Contents

RoHS Compliant

CIRCUIT PROTECTION PRODUCTS

RESISTORS PRODUCTS

MARKING & PACKAGING

CF/CFS Thin Film Chip Fuse

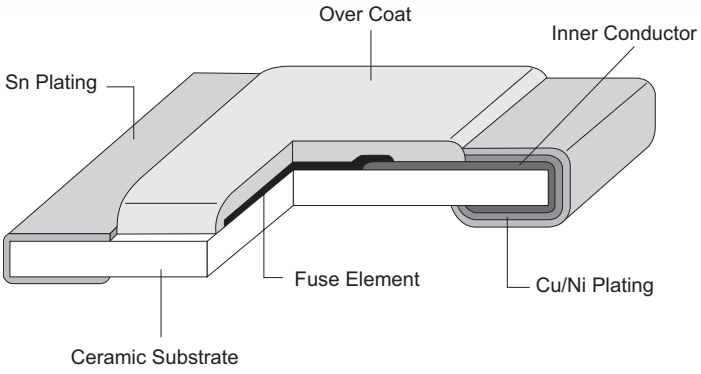
RoHS Compliant

TA-I TECHNOLOGY CO., LTD.

Features

- Small and light weight design
- Thin film manufacturing method stabilizing fusing characteristics
- Low internal resistance
- Suitable for over current protection
- Recognized standard: UL248-14 file No. E241710

Construction



Application

- PC related equipment and peripherals (PC, Hard Drive, ODD, Printer etc.)
- Small portable devices, mobile phone, PDA, battery charger etc.
- Digital camera
- Game equipment
- LCD monitors, LCD modules (Backlight inverter)
- Battery package

Type Designation

CF/CFS	06	V5	T	R50
Product Code	**Size**	**Rated Voltage**	**Packaging**	**Rated Current**
CF: Open within 1min. at 200% rated current CFS: Open within 5 sec. at 250% rated current	04: 1.0x0.52mm 06: 1.6x0.80mm 12: 3.1x1.55mm 24: 6.1x2.6mm	VA: 125V V6: 63V V5: 50V V3: 32V	T: Paper Tape (5K)	R50: 0.5A R80: 0.8A 1R0: 1A 1R25: 1.25A 1R50: 1.5A 2R0: 2A 2R50: 2.5A 3R0: 3.0A 4R0: 4.0A 5R0: 5.0A 7R0: 7.0A

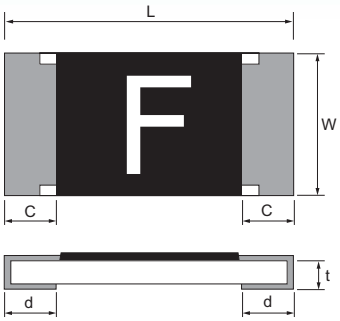
CF/CFS Thin Film Chip Fuse

RoHS Compliant

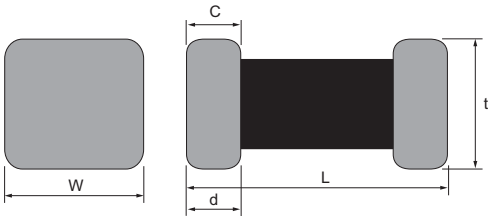
TA-I TECHNOLOGY CO., LTD.

Dimensions

For CF/CFS 04/06/12



For CF/CFS 24



Unit: mm

Type (inch)	L	W	C	d	t
CF/CFS 04 (0402)	1.0±0.1	0.52±0.05	0.2±0.1	0.25±0.10	0.35±0.05
CF/CFS 06 (0603)	1.6±0.1	0.80±0.10	0.3±0.2	0.35±0.20	0.45±0.10
CF/CFS 12 (1206)	3.1±0.1	1.55±0.10	0.5±0.3	0.5±0.20	0.60±0.10
CF/CFS 24 (2410)	6.1±0.2	2.6±0.1	1.45±0.1	1.45±0.1	2.6±0.1

Reliability Tests

Parameter	Requirement	Test Method
Carrying capacity	No fusing	Rated current, 4hrs
Interrupting Ability	No mechanical damages	After the fuse is interrupted, rated voltage applied for 30secs. again
Bending Test	No mechanical damages	Distance between holding points: 90mm, Bending: 3mm, 30 Seconds 1time
Resistance to Solder Heat	±20%	260°C±5°C, 10±1sec.
Solderability	95% coverage minimum	245°C±5°C, 2±0.5secs. (Lead Free)
Temperature Rise	<75°C	100% of its rated current, measure of surface temperature
Resistance to Dry Heat	±20%	105°C±5°C, 1000hrs
Resistance to Solvent	No evident damages on protective coating and marking	23°C±5°C of Isopropyl alcohol 90secs.
Insulation Resistance	10kΩ and more	Measure DC resistance after fusing
Thermal Shock	ΔR<±10%	-20°C/+25°C/+125°C/+25°C, 10 cycles

CF/CFS Thin Film Chip Fuse

RoHS Compliant

CF0402 Rating and Characteristic

Parts Designation	Marking	Rated Current	Fusing Time	Resistance (mΩ) Typ.*	Rated Voltage	Breaking Capacity	Body Temperature rising
CF04V3TR50	F	0.50A	Open within 1min. at 200% rated current	320	DC 32V	DC 32V / 35A	<75°C at 100% rated current
CF04V3TR80	K	0.80A		120			
CF04V3T1R0	L	1.00A		90			
CF04V3T1R25	M	1.25A		67			
CF04V3T1R50	P	1.50A		51			
CF04V3T1R60	N	1.60A		46			
CF04V3T2R0	S	2.00A		33			
CF04V3T2R50	T	2.50A		25			
CF04V3T3R00	3	3.00A		20			
CF04V3T3R15	U	3.15A		19			
CF04V3T4R0	W	4.00A		16			
CFS04V3TR50	F	0.50A	Open within 5secs. at 250% rated current	235	DC 32V	DC 32V / 35A	
CFS04V3TR80	K	0.80A		86			
CFS04V3T1R0	L	1.00A		64			
CFS04V3T1R25	M	1.25A		45			
CFS04V3T1R50	P	1.50A		35			
CFS04V3T1R60	N	1.60A		32			
CFS04V3T2R0	S	2.00A		24			
CFS04V3T2R50	T	2.50A		19			
CFS04V3T3R00	3	3.00A		15			
CFS04V3T3R15	U	3.15A		14			
CFS04V3T4R0	W	4.00A		10.5			

* Resistance valve was measured with less than 10% of rated current.

CF/CFS Thin Film Chip Fuse

RoHS Compliant

TA-I TECHNOLOGY CO., LTD.

CF0603 Rating and Characteristic

Parts Designation	Marking	Rated Current	Fusing Time	Resistance (mΩ) Typ.*	Rated Voltage	Breaking Capacity	Body Temperature rising
CF06V5TR50	F	0.50A	Open within 1min. at 200% rated current	250	DC 50V	DC 50V / 50A	<75°C at 100% rated current
CF06V3TR63	I	0.63A		173	DC 32V	DC 32V / 50A	
CF06V3TR80	K	0.80A		115			
CF06V3T1R0	L	1.00A		88			
CF06V3T1R25	M	1.25A		63			
CF06V3T1R50	P	1.50A		45			
CF06V3T1R60	N	1.60A		42			
CF06V3T2R0	S	2.00A		33			
CF06V3T2R50	T	2.50A		24	DC 32V	DC 32V / 50A	
CF06V3T3R00	3	3.00A		21			
CF06V3T3R15	U	3.15A		19			
CF06V3T4R0	W	4.00A		15	DC 32V	DC 32V / 50A	
CF06V3T5R0	Y	5.00A		12			
CFS06V5TR50	F	0.50A	Open within 5secs. at 250% rated current	175	DC 50V	DC 50V / 50A	
CFS06V3TR63	I	0.63A		130	DC 32V	DC 32V / 50A	
CFS06V3TR80	K	0.80A		93			
CFS06V3T1R0	L	1.00A		65			
CFS06V3T1R25	M	1.25A		47			
CFS06V3T1R50	P	1.50A		36			
CFS06V3T1R60	N	1.60A		34			
CFS06V3T2R0	S	2.00A		26			
CFS06V3T2R50	T	2.50A		20			
CFS06V3T3R00	3	3.00A		16			
CFS06V3T3R15	U	3.15A		15			
CFS06V3T4R0	W	4.00A		12			
CFS06V3T5R0	Y	5.00A		9			

* Resistance valve was measured with less than 10% of rated current.

CF/CFS Thin Film Chip Fuse

RoHS Compliant

CF1206 Rating and Characteristic

Parts Designation	Marking	Rated Current	Fusing Time	Resistance (mΩ) Typ.*	Rated Voltage	Breaking Capacity	Body Temperature rising
CF12V6TR50	F	0.50A	Open within 1min. at 200% rated current	590	DC 63V	DC 63V / 50A	<75°C at 100% rated current
CF12V6TR80	K	0.80A		225			
CF12V6T1R0	L	1.00A		130			
CF12V6T1R25	M	1.25A		88			
CF12V6T1R50	P	1.50A		65			
CF12V6T2R0	S	2.00A		38			
CF12V3T2R50	T	2.50A		32	DC 32V	DC 32V / 50A	
CF12V3T3R00	3	3.00A		23			
CF12V3T4R0	W	4.00A		15	DC 32V	DC 32V / 50A	
CF12V3T5R0	Y	5.00A		11			
CF12V3T7R0	Z	7.00A		7			
CFS12V6TR50	F	0.50A	Open within 5secs. at 250% rated current	385	DC 63V	DC 63V / 50A	
CFS12V6TR80	K	0.80A		165			
CFS12V6T1R0	L	1.00A		108			
CFS12V6T1R25	M	1.25A		76			
CFS12V6T1R50	P	1.50A		51			
CFS12V6T2R0	S	2.00A		32			
CFS12V3T2R50	T	2.50A		26	DC 32V	DC 32V / 50A	
CFS12V3T3R00	3	3.00A		20			
CFS12V3T4R0	W	4.00A		14	DC 32V	DC 32V / 50A	
CFS12V3T5R0	Y	5.00A		10			
CFS12V3T7R0	Z	7.00A		6.5			

* Resistance valve was measured with less than 10% of rated current.

CF/CFS Thin Film Chip Fuse

RoHS Compliant

TA-I TECHNOLOGY CO., LTD.

CF24 Rating and Characteristic

Parts Designation	Rated Current	Fusing Time	Resistance (mΩ) Typ.*	Rated Voltage	Voltage Drop(mV) Max
CF24VATR50	0.5A	Open within 5 secs. at 200% rated current	0.163	125V DC	300
CF24VATR70	0.7A		0.13		280
CF24VATR75	0.75A		0.102		270
CF24VAT1R0	1A		0.073		250
CF24VAT1R50	1.5A		0.043		220
CF24VAT2R0	2A		0.031		200
CF24VAT2R50	2.5A		0.024		180
CF24VAT3R00	3A		0.021		160
CF24VAT3R50	3.5A		0.018		150
CF24VAT4R0	4A		0.016		150
CF24VAT5R0	5A		0.013		130
CF24VAT6R0	6A		0.011		120
CF24VAT7R0	7A		0.0082		120
CF24VAT8R0	8A		0.0058		110
CF24VAT10R0	10A		0.0049		90
CF24V6T12R0	12A	Open within 60 secs. at 200% rated current	0.0031	65V DC	80
CF24V6T15R0	15A		0.0020		70
CFS24VATR50	0.5A	Open Min 1 sec Max 60 secs. at 200% rated current	0.451	125V DC	400
CFS24VATR70	0.7A		0.210		360
CFS24VATR75	0.75A		0.242		320
CFS24VAT1R0	1A		0.132		250
CFS24VAT1R50	1.5A		0.067		230
CFS24VAT2R0	2A		0.043		210
CFS24VAT2R50	2.5A		0.04		200
CFS24VAT3R00	3A		0.033		190
CFS24VAT3R50	3.5A		0.024		180
CFS24VAT4R0	4A		0.022		160
CFS24VAT5R0	5A		0.021		150
CFS24VAT6R0	6A		0.018		140
CFS24VAT7R0	7A		0.011		130

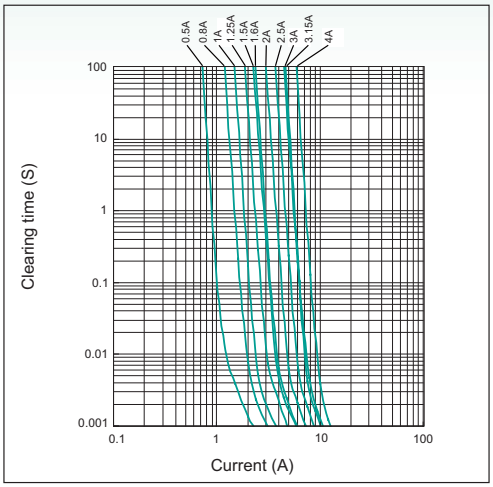
* Resistance valve was measured with less than 10% of rated current.

Note: CF/CFS 24 Series are Ceramic Brick Fuse.

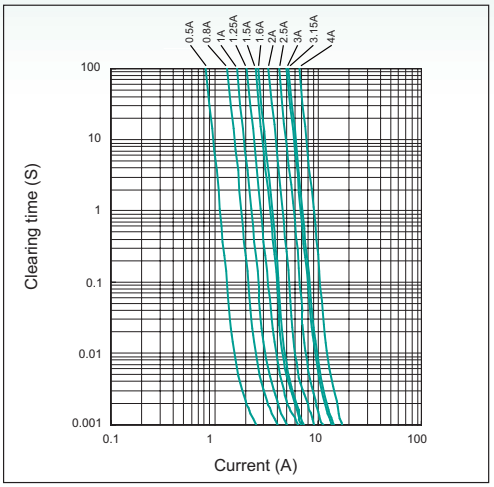
CF/CFS Thin Film Chip Fuse

RoHS Compliant

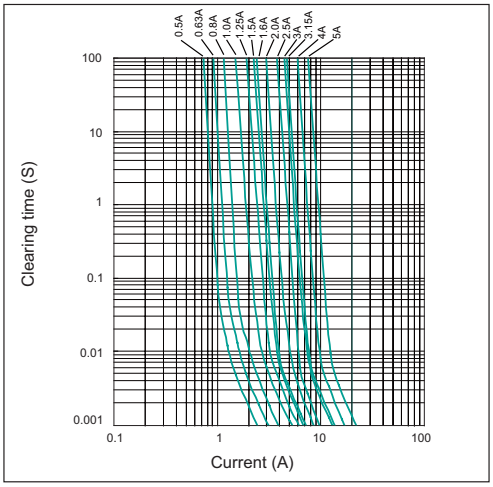
CF04 I-t Curve



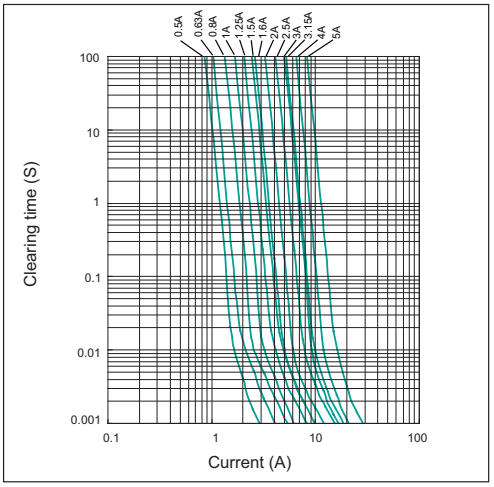
CFS04 I-t Curve



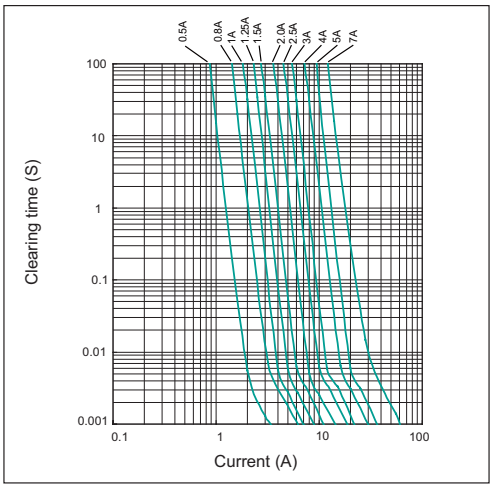
CF06 I-t Curve



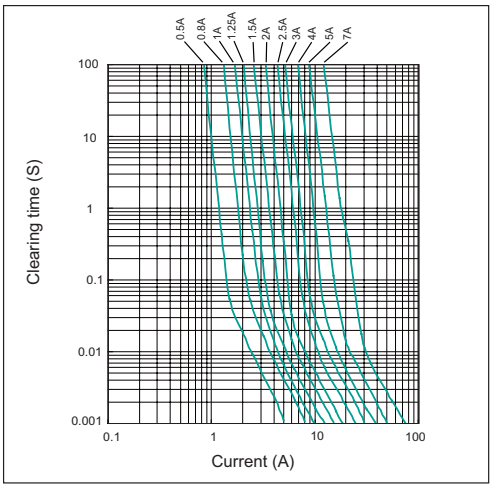
CFS06 I-t Curve



CF12 I-t Curve



CFS12 I-t Curve



CP

Lead Free Thin Film Chip Fuse

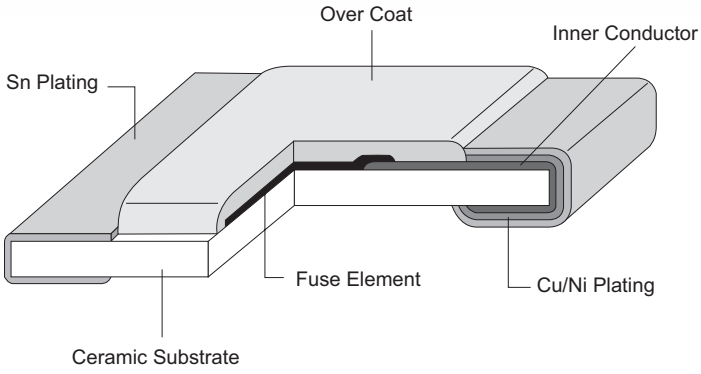
RoHS Compliant

TA-I TECHNOLOGY CO., LTD.

Features

- Small and light weight design
- Thin film manufacturing method stabilizing fusing characteristics
- Low internal resistance
- Suitable for over current protection
- Recognized standard: UL248-14 file No. E241710

Construction



Application

- PC related equipment and peripherals (PC, Hard Drive, ODD, Printer etc.)
- Small portable devices, mobile phone, PDA, battery charger etc.
- Digital camera
- Game equipment
- LCD monitors, LCD modules (Backlight inverter)
- Battery package

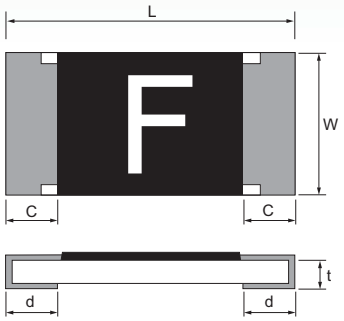
Type Designation

CP	06	V5	T	R50
Product Code	**Size**	**Rated Voltage**	**Packaging**	**Rated Current**
Lead Free Thin Film Chip Fuse	04: 0402(1.0x0.5mm) 06: 0603(1.6x0.8mm) 12: 1206(3.2x1.6mm)	V6: 63V V5: 50V V3: 32V VA: 125V	T: Paper Tape (5K)	R50: 0.5A R63: 0.63A R80: 0.8A 1R0: 1A 1R25: 1.25A 1R50: 1.5A 1R60: 1.6A 2R0: 2A 2R50: 2.5A 3R00: 3A 3R15: 3.15A 4R0: 4A 5R0: 5A 7R0: 7A

CP Lead Free Thin Film Chip Fuse

RoHS Compliant

Dimensions



Unit: mm

Type (inch)	L	W	C	d	t
CP06V (0603)	1.6±0.1	0.8±0.1	0.3±0.2	0.35±0.2	0.45±0.1
CP12V (1206)	3.1±0.1	1.55±0.1	0.5±0.3	0.5±0.2	0.6±0.1

Rating & Characteristic

Parts Designation	Marking	Rated Current	Fusing Time	Resistance (mΩ) Typ.*	Rated Voltage	Typical I^2t (A^2S)	Body Temperature rising
CP06V5TR50	F	0.50A	Open within 5sec. at 200% rated current	385	DC 50V	0.0088	<75°C at 100% rated current
CP06V3TR63	I	0.63A		218	DC 32V	0.0145	
CP06V3TR80	K	0.80A		161		0.0178	
CP06V3T1R0	L	1.00A		125		0.0298	
CP06V3T1R25	M	1.25A		85		0.0507	
CP06V3T1R50	P	1.50A		66		0.0745	
CP06V3T1R60	N	1.60A		63		0.0817	
CP06V3T2R0	S	2.00A		45		0.1176	
CP06V3T2R50	T	2.50A		36	DC 32V	0.1807	
CP06V3T3R00	3	3.00A		28		0.3517	
CP06V3T3R15	U	3.15A		27		0.3805	
CP06V3T4R0	W	4.00A		20	DC 32V	0.5746	
CP06V3T5R0	Y	5.00A		16		0.7726	

CP Lead Free Thin Film Chip Fuse

RoHS Compliant

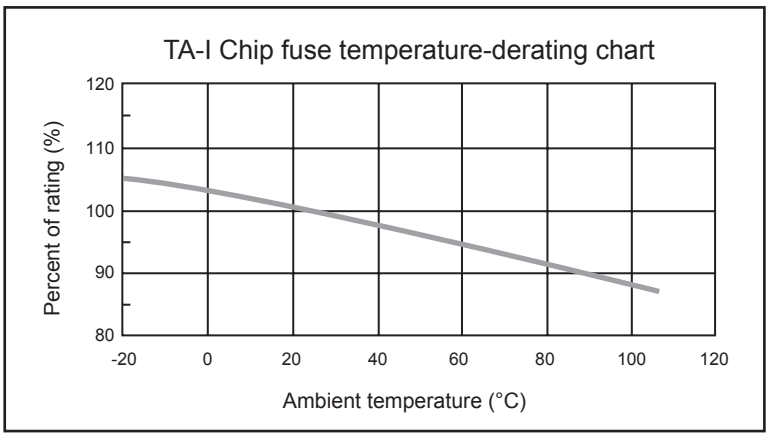
TA-I TECHNOLOGY CO., LTD.

Rating & Characteristic

Parts Designation	Marking	Rated Current	Fusing Time	Resistance (mΩ) Typ.*	Rated Voltage	Typical I^2t (A^2S)	Body Temperature rising
CP12V6TR50	F	0.50A	Open within 5sec. at 200% rated current	640	DC 63V	0.015	<75°C at 100% rated current
CP12V6TR80	K	0.80A		258		0.040	
CP12V6T1R0	L	1.00A		178		0.062	
CP12V6T1R25	M	1.25A		122		0.094	
CP12V6T1R50	P	1.50A		83		0.141	
CP12V6T2R0	S	2.00A		57		0.285	
CP12V3T2R50	T	2.50A		44	DC 32V	0.445	
CP12V3T3R00	3	3.00A		33		0.639	
CP12V3T4R0	W	4.00A		22	DC 32V	1.109	
CP12V3T5R0	Y	5.00A		17		1.710	
CP12V3T7R0	Z	7.00A		11		3.300	

Temperatuer Derating Curve

- **Normal Ambient Temperature: 25°C**
- **Operating Temperature: -20°C~105°C, whit proper Derating factor as below:**



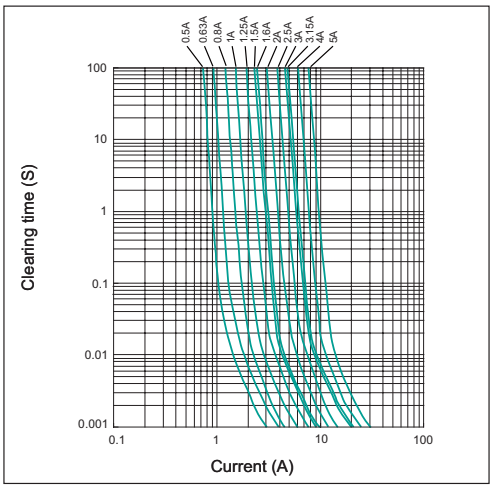
CP Lead Free Thin Film Chip Fuse

RoHS Compliant

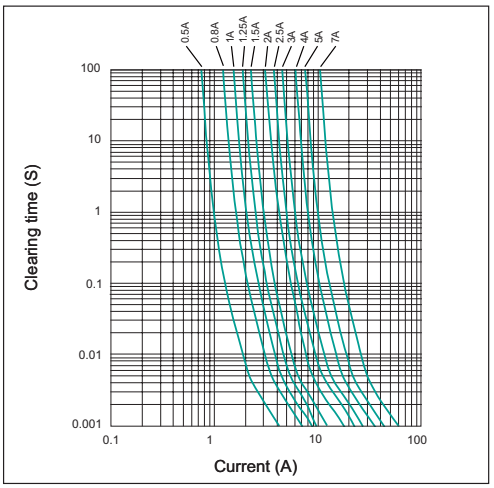
Reliability Test

Parameter	Requirement	Test Method
Carrying capacity	No fusing	Rated current ,4hr
Fusing Time	Within 5sec.	200% of its rated current
Interrupting Ability	No mechanical damages	After the fuse is interrupted ,rated voltage applied for 30sec again
Bending Test	No mechanical damages	Distance between holding points: 90mm, Bending:3mm,1time ,30sec
Resistance to solder Heat	±20%	260°C ± 5°C, 10seconds ± 1second
Solderability	95% coverage minimum	235°C ± 5°C, 2±0.5second 245°C ± 5°C, 2 ± 0.5second (Lead Free)
Temperature Rise	<75°C	100% of its rated current, Measure of surface temperature
Resistance to Dry Heat	±20%	105°C±5°C, 1000 hrs
Resistance to Solvent	No evident damages on protective coating and marking	23°C±5°C of Isopropyl alcohol 90second
Insulation Resistance	10kΩ and more	Measure DC resistance after fusing
Thermal Shock	ΔR<10%	-20°C / +25°C / +125°C / +25°C, 10 cycles

CP06 Chip Fuse I-t Curve



CP12 Chip Fuse I-t Curve



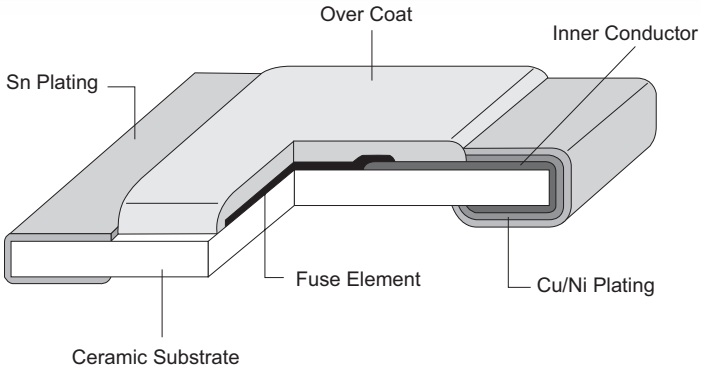
CPS Lead Free Thin Film Chip Fuse

RoHS Compliant

Features

- Small and light weight design
- Thin film manufacturing method stabilizing fusing characteristics
- Low internal resistance
- Suitable for over current protection
- Recognized standard: UL248-14 file No. E241710

Construction



Application

- PC related equipment and peripherals (PC, Hard Drive, ODD, Printer etc.)
- Small portable devices, mobile phone, PDA, battery charger etc.
- Digital camera
- Game equipment
- LCD monitors, LCD modules (Backlight inverter)
- Battery package

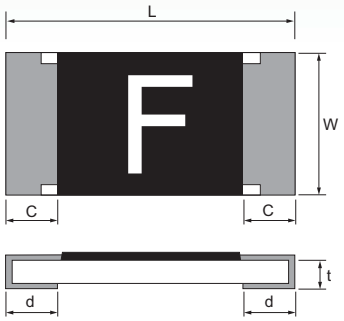
Type Designation

CPS	06	V5	T	R50
Product Code	**Size**	**Rated Voltage**	**Packaging**	**Rated Current**
Chip Fuse Open with 1~120 sec. at 200% rated current	04: 0402(1.0x0.5mm) 06: 0603(1.6x0.8mm) 12: 1206(3.2x1.6mm)	V6: 63V V5: 50V V3: 32V VA: 125V	T: Paper Tape (5K)	R50: 0.5A R63: 0.63A R80: 0.8A 1R0: 1A 1R25: 1.25A 1R50: 1.5A 1R60: 1.6A 2R0: 2A 2R50: 2.5A 3R00: 3A 3R15: 3.15A 4R0: 4A 5R0: 5A 7R0: 7A

CPS Lead Free Thin Film Chip Fuse

RoHS Compliant

Dimensions



Unit: mm

Type (inch)	L	W	C	d	t
CPS06V (0603)	1.6±0.1	0.8±0.1	0.3±0.2	0.35±0.2	0.45±0.1
CPS12V (1206)	3.1±0.1	1.55±0.1	0.5±0.3	0.5±0.2	0.6±0.1

Rating & Characteristic

Parts Designation	Marking	Rated Current	Fusing Time	Resistance (mΩ) Typ.*	Rated Voltage	Typical I^2t (A^2S)	Body Temperature rising
CPS06V5TR50	F	0.50A	Open within 1~120sec. at 200% rated current	308	DC 50V	0.0135	<75°C at 100% rated current
CPS06V3TR63	I	0.63A		170	DC 32V	0.0216	
CPS06V3TR80	K	0.80A		125		0.0349	
CPS06V3T1R0	L	1.00A		89		0.0726	
CPS06V3T1R25	M	1.25A		67		0.0852	
CPS06V3T1R50	P	1.50A		51		0.1464	
CPS06V3T1R60	N	1.60A		46		0.1665	
CPS06V3T2R0	S	2.00A		36		0.2160	
CPS06V3T2R50	T	2.50A		28	DC 32V	0.5030	
CPS06V3T3R00	3	3.00A		22		0.6980	
CPS06V3T3R15	U	3.15A		21		0.7668	
CPS06V3T4R0	W	4.00A		18	DC 32V	1.8380	
CPS06V3T5R0	Y	5.00A		12		2.5970	

CPS Lead Free Thin Film Chip Fuse

RoHS Compliant

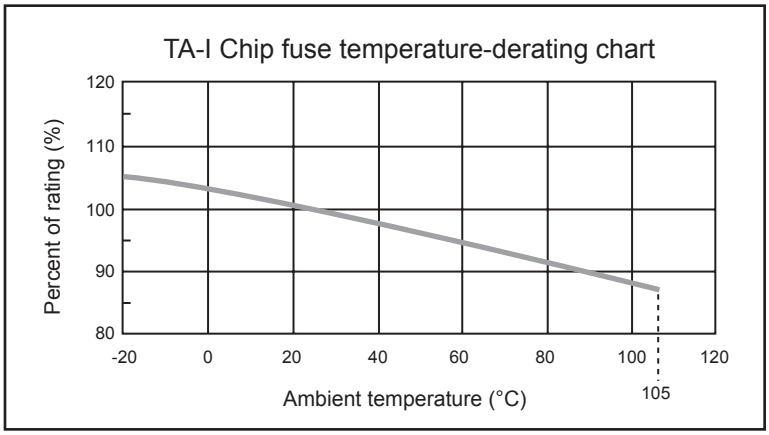
TA-I TECHNOLOGY CO., LTD.

Rating & Characteristic

Parts Designation	Marking	Rated Current	Fusing Time	Resistance (mΩ) Typ.*	Rated Voltage	Typical I^2t (A^2S)	Body Temperature rising
CPS12V6TR50	F	0.50A	Open within 1~120sec. at 200% rated current	528	DC 63V	0.027	<75°C at 100% rated current
CPS12V6TR80	K	0.80A		215		0.072	
CPS12V6T1R0	L	1.00A		149		0.134	
CPS12V6T1R25	M	1.25A		100		0.233	
CPS12V6T1R50	P	1.50A		71		0.305	
CPS12V6T2R0	S	2.00A		47		0.509	
CPS12V3T2R50	T	2.50A		39	DC 32V	0.777	
CPS12V3T3R00	3	3.00A		28		1.285	
CPS12V3T4R0	W	4.00A		19	DC 32V		
CPS12V3T5R0	Y	5.00A		15		5.510	
CPS12V3T7R0	Z	7.00A		10		10.170	

Temperatuer Derating Curve

- **Normal Ambient Temperature: 25°C**
- **Operating Temperature: -20°C~105°C, whit proper Derating factor as below:**



CPS Lead Free Thin Film Chip Fuse

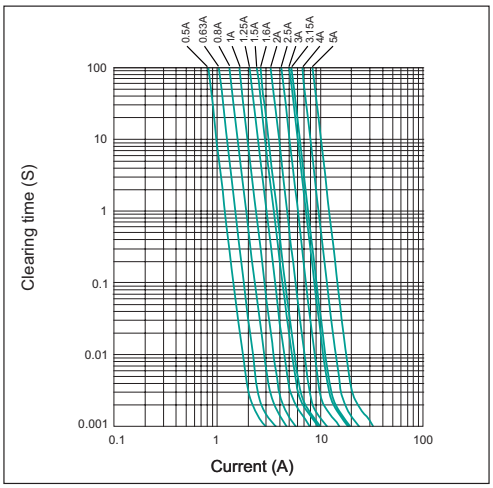
RoHS Compliant

TAI-TECH TECHNOLOGY CO., LTD.

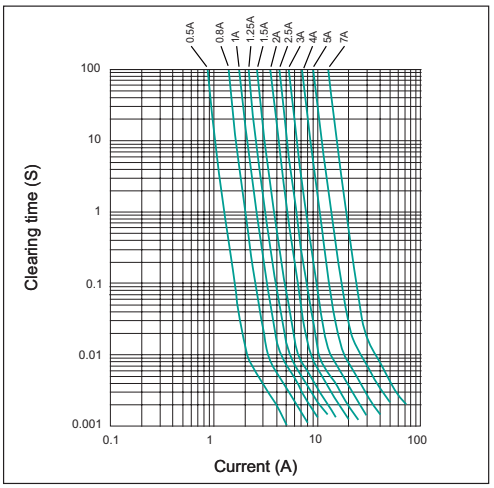
Reliability Test

Parameter	Requirement	Test Method
Carrying capacity	No fusing	Rated current ,4hr
Fusing Time	Within 1~120sec.	200% of its rated current
Interrupting Ability	No mechanical damages	After the fuse is interrupted , rated voltage applied for 30sec again
Bending Test	No mechanical damages	Distance between holding points: 90mm, Bending:3mm,1time, 30sec
Resistance to solder Heat	±20%	260°C±5°C,10seconds ± 1second
Solderability	95% coverage minimum	235°C±5°C, 2±0.5second 245°C±5°C, 2±0.5second (Lead Free)
Temperature Rise	<75°C	100% of its rated current, Measure of surface temperature
Resistance to Dry Heat	±20%	105°C±5°C,1000 hrs
Resistance to Solvent	No evident damages on protective coating and marking	23°C±5°C of Isopropyl alcohol 90second
Insulation Resistance	10kΩ and more	Measure DC resistance after fusing
Thermal Shock	ΔR<10%	-20°C/+25°C /+125°C/+25°C, 10 cycles

CPS06 Chip Fuse I-t Curve



CPS12 Chip Fuse I-t Curve



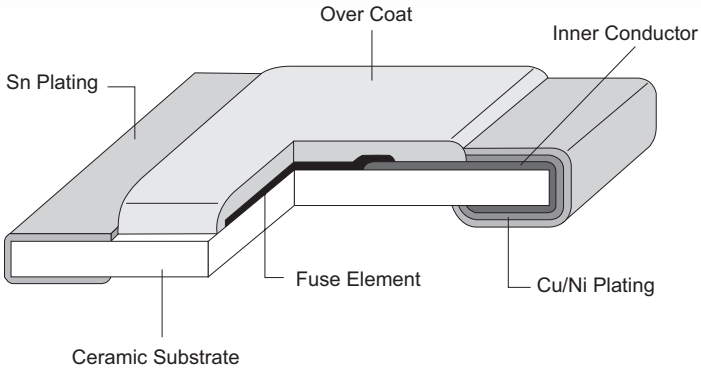
CH Lead Free Thin Film Chip Fuse

RoHS Compliant

Features

- Small and light weight design
- Thin film manufacturing method stabilizing fusing characteristics
- Low internal resistance
- Suitable for over current protection
- Recognized standard: UL248-14 file No. E241710

Construction



Application

- PC related equipment and peripherals (PC, Hard Drive, ODD, Printer etc.)
- Small portable devices, mobile phone, PDA, battery charger etc.
- Digital camera
- Game equipment
- LCD monitors, LCD modules (Backlight inverter)
- Battery package

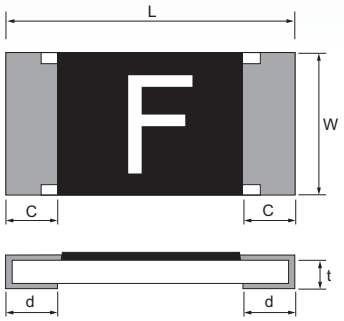
Type Designation

CH	06	V5	T	R50
Product Code	**Size**	**Rated Voltage**	**Packaging**	**Rated Current**
Chip Fuse Open with 1~60 sec. at 200% rated current	06: 0603(1.6x0.8mm) 12: 1206(3.2x1.6mm)	V6: 63V V5: 50V V3: 32V VA: 125V	T: Paper Tape (5K)	R50: 0.5A 1R0: 1A

CH Lead Free Thin Film Chip Fuse

RoHS Compliant

Dimensions



Unit: mm

Type (inch)	L	W	C	d	t
CH06V (0603)	1.6±0.1	0.8±0.1	0.3±0.2	0.35±0.2	0.45±0.1
CH12V (1206)	3.1±0.1	1.55±0.1	0.5±0.3	0.5±0.2	0.6±0.1

Rating & Characteristic

Parts Designation	Marking	Rated Current	Fusing Time	Resistance (mΩ) Typ.*	Rated Voltage	Typical I^2t (A^2S)	Body Temperature rising
CH06V5TR60	F	0.50A	Open within 1~60sec. at 200% rated current	308	DC 50V	0.013	<75°C at 100% rated current
CH06V3TR63	I	0.63A		170	DC 32V	0.015	
CH06V3TR80	K	0.80A		125		0.025	
CH06V3T1R0	L	1.00A		89		0.064	
CH06V3T1R25	M	1.25A		67		0.065	
CH06V3T1R50	P	1.50A		51		0.089	
CH06V3T1R60	N	1.60A		46		0.101	
CH06V3T2R0	S	2.00A		36		0.188	
CH06V3T2R50	T	2.50A		28	DC 32V	0.458	
CH06V3T3R00	3	3.00A		22		0.565	
CH06V3T3R15	U	3.15A		21		0.620	
CH06V3T4R0	W	4.00A		18	DC 32V	1.665	
CH06V3T5R0	Y	5.00A		12		2.597	

CH Lead Free Thin Film Chip Fuse

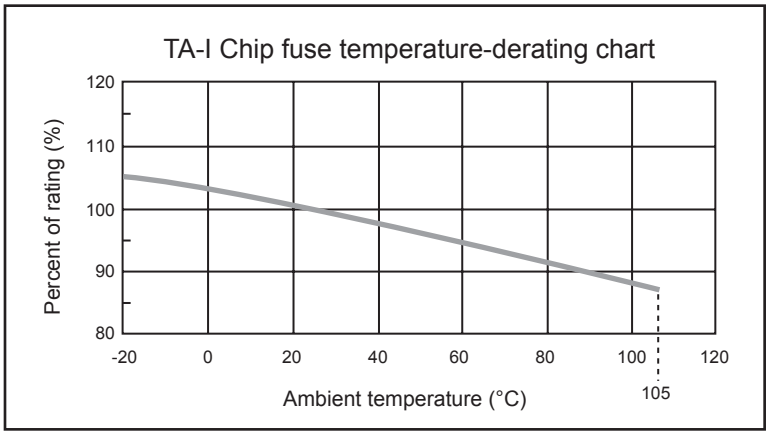
RoHS Compliant

Rating & Characteristic

Parts Designation	Marking	Rated Current	Fusing Time	Resistance (mΩ) Typ.*	Rated Voltage	Typical I^2t (A^2S)	Body Temperature rising
CH12V6TR50	F	0.50A	Open within 1~60sec. at 200% rated current	528	DC 63V	0.027	<75°C at 100% rated current
CH12V6TR80	K	0.80A		215		0.072	
CH12V6T1R0	L	1.00A		149		0.112	
CH12V6T1R25	M	1.25A		100		0.212	
CH12V6T1R50	P	1.50A		71		0.333	
CH12V6T2R0	S	2.00A		47		0.763	
CH12V3T2R50	T	2.50A		39	DC 32V	1.201	
CH12V3T3R00	3	3.00A		28		1.383	
CH12V3T4R0	W	4.00A		19	DC 32V		
CH12V3T5R0	Y	5.00A		15		4.959	
CH12V3T7R0	Z	7.00A		10		7.629	

Temperatuer Derating Curve

- **Normal Ambient Temperature: 25°C**
- **Operating Temperature: -20°C~105°C, whit proper Derating factor as below:**



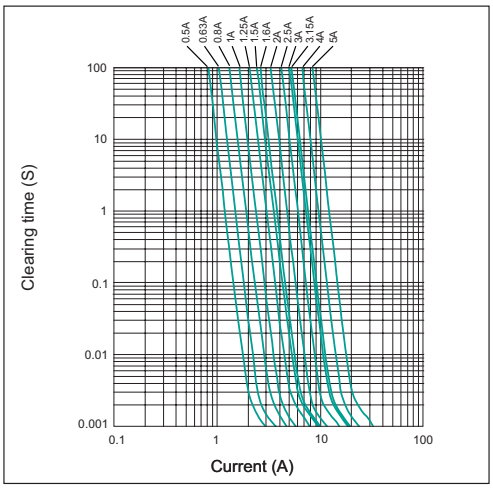
CH Lead Free Thin Film Chip Fuse

RoHS Compliant

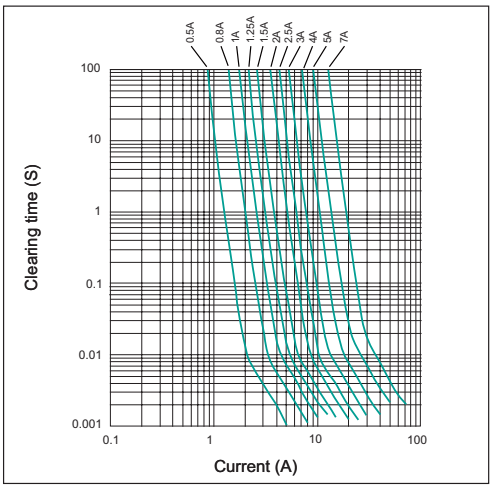
Reliability Test

Parameter	Requirement	Test Method
Carrying capacity	No fusing	Rated current ,4hr
Fusing Time	Within 1~60sec.	200% of its rated current
Interrupting Ability	No mechanical damages	After the fuse is interrupted , rated voltage applied for 30sec again
Bending Test	No mechanical damages	Distance between holding points: 90mm, Bending:3mm,1time, 30sec
Resistance to solder Heat	±20%	260°C±5°C,10seconds ± 1second
Solderability	95% coverage minimum	235°C±5°C, 2±0.5second 245°C±5°C, 2±0.5second (Lead Free)
Temperature Rise	<75°C	100% of its rated current, Measure of surface temperature
Resistance to Dry Heat	±20%	105°C±5°C,1000 hrs
Resistance to Solvent	No evident damages on protective coating and marking	23°C±5°C of Isopropyl alcohol 90second
Insulation Resistance	10kΩ and more	Measure DC resistance after fusing
Thermal Shock	ΔR<10%	-20°C/+25°C /+125°C/+25°C, 10 cycles

CH06 Chip Fuse I-t Curve



CH12 Chip Fuse I-t Curve



SRF Lead Free SMD Resettable Fuse

RoHS Compliant

Features

- Small and light weight design
- Thin film manufacturing method stabilizing fusing characteristics
- Low internal resistance
- Suitable for over current protection
- Recognized standard: UL248-14 file No. E241710

Construction

Application

- PC related equipment and peripherals (PC, Hard Drive, ODD, Printer etc.)
- Small portable devices, mobile phone, PDA, battery charger etc.
- Digital camera
- Game equipment
- LCD monitors, LCD modules (Backlight inverter)
- Battery package

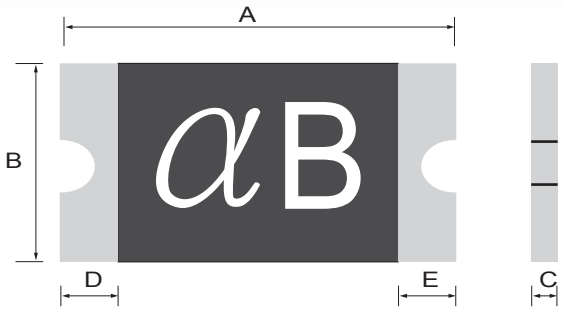
Type Designation

SRF	12	035	V06	–	E	F
Product Coble	**Size**	**I-hold**	**Vmax (Vdc)**		**Packaging**	**Lead Free**
SMD Resettable Fuse	12: 1206 (3.2x1.6mm) 18: 1812 (4.5x3.2mm) 29: 2920 (7.5x5.5mm)	035: 0.35A	V06: 6V V08: 8V V09: 9V V12: 12V V13: 13.2V V15: 15V V16: 16V V30: 30V V60: 60V		E: Embossed Tape	

SRF Lead Free SMD Resettable Fuse

RoHS Compliant

Dimensions



Unit: mm

Type (inch) (Inch Size code)	A		B		C		D	E
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.
SRF12-XXXVXX-EF	3.00	3.50	1.50	1.80	0.40	0.90	0.15	0.10
SRF18-XXXVXX-EF	4.37	4.73	3.07	3.41	0.40	0.90	0.30	0.25
SRF29-XXXVXX-EF	6.73	7.98	4.80	5.44	0.30	0.90	0.30	0.10

Rating & Characteristic

Model	Marking	V_{max} (Vdc)	I_{max} (A)	I_{hold} @ 25°C (A)	I_{trip} @ 25°C (A)	P_d Typ. (W)	Maximum Time To Trip		Resistance	
							Current (A)	Time (Sec)	Ri_{min} (Ω)	$R1_{max}$ (Ω)
SRF12-010V15-EF	1	15	100	0.1	0.3	0.5	0.5	1.5	1	6
SRF12-020V09-EF	2	9	100	0.2	0.5	0.5	8	0.02	0.65	3.5
SRF12-035V06-EF	3	6	100	0.35	0.75	0.5	8	0.1	0.25	1.2
SRF12-050V06-EF	5	6	100	0.5	1	0.5	8	0.1	0.15	0.85
SRF12-075V06-EF	7	6	40	0.75	1.5	0.6	8	0.2	0.09	0.385
SRF12-100V06-EF	0	6	100	1	1.95	0.6	8	0.3	0.06	0.23
SRF12-110V06-EF	0	6	100	1.1	2.2	0.6	8	0.3	0.06	0.21

SRF Lead Free SMD Resettable Fuse

RoHS Compliant

Model	Marking	V_{max} (Vdc)	I_{max} (A)	I_{hold} @ 25°C (A)	I_{trip} @ 25°C (A)	P_d Max. (W)	Maximum Time To Trip		Resistance	
							Current (A)	Time (Sec)	Ri_{min} (Ω)	$R1_{max}$ (Ω)
SRF12-005V60-EF	αZ	60	100	0.05	0.15	0.4	0.3	1.5	3.6	50
SRF12-010V60-EF	αN	60	100	0.1	0.25	0.4	0.5	1	1.6	15
SRF12-025V16-EF	αA	16	100	0.25	0.5	0.6	8	0.08	0.35	2.5
SRF12-035V06-EF	αB	6	100	0.35	0.75	0.6	8	0.1	0.25	1.3
SRF12-050V06-EF	αF	6	100	0.5	1	0.6	8	0.1	0.15	0.7
SRF12-050V13-EF	αF	13.2	100	0.5	1	0.6	8	0.1	0.15	0.7
SRF12-075V06-EF	αG	6	100	0.75	1.5	0.6	8	0.2	0.09	0.5
SRF12-100V06-EF	αH	6	100	1	1.8	0.6	8	0.3	0.055	0.27
SRF12-150V06-EF	αI	6	100	1.5	3	0.8	8	1	0.04	0.13
SRF12-200V06-EF	αK	6	100	2	3.5	0.8	8	1.5	0.018	0.08

Model	V_{max} (Vdc)	I_{max} (A)	I_{hold} @ 25°C (A)	I_{trip} @ 25°C (A)	P_d Typ. (W)	Maximum Time To Trip		Resistance	
						Current (A)	Time (Sec)	Ri_{min} (Ω)	$R1_{max}$ (Ω)
SRF18-010V30-EF	30	100	0.1	0.3	0.8	0.5	1.5	0.75	15
SRF18-014V60-EF	60	100	0.14	0.34	0.8	1.5	0.15	0.65	6
SRF18-020V30-EF	30	100	0.2	0.4	0.8	8	0.02	0.35	5
SRF18-060V30-EF	30	100	0.3	0.6	0.8	8	0.1	0.25	3
SRF18-050V15-EF	15	100	0.5	1	0.8	8	0.15	0.15	1
SRF18-075V13-EF	13.2	40	0.75	1.5	0.8	8	0.2	0.09	0.45
SRF18-075V16-EF	16	100	0.75	1.5	0.8	8	0.2	0.09	0.45
SRF18-110V08-EF	8	100	1.1	2.2	0.8	8	0.3	0.05	0.25
SRF18-110V16-EF	16	100	1.1	2.2	0.8	8	0.3	0.05	0.25
SRF18-125V16-EF	16	100	1.25	2.5	0.8	8	0.4	0.05	0.15
SRF18-150V08-EF	8	100	1.5	3	0.8	8	0.5	0.04	0.16
SRF18-300V12-EF	12	100	3	3	0.8	8	0.5	0.04	0.16
SRF18-150V16-EF	16	100	1.5	3	0.8	8	0.5	0.04	0.16
SRF18-160V08-EF	8	100	1.6	2.8	0.8	8	1	0.03	0.13
SRF18-200V08-EF	8	100	2	4	0.8	8	2	0.02	0.1
SRF18-260V08-EF	8	100	2.6	5	0.8	8	2.5	0.015	0.05
SRF18-300V08-EF	8	100	3	5	0.8	8	4	0.012	0.04

SRF Lead Free SMD Resettable Fuse

RoHS Compliant

Model	V_{max} (Vdc)	I_{max} (A)	I_{hold} @ 25°C (A)	I_{trip} @ 25°C (A)	P_d Typ. (W)	Maximum Time To Trip		Resistance	
						Current (A)	Time (Sec)	Ri_{min} (Ω)	$R1_{max}$ (Ω)
SRF29-030V60-EF	60	100	0.3	0.6	1.5	1.5	3	0.6	4.8
SRF29-030V60-EF	60	100	0.5	1	1.5	2.5	4	0.18	1.4
SRF29-030V33-EF	33	100	0.75	1.5	1.5	8	0.3	0.1	1
SRF29-030V33-EF	33	100	1.1	2.2	1.5	8	0.5	0.065	0.41
SRF29-030V33-EF	33	100	1.25	2.5	1.5	8	2	0.05	0.25
SRF29-030V33-EF	33	100	1.5	3	1.5	8	2	0.035	0.23
SRF29-030V33-EF	33	100	1.85	3.7	1.5	8	2.5	0.03	0.15
SRF29-030V16-EF	16	100	2	4	1.5	8	4.5	0.02	0.12
SRF29-030V16-EF	16	100	2.5	5	1.5	8	16	0.02	0.085
SRF29-030V06-EF	6	100	2.6	5.2	1.5	8	10	0.014	0.075
SRF29-030V06-EF	6	40	3	6	1.5	8	20	0.12	0.045
SRF29-030V16-EF	16	100	3	6	1.5	8	20	0.012	0.048

I_{hold} = Hold Current. Maximum current device will sustain for 30min without tripping in 25°C still air.
I_{trip} = Trip Current. Minimum current at which the device will trip in 25°C still air.
V_{max} = Maximum voltage device can withstand without damage at rated current.
I_{max} = Maximum fault current device can withstand without damage at rated voltage.
Pd_{typ} = Power dissipated from device when in the tripped state at 25°C still air.
Ri_{typ} = Typical resistance of device in initial (un-soldered) state.
$R1_{max}$ = Maximum resistance of device at 25°C measured one hour post reflow.

Environment

Operating Conditions

Operating Temperature: -40°C to 85°C
Device Surface Temperature: 125°C max

Environmental Specifications

TEST ITEM	Condition	Resistance Change
Passive aging	85°C,1000hr	±5% typical
Humidity aging	85°C, 85%R.H, 168hr	±5% typical
Thermal shock	85°C to -40°C, 20times	±33% typical
Resistance to solvent	MIL-STD-202,Method215	No change
Vibration	MIL-STD-202,Method201	No change

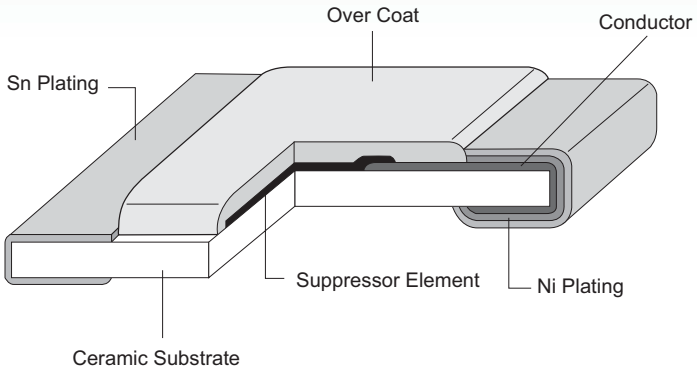
UMS Ultra-Low Capacitance MAX Guard® ESD Suppressor (High Frequency Type)

RoHS Compliant

Features

- Ultra low capacitance (<0.05pF)
- Ultra-low leakage current (<1nA)
- Zero signal distortion
- Fast response time
- Bi-direction protection device

Construction



Application

- Mobile / smart phone
- Computers / N/B PC
- Digital cameras
- PDA / MID / UMPC
- Plasma display panels / LCD TVs / HDTVs / PDP
- MP3 / Multimedia players / Game device
- Scanner / Printer
- Ultra-high speed data ports
  USB 2.0, IEEE1394, DVI
  HDMI, High speed Ethernet

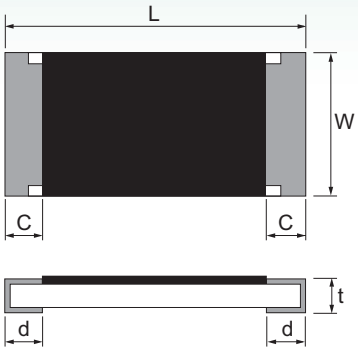
Type Designation

UMS	06	A	05	T	1	V1
Product Code	**Size**	**Safety Certificaion**	**Operating Voltage**	**Packaging**	**Typical Clamping Voltage**	**Typical Trigger Voltage**
Ultra-Low Capacitance MAX Guard Suppressor	04:0402 (1.0x0.5mm) 06: 0603 (1.6x0.8mm)	A: Suitable for IEC61000-4-2 B: Suitable for IEC61000-4-2 25KV Air-discharge C: Suitable for IEC61000-4-2 & AEC-Q200	03: 3.3V 05: 5.5V 12: 12V 24: 24V	T: Paper Tape (5K/10K)	1: 17V 2: 25V	V1: 150V V2: 250V

UMS Ultra-Low Capacitance MAX Guard® ESD Suppressor (High Frequency Type)

RoHS Compliant

Dimension



Unit: mm

Type (inch)	L	W	C	d	t
UMS04 (0402)	1.00±0.1	0.50±0.05	0.20±0.1	0.25±0.1	0.35±0.05
UMS06 (0603)	1.55±0.1	0.80±0.1	0.30±0.2	0.30±0.2	0.45±0.1

Rating & Characteristic

Type	Continuous Operating Voltage (Max.)	ESD Capability*1	Trigger Voltage (Typ.)*2	Clamping Voltage (Typ.)*2	Capacitance*3	Leakage Current (Typ.)	Response Time	ESD Pulse Withstand (Typ.)*4
UMS04A03T1V1	3.3 VDC	Direct Discharge: 8KV Air Discharge:15KV	150 V	17 V	<0.05pF	<1nA	<1ns	>1000 pulses
UMS06A03T1V1								
UMS04A03T2V2			250 V	25 V				
UMS06A03T2V2								
UMS04A05T1V1	5.5 VDC		150 V	17 V				
UMS06A05T1V1								
UMS04A05T2V2			250 V	25 V				
UMS06A05T2V2								
UMS04A12T2V2	12 VDC		250 V	25 V				
UMS06A12T2V2								
UMS04A24T2V2	24 VDC		250 V	25 V				
UMS06A24T2V2								

Note:

*1. The function meets with the requirement of IEC 61000-4-2 specification.

*2. Trigger measurement made using Transmission Line Pulse method.

*3. Capacitance measured at 1 M~1.8 GHz.

*4. Performing under IEC 61000-4-2 level 4 (8KV contact discharge, 15KV air discharge).

MS

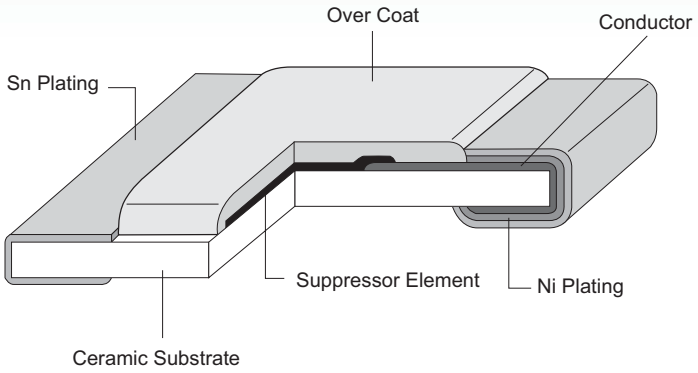
Low Capacitance MAX Guard® ESD Suppressor

RoHS Compliant

Features

- Low capacitance (<0.2pF)
- Ultra low leakage current (<1nA)
- Fast response time
- Bi-direction protection device

Construction



Application

- Mobile / smart phone
- Computers / N/B PC
- Digital cameras
- PDA / MID / UMPC
- Plasma display panels / LCD TVs / HDTVs / PDP
- MP3 / Multimedia players / Game device
- Scanner / Printer
- High speed data ports
  USB 2.0, IEEE1394

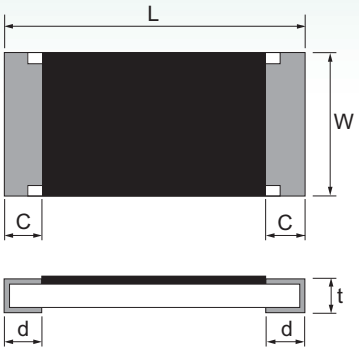
Type Designation

MS	06	A	05	T	2	V2
Product Code	**Size**	**Safety Certification**	**Operating Voltage**	**Packaging**	**Typical Clamping Voltage**	**Typical Trigger Voltage**
MAX Guard Suppressor	04: 0402 (1.0x0.5mm) 06: 0603 (1.6x0.8mm)	A: Suit For IEC61000-4-2 C: Suit For IEC61000-4-2 & AEC-Q200	03: 3.3V 05: 5.5V 12: 12V 24: 24V	T: Paper Tape (5K/10K)	1: 17V 2: 25V	V1: 150V V2: 250V

MS Low Capacitance MAX Guard® ESD Suppressor

RoHS Compliant

Dimensions



Unit: mm

Type (inch)	L	W	C	d	t
MS04 (0402)	1.00±0.1	0.50±0.05	0.20±0.1	0.25±0.1	0.35±0.05
MS06(0603)	1.55±0.1	0.80±0.1	0.30±0.2	0.30±0.2	0.45±0.1

Rating & Characteristic

Type	Continuous Operating Voltage (Max.)	ESD Capability*1	Trigger Voltage (Typ.)*2	Clamping Voltage (Typ.)*2	Capacitance*3	Leakage Current (Typ.)	Response Time	ESD Pulse Withstand (Typ.)*4
MS04A03T1V1	3.3 VDC	Direct Discharge: 8KV Air Discharge:15KV	150 V	17 V	<0.2pF	<1nA	<1ns	>1000 pulses
MS06A03T1V1								
MS04A03T2V2			250 V	25 V				
MS06A03T2V2								
MS04A05T1V1	5.5 VDC		150 V	17 V				
MS06A05T1V1								
MS04A05T2V2			250 V	25 V				
MS06A05T2V2								
MS04A12T2V2	12 VDC		250 V	25 V				
MS06A12T2V2								
MS04A24T2V2	24 VDC		250 V	25 V				
MS06A24T2V2								

Note:

*1. The function meets with the requirement of IEC 61000-4-2 specification.

*2. Trigger measurement made using Transmission Line Pulse method.

*3. Capacitance measured at 1 M~1.8 GHz.

*4. Performing under IEC 61000-4-2 level 4 (8KV contact discharge, 15KV air discharge).

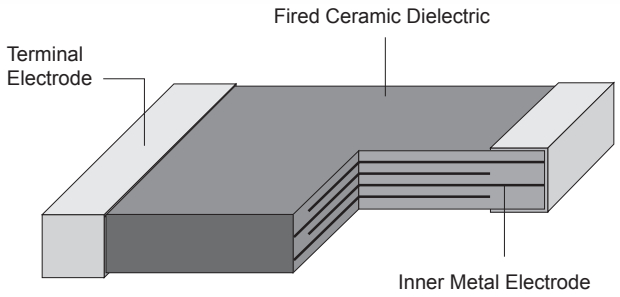
MVL Multilayer Chip Varistor for Surge and ESD Protection- L Type Series

RoHS Compliant

Features

- No polarity due to symmetrical current-voltage characteristics
- Excellent electro static absorption capability
- Variable capacitance
- Suitable for ESD Protection

Construction



Application

- USB2.0 Power and Data lines I/O Port protection
- Notebook PC, Computers
- Monitors and Flat Panel Displays
- IEEE 1394 Firewire Ports
- Video Graphics Cards
- SIM ports Mobile phone
- Digital Camera
- MP3/MP4 player
- LCD Module
- HUB/ Telecom/ Wireless LAN
- Keyboard

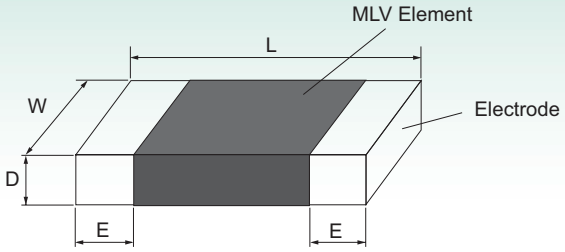
Type Designation

MV	06	L	04	T	–	080
Product Code	**Size**	**Type Series**	**Max. Working Voltage**	**Packaging**	**Internal Code**	**Varistor Voltage**
Multilayer Varistor	04: 0402 06: 0603 08: 0805 12: 1206	Surge/ESD Protention	04: 4V 11: 11V 25: 25V	T: Paper tape 0402: 10K 0603: 4K 0805: 3K 1206: 3K		080: 8V 120: 12V 330: 33V

MVL Multilayer Chip Varistor for Surge and ESD Protection- L Type Series

RoHS Compliant

Dimension



Unit: mm

Type	L	W	D	E
0402	1.0 ± 0.10	0.5 ± 0.10	0.6 max	0.25±0.10
0603	1.6 ± 0.15	0.8 ± 0.15	0.9 max	0.3±0.10
0805	2.00 ± 0.20	1.25 ± 0.20	1.0 max	0.40 ± 0.20
1206	3.20 ± 0.20	1.60 ± 0.15	1.2 max	0.50 ± 0.20

Rating & Characteristic

Part No.	Size	Working Voltage (MAX)		Varistor Voltage	Peak Current	Clamping Voltage (MAX)		Energy Absorption (MAX)	Typical Capacitance
Unit Condition		AC (V_{RMS})	DC (V)	V1mA (V)	8/20μs (A)	(A)	(V)	10/1000μs (J)	1KHz (pF)
MV04L04T-080	0402	4	5.5	8 (8~11)	20	1	20	0.05	295
MV04L06T-120		6	9	12 (10.2~13.8)	20	1	23	0.05	190
MV04L08T-150		8	11	15 (12.75~17.25)	20	1	25	0.05	160
MV04L11T-180		11	14	18 (15.3~20.7)	20	1	30	0.05	135
MV04L12T-220		12	16.5	22 (19.8~24.2)	20	1	36	0.05	105
MV04L14T-240		14	18	24 (21.6~26.4)	20	1	40	0.05	93
MV04L17T-270		17	22	27 (24.3~29.7)	20	1	45	0.05	75
MV04L20T-330		20	26	33 (29.7~36.3)	20	1	54	0.05	54
MV04L25T-390		25	30	39 (35.1~42.9)	20	1	65	0.05	45
MV06L04T-080	0603	4	5.5	8 (8~11)	30	1	20	0.1	800
MV06L06T-120		6	9	12 (10.2~13.8)	30	1	23	0.1	680
MV06L08T-150		8	11	15(12.75~17.25)	30	1	25	0.1	460
MV06L11T-180		11	14	18 (15.3~20.7)	30	1	30	0.1	350
MV06L14T-240		14	18	24 (21.6~26.4)	30	1	39	0.1	270
MV06L17T-270		17	22	27 (24.3~29.7)	30	1	44	0.1	235
MV06L20T-330		20	26	33 (29.7~36.3)	30	1	54	0.1	200
MV06L25T-390		25	30	39 (35.1~42.9)	30	1	65	0.1	120
MV06L30T-470		30	38	47 (42.3~51.7)	30	1	77	0.1	100
MV06L35T-560		35	45	56 (50.4~61.6)	30	1	90	0.1	80
MV08L04T-080	0805	4	5.5	8 (8~11)	80	1	20	0.1	1600
MV08L06T-120		6	9	12 (10.2~13.8)	80	1	23	0.1	1180
MV08L08T-150		8	11	15 (12.75~17.25)	100	1	25	0.1	1050
MV08L11T-180		11	14	18 (15.3~20.7)	100	1	30	0.1	750
MV08L14T-240		14	18	24 (21.6~26.4)	100	1	39	0.2	550
MV08L17T-270		17	22	27 (24.3~29.7)	100	1	44	0.2	400
MV08L20T-330		20	26	33 (29.7~36.3)	100	1	54	0.3	350
MV08L25T-390		25	30	39 (35.1~42.9)	100	1	65	0.3	310
MV08L30T-470		30	38	47 (42.3~51.7)	100	1	77	0.3	280
MV08L35T-560		35	45	56 (50.4~61.6)	80	1	90	0.3	195
MV12L04T-080	1206	4	5.5	8(8~11)	100	1	20	0.2	3200
MV12L11T-180		11	14	18(15.3~20.7)	100	1	30	0.3	1150
MV12L14T-240		14	18	24(21.6~26.4)	100	1	39	0.3	900
MV12L17T-270		17	22	27(24.3~29.7)	100	1	44	0.4	840
MV12L20T-330		20	26	33(29.7~36.3)	100	1	54	0.5	490
MV12L25T-390		25	30	39(35.1~42.9)	100	1	65	0.6	440
MV12L30T-470		30	38	47(42.3~51.7)	100	1	77	0.7	400
MV12L35T-560		35	45	56(50.4~61.6)	100	1	90	0.8	310
MV12L40T-680		40	56	68(61.2~74.8)	100	1	110	1.0	280
MV12L50T-820		50	65	82(73.8~90.2)	100	1	135	0.5	240
MV12L60T-101		60	85	100(90~110)	100	1	165	0.6	160

*If your request is out of this range, please feel free to contact with our factory.

MVE Multilayer Chip Varistor for ESD Protection-E Type Series

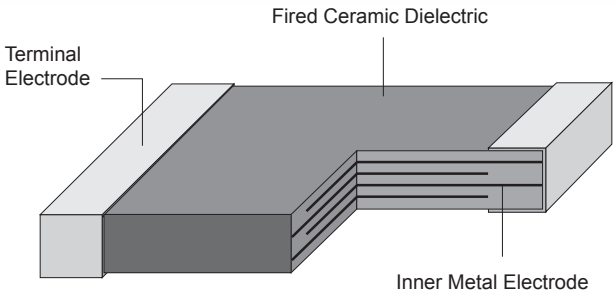
RoHS Compliant

TAI-TECH TECHNOLOGY CO., LTD.

Features

- No polarity due to symmetrical current-voltage characteristics
- Excellent electro static absorption capability
- Variable capacitance
- Suitable for ESD Protection

Construction



Application

- USB2.0 Power and Data lines I/O Port protection
- Notebook PC, Computers
- Monitors and Flat Panel Displays
- IEEE 1394 Firewire Ports
- Video Graphics Cards
- SIM ports Mobile phone
- Digital Camera
- MP3/MP4 player
- LCD Module
- HUB/ Telecom/ Wireless LAN
- Keyboard

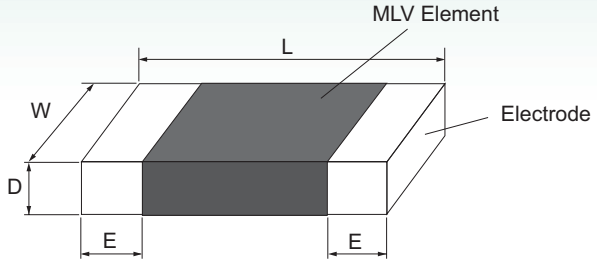
Type Designation

MV	06	E	050	T	050	–
Product Code	**Size**	**Type Series**	**Max. Working Voltage**	**Packaging**	**Capacitance**	**Internal Code**
Multilayer Varistor	04: 0402 (1.0x0.5mm) 06: 0603 (1.6x0.8mm)	ESD Protention	050: 5V 120: 12V 240: 24V	T: Paper tape 0402: 10K 0603: 4K	050: 5(pF) 100: 10(pF) 2R5: 2.5(pF)	

MVE Multilayer Chip Varistor for ESD Protection-E Type Series

RoHS Compliant

Dimension



Unit: mm

Type	L	W	D	E
0402	1.0 ± 0.10	0.5 ± 0.10	0.6 max	0.25+0.1/-0.1
0603	1.6 ± 0.15	0.8 ± 0.15	0.9 max	0.3+0.1/-0.1

Rating & Characteristic

Part No.	Size	Maximum Working Voltage	Maximum Clampingc Voltage	Leakage Current	Capacitance	Cap. Tolerance
Unit Condition		(VDC)	(V)	(μA)	(pF)	(%)
MV04E050T101-	0402	5	30	< 1	100	±30%
MV04E050T820-		5	50	< 1	82	±30%
MV04E050T560-		5	50	< 1	56	±30%
MV04E050T330-		5	50	< 1	33	±30%
MV04E050T220-		5	50	< 1	22	±30%
MV04E050T100-		5	50	< 1	10	±30%
MV04E050T050-		5	50	< 1	5	+80%/-20%
MV04E120T101-		12	50	< 1	100	±30%
MV04E120T820-		12	50	< 1	82	±30%
MV04E120T560-		12	40	< 1	56	±30%
MV04E120T330-		12	40	< 1	33	±30%
MV04E120T220-		12	40	< 1	22	±30%
MV04E120T100-		12	60	< 1	10	±30%
MV04E120T050-		12	80	< 1	5	+80%/-20%
MV04E240T2R5-		24	198	< 1	2.5	+80%/-20%
MV06E050T101-	0603	5	30	< 1	100	±30%
MV06E050T820-		5	50	< 1	82	±30%
MV06E050T560-		5	50	< 1	56	±30%
MV06E050T330-		5	50	< 1	33	±30%
MV06E050T220-		5	50	< 1	22	±30%
MV06E050T100-		5	50	< 1	10	±30%
MV06E050T050-		5	50	< 1	5	+80%/-20%
MV06E120T101-		12	50	< 1	100	±30%
MV06E120T820-		12	50	< 1	82	±30%
MV06E120T560-		12	40	< 1	56	±30%
MV06E120T330-		12	40	< 1	33	±30%
MV06E120T220-		12	40	< 1	22	±30%
MV06E120T100-		12	60	< 1	10	±30%
MV06E120T050-		12	80	< 1	5	+80%/-20%
MV06E240T2R5-		24	198	< 1	2.5	+80%/-20%

NEW

UMSA Ultra-Low Capacitance MAX Guard® ESD Suppressor Array (High Frequency Type)

RoHS Compliant

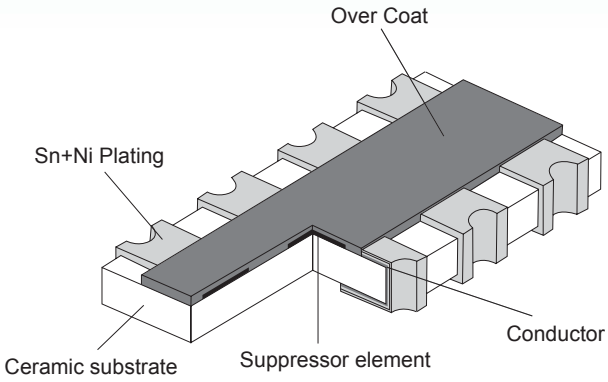
Features

- Ultra low capacitance (<0.05pF)
- Ultra-low leakage current (<1nA)
- Zero signal distortion
- Fast response time
- Bi-direction protection device

Application

- Mobile / smart phone
- Computers / N/B PC
- Digital cameras
- PDA / MID / UMPC
- Plasma display panels / LCD TVs / HDTVs
- MP3 / Multimedia players / Game device
- Scanner / Printer
- Ultra-high speed data ports
  USB 2.0, IEEE1394, DVI
  HDMI, High speed ethernet

Construction



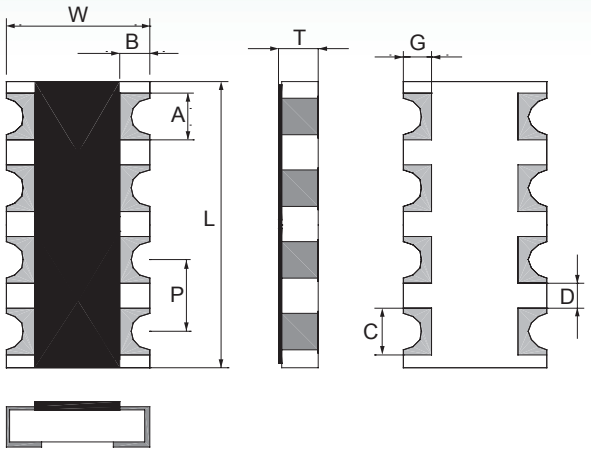
Type Designation

UMSA	34	A	05	T	1	V1
Product Code	**Size**	**Safety Certificaion**	**Operating Voltage**	**Packaging**	**Typical Clamping Voltage**	**Typical Trigger Voltage**
Ultra-Low Capacitance MAX Guard Suppressor Array	34: 0603x4	A: Suitable for IEC61000-4-2 C: Suitable for IEC61000-4-2 & AEC-Q200	03: 3.3V 05: 5.5V 12: 12V 24: 24V	T: Paper Tape (5K)	1: 17V 2: 25V	V1: 150V V2: 250V

UMSA Ultra-Low Capacitance MAX Guard® ESD Suppressor Array (High Frequency Type)

RoHS Compliant

Dimension



Unit: mm

Type	L	W	T	P	A	B	C	D	G
UMSA34	3.2±0.2	1.5±0.2	0.6±0.1	0.8±0.1	0.6±0.1	0.3±0.2	0.5±0.1	0.25±0.1	0.35±0.15

Rating & Characteristic

Type	Continuous Operating Voltage (Max.)	ESD Capability*1	Trigger Voltage (Typ.)*2	Clamping Voltage (Typ.)*2	Capacitance*3	Leakage Current (Typ.)	Response Time	ESD Pulse Withstand (Typ.)*4
UMSA34A03T1V1	3.3 VDC	Direct Discharge: 8KV Air Discharge:15KV	150V	17V	<0.05pF	<0.1μA	<1ns	>1000 pulses
UMSA34A03T2V2			250V	25V				
UMSA34A05T1V1	5.5 VDC		150V	17V				
UMSA34A05T2V2			250V	25V				
UMSA34A12T1V1	12 VDC		150V	17V				
UMSA34A12T2V2			250V	25V				
UMSA34A24T2V2	24 VDC		250V	25V				

Note:

*1. The function meets with the requirement of IEC 61000-4-2 specification.

*2. Trigger measurement made using Transmission Line Pulse method.

*3. Capacitance measured at 1 M~1.8 GHz.

*4. Performing under IEC 61000-4-2 level 4 (8KV contact discharge, 15KV air discharge).

NEW

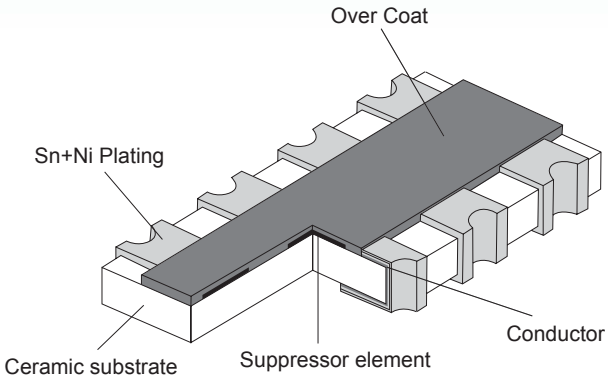
MSA Low Capacitance MAX Guard® ESD Suppressor Array

RoHS Compliant

Features

- Low capacitance (<0.2pF)
- Ultra low leakage current (<1nA)
- Fast response time
- Bi-direction protection device

Construction



Application

- Mobile / smart phone
- Computers / N/B PC
- Digital cameras
- PDA / MID / UMPC
- Plasma display panels / LCD TVs / HDTVs
- Mp3 / Multimedia players / Game device
- Scanner / Printer
- High speed data ports
  USB 2.0, IEEE1394

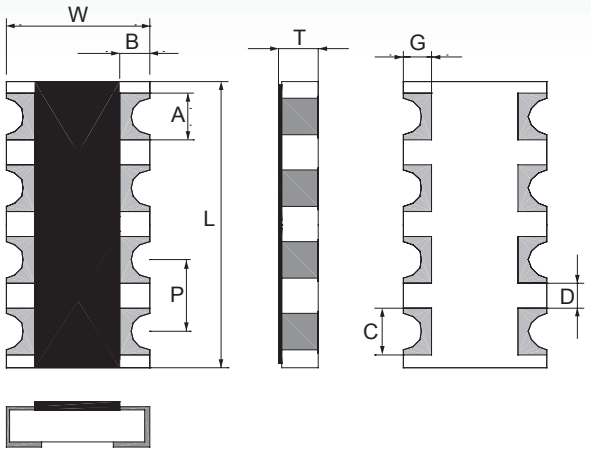
Type Designation

MSA	34	A	05	T	1	V1
Product Code	**Size**	**Safety Certificaion**	**Operating Voltage**	**Packaging**	**Typical Clamping Voltage**	**Typical Trigger Voltage**
MAX Guard Suppressor Array	34: 0603x4	A: Suitable for IEC61000-4-2 C: Suitable for IEC61000-4-2 & AEC-Q200	03: 3.3V 05: 5.5V 12: 12V 24: 24V	T: Paper Tape (5K)	1: 17V 2: 25V	V1: 150V V2: 250V

MSA Low Capacitance MAX Guard® ESD Suppressor Array

RoHS Compliant

Dimension



Unit: mm

Type	L	W	T	P	A	B	C	D	G
MSA34	3.2±0.2	1.5±0.2	0.6±0.1	0.8±0.1	0.6±0.1	0.3±0.2	0.5±0.1	0.25±0.1	0.35±0.15

Rating & Characteristic

Type	Continuous Operating Voltage (Max.)	ESD Capability*1	Trigger Voltage (Typ.)*2	Clamping Voltage (Typ.)*2	Capacitance*3	Leakage Current (Typ.)	Response Time	ESD Pulse Withstand (Typ.)*4
MSA34A03T1V1	3.3 VDC	Direct Discharge: 8KV Air Discharge:15KV	150V	17V	<0.2pF	<0.1μA	<1ns	>1000 pulses
MSA34A03T2V2			250V	25V				
MSA34A05T1V1	5.5 VDC		150V	17V				
MSA34A05T2V2			250V	25V				
MSA34A12T1V1	12 VDC		150V	17V				
MSA34A12T2V2			250V	25V				
MSA34A24T2V2	24 VDC		250V	25V				

Note:

*1. The function meets with the requirement of IEC 61000-4-2 specification.

*2. Trigger measurement made using Transmission Line Pulse method.

*3. Capacitance measured at 1 M~1.8 GHz.

*4. Performing under IEC 61000-4-2 level 4 (8KV contact discharge, 15KV air discharge).

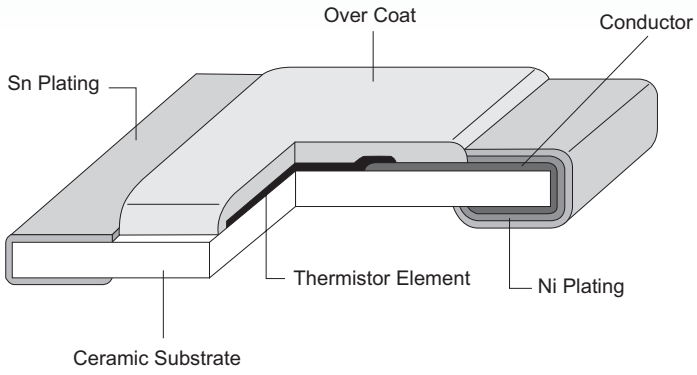
NTC Chip Thermistor

RoHS Compliant

Features

- SMD type NTC chip thermistors.
- Thinner than the multilayer type.
- High precision and high stability.
- High accuracy in resistance and B-constant.

Construction



Application

- Temperature compensation of transistor, IC crystal oscillator of mobile communication equipment.
- Temperature sensor for rechargeable batteries.
- Temperature compensation of LCD.
- Temperature compensation and sensing of car audio equipment.

Type Designation

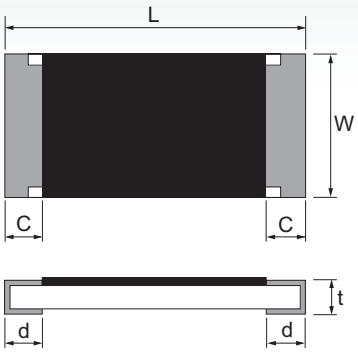
NT	06	J	T	103	3435
Product Code	**Size**	**Tolerance of Resistance at 25°C**	**Packaging**	**Resistance at 25°C**	**B Value (K) at 25°C/85°C**
NTC Thermistor	04: 1.0x0.5mm 06: 1.6x0.8mm	F: ±1.0% G: ±2.0% H: ±3.0% J: ±5.0% K: ±10.0%	T: Paper Tape	102: 1KΩ 103: 10KΩ	2800, 3100, 3300, 3435, 3700, 3950 4000, 4400

NTC Chip Thermistor

RoHS Compliant

TA-I TECHNOLOGY CO., LTD.

Dimensions



Unit: mm

Type (inch)	L	W	C	d	t
NT04 (0402)	1.00±0.05	0.50±0.05	0.20±0.10	0.25±0.10	0.35±0.05
NT06(0603)	1.60±0.10	0.80±0.10	0.30±0.20	0.30±0.2	0.45±0.1

Reliability Tests

Items	Standard	Requirem ents	Test Conditions
Solderability	IEC68-2-20	More than 95% of the terminal electrode Shall be covered with new solder.	235±5°C, 2±0.5 secs. 245°C±5°C, 2±0.5second (Lead Free)
Resistance to Solder heat	IEC68-2-20	1. No serious mechanical damage 2. ΔR≤ 3% (Ref. To initial value)	260±5°C, 5±1sec
Damp Heat	IEC68-2-3	1. No serious mechanical damage 2. ΔR≤ 3% (Ref. To initial value)	1. 40°C ± 2, 90%~95%RH, 1000±24hrs 2. Measuring resistance after sample kept at room temp. for 24hrs
Thermal Shock	IEC68-2-14	1. No serious mechanical damage 2. ΔR≤ 3%	1. Cycle: min. -40±5°C (30min)→ 25°C±5°C (5min), → max. 125±5°C (30min) → 25±5°C (5min) 2. The Cycles repeated 100 times
High Temp. Storage	IEC68-2-20	1. No serious mechanical damage 2. ΔR≤ 5%	1. Temp.: max 125±2°C 2. Time: 1000hrs±24hrs Measuring resistance after sample kept at room temp. for 24hrs
Life Test*	CNS5550	1. No serious mechanical damage 2. ΔR≤ 3%	1. Temp.: max 25±5°C Loading zero power current 2. Time: 1000hrs±24hrs Let it sit at R.T, for 24hrs then Measure
Robustness of Termination (Bending)	JIS-C5202-6.1	1. ΔR≤ 3%	3mm deflection, duration 30 secs.

Note*: 1. The life test is carried under temperature for 1,000hours.

NTC Chip Thermistor

RoHS Compliant

TAI-TECH TECHNOLOGY CO., LTD.

Rating & Characteristic

Part Number	Zero Power Resistance at 25°C (KΩ)	Code & Tolerance of Resistance	$B_{25/85}$ value (K)	Tolerance of B value (±%)	Zero power current at 25°C(mA)	Power Rating at 25°C (mw)	Typical Thermal Time Constnat (Sec)	Typical Dissipation Constnat (mw/°C)	Operation Temperature range (°C)
NT04□T102_2800	1		2800		0.100				
NT04□T152_2800	1.5		2800		0.081				
NT04□T202_2800	2.0		2800		0.070				
NT04□T222_2800	2.2		2800		0.067				
NT04□T332_3100	3.3		3100		0.055				
NT04□T472_3300	4.7		3300		0.046				
NT04□T502_3435	5.0	F: ±1.0%	3435		0.044				
NT04□T682_3435	6.8	G: ±2.0%	3435		0.038				
NT04□T103_3435	10	H: ±3.0%	3435	3	0.031	5	≤5	3.0	-40~125
NT04□T223_3700	22	J: ±5.0%	3700		0.021				
NT04□T333_3950	33	K: ±10.0%	3950		0.017				
NT04□T473_3950	47		3950		0.014				
NT04□T503_4000	50		4000		0.014				
NT04□T683_4000	68		4000		0.012				
NT04□T104_4000	100		4000		0.010				
NT04□T224_4000	220		4000		0.006				
NT04□T474_4400	470		4400		0.004				

Note*: 1.□: Resistance Tolerance Code.

Part Number	Zero Power Resistance at 25°C (KΩ)	Code & Tolerance of Resistance	$B_{25/85}$ value (K)	Tolerance of B value (±%)	Zero power current at 25°C(mA)	Power Rating at 25°C (mw)	Typical Thermal Time Constnat (Sec)	Typical Dissipation Constnat (mw/°C)	Operation Temperature range (°C)
NT06□T102_3100	1.0		3100		0.100				
NT06□T152_3100	1.5		3100		0.081				
NT06□T202_3400	2		3400		0.070				
NT06□T222_3400	2.2		3400		0.067				
NT06□T332_3400	3.3		3400		0.055				
NT06□T472_3435	4.7		3435		0.046				
NT06□T502_3435	5	F: ±1.0%	3435		0.044				
NT06□T682_3438	6.8	G: ±2.0%	3435		0.038				
NT06□T103_3435	10	H: ±3.0%	3435	3	0.031	5	≤5	3.0	-40~125
NT06□T223_3950	22	J: ±5.0%	3950		0.021				
NT06□T333_3950	33	K: ±10.0%	3950		0.017				
NT06□T473_3950	47		3950		0.014				
NT06□T503_4000	50		4000		0.014				
NT06□T683_4000	68		4000		0.012				
NT06□T104_4000	100		4000		0.010				
NT06□T204_4000	200		4000		0.007				
NT06□T224_4000	220		4000		0.006				
NT06□T474_4350	470		4350		0.004				

Note*: 1.□: Resistance Tolerance Code.

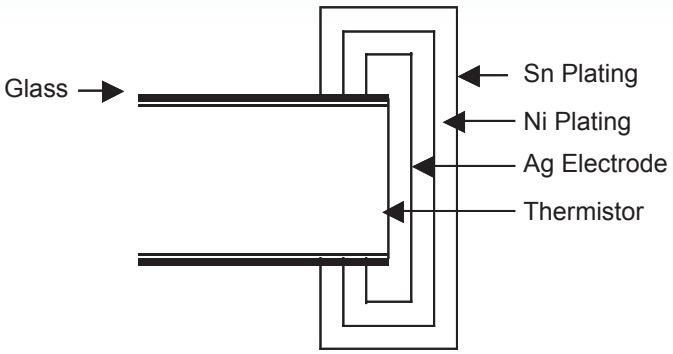
MTR Muti-Layer Thermistor

RoHS Compliant

Features

- Small and light weight design
- Thin film manufacturing method stabilizing fusing characteristics
- Low internal resistance
- Suitable for over current protection
- Recognized standard: UL248-14 file No. E241710

Construction



Application

- PC related equipment and peripherals (PC, Hard Drive, ODD, Printer etc.)
- Small portable devices, mobile phone, PDA, battery charger etc.
- Digital camera
- Game equipment
- LCD monitors, LCD modules (Backlight inverter)
- Battery package

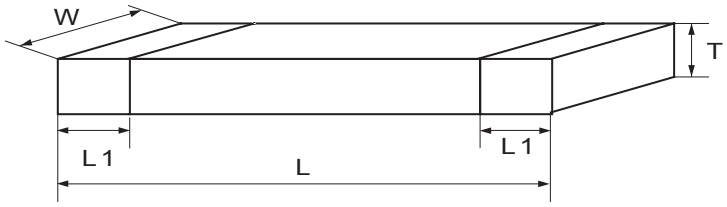
Type Designation

MTR	06	F	T	F	344	A	103
Product Code	**Size**	**Tolerance Of Resistance at 25°C**	**Packaging**	**Tolerance of B Value at 25(°C)**	**B Value (K)**	**Temp Range Of B Value (°C)**	**Resistance at 25°C**
Multi-Layer Thermistor	04: 0402 (1.0x0.5mm) 06: 0603 (1.6x0.8mm) 10: 0805 (2.0x1.2mm)	F: ±1.0% G: ±2.0% H: ±3.0% J: ±5.0% K: ±10.0%	T: Paper E: Emboss	F: ±1.0% G: ±2.0% H: ±3.0% J: ±5.0%	344:3435 370:3700 380:3800 395:3950 400:4000 405:4050 415:4150	A: 25-50 B: 25-85	102: 1KΩ 103: 10KΩ

MTR Muti-Layer Thermistor

RoHS Compliant

Dimensions



Unit: mm

Item	L(mm)	W(mm)	T(mm)	L1(mm)
1005 (0402)	1.00 ±0.10	0.50 ±0.10	0.60 max	0.15~0.30
1608 (0603)	1.60 ±0.15	0.80 ±0.15	0.95 max	0.20~0.50
2012 (0805)	2.00 ±0.20	1.25 ±0.20	1.20 max	0.20~0.60

Rating & Characteristic

Part Designation	Zero Power Resistance at 25°C (KΩ)	Tolerance of Resistance (±%)	B value (25-50) (K)	B value (25-85) (K)	Tolerance of B value (±%)	Max Power Rated at 25°C (mW)	Typical Thermal Time Constant (sec)	Typical Dissipation Constant (mW/°C)	Operation Temperature range (°C)
MTR04□T□344B103	10	1, 2, 3, 5, 10	3385	3435	1, 3, 5	250 mW	Approx. 3 sec	Approx. 2.5 mW/°C	-40~125
MTR04□T□380B103	10		3780	3800					
MTR04□T□405B474	470		3995	4050					
MTR04□T□405B473	47		3995	4050					
MTR04□T□405B104	100		3995	4050					
MTR04□T□415B683	68		4125	4150					
MTR06□T□334B472	4.7	1, 2, 3, 5, 10	3295	3340	1, 3, 5	350 mW	Approx. 5 sec	Approx. 3.5 mW/°C	-40~125
MTR06□T□334B502	5		3295	3340					
MTR06□T□344B103	10		3295	3340					
MTR06□T□355B103	10		3500	3550					
MTR06□T□370B103	10		3650	3700					
MTR06□T□397B103	10		3965	3970					

MTR Muti-Layer Thermistor

RoHS Compliant

Part Designation	Zero Power Resistance at 25°C (KΩ)	Tolerance of Resistance (±%)	B value (25-50) (K)	B value (25-85) (K)	Tolerance of B value (±%)	Max Power Rated at 25°C (mW)	Typical Thermal Time Constant (sec)	Typical Dissipation Constant (mW/°C)	Operation Temperature range (°C)
MTR06□T□395B473	47	1, 2, 3, 5, 10	3895	3950	1, 3, 5	350	Approx. 5 sec	Approx. 3.5 mW/°C	-40~+125
MTR06□T□395B503	50		3895	3950					
MTR06□T□395B683	68		3895	3950					
MTR06□T□395B104	100		3895	3950					
MTR06□T□395B473	47		3895	3950					
MTR06□T□400B334	330		3950	4000					
MTR06□T□405B473	47		4000	4055					
MTR06□T□405B474	470		4000	4055					
MTR06□T□410B564	560		4045	4100					
MTR10□T□344B472	4.7	1, 2, 3, 5, 10	3385	3435	1, 3, 5	400	Approx. 7.5 sec	Approx. 4 mW/°C	-40~+125
MTR10□T□344B103	10		3385	3435					
MTR10□T□355B103	10		3500	3550					
MTR10□T□397B103	10		3915	3970					
MTR10□T□390B223	22		3845	3900					
MTR10□T□400B473	47		3945	4000					
MTR10□T□400B503	50		3945	4000					
MTR10□T□400B104	100		3945	4000					
MTR10□T□410B334	330		4045	4100					

Reliability Tests

Performance	Test Method	Appraise
Life	MIL – STD – 202F, Method 108A 1000 hours at 70°C NTC WV intermittent	Within ±3 %
Humidity	MIL – STD – 202F, Method 103B 1000 hours at Temperature: 40°C Humidity: 95%	Within ±3 %
Thermal Shock	MIL – STD – 202F, Method 107 10 cycles, -40°C to +125°C	Within ±3 %
Solderability	MIL – STD – 202F, Method 208 235°C for 2 seconds	95% min. coverage
Resistance to Soldering Heat	MIL – R – 55342D , Para 4.7.7 Soldered to test board at 260°C for 10 seconds	Within ±3 %
Bending Strength	JIS C 5202 6.1.4 Pressurizing rod at a rate at 1mm/sec for 1mm	Within ±3 %
Resistance to flexure of Substrate	JIS C 5202 6.2.1 Pressurizing force shall be 3kg (min.)	Over 3 kg
Insulation Resistance	MIL – STD – 202F , Method 302 DC 250V For 10 seconds	Over 1000MΩ
Dielectric Withstand Voltage	MIL – STD – 202F , Method 301 DC 250V For 10 seconds	Not Short

RM Thick Film Chip Resistors (General Purpose)

RoHS Compliant

TA-I TECHNOLOGY CO., LTD.

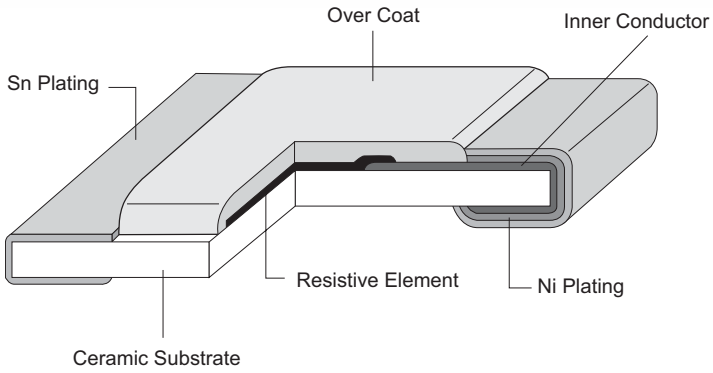
Features

- High density
- High reliability
- Automatic placement

Application

- General Purpose

Construction



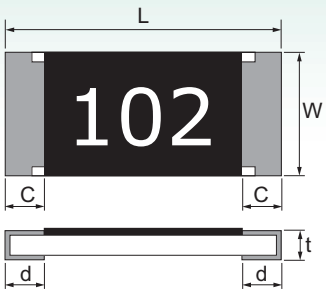
Type Designation

RM	10	J	T N	103
Product Code	**Size Power Rating (at 70°C)**	**Tolerance**	**Packaging**	**Nominal Resistance**
Thick Film Chip Resistors	01: 01005 (0.4x0.2mm) 1/32W 02: 0201 (0.6x0.3mm) 1/20W 04: 0402 (1.0x0.5mm) 1/16W 06: 0603 (1.6x0.8mm) 1/10W 10: 0805 (2.0x1.2mm) 1/8W 12: 1206 (3.2x1.6mm) 1/4W 13: 1210 (3.2x2.6mm) 1/3W 20: 2010 (5.0x2.5mm) 1/2W 25: 2512 (6.4x3.2mm) 1W	B : ±0.1% D : ±0.5% F : ±1% G : ±2% J : ±5%	T : Paper Tape E : Embossed Tape B : Bulk Cassette N: Lead Free Special L : 06-2mm Pitch Paper Tape	3 Digits (E-24) e.g., 103=10kΩ 4 Digits (E-96) e.g., 1002=10kΩ

RM Thick Film Chip Resistors (General Purpose)

RoHS Compliant

Dimension



Unit: mm

Type	L	W	C	d	t
RM01	0.40±0.03	0.20±0.03	0.10±0.05	0.10±0.05	0.13±0.05
RM02	0.60±0.03	0.30±0.03	0.10±0.05	0.15±0.05	0.25±0.05
RM04	1.00 $^{+0.10}_{-0.05}$	0.50±0.05	0.20±0.10	0.25±0.10	0.35±0.05
RM06	1.60±0.10	0.80±0.10	0.30±0.20	0.30 $^{+0.2}_{-0.1}$	0.45±0.10
RM10	2.00±0.10	1.25±0.10	0.40±0.20	0.40±0.20	0.50±0.10
RM12	3.10±0.10	1.55±0.10	0.50±0.30	0.40±0.20	0.60±0.10
RM13	3.10±0.10	2.55±0.10	0.50±0.30	0.40±0.20	0.60±0.10
RM20	5.00±0.15	2.50±0.15	0.60±0.30	0.50±0.25	0.60±0.10
RM25	6.30±0.20	3.20±0.20	0.60±0.30	0.50±0.25	0.60±0.10

Rating and Characteristic

Type	Power Rating at 70°C	MAX. Working Voltage	MAX. Over-Load Voltage	T.C.R (PPM °C)	Resistance Range (Ω)				
					B (±0.1%) E-96&E-24	D (±0.5%) E-96&E-24	F (±1%) E-96&E-24	G (±2%) E-24	J (±5%) E-24
RM01	1/32W	15V	30V	±300					10Ω≤R≤100Ω
				+600 -200					100Ω≤R≤1MΩ
RM02	1/20W	25V	50V	+200			10Ω-1MΩ	10Ω-1MΩ	10Ω-10MΩ
				+600 -200	10Ω≤R<100Ω	10Ω≤R<100Ω	10Ω≤R<100Ω		1Ω-9.1Ω
RM04	1/16W	50V	100V	±100	100Ω-200kΩ	100Ω-1MΩ	100Ω-1MΩ		
				±200	10Ω-200kΩ	10Ω-1MΩ	10Ω-10MΩ	10Ω-10MΩ	10Ω-10MΩ
				+500 -200			1Ω-9.1Ω	1Ω-9.1Ω	1Ω-9.1Ω
				±400					10MΩ≤R≤20MΩ
RM06	1/10W	50V	100V	±100	10Ω-560kΩ	10Ω-1MΩ	10Ω-1MΩ		
				±200			1M<R≤10MΩ	10Ω-10MΩ	10Ω-10MΩ
				±400			1Ω-9.1Ω	1Ω-9.1Ω	1Ω ~ 9.1Ω 10MΩ<R≤20MΩ
RM10	1/8W	150V	300V	±100	10Ω-560kΩ	10Ω-1MΩ	10Ω-1MΩ		
				±200			1M<R≤10MΩ	10Ω-10MΩ	10Ω-10MΩ
				±400			1Ω-9.1Ω	1Ω-9.1Ω	1Ω ~ 9.1Ω 10MΩ<R≤20MΩ
RM12	1/4W	200V	400V	±100	10Ω-560kΩ	10Ω-1MΩ	10Ω-1MΩ		
				±200			1M<R≤10MΩ	10Ω-10MΩ	10Ω-10MΩ
				±400			1Ω-9.1Ω	1Ω-9.1Ω	1Ω ~ 9.1Ω 10MΩ<R≤20MΩ
RM13	1/3W	200V	400V	±100	10Ω-560kΩ	10Ω-1MΩ	10Ω-1MΩ		
				±200			1M<R≤10MΩ	10Ω-10MΩ	10Ω-10MΩ
				±400			1Ω-9.1Ω	1Ω-9.1Ω	1Ω ~ 9.1Ω 10MΩ<R≤20MΩ
RM20	1/2W	200V	400V	±100	10Ω-560kΩ	10Ω-1MΩ	10Ω-1MΩ		
				±200			1M<R≤10MΩ	10Ω-10MΩ	10Ω-10MΩ
				±400			1Ω-9.1Ω	1Ω-9.1Ω	1Ω ~ 9.1Ω 10MΩ<R≤20MΩ
RM25	1W	200V	400V	±100	10Ω-560kΩ	10Ω-1MΩ	10Ω-1MΩ		
				±200			1M<R≤10MΩ	10Ω-10MΩ	10Ω-10MΩ
				±400			1Ω-9.1Ω	1Ω-9.1Ω	1Ω ~ 9.1Ω 10MΩ<R≤20MΩ

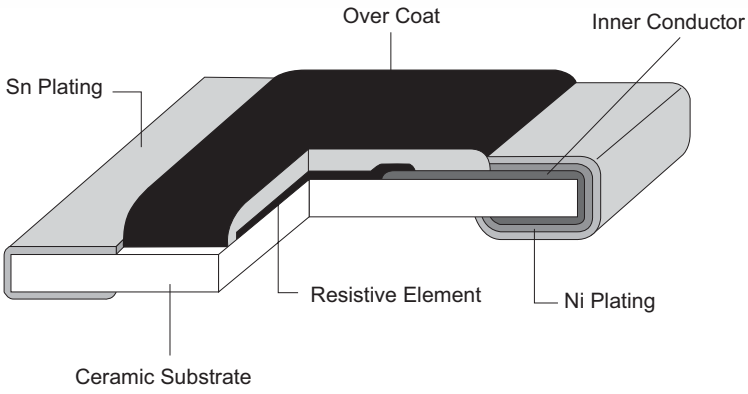
RMG General Purpose Chip Resistors

RoHS Compliant

Features

- Competitive Price
- Lead-free 100%
- Competitive price

Construction



Application

- Audio, Automotive, RF, NB, Main-board, Printer, Server, HDD, Scanner, DC-DC power converter, Testing & Measuring equipment, LCD panel, Tune.

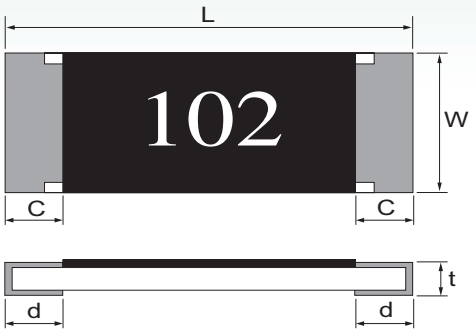
Type Designation

RMG	10	J	T	103
Product Code	**Size Power Rating**	**Tolerance**	**Packaging**	**Nominal Resistance**
RMG: Chip Resistors	04: 0402(1.0x0.5mm) 1/16W 06: 0603(1.6x0.8mm) 1/10W 10: 0805(2.0x1.2mm) 1/8W 12: 1206(3.2x1.6mm) 1/4W	J: ±5% G: ±2% F: ±1%	T: Paper Tape	3 Digits, e.g.,: (E-24) 103=10kΩ 4 Digits, e.g.,: (E-96) 1540=154Ω

RMG General Purpose Chip Resistors

RoHS Compliant

Dimensions



Unit: mm

Type	L	W	C	d	t
RMG04	$1.0^{+0.1}_{-0.05}$	0.50±0.05	0.25±0.15	0.30±0.15	0.30±0.05
RMG06	1.50±0.10	0.80±0.10	0.30±0.20	0.40±0.20	0.40±0.10
RMG10	2.00±0.15	1.25±0.15	0.40±0.20	0.60±0.20	0.50±0.10
RMG12	3.10±0.20	1.50±0.20	0.50±0.30	0.70±0.20	0.50±0.10

Rating & Characteristic

Type	Power Rating at 70°C	MAX. Working Voltage	MAX. Over-Load Voltage	T.C.R (PPM/°C)	Resistance Tolerance (Ω)		
					F(±1%) E-96&E-24	G(±2%) E-24	J(±5%) E-24
RMG04	1/16W	50V	100V	±100	1Ω~10kΩ		
RMG06	1/10W	50V	100V	±100	1Ω~47kΩ		
RMG10	1/8W	150V	300V	±100	1Ω~100kΩ		
RMG12	1/4W	200V	400V	±100	1Ω~100kΩ		

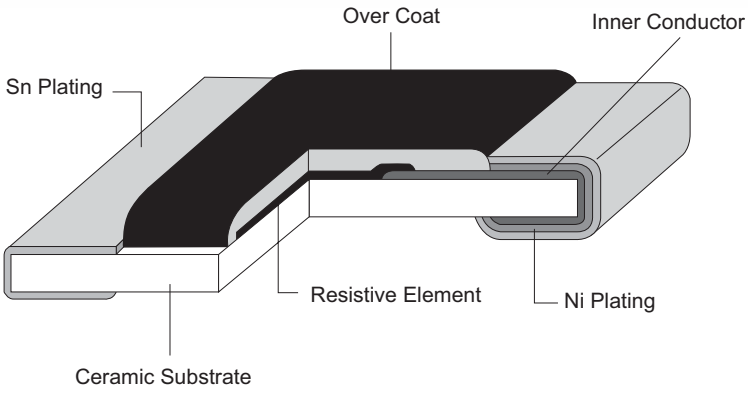
RMP General Purpose Chip Resistors

RoHS Compliant

Features

- Reinforce power rating
- Lead-free 100%
- Competitive price

Construction



Application

- Audio, Automotive, RF, NB, Main-board, Printer, Server, HDD, Scanner, DC-DC power converter, Testing & Measuring equipment, LCD panel, Tune.

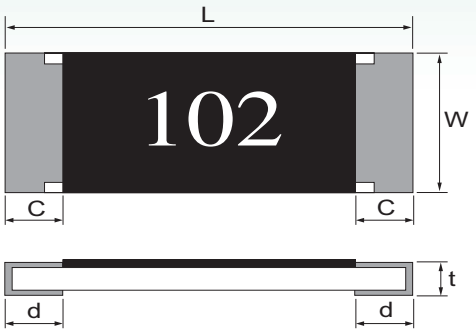
Type Designation

RMP	10	J	T	103
Product Code	**Size Power Rating**	**Tolerance**	**Packaging**	**Nominal Resistance**
RMP: Chip Resistors	04: 0402(1.0x0.5mm) 1/10W 06: 0603(1.6x0.8mm) 1/8W 10: 0805(2.0x1.2mm) 1/4W 12: 1206(3.2x1.6mm) 1/2W	J: ±5% G: ±2% F: ±1%	T: Paper Tape	3 Digits, e.g.,: (E-24) 103=10kΩ 4 Digits, e.g.,: (E-96) 1540=154Ω

RMP General Purpose Chip Resistors

RoHS Compliant

Dimensions



Unit: mm

Type	L	W	C	d	t
RMP04	$1.0^{+0.1}_{-0.05}$	0.50±0.05	0.25±0.15	0.30±0.15	0.30±0.05
RMP06	1.50±0.10	0.80±0.10	0.30±0.20	0.40±0.20	0.40±0.10
RMP10	2.00±0.15	1.25±0.15	0.40±0.20	0.60±0.20	0.50±0.10
RMP12	3.10±0.20	1.50±0.20	0.50±0.30	0.70±0.20	0.50±0.10

Rating & Characteristic

Type	Power Rating at 70°C	MAX. Working Voltage	MAX. Over-Load Voltage	T.C.R (PPM/°C)	Resistance Tolerance (Ω)		
					F(±1%) E-96&E-24	G(±2%) E-24	J(±5%) E-24
RMP04	1/10W	50V	100V	±100	1Ω~10kΩ		
RMP06	1/8W	150V	300V	±100	1Ω~47kΩ		
RMP10	1/4W	200V	400V	±100	1Ω~100kΩ		
RMP12	1/2W	200V	400V	±100	1Ω~100kΩ		

RB Thin Film Chip Resistors (RB series Standard)

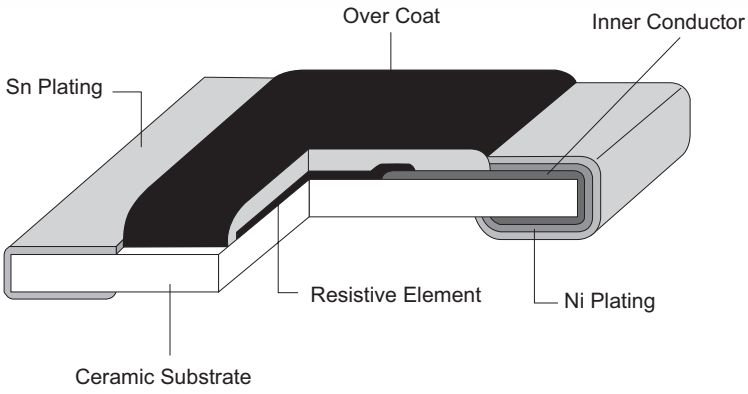
RoHS Compliant

TA-I TECHNOLOGY CO., LTD.

Features

- Precision of ±0.1% is availiable
- Low T.C.R. ±25ppm is availiable
- Low current noise

Construction



Application

- Mother-board, Printer, Server, HDD, Scanner
- DC-DC power converter, Test & measuring equipment
- Base station, Switching, Access system
- Air-bag, ABS, Fuel injection
- LCD panel
- Audio, Tuner

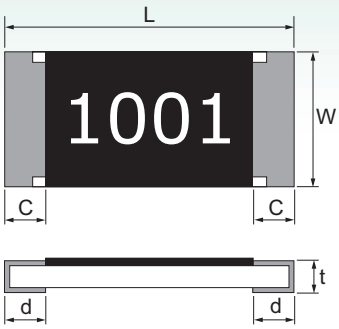
Type Designation

RB	10	B	T	P	1001
Product Code	**Size, Power Rating (at 70°C)**	**Tolerance**	**Packaging**	**TCR (ppm/°C)**	**Nominal Resistance**
Thin Film Chip Resistors	02: 0201 (0.6x0.3mm)1/20W 04: 0402 (1.0x0.5mm)1/16W 06: 0603 (1.6x0.8mm)1/10W 10: 0805 (2.0x1.2mm)1/8W 12: 1206 (3.2x1.6mm)1/4W 13: 1210 (3.2x2.6mm)1/5W 20: 2010 (5.0x2.5mm)1/4W 25: 2512 (6.4x3.2mm)1/2W	A: ±0.05% B: ±0.10% C: ±0.25% D: ±0.50% F: ±1.00%	T: Paper Tape B: Bulk Cassette	J: ±5ppm K: ±10ppm M: ±15ppm P: ±25ppm S: ±50ppm R: ±100ppm	4 Digits (E-96) e.g., 1001=1kΩ

RB Thin Film Chip Resistors (High Precision)

RoHS Compliant

Dimensions



Unit: mm

Type	L	W	C	d	t
RB02	0.63±0.03	0.30±0.03	0.1±0.05	0.15±0.05	0.25±0.05
RB04	1.00±0.05	0.50±0.05	0.20±0.10	0.25±0.10	0.35±0.05
RB06	1.60±0.10	0.80±0.10	0.30±0.20	0.30+0.20/-0.10	0.45±0.10
RB10	2.00±0.10	1.25±0.10	0.40±0.20	0.40±0.20	0.50±0.10
RB12	3.10±0.10	1.55±0.10	0.50±0.30	0.40±0.20	0.55±0.10
RB13	3.10±0.10	2.55±0.10	0.50±0.30	0.40±0.20	0.60±0.10
RB20	5.00±0.15	2.50±0.15	0.60±0.30	0.50±0.25	0.60±0.10
RB25	6.30±0.20	3.20±0.20	0.60±0.30	0.50±0.25	0.60±0.10

Rating & Characteristic

Type	Power Rating at 70°C	Rated* Voltage	Max. Working Voltage	Max. Over- Load Voltage	T.C.R (PPM/°C)	Resistance Range	Resistance tolerance (%)
RB02	1/32 W	$(P*R)^{1/2}$	15V	30V	±25 ±50	50Ω~10KΩ	±0.5~±1.0
RB04	1/16 W	$(P*R)^{1/2}$	50V	100V	±10 ±25 ±50 ±100	10Ω~100KΩ	±0.1~ ±1.0
RB06	1/10 W	$(P*R)^{1/2}$	75V	150V	±50 ±100	1Ω~9.1Ω	±0.5~1
RB06	1/10 W	$(P*R)^{1/2}$	75V	150V	±10 ±25 ±50 ±100	10Ω~390KΩ	±0.1~ ±1.0
RB10	1/8 W	$(P*R)^{1/2}$	150V	300V	±50 ±100	1Ω~9.1Ω	±0.5~10
RB10	1/8 W	$(P*R)^{1/2}$	150V	300V	±10 ±25 ±50 ±100	10Ω~800KΩ	±0.1~ ±1.0
RB12	1/4 W	$(P*R)^{1/2}$	150V	300V	± 50 ±100	1Ω~9.1Ω	±0.5~1
RB12	1/4 W	$(P*R)^{1/2}$	150V	300V	±10 ±25 ±50 ±100	10Ω~1MΩ	±0.1~ ±1.0
RB13	1/5 W	$(P*R)^{1/2}$	150V	300V	±25 ±50	4.7Ω~1MΩ	±0.05
RB20	1/4 W	$(P*R)^{1/2}$	150V	300V	±25 ±50	4.7Ω~1MΩ 4.7Ω~3MΩ 1Ω~3MΩ	±0.05 ±0.1 ±0.25~±0.50
RB25	1/2 W	$(P*R)^{1/2}$	150V	300V	±25 ±50	4.7Ω~1MΩ 4.7Ω~3MΩ 1Ω~3MΩ	±0.05 ±0.1 ±0.25~±0.50

Operating Temp (°C): -55°C~+125°C

Note: 1. $E=\sqrt{P*R}$, E=Rated Voltage(V); P=Rated Power(W); R=Resistance Value(Ω)

2. Except for the Above Standardized Products, We Also Provide Customized Products.

RBP Metal Thin Film Chip Resistors

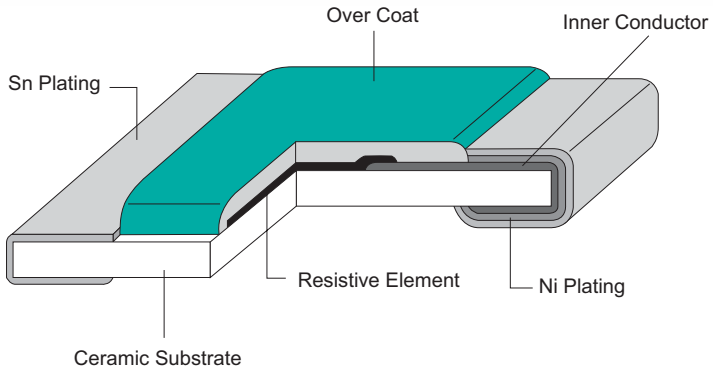
RoHS Compliant

TA-I TECHNOLOGY CO., LTD.

Features

- Low parastics
- Excellent high-frequency stability
- Low noise
- Narrow tolerance
- Low profile
- High integration potential

Construction



Application

- Audio and video equipment
- Telecommunications equipment
- EDP equipment
- Automotive electronics
- Voltage control in power supplies
- Test & Measurment equipment

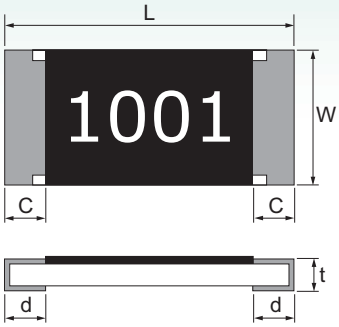
Type Designation

RBP	10	B	T	P	1001
Product Code	**Size, Power Rating (at 70°C)**	**Tolerance**	**Packaging**	**TCR (ppm/°C)**	**Nominal Resistance**
Metal Thin Film	06: 0603 (1.6x0.8mm) 1/8W 10: 0805 (2.0x1.2mm)1/4W 12: 1206 (3.2x1.6mm) 1/2W 13: 1210 (3.2x2.6mm) 1/2W 20: 2010 (2.0x2.5mm) 1W 25: 2512 (6.4x3.2mm) 2W	B: ±0.10% C: ±0.25% D: ±0.50% F: ±1.00% G: ±2.00% J: ±5.00%	T: Paper Tape B: Bulk Cassette	J: ±5ppm k: ±10ppm M: ±15ppm P: ±25ppm S: ±50ppm T: ±100ppm	e.g., 1001=1kΩ

RBP Metal Thin Film Chip Resistors

RoHS Compliant

Dimensions



Unit: mm

Type	L	W	C	d	t
RBP06	1.60±0.10	0.80±0.10	0.30±0.20	0.40+0.20/-0.10	0.45±0.10
RBP10	2.00±0.10	1.25±0.10	0.40±0.20	0.45±0.20	0.50±0.10
RBP12	3.10±0.10	1.55±0.10	0.50±0.30	0.50±0.20	0.55±0.10
RBP13	3.10±0.10	2.55±0.10	0.50±0.30	0.50±0.20	0.60±0.10
RBP20	5.10±0.15	2.50±0.15	0.60±0.30	1.40±0.25	0.60±0.10
RBP25	6.30±0.20	3.20±0.20	0.60±0.30	1.85±0.25	0.60±0.10

Rating & Characteristic

Type	Power Rating at 70°C	Rated Voltage	Max. Working Voltage	Max. Over- Load Voltage	T.C.R (PPM/°C)	Resistance Range	Resistance tolerance (%)
RBP06	1/8 W	$(P*R)^{1/2}$	75V	150V	±50 ±100	1Ω~9.1Ω	±0.5~±5.0
RBP06	1/8 W	$(P*R)^{1/2}$	75V	150V	±10 ±25 ±50 ±100	10Ω~390KΩ	±0.1~ ±5.0
RBP10	1/4 W	$(P*R)^{1/2}$	150V	300V	±50 ±100	1Ω~9.1Ω	±0.5~±5.0
RBP10	1/4 W	$(P*R)^{1/2}$	150V	300V	±10 ±25 ±50 ±100	10Ω~800KΩ	±0.1~ ±5.0
RBP12	1/2 W	$(P*R)^{1/2}$	150V	300V	± 50 ±100	1Ω~9.1Ω	±0.5~±5.0
RBP12	1/2 W	$(P*R)^{1/2}$	150V	300V	±10 ±25 ±50 ±100	10Ω~1MΩ	±0.1~ ±5.0
RBP13	1/2 W	$(P*R)^{1/2}$	150V	300V	± 50 ±100	1Ω~9.1Ω	±0.5~±5.0
RBP13	1/2 W	$(P*R)^{1/2}$	150V	300V	±10 ±25 ±50 ±100	10Ω~1MΩ	±0.1~ ±5.0
RBP20	1 W	$(P*R)^{1/2}$	150V	300V	± 50 ±100	1Ω~9.1Ω	±0.5~±5.0
RBP20	1 W	$(P*R)^{1/2}$	150V	300V	±10 ±25 ±50 ±100	10Ω~1MΩ	±0.1~ ±5.0
RBP25	2 W	$(P*R)^{1/2}$	150V	300V	± 50 ±100	1Ω~9.1Ω	±0.5~±5.0
RBP25	2 W	$(P*R)^{1/2}$	150V	300V	±10 ±25 ±50 ±100	10Ω~1MΩ	±0.1~ ±5.0

Operating Temp (°C): -55°C~+125°C

Note: 1. E= $\sqrt{P*R}$, E=Rated Voltage(V); P=Rated Power(W); R=Resistance Value(Ω)

2. Except for the Above Standardized Products, We Also Provide Customized Products.

RBS Anti Sulfuration Chip Resistors

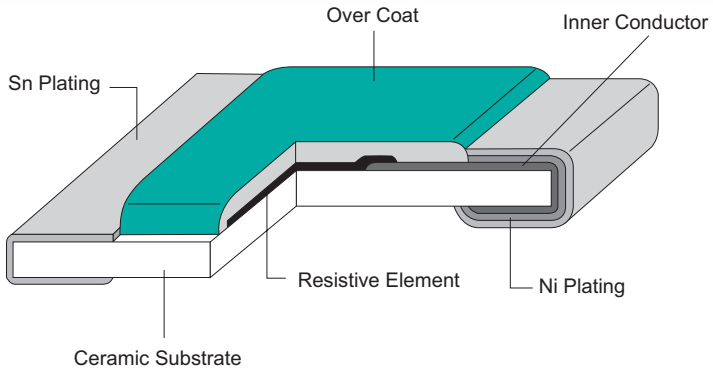
RoHS Compliant

TA-I TECHNOLOGY CO., LTD.

Features

- Low parastics
- Excellent high-frequency stability
- Low noise
- Narrow tolerance
- Low profile
- High integration potential

Construction



Application

- Audio and video equipment
- Telecommunications equipment
- EDP equipment
- Automotive electronics
- Voltage control in power supplies
- Test & Measurment equipment

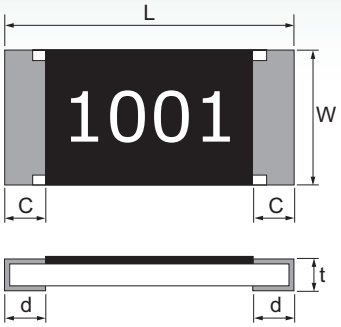
Type Designation

RBS	10	B	T	P	1001
Product Code	**Size, Power Rating (at 70°C)**	**Tolerance**	**Packaging**	**TCR (ppm/°C)**	**Nominal Resistance**
Anti Sulfuration	04: 0402 (1.0x0.5mm) 1/16W 06: 0603 (1.6x0.8mm) 1/0W 10: 00805 (2.0x1.2mm) 1/8W 12: 1206 (3.2x1.6mm) 1/4W	B: ±0.10% C: ±0.25% D: ±0.50% F: ±1.00%	T: Paper Tape B: Bulk Cassette	J: ±5ppm k: ±10ppm M: ±15ppm P: ±25ppm S: ±50ppm T: ±100ppm	e.g., 1001=1kΩ

RBS Anti Sulfuration Chip Resistors

RoHS Compliant

Dimensions



Unit: mm

Type	L	W	C	d	t
RBS04	1.00±0.05	0.50±0.05	0.20±0.10	0.25±0.10	0.35±0.05
RBS06	1.60±0.10	0.80±0.10	0.30±0.20	0.30+0.20/-0.10	0.45±0.10
RBS10	2.00±0.10	1.25±0.10	0.40±0.20	0.40±0.20	0.50±0.10
RBS12	3.10±0.10	1.55±0.10	0.50±0.30	0.40±0.20	0.55±0.10

Rating & Characteristic

Type	Power Rating at 70°C	Rated Voltage	Max. Working Voltage	Max. Over- Load Voltage	T.C.R (PPM/°C)	Resistance Range	Resistance tolerance (%)
RBS04	1/16 W	$(P*R)^{1/2}$	50V	100V	±10 ±25 ±50 ±100	100Ω~100KΩ	±0.1~ ±1.0
RBS06	1/10 W	$(P*R)^{1/2}$	75V	150V	±10 ±25 ±50 ±100	100Ω~390KΩ	±0.1~ ±1.0
RBS10	1/8 W	$(P*R)^{1/2}$	150V	300V	±10 ±25 ±50 ±100	100Ω~800KΩ	±0.1~ ±1.0
RBS12	1/4 W	$(P*R)^{1/2}$	150V	300V	±10 ±25 ±50 ±100	100Ω~1MΩ	±0.1~ ±1.0

Operating Temp (°C): -55°C~+125°C

Note: 1. $E=\sqrt{P*R}$, E=Rated Voltage(V); P=Rated Power(W); R=Resistance Value(Ω)

2. Except for the Above Standardized Products, We Also Provide Customized Products.

RH Thick Film High Voltage Chip Resistors

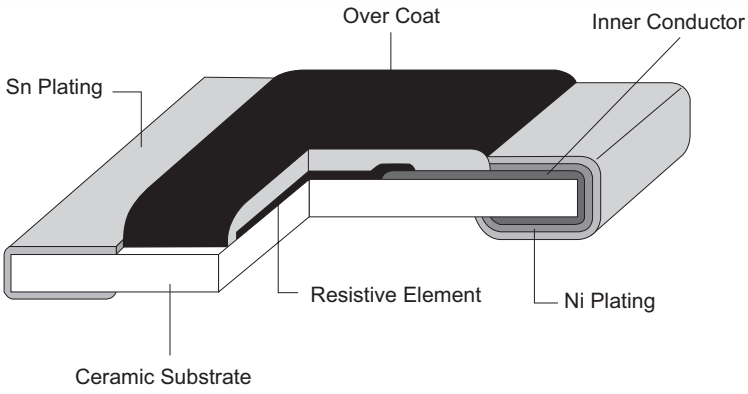
RoHS Compliant

TA-I TECHNOLOGY CO., LTD.

Features

- The application of RH series resistors can reduce the numbers and space of resistor used in circuits
- Compared to RM series resistors, RH series can stand twice the maximum operating voltage

Construction



Application

- Power supply

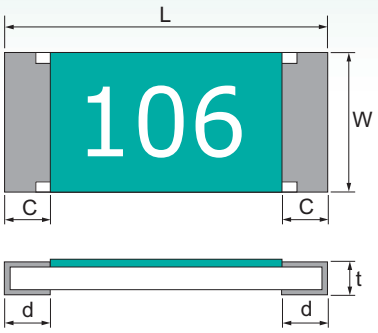
Type Designation

RH	12	F	T N	4993
Product Code	**Size, Power Rating (at 70°C)**	**Tolerance**	**Packaging**	**Nominal Resistance**
High Voltage Chip Resistors	12: 1206 (3.2x1.6mm) 1/4W 20: 2010 (5.0x2.5mm) 1/2W	1206 F : ±1% G: ±2% J : ±5% 2010 J :±5%	1206 T: Paper Tape TN: Lead Free & Paper Type 2010 E : Emboss Ttape EN: Lead Free & Emboss Tape	3 Digits (E-24) e.g., 105=1MΩ 4 Digits (E-96) e.g., 4993=499kΩ

RH Thick Film High Voltage Chip Resistors

RoHS Compliant

Dimension



Unit: mm

Type	L	W	C	d	t
RH12	3.10±0.20	1.55±0.10	0.40±0.25	0.40±0.20	0.55±0.10
RH20	5.00±0.20	2.50±0.20	0.40±0.25	0.50±0.25	0.55±0.10

Rating & Characteristic

Characteristics	Feature		Measurement Mathod
	RH12	RH20	
Power Ratings (W)	1/4W	1/2W	
Resistance Value (Ω)	47Ω~22MΩ		Refer to JIS C 5202 5.1
T.C.R (ppm/°C)	±200		Refer to JIS C 5202 5.2
Operation Temperature Range (°C)	-55~+125		
Resistance Tolerance (%)	±1, ±2, ±5	±5	
Maximum Working Voltage (V)	400	1500	
Maximum Overload Voltage (V)	800	3000	Remark RH20: DC 3000V, AC 2122V

*Note 1: Measure method refer to JIS C 5202 5.1
*Note 2: Measure method refer to JIS C 5202 5.2
*Note 3: Remark RH20: DC 3000V, AC 2122V

RT

Thick Film Trimmable Chip Resistors

RoHS Compliant

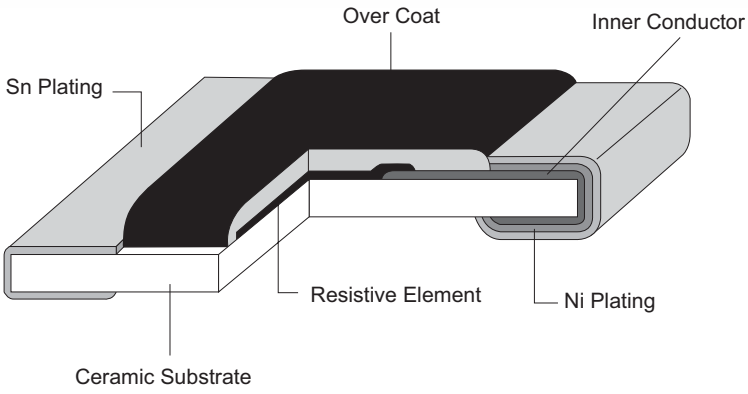
Features

- Suitable for laser trimming
- High reliability

Application

- Chip resistor for functional trimming

Construction



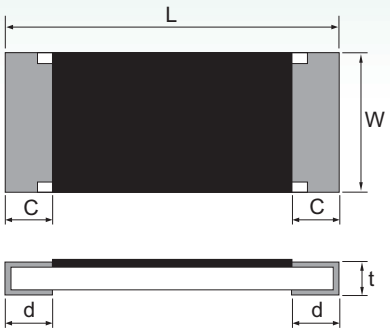
Type Designation

RT	10	P	T N	103
Product Code	**Size, Power Rating (at 70°C)**	**Tolerance**	**Packaging**	**Nominal Resistance**
Trimmable Chip Resistors	04: 0402 1/16W 06: 0603 1/10W 10: 0805 1/8W 12: 1206 1/4W 13: 1210 1/3W	K: ±10% M: ±20% N: ±30% P: 0~-30%	T: Paper Tape E: Embossed Tape B: Bulk Cassette Special L: 06: 2mm Pitch Paper Tape N: Lead Free	3 Digits (E-24) e.g., 103=10kΩ 4 Digits (E-96) e.g., 1540=154Ω 43R2=43.2Ω

RT Thick Film Trimmable Chip Resistors

RoHS Compliant

Dimensions



Unit: mm

Type	L	W	C	d	t
RT04	$1.0^{+0.1}_{-0.05}$	0.5±0.05	0.2±0.1	0.25±0.1	0.35±0.05
RT06	1.6±0.1	0.8±0.1	0.3±0.2	$0.3^{+0.2}_{-0.1}$	0.45±0.1
RT10	2.0±0.1	1.25±0.1	0.4±0.2	0.4±0.2	0.5±0.1
RT12	3.1±0.1	1.55±0.1	0.5±0.3	0.4±0.2	0.6±0.1
RT13	3.1±0.1	2.55±0.1	0.5±0.3	0.4±0.2	0.6±0.1

Rating & Characteristic

Type	Power Rating at 70°C	MAX. Working Voltage	MAX. Over-Load Voltage	Operating Temp. (°C)	Resistance Tolerance (%)	Resistence Range (Ω)	Std Res. Value	T.C.R. ppm/°C
RT04	1/16W	50V	100V	-55°C~+125°C	±10% ±20% ±30%	10Ω~1MΩ on quest: 0805: 3MΩ	E-24	±200
RT06	1/10W	50V	100V					
RT10	1/8W	150V	300V					
RT12	1/4W	200V	400V					
RT13	1/3W	200V	400V					

RL

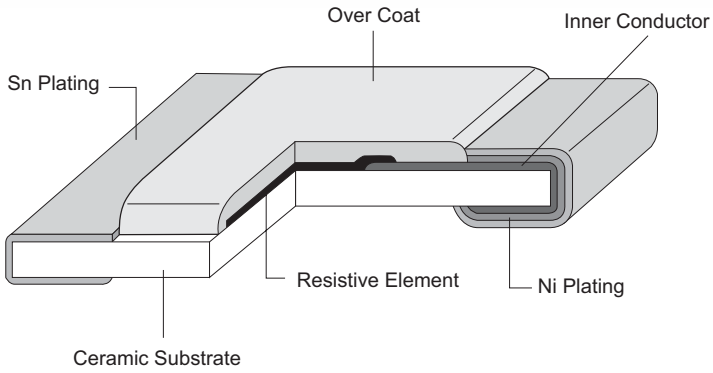
Thick Film Low Ohmic Chip Resistors

RoHS Compliant

Features

- Low resistance and high accuracy resistor for current detection

Construction



Application

- Power supply
- Mobile-phone
- Portable devices
- PC, N/B PC, UMPC
- HDD

Type Designation

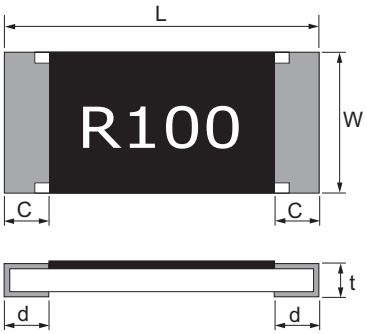
RL	10	F	T N	R100
Product Code	**Size, Power Rating (at 70°C)**	**Tolerance**	**Packaging**	**Nominal Resistance**
Low Ohmic Chip Resistor	04: 0402 1/16W 06: 0603 1/8W 10: 0805 1/4W 12: 1206 1/2W 20: 2010 3/4W 25: 2512 1W	F: ±1% G: ±2% J: ±5%	T: Paper Tape E: Embossed Tape N: Lead Free	3 Digits e.g.,(5%) R10=0.1Ω 4 Digits e.g.,(1%) R100=0.1Ω Standard: E-24 Series

RL Thick Film Low Ohmic Chip Resistors

RoHS Compliant

Dimensions

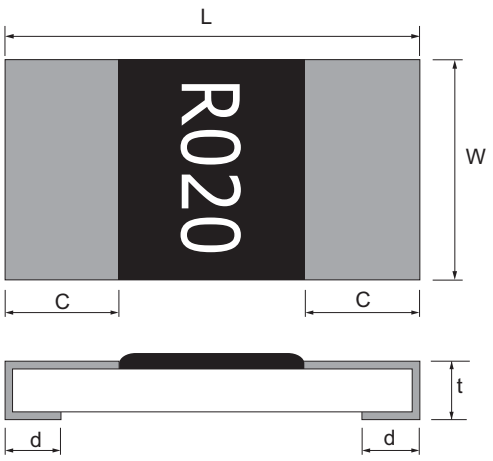
1. Standard products



Unit: mm

Type	L	W	C	d	t
RL04	$1.00^{+0.10}_{-0.05}$	0.50±0.05	0.20±0.10	0.25±0.10	0.35±0.05
RL06	1.60±0.10	0.80±0.10	0.30±0.20	0.35±0.20	0.45±0.10
RL10	2.00±0.10	1.25±0.10	0.40±0.20	0.35±0.20	0.50±0.10
RL12	3.10±0.20	1.55±0.10	0.50±0.30	0.40±0.20	0.55±0.10
RL20	5.00±0.20	2.50±0.20	0.60±0.30	0.50±0.25	0.55±0.10
RL25	6.30±0.20	3.20±0.20	0.60±0.30	0.50±0.25	0.55±0.10

2. 1206 Type for 20mΩ~91mΩ



Unit: mm

Type	L	W	C	d	t
RL12	3.10±0.20	1.55±0.10	0.90±0.30	0.50±0.20	0.55±0.10

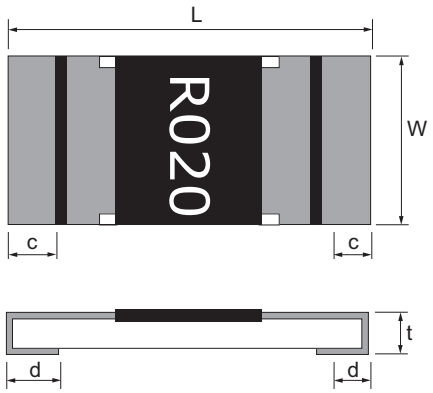
RL Thick Film Low Ohmic Chip Resistors

RoHS Compliant

TA-I TECHNOLOGY CO., LTD.

Dimensions

3. 2010 & 2512 Type for 20mΩ-91mΩ



Unit: mm

Type	L	W	C	d	t
RL20	5.00±0.20	2.50±0.20	0.60±0.30	0.50±0.25	0.55±0.10
RL25	6.30±0.20	3.20±0.20	0.60±0.30	0.50±0.25	0.55±0.10

Rating & Characteristic

Type	Power ratings	Reistance Value (mΩ)	Operation Temperature Range(°C)	T.C.R. (ppm/°C)
RL04	1/16W	200~910	-55~+125	±300 (200~500mΩ) ±200 (501~910mΩ)
RL06	1/8W	100~910		± 200 (50~910mΩ)
RL10	1/4W	50~910		
RL12	1/2W	20~910		
RL20	3/4W			
RL25	1W			

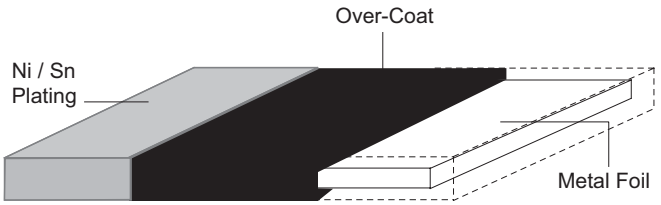
RLM Metal Foil Current Sensing Chip Resistors

RoHS Compliant

Features

- Ultra low resistance (down to 1mΩ), Suitable for large current detecting
- Extremely low TCR
- Over coating: Molding compound UL-94 V-0 grade

Construction



Application

- Power module (VRM) for CPU
- Battery chargers
- Power supply
- DC/DC converter

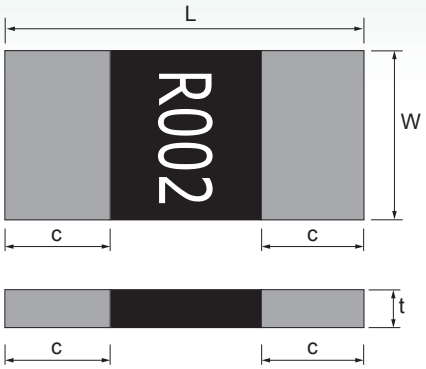
Type Designation

RLM	25	F	E	C	R002
Product Code	**Size**	**Resistance Tolerance**	**Packaging**	**Power Rating (at 70°C)**	**Resistance**
Current Sensing Resistors	12: 1206 (3.2x1.6mm) 20: 2010 (5.0x2.5mm) 25: 2512 (6.4x3.2mm)	F: ±1% G: ±2% J: ±5%	E: Embossed Tape	A=1/4W S=1/2W C= 1W D=1 1/2W E= 2W	4 Digits (E-96) e.g., R002=2mΩ R010=10mΩ

RLM Metal Foil Current Sensing Chip Resistors

RoHS Compliant

Dimensions



Unit: mm

Type	L	W	C	t	Material
RLM 12	3.2±0.2	1.6±0.2	0.5±0.3	0.6±0.2	Metal: Copper-Nickel Alloy or Copper-Manganese Alloy Over Coating: molding Compound UL-94 V-0 grade
RLM 20	5.0±0.2	2.5±0.2	0.6±0.3	0.7±0.2	
RLM 25	6.4±0.2	3.2±0.2	2.0±0.2 (≤2mΩ) 0.9±0.2 (R>2mΩ)	0.6±0.2	

Rating & Characteristic

Type	Power ratings	Reistance Value (mΩ)	Operation Temperature Range(°C)	T.C.R. (ppm/°C)	Tolerance(%)	Insulation Reistance	Maximum Working Voltage (V)
RLM12	1/4 W & 1/2W & 1W	5~30	-55~+125	± 275 (R≤1mΩ) ± 100 (1mΩ<R≤10mΩ) ± 75(R>10mΩ)	±1, ±2, ±5	Over 100MΩ	$(P*R)^{1/2}$
RLM20	1/2W & 1 W	3~25					
RLM25	1 W	1~50					
	2 W	R≤10mΩ					

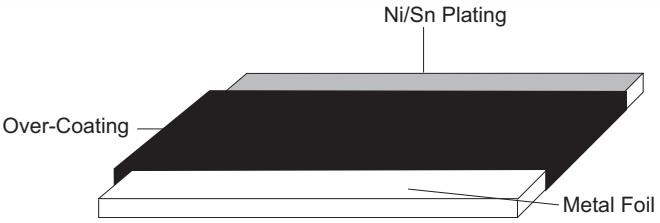
RLN Metal Foil Current Sensing Chip Resistors

RoHS Compliant

Features

- Ultra low resistance, Suitable for large current detecting
- Low temperature rise for high power application
- Extremely low TCR
- Over coating: Molding compound UL-94 V-0 grade

Construction



Application

- Power module (VRM) for CPU
- Battery chargers
- Power supply
- DC/DC converter

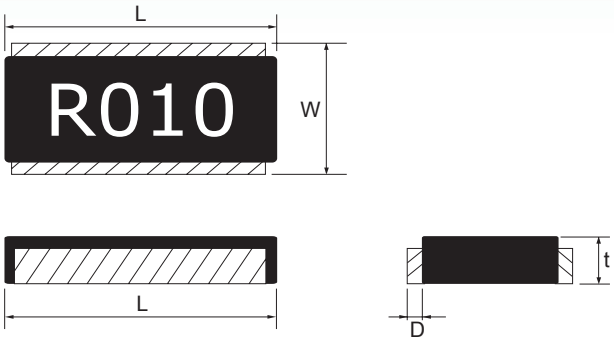
Type Designation

RLN	37	F	E	C	R010
Product Code	**Size**	**Resistance Tolerance**	**Packaging**	**Power Rating (at 70°C)**	**Resistance**
Current Sensing Resistors	37: 3720	F: ±1% G: ±2% J: ±5%	E: Embossed Tape	S= 1/2W C= 1W	4 Digits (E-96) e.g: R010= 10mΩ

RLN Metal Foil Current Sensing Chip Resistors

RoHS Compliant

Dimensions



Unit: mm

Type	L	W	D	t	Material
RLN	3.75±0.3	2.1±0.25	0.5±0.2	0.7±0.20	Metal: Copper-Nickel Alloy or Copper-Manganese Alloy Over Coating: molding Compound UL-94 V-0 grade

Rating & Characteristic

Type	Power Ratings	Reistance Value (mΩ)	Operation Temperature Range(°C)	T.C.R. (ppm/°C)	Tolerance(%)	Insulation Reistance	Maximum Working Voltage (V)
RLN	1/2W & 1W*	1~30	-55~+170	100	±1, ±2, ±5	Over 100MΩ	$(P*R)^{1/2}$

Note: 1 Watts total Solder pad and trace size of 300mm^2

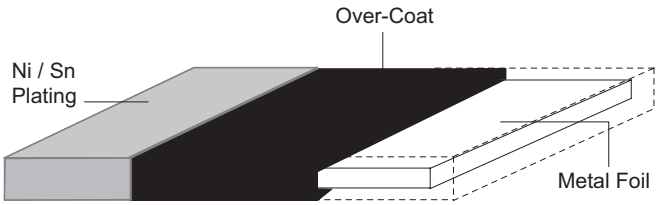
RLP Metal Foil High Power Current Sensing Resistors RLP Series

RoHS Compliant

Features

- Ultra low resistance, Suitable for large current detecting
- Ultra low device surface temperature
- Extremely low TCR
- Over coating: Molding compound UL-94 V-0 grade

Construction



Application

- Power module (VRM) for CPU
- Battery chargers
- Power supply
- DC/DC converter

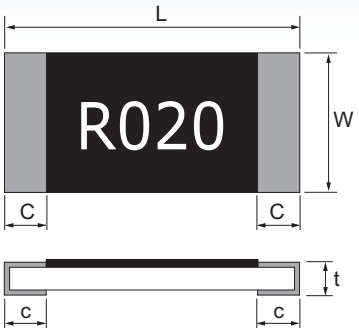
Type Designation

RLP	25	F	E	E	R010
Product Code	**Size**	**Resistance Tolerance**	**Packaging**	**Power Rating (at 70°C)**	**Resistance**
Current Sensing Resistors	25: 2512 20: 2010	F: ±1% G: ±2% J: ±5%	E: Embossed Tape	C= 1W D=1.5W E= 2W G= 3W	e.g: R010= 10mΩ

RLP Metal Foil High Power Current Sensing Resistors RLP Series

RoHS Compliant

Dimensions



Unit: mm

Type	L	W	C	t	Material
RLP20	5.0±0.2	2.5±0.2	0.6±0.3	0.75±0.2	Metal: Copper-Nickel Alloy or Copper-Manganese Alloy Over Coating: Molding Compound UL-94 V-0 Grade
RLP25	6.4±0.2	3.2±0.2	0.9±0.2	0.7±0.2	

Rating & Characteristic

Type	Power ratings	Reistance Value (mΩ)	Operation Temperature Range(°C)	T.C.R. (ppm/°C)	Tolerance(%)	Insulation Reistance	Maximum Working Voltage (V)
RLP20	1 W & 1 1/2W	10~60	-55~+170	75	±1, ±2, ±5	Over 100MΩ	$(P*R)^{1/2}$
RLP25	1 W & 2W & 3W	10~100					

* If requested resistance value is out of this range, please feel free to contact with our company.

CN Thick Film Chip Resistor Arrays (Networks)-Convex Type

RoHS Compliant

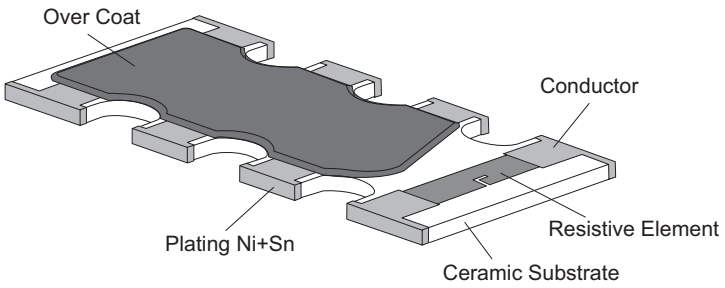
Features

- Less board space than individual chip resistor
- Integrated 2~8 elements for Pull-up / Pull-down circuits

Application

- Pull-up / Pull-down resistance for digital circuit

Construction



Type Designation

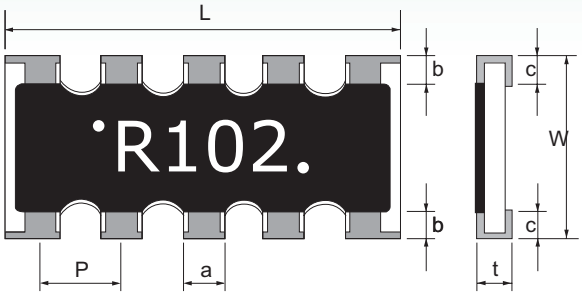
CN	34	J	T N	103
Product Code	**Size**	**Tolerance**	**Packaging**	**Nominal Resistance**
Chip Resistor Arrays (Networks) Convex Type	22: 0402*2 24: 0402*4 28: 0402*8 32: 0603*2 34: 0603*4 35: 0603*5	F: ±1% G: ±2% J: ±5%	T: Paper Tape N: Lead Free R: 10P8R (R circuits) S: 10P8R (S circuits) D: 9P8R	3 Digits (E-24) e.g.: 103= 10kΩ 4 Digits (E-96) e.g.: 1540=154Ω

CN Thick Film Chip Resistor Arrays (Networks)-Convex Type

RoHS Compliant

TA-I TECHNOLOGY CO., LTD.

Dimensions



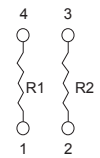
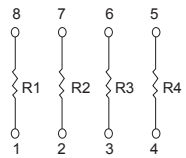
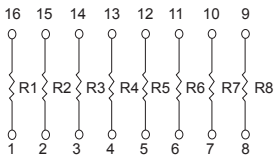
Unit: mm

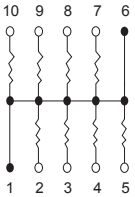
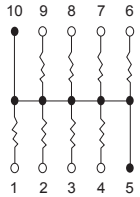
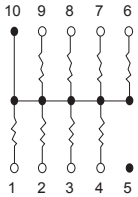
Type	L	W	t	P	a	b	c
CN22	1.0±0.1	1.0±0.1	0.35±0.1	0.65±0.1	0.33±0.1	0.15±0.1	0.25±0.1
CN24	2.0±0.1	1.0±0.1	0.4±0.1	0.5±0.05	0.3±0.1	0.15±0.1	0.25±0.1
CN28	4.0±0.2	1.6±0.15	0.4±0.1			0.25±0.1	
CN32	1.6±0.15	1.6±0.15	0.45±0.1	0.76±0.1	0.45±0.1	0.3±0.2	0.3±0.2
CN34	3.2±0.2	1.6±0.15	0.50±0.1	0.8±0.05	0.45±0.1	0.3±0.2	0.3±0.2
CN35				0.64±0.05	0.35±0.1		

Rating & Characteristic

Type	Power Rating at 70°C	MAX. Working Voltage	MAX. Over-Load Voltage	Operating Temp. (°C)	Resistance Tolerance (%)	Resistence Range (Ω)	Temp Co-efficient PPM/°C
CN22	1/16W	25V	50V	-55~+125°C	±1% ±2% ±5%	10Ω~1MΩ	±250
CN24	1/16W						
CN28	1/16W						
CN32	1/16W	50V	100V				±200
CN34	1/16W	50V	100V				
CN35	1/16W	25V	50V		±5%	56Ω~100K	

Schematic

CN12, CN22, CN32	CN24, CN34	CN28, 16P8R
		
R1= R2	R1=R2=R3=R4	R1=R2.....R8

CN35 10P8R		9P8R
(S Circuit)	(R Circuit)	(D Circuit)
		

CNC Thick Film Chip Resistors Arrays (Networks)-Concave Type

RoHS Compliant

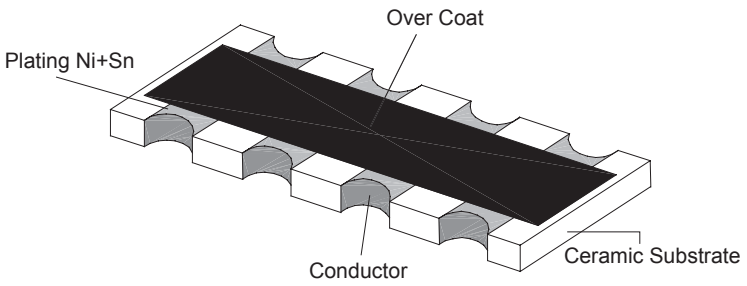
Features

- Less board space than individual chip resistor
- Integrated 2~4 elements for Pull-up / Pull-down circuits

Application

- Pull-up / Pull-down resistance for digital circuit

Construction



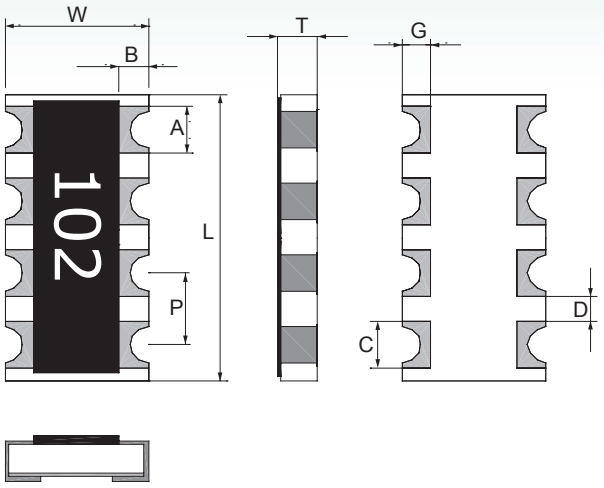
Type Designation

CNC	34	J	T N	102
Product Code	**Size**	**Tolerance**	**Packaging**	**Nominal Resistance**
Chip Resistor Arrays (Network) Concave Type	22: 0402-X2 24: 0402-X4 34: 0603-X4	J: ±5%	T: Paper Tape N: Lead Free	3 digits e.g., (E-24) 102=1kΩ 4 digits e.g., (E-96) 1001=1kΩ

CNC Thick Film Chip Resistors Arrays (Networks)-Concave Type

RoHS Compliant

Dimensions



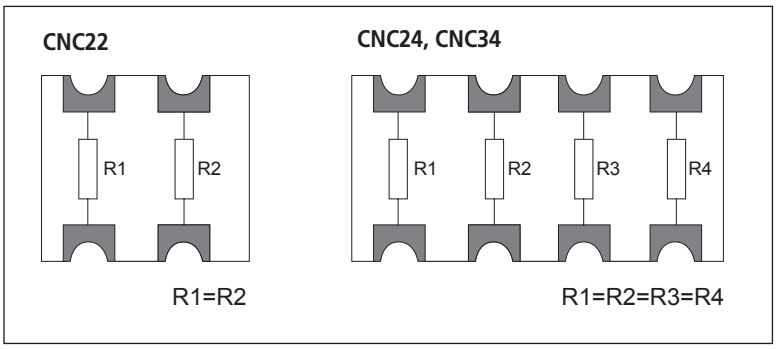
Unit: mm

Type	L	W	T	P	A	B	C	D	G
CNC22	1.0±0.1	1.0±0.1	0.3±0.1	0.5±0.1	0.35±0.1	0.25±0.15	0.35±0.1	0.15±0.1	0.25±0.15
CNC24	2.0±0.1	1.0±0.1	0.4±0.1	0.5±0.1	0.3±0.1	0.2±0.1	0.3±0.1	0.15±0.1	0.25±0.15
CNC34	3.2±0.2	1.5±0.2	0.55±0.1	0.8±0.1	0.6±0.1	0.3±0.2	0.5±0.1	0.25±0.1	0.35±0.15

Rating & Characteristic

Type	Power Rating at 70°C	MAX. Working Voltage	MAX. Over-Load Voltage	Operating Temp. (°C)	Resistance Tolerance (%)	Resistence Range (Ω)	Temp Co-efficient PPM/°C
CNC22	1/16W	25V	50V	-55~+125°C	±5%	10Ω~1MΩ	±300
CNC24							±300
CNC34		50V	100V				±200

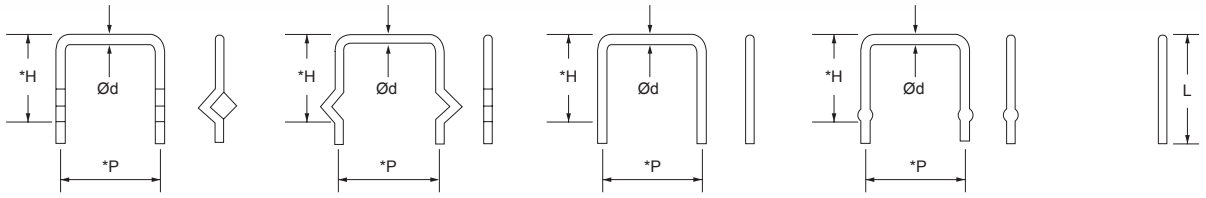
Schematic



MR Mini Ohmic Resistors (Wire Type)

RoHS Compliant

Construction



M Type | H Type | C Type | N Type | E Type

Features

- Customized Pitch and height are available.

Application

- Low resistance for power supply current detection.

Type Designation

MR	08	J	M	A	0200	F
Product Code	**Diameter**	**Tolerance**	**Forming Type**	**Pitch**	**Resistance**	**Plating**
Mini Ohmic Resistors	0.8: 0.8mm wire	J : ±5% K: ±10% N: No Tolerance	M H C N E	A=5 B=10 C=12.5 D=15 E=2.50 F=20 G=25 H=7.2 I=17.74 J=17 K=20.32 M=7.5 N=13.15/13.6 S=26 unit: mm	0200=20mΩ	N=Unplated F=Lead Free

MR Mini Ohmic Resistors (Wire Type)

RoHS Compliant

Rating & Characteristic

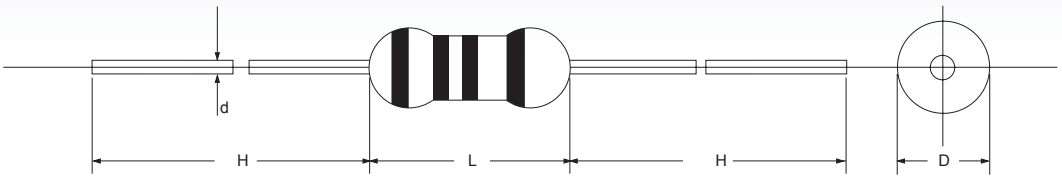
Ød (mm)	Max Current Rating	Resistance Tolerance	Operating Temp (°C)	Temp Coefficient PPM/°C
0.4	2.0	J: ±5% K: ±10%	-55 | +155	CMW Wire: ±50ppm/°C CN49 Wire: ±100ppm/°C CN30 Wire: ±200ppm/°C CN Wire: ±300ppm/°C (Raw material)
0.5	2.5			
0.6	3.0			
0.7	4.0			
0.8	4.5			
0.9	5.0			
1.0	5.5			
1.1	6.0			
1.2	7.0			
1.3	7.5			
1.4	8.0			
1.5	9.0			
1.6	9.5			
1.8	11.0			
2.0	12.0			

Note: Except for the above standardized products, We also provide the Customized products.

RD Carbon Film Resistors

RoHS Compliant

Dimension



Unit: mm

Type	L	D	H	d
RD16 RD25S	3.2±0.5	1.7±0.3	28±2	0.45±0.05 Unit: mm
RD25 RD50S	5.7±0.5	2.3±0.3	26±2	0.56±0.05
RD50 RD1BS	9.0±0.5	3.2±0.5	26±2	0.6±0.05
RD1B	11±1.0	4.4±0.6	35±2	0.8±0.05
RD2B	15±1.0	4.8±0.6	33±2	0.8±0.05

Type Designation

RD	25 S	J	X	103
Product Code	**Series**	**Resistance Tolerance**	**Forming and Packaging**	**Nominal Resistance**
Carbon Film Resistors	16: 1/8W (1/6W) 25: 1/4W 50: 1/2W S : miniature Size	G:±2% J: ±5%	X: T52 Y: T26 H: H Type M: M Type U: U Type R: Radial Tape P: P Type	10KΩ

Rating & Characteristic

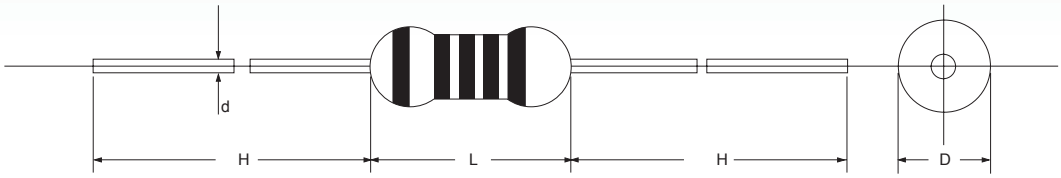
Type		Power Rating at 70°C	MAX Working Voltage	MAX Over Load Voltage	Operating Tamp (°C)	Resistnce Tolerance (Ω)	Temp Co-efficient PPM/°C
RD16		1/8W	200V	400V	-55 | +155	±2% 10Ω~1MΩ ±5% 1Ω~10MΩ	<100K +350 -500 >100K +350 | 1MΩ -700 >1MΩ +350 -500
RD25	RD25S	1/4W	250V	500V			
RD50	RD50S	1/2W	350V	700V			
RD1B	RD1BS	1W	500V	1000V			

RN Metal Film Resistors

RoHS Compliant

TA-I TECHNOLOGY CO., LTD.

Dimension



Unit: mm

Type	L	D	H	d
RN16 RD25S	3.3±0.5	1.7±0.3	28±2	0.5±0.05
RN25 RD50S	6.5±0.5	2.4±0.3	28±2	0.6±0.05
RN50	9.2±0.5	3.3±0.5	28±2	0.6±0.05

Type Designation

RN	25 S	F	X	1002
Product Code	**Series**	**Resistance Tolerance**	**Forming and Packaging**	**Nominal Resistance**
Metal Film Resistors	16: 1/8W (1/6W) 25: 1/4W 50: 1/2W S : Miniature Size	D: ±0.5% F: ±1% B: ±0.1%	X: T52 Y: T26 M: M Type U: U Type	10KΩ

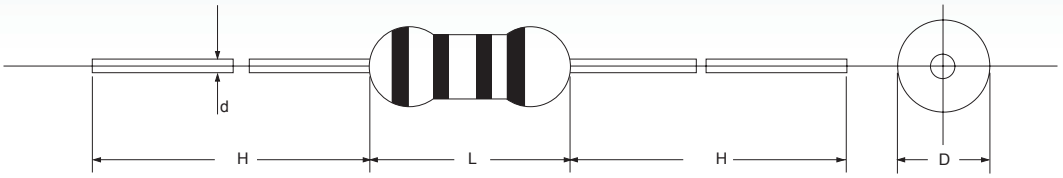
Rating & Characteristic

Type		Power Rating at 70°C	MAX Working Voltage	MAX Over Load Voltage	Operating Tamp (°C)	Resistnce Tolerance (%)	Resistnce Rnge (Ω)	Std Res. Value	Temp Co-efficient PPM/°C
RN16		1/8W	200V	400V	-55 | +155	±0.5% ±1%	10Ω~1MΩ	E-96	±50 ±100
RN25	RN25S	1/4W	250V	500V					
RN50	RN50S	1/2W	350V	700V					

RS Metal Oxide Film Resistors (Flame Proof)

RoHS Compliant

Dimension



Unit: mm

Type	L	D	H	d
RS50S	6.5±0.5	2.4±0.5	28±2	0.6±0.05
RS50 RS1BS	9±1	3.5±0.5	30±3	0.6±0.05
RS1B RS2BS	11±1	4.5±1	30±3	0.8±0.05
RS2B RS3BS	15±1	6.0±1	30±3	0.8±0.05
RS3B RS5BS	25±1	9.0±1	30±3	0.8±0.05
RS5B	41±1	9.0±1	30±3	0.8±0.05

Unit: mm

Type Designation

RS	1B S	J	X	103
Product Code	**Series**	**Resistance Tolerance**	**Forming and Packaging**	**Nominal Resistance**
Metal Oxide Film Resistors	50-1/2W 3B-3W 1B-1W 5B-5W 2B-2W S : Miniature Size	G: ±2% J: ±5%	X: T52 Y: T26 M: M Type U: U Type R: Radial Tape P: P Type Z: T73	10KΩ

Ratings & Characteristics

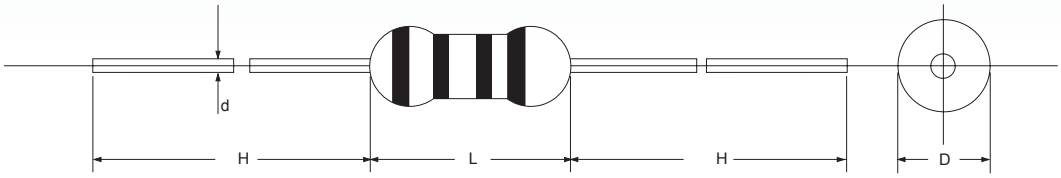
Type		Power Rating at 70°C	MAX Working Voltage	MAX Over Load Voltage	Operating Tamp (°C)	Resistnce Tolerance (%)	Resistnce Rnge (Ω)	Std Res. Value	Temp Co-efficient PPM/°C
RS50	RS50S	1/2W	250V	400V	-55 | +155	±2% ±5%	0~100KΩ	E-24	±350
RS1B	RS1BS	1W	350V	600V					
RS2B	RS2BS	2W	350V	600V			0~120KΩ		
RS3B	RS3BS	3W	500V	800V			0~150KΩ		
RS5B	RS5BS	5W	750V	1000V					

KN Wire Wound Resistors (Flame Proof)

RoHS Compliant

TA-I TECHNOLOGY CO., LTD.

Dimension



Unit: mm

Type	Power Rating	D±1	L±1	H±3	d±0.05	Resistance Range (Ω)	Temp Co-efficient PPM/°C
KN1B	1W	4.0	11	26	0.8	0.1 - 100	±300
KN2B	2W	5.0	15	28	0.8	0.1 - 120	
KN3B	3W	6.0	17	38	0.8	0.1 - 180	
KN4B	4W	6.0	17	38	0.8	0.1 - 180	
KN5B	5W	8.0	24	38	0.8	0.1 - 300	
KN6B	6W	8.0	24	38	0.8	0.1 - 300	
KN7B	7W	8.0	24	38	0.8	0.1 - 300	
KN8B	8W	8.0	40	38	0.8	0.3 - 2K	
KN10B	10W	8.0	52	38	0.8	0.3 - 2K	

Type Designation

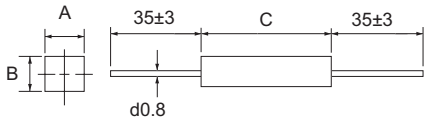
KN	P	1B	J	X	100
Product Code	**Type**	**Series**	**Resistance Tolerance**	**Forming and Packaging**	**Nominal Resistance**
Wire Wound Resistors	P: Inductance D: Non-Inductance	1B: 1W 2B: 2W 3B: 3W | 10B: 10W S : Miniature Size	F: ±1% G: ±2% J: ±5%	X: T52 M: M Type U: U Type Z: T73	10Ω

SQ Cement Type Resistors (Wire Wound & Metal Oxide Film)

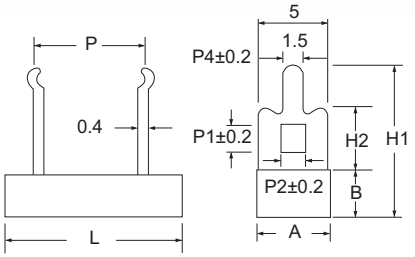
RoHS Compliant

Dimension

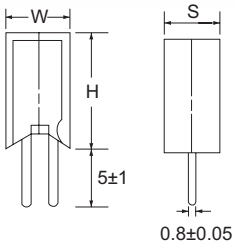
P Type



Z Type



M Type



Unit: mm

Type	Dimensionn (mm)											
(SQP/SQZ/SQM)	A±1	B±1	C±1	L±1.5	W±1	H±1	S	P±1.5	P1	P2	H±1	H2±2
3B	8	8	22		12	25	8					
5B	9.5	9.5	22	27	13	25	9	15	4.0	2	25	10.5
7B	9.5	9.5	35	35	13	39	9	22	4.0	2	25	10.5
10B	9.5	9.5	48	48	13	51	9	32	4.0	2	25	10.5

Type Designation

SQ	3B	J	P	102
Product Code	**Series**	**Forming and Packaging**	**Type**	**Nominal Resistance**
Cement Type Resistors	3B: 3W 5B: 5W 7B: 7W 10: 10W 2B: 2W	J: ±5% K: ±10%	P: P Type Z: Z Type M: M Type	1KΩ

Rating & Characteristic

Type	Power Rating at 70°C	MAX Working Voltage	MAX Over Load Voltage	Resistnce Tolerance	Resistnce Range (Ω)	Std Res. Value
3B	3W	350V	700V	J±5% K±10%	0.05Ω~100KΩ	E-24
5B	5W	350V	700V		0.05Ω~100KΩ	
7B	7W	500V	1000V		0.1Ω~1KΩ	
10B	10W	750V	1500V		0.1Ω~10KΩ	

SMD Marking

RoHS Compliant

Resistance Marking for SMD Resistors

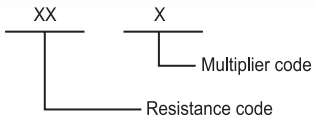
3.digits marking for E-24 (G.J.)

683 = 68000Ω = 68KΩ

4.digits marking for E-96 (D.F.)

17R8 = 17.8Ω

Coding Formula



3. Rx06 E-96 marking
3 digits marking for E-96 (F)

50C = 32.4KΩ

Size ≤ Rx0402, Size ≤ Cx22
Size ≤ Cx14

NO marking

Example (0603):

$10.2K\Omega = \frac{102}{02} \times \frac{10^{2}}{C}\Omega = 02C$

$33.2\Omega = \frac{332}{51} \times \frac{10^{-1}}{X}\Omega = 51X$

Multiplier code

Type	A	B	C	D	E	F	X	Y	Z
Multiplier	10^{0}	10^{1}	10^{2}	10^{3}	10^{4}	10^{5}	10^{-1}	10^{-2}	10^{-3}

Rx06 Resistance code

Value	Code	Value	Code	Value	Code	Value	Code
100	01	178	25	316	49	562	73
102	02	182	26	324	50	576	74
105	03	187	27	332	51	590	75
107	04	191	28	340	52	604	76
110	05	196	29	348	53	619	77
113	06	200	30	357	54	634	78
115	07	205	31	365	55	649	79
118	08	210	32	374	56	665	80
121	09	215	33	383	57	681	81
124	10	221	34	392	58	698	82
127	11	226	35	402	59	715	83
130	12	232	36	412	60	732	84
133	13	237	37	422	61	750	85
137	14	243	38	432	62	768	86
140	15	249	39	442	63	787	87
143	16	255	40	453	64	806	88
147	17	261	41	464	65	825	89
150	18	267	42	475	66	845	90
154	19	274	43	487	67	866	91
158	20	280	44	499	68	887	92
162	21	287	45	511	69	909	93
165	22	294	46	523	70	931	94
169	23	301	47	536	71	953	95
174	24	309	48	549	72	976	96

SMD E12 ~ E96 Values

RoHS Compliant

Standard Resistance Values & Symbols for SMD Resistors

E12	E24	E96	E12	E24	E96
10	10	100	33	33	
		102			332
		105			340
		107			348
	11	110			357
		113		36	
		115			365
		118			374
12	12				383
		121	39	39	
		124			392
		127			402
	13	130			412
		133			422
		137		43	
		140			432
		143			442
		147			453
15	15	150			464
		154	47	47	
		158			475
	16				487
		162			499
		165		51	
		169			511
		174			523
		178			536
18	18				549
		182	56	56	
		187			562
		191			576
		196			590
	20	200			604
		205			619
		210		62	
		215			634
22	22				649
		221			665
		226	68	68	
		232			681
		237			698
	24				715
		243			732
		249		75	750
		255			768
		261			787
		267			806
27	27		82	82	
		274			825
		280			845
		287			866
		294			887
	30				909
		301		91	
		309			931
		316			953
		324			976

SMD Package Reel Quantity & Size

RoHS Compliant

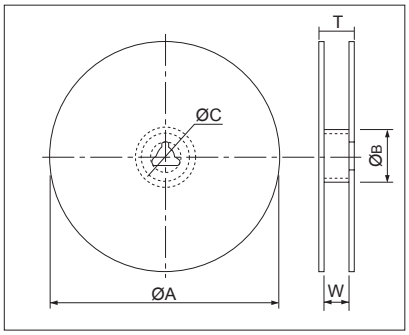
Packaging for SMD Components

Packaging

Unit: pcs

Type \ Package Series		Package Tape		Embossed Plastic Tape 4mm pitch
		4mm pitch 178mm/R	2mm pitch 178mm/R	
RM	01		10000	
RM	02		10000	
CF,CFS,RM,RT,RB,MS,UMS,NT	04		10000	
CF,CFS,RM,RL,RT,RB,MS,UMS,NT	06	5000	10000	
RM,RL,RT,RB	10	5000		
CF,CFS,RM,RL,RT,RB,RH	12	5000		
RM,RT	13	5000		
RM,RL,RH,RLP	20			4000
RM,RL,RLM,RLP	25			4000
CN,CNC	22		10000	
CN,CNC,MSA,UMSA	24		10000	
CN	28	5000		
CN	32	5000		
CN,CNC,MSA,UMSA	34	5000		
CN	35	5000		
RLN	37			4000

Reel Specifications



Unit: mm

Package	ØA	ØB	ØC	W	T
MSA 24, 34 UMSA 24, 34 MS 04, 06 UMS 04, 06 CF 04, 06, 12 CFS 04, 06, 12 NT 04, 06 RX 01, 02, 04, 06, 10, 12, 13 CN 12/22/24/28/32/34/35 CNC 22/24/34	178±2	60 or more	13.0±1.0	9.0±1.0	11.5±1
RX 20, 25				13.0±1.0	15.5±1

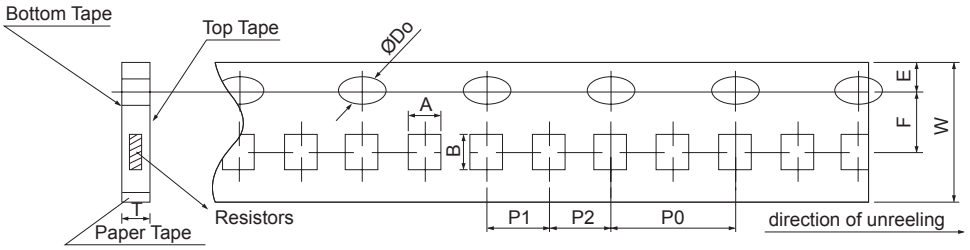
SMD Paper Tape Reel Dimension

RoHS Compliant

Packaging for SMD Components

Paper Tape Specifications

2mm pitch paper

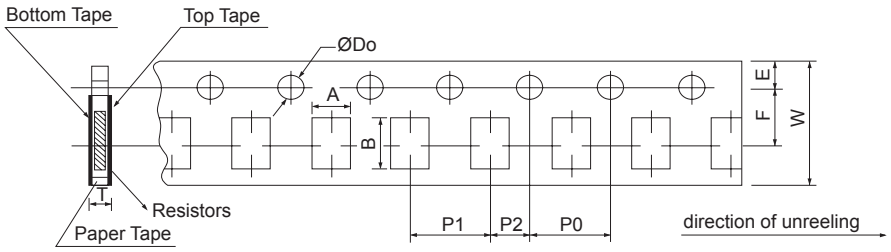


Unit: mm

Type	A	B	W	F	E	P_1	P_2	P_0	$ØD_0$	T
01	0.24±0.05	0.45±0.1	8.0±0.2	3.5±0.05	1.75±0.1	2.0±0.1	2.0±0.05	4.0±0.1	$1.5^{+0.1}_{-0}$	0.40±0.1
02	0.37±0.05	0.67±0.1				2.0±0.1	2.0±0.05			0.37±0.1
04	0.7±0.05	1.2±0.05				2.0±0.1	2.0±0.1			0.45±0.1
06	1.1±0.1	1.9±0.1				2.0±0.1	2.0±0.1			0.64±0.1

Type	A	B	W	F	E	P_1	P_2	P_0	$ØD_0$	T
CN12	0.7±0.1	1.0±0.1	8.0±0.2	3.5±0.05	1.75±0.1	2.0±0.1	2.0±0.05	4.0±0.1	$1.5^{+0.1}_{-0}$	0.40±0.1
CN22	1.2±0.15	1.2±0.1								0.45±0.1
CN24		2.2±0.2								0.64±0.1
CNC22	1.2±0.1	1.2±0.1								0.45±0.1
CNC24, MSA 24, UMSA 24	1.2±0.1	2.2±0.1								$0.6^{+0.2}_{-0}$

4mm pitch paper



Unit: mm

Type	A	B	W	F	E	P_1	P_2	P_0	$ØD_0$	T
06	1.1±0.1	1.9±0.1	8.0±0.2	3.5±0.05	1.75±0.1	4.0±0.1	2.0±0.05	4.0±0.1	$1.5^{+0.1}_{-0}$	0.64±0.1
10	1.6±0.15	2.4±0.2								0.84±0.1
12	2.0±0.15	3.6±0.2								
13	2.8±0.2	3.6±0.2								

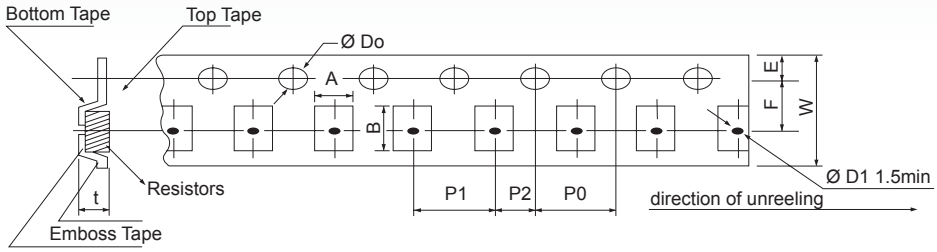
Type	A	B	W	F	E	P_1	P_2	P_0	$ØD_0$	T
CN28	1.9±0.2	4.3±0.2	8.0±0.2	3.5±0.05	1.75±0.1	4.0±0.1	2.0±0.05	4.0±0.1	$1.5^{+0.1}_{-0}$	0.84±0.1
CN32	1.8±0.2	1.8±0.2								
CN34, 35	2.0±0.15	3.6±0.2								
CNC34, MSA 34, UMSA 34	2.0±0.15	3.6±0.2								

SMD Embossed Plastic Tape Dimension & Land Patterns

RoHS Compliant

Embossed Plastic Tape Specifications

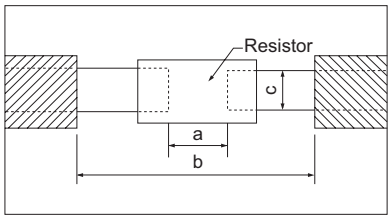
4mm pitch paper



Unit: mm

Type	A	B	W	F	E	P_1	P_2	P_0	$ØD_0$	t
20	2.8±0.2	5.3±0.2	12.0±0.2	5.5±0.05	1.75±0.1	4.0±0.1	2.0±0.05	4.0±0.05	$1.5^{+0.1}_{-0}$	0.85±0.15
25	3.6±0.2	6.9±0.2								
37	2.6±0.2	4.5±0.2	12.0±0.2	5.5±0.1	1.75±0.1	4.0±0.1	2.0±0.2	4.0±0.1	1.55±0.05	1.1±0.1

Recommended land patterns for SMD Resistors

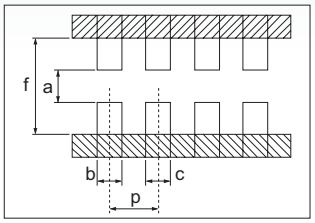


Land pattern: Type / Series		Dimension (mm) a	b	c
RM	01 (01005)	0.15~0.2	0.5~0.7	0.20~0.25
RM	02 (0201)	0.25~0.3	0.7~0.9	0.4~0.5
CF CFS NT MS UMS RM RT RB	04 (0402)	0.50~0.6	1.4~1.6	0.5~0.6
CF CFS NT MS UMS RM RL RT RB	06 (0603)	0.7~0.9	2.0~2.2	0.8~1.0
RM RL RT RB	10 (0805)	1.0~1.4	3.2~3.8	0.9~1.4
CF CFS RM RL RT RB RH	12 (1206)	2.0~2.4	4.4~5.0	1.2~1.8
RM RT	13 (1210)	2.0~2.4	4.4~5.0	2.3~3.5
RLP RM RL RH	20 (2010)	3.3~3.7	5.7~6.5	2.3~3.5
RLM RLP RM RL	25 (2512)	3.6~4.0	7.6~8.6	2.3~3.5

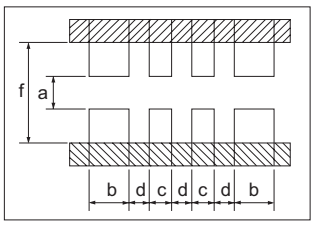
SMD Land Patterns & Solder Pad

RoHS Compliant

Recommended land patterns for SMD Array Products

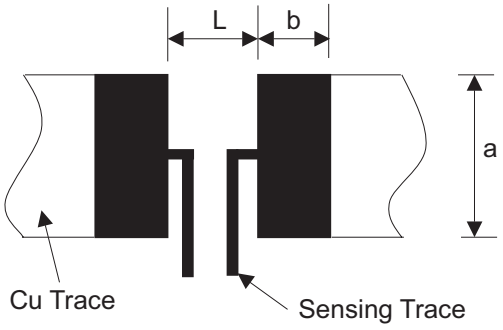


Type \ Land pattern / Series	Dimension (mm)				
	a	b	c	p	f
CN 12	0.3	0.3	0.3	0.5	0.9
CN 22	0.5	0.35~0.4	0.35~0.4	0.65	1.4~1.5
CN 32	0.7~0.9	0.4~0.5	0.4~0.5	0.8	2.2~2.6
CN 34	0.7~0.9	0.4~0.5	0.4~0.5	0.8	2.2~2.6
CN 35	0.7~0.9	0.4~0.5	0.3~0.4	0.64	2.2~2.6
CNC 22	0.4~0.5	0.25~0.3	0.25~0.3	0.5	2.0
MSA UMSA CNC 24	0.4~0.5	0.25~0.3	0.25~0.3	0.5	2.0
MSA UMSA CNC 34	07~0.9	0.40~0.45	0.40~0.45	0.8	2.2~2.6



Type \ Land pattern / Series		Dimension (mm)				
		a	b	c	d	f
CN	24	0.4	0.525	0.25	0.25	1.4
CN	28	1.0	0.425	0.25	0.25	2.0

Recommanded Solder Pad Dimension For Current Sensing Products



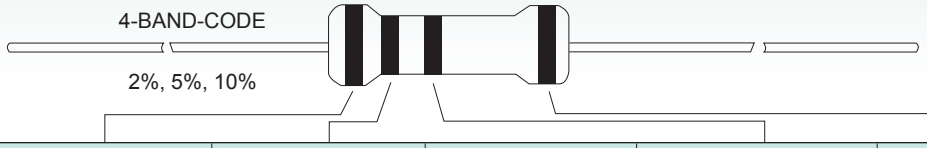
Unit: mm

	Parameters	a	b	L
RLM/P 25	1~2 mΩ	4.0	3.1	1.3
	3~100mΩ	4.0	2.1	4.1
RLN 37	1/2 W	4.2	1.3~1.6	0.5~1.2
	1 W	7.9	1.3~1.6	0.5~1.2
RLM/P 20	-	3.1	2.7	3.1
RLM 12	-	1.8	1.3	1.4

Leaded Type Resistor Spec.

RoHS Compliant

Colorcode



COLOR	1ST BAND	2ND BAND	3RD BAND	MULTIPLIEN	TOLERANCE
BLACK	0	0	0	1Ω	
BROWN	1	1	1	10Ω	±1% (F)
RED	2	2	2	100Ω	±2% (G)
ORANGE	3	3	3	1KΩ	
YELLOW	4	4	4	10KΩ	
GREEN	5	5	5	100KΩ	±0.5% (D)
BLUE	6	6	6	1MΩ	±0.25% (C)
VIOLET	7	7	7	10MΩ	±0.10% (B)
GRAY	8	8	8		±0.05%
WHITE	9	9	9		
GOLD				0.1	±5% (J)
SILVER				0.01	±10% (K)

Temperature Coefficient

Unit: ppm

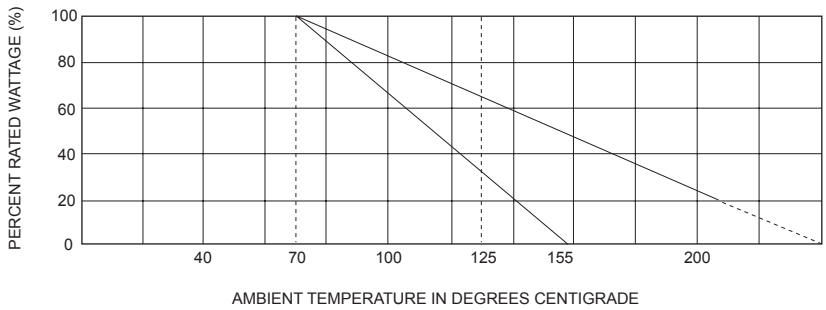
Symbol	T	E	C.H	D.K	J	L	D
T.C.R	±10	±25	±50	±100	±150	±200	+200 -500

Resistance Tolerance

Unit: %

Symbol	A	B	C	D	F	G	J	K	M
Resistance Tolerance	±0.05	±0.1	±0.25	±0.5	±1	±2	±5	±10	±20

Derating Curve

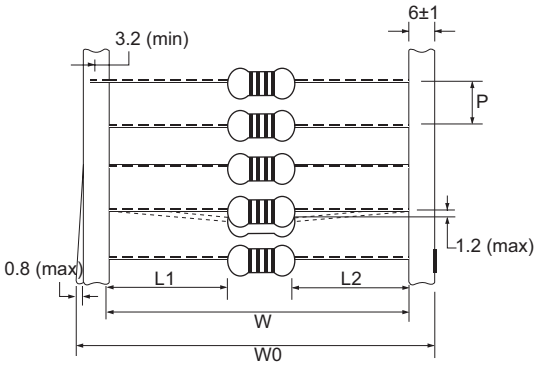


Leaded Type Resistor Package

RoHS Compliant

Standard Packaging

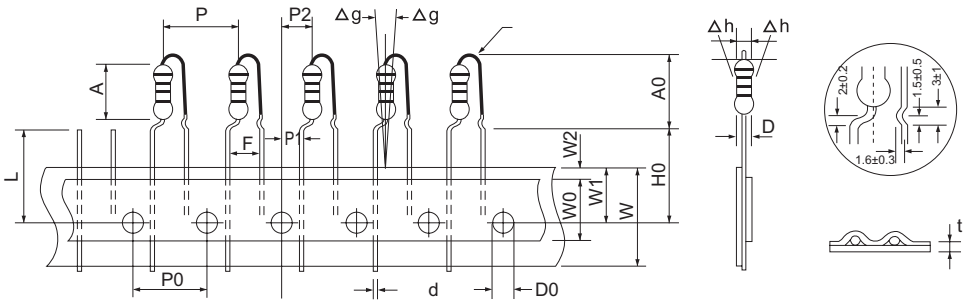
Axial Tape



Unit: mm

Series	W ±1	W0 ±1	P ±3	L1-L2 max
16, 25S	52	64	5	0.8
	26	38		
25, 50S	52	64	5	0.8
	26	38		
50, 1BS	52	64	5	1.2
1B, 2BS	73	85	5	1.5
	52	64		
2B, 3BS	73	85	10	1.5
	52	64		

Radial Tape



Series: 25, 50S, 1BS, 50

Unit: mm

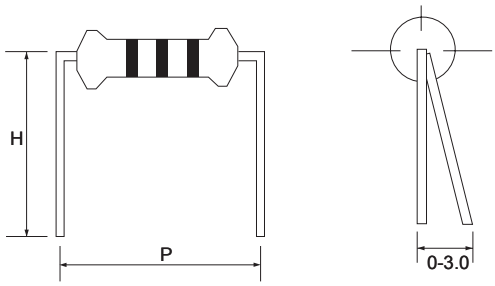
Code	Dimension	Code	Dimension	Code	Dimension	Code	Dimension
P	12.7±1.0	W_2	3mm (max)	W	18.0±1.0	Δh	0±2
P_0	12.7±0.3	H_0	16.5±0.5	W_0	5mm (min)	D	2.5mm (max)
P_1	3.85±0.7	A_0	1.25mm (max)	W_1	9.0±0.5	A	7.0mm (max)
P_2	6.35±0.4	D_0	4.0±0.2	t	0.7±0.2	d	0.60±0.06
F	$5.08^{+0.6}_{-0.2}$	L	11mm (max)	Δg	0±3.0°		

Leaded Type Resistor Forming

RoHS Compliant

Forming

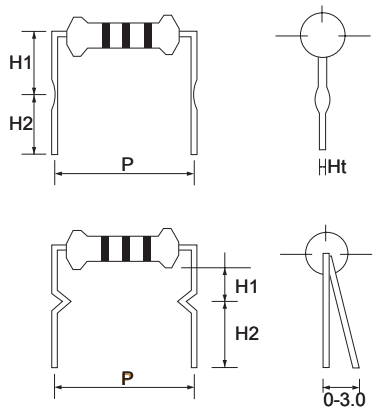
H Type



Unit: mm

Series	Dimension	
	P±1	H±1
16, 25S	5.0	5.0
25, 50S	10.0	10.0
50, 1BS	12.5	10.0
1B, 2BS	15.0	10.0
2B, 3BS	20.0	15.0

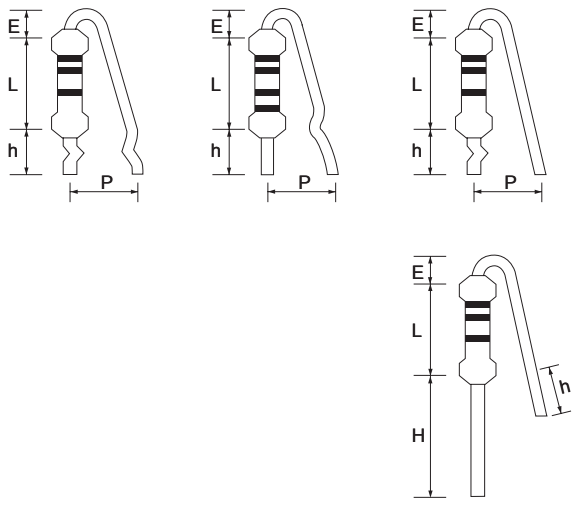
M Type



Unit: mm

Series	Dimension			
	P±1	H_1±1	H_2±1	t±0.2
50, 1BS	12.5	6.0	5.0	1.1
1B,2BS	15	6.0	5.0	1.4
2B, 3BS	20	7.0	5.0	1.4
3B, 5BS	30	13.0	5.0	1.4

U Type



Unit: mm

Series	Dimension			
	P±1	h±1	L±1	E max
25, 50S	5-7	10	6.5	3.5
50, 1BS	5-7	10	9	3.5
1B, 2BS	5-7	10	12	3.5
2B, 3BS	5-7	10	16	3.5
3B, 5BS	10-12	10	25	3.5

Unit: mm

Series	Dimension			
	L±0.2	H±0.1	h min	E max
16, 25S	3.2	15	9	3.5

Memo

RoHS Compliant

TA-I TECHNOLOGY CO., LTD.

Memo

RoHS Compliant

TA-I TECHNOLOGY CO., LTD.