Metal Film Resistor
Anti-Surge Low-Ohmic Type

CSW Series

MERITEK

FEATURES

- Operating temperature: -55°C ~ +170°C
- High Precision Current Sensing
- High Power Capability and Excellent Anti-Surge
- Applications: Consumer electronics, Computer, Communication devices, Measuring instrument, Industrial/ Power Supply, Battery Management System

PART NUMBERING SYSTEM

CSW	1206	D	T	18R0	D
(1)	(2)	(3)	(4)	(5)	(6)

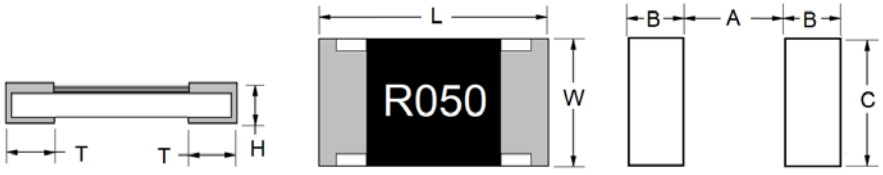
RoHS

No	Item	Code	Description	
(1)	**Meritek Series**	CSW	Metal Film Resistor, Anti-Surge Low Resistance Chip Type	
(2)	**Size Code**	1206	1206: 1.0 x 0.5 mm	1206, 1210, 2010, 2512
(3)	**TCR**	D	D: ±50PPM/°C	E: ±100 PPM/°C
(4)	**Power Rating**	T	T: 1.0W	A:1.5W, S: 2.0W, C:3.5W
(5)	**Resistance**	18R0	18R0: 18Ω	R056: 0.056Ω, 1R00: 1.00 Ω
(6)	**Tolerance**	D	D: ±0.5%	F:±1%, G: ±2%, J: ±5%

ELECTRICAL CHARACTERISTICS

Size	Rated Power at 70°C	Max. Rated Current	Max. Overload Current	TCR	Resistance Range (Ω)			
	(W)	(A)	(A)	(PPM/°C)	±0.5%	±1.0%	±2.0%	±5.0%
1206	1.0	4.47	10.00	±100	50mΩ ≤ R < 100mΩ			
				±50	100mΩ ≤ R ≤ 33Ω			
1210	1.0	4.47	10.00	±100	50mΩ ≤ R < 100mΩ			
				±50	100mΩ ≤ R ≤ 33Ω			
2010	1.5	5.48	12.25	±50	50mΩ ≤ R < 33Ω			
2512	2.0	6.32	14.14	±50	50mΩ ≤ R < 33Ω			
	3.5	8.37	18.71	±50	50mΩ ≤ R < 33Ω			

DIMENSIONS



Size	L	W	H	T	A	B	C
1206	3.10 ± 0.10	1.60 ± 0.10	0.55 ± 0.10	0.45 ± 0.20	2.20	4.20	1.80
1210	3.10 ± 0.10	2.50 ± 0.15	0.55 ± 0.10	0.50 ± 0.20	2.00	4.40	2.70
2010	5.00 ± 0.20	2.50 ± 0.15	0.55 ± 0.10	0.60 ± 0.25	3.80	6.60	2.70
2512	6.30 ± 0.15	3.20 ± 0.20	0.55 ± 0.10	0.60 ± 0.25	4.90	8.10	3.40
2512 (3.5W)	6.30 ± 0.15	3.20 ± 0.15	0.70 ± 0.15	0.65 ± 0.25	4.90	8.10	3.40

RELIABILITY TEST CONDITION AND REQUIREMENT

Item	Test Method	Condition	Requirement
Temperature Coefficient (TCR)	**JIS-C-5201-1 4.8 IEC-60115-1 4.8**	-25°C~+125°C , 25°C is the reference temperature	Refer to Electrical Specifications
Short Time Overload	**JIS-C-5201-1 4.13 IEC-60115-1 4.13**	Standard power: 5*RCWV whichever is less for 5s	±(1.0%+0.001Ω)
Insulation Resistance	**JIS-C-5201-1 4.8 IEC-60115-1 4.8**	Apply 100VDC for 1 minute	≥10GΩ
Dielectric Withstanding Voltage	**JIS-C5201-1 4.7**	Applied 500VAC for 1 minute.	No short or burned on the appearance
Core Body Strength	**JIS-C5201-1 4.15**	Central part pressurizing force：10N , 10 seconds	No broken
Solderability	**JIS-C-5201-1 4.17 IEC-60115-1 4.17**	245±5°C for 3±0.5 seconds	>95% coverage No visual damage
Resistance to Soldering Heat	**JIS-C-5201-1 4.18 IEC-60115-1 4.18**	260±5°C for 10 seconds	±(1.0%+0.001Ω) No visual damage
Leaching	**JIS-C-5201-1 4.18 IEC-60068-2-58 8.2.1**	260±5℃ For 30 seconds	>95% coverage No visual damage
Rapid Change of Temperature	**JIS-C-5201-1 4.19 IEC-60115-1 4.19**	-55°C ~ +155, 300 cycles	±(1.0%+0.001Ω) No visual damage
Damp Heat with Load	**JIS-C-5201-1 4.24 IEC-60115-1 4.24**	40±2°C, 90~95% R.H., RCWV or Max. working current whichever is less for 1000hrs with 1.5hrs “ON” and 0.5hr “OFF”	±(1.0%+0.001Ω)
Biased Humidity	**MIL-STD-202 Method 103**	1,000 hours; 85°C / 85% RH, 10% of operating power. Measurement at 24±4 hours after test conclusion.	±(0.5%+0.05Ω)
Endurance	**JIS-C-5201-1 4.25 IEC-60115-1 4.25.1**	70±2°C, RCWV or Max. working current whichever is less for 1000hrs with 1.5hrs “ON” and 0.5hr “OFF”	±(1.0%+0.001Ω)
High Temperature Exposure	**JIS-C5201-1 4.25 IEC-60068-2-2**	170±°C for 1,000 hours +48/-0 hours.	±(1.0%+0.001Ω)
Resistance to Solvent	**JIS-C-5201-1 4.29**	The tested resistor be immersed into isopropyl alcohol of 20~25°C for 60 seconds. Then the resistor is left in the room for 48 hours.	±(1.0%+0.001Ω) No visual damage
Terminal Strength	**JIS-C5201-1 4.32 AEC Q200-006**	Pressurizing force for 10 seconds 0201, 0402, 0603：8N ; 0805 and above：17.7N	No broken
Bending Strength	**JIS-C-5201-1 4.33 IEC-60115-1 4.33**	Deflection/5sec: 3mm — Size: 1206, 1210 Deflection/5sec: 2mm — Size: 2010, 2512	±(1.0%+0.001Ω) No visual damage

Note:
1. Temperature Coefficient of Resistance test to -55℃ is available upon request.
2. AEC-Q200 test reports available upon request

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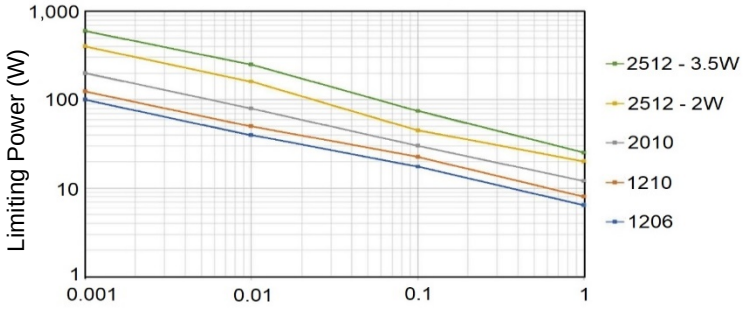
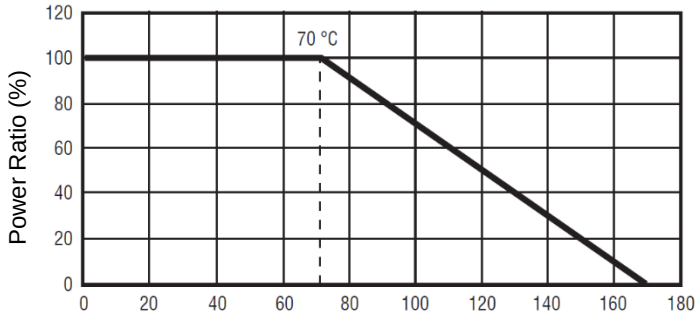
CHARACTERISTIC CURVE

Surge Curve

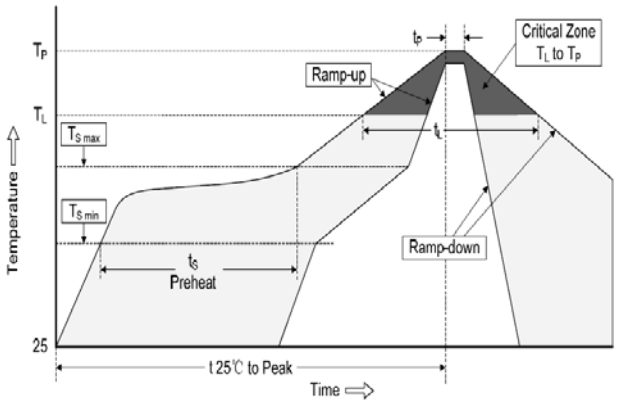


Power Derating Curve

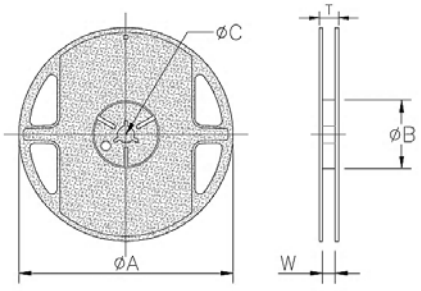


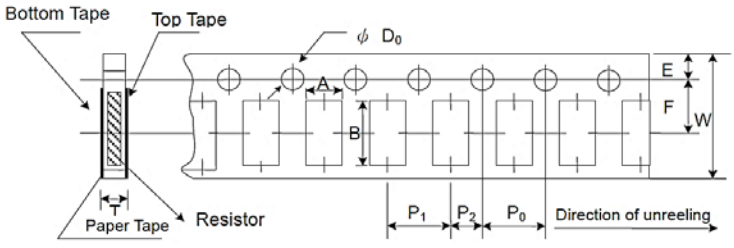
SOLDERING RECOMMENDATION

Reflow Condition		
Pre Heat	Temp. Min $T_{s(min)}$	150°C
	Temp. Max $T_{s(max)}$	180°C
	Time (min. to max.) (t_s)	90s ~ 120s
Average ramp up rate (T_L) to peak		3°C/s max.
$T_{s(max)}$ to T_L (Ramp-up rate)		3°C/s max.
Reflow	Temp. (T_L)	220°C
	Time (min. to max.) (t_L)	60s max.
Peak Temperature (T_P)		265°C
Time within 5°C of T_P (t_p)		10s
Ramp-down Rate		6°C/s



PACKAGING SPECIFICATIONS

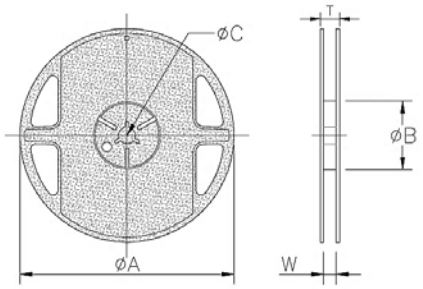


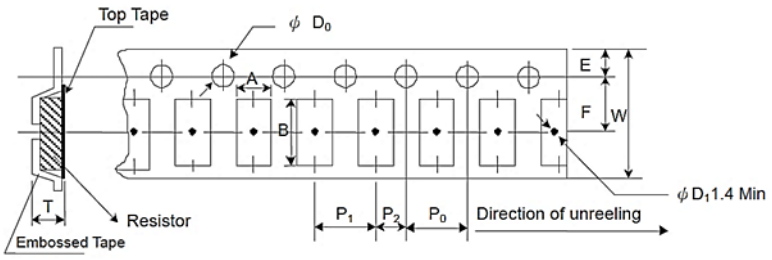


Size	Reel Dimension (mm)							
	Quantity	Tape Width	Diameter	ϕA	ϕB	ϕC	W	T
1206	Paper 5K	8mm	7”	178.0±2.0	60±1.0	13.5±1.0	9.0±0.1	11.5±2.0
1210	Paper 5K	8mm	7”	178.0±2.0	60±1.0	13.5±1.0	9.0±0.1	11.5±2.0

Size	Paper Tape Dimension (mm)									
	A	B	W	E	F	P_0	P_1	P_2	ΦD_0	T
1206	1.90±0.2	3.05±0.2	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.10	4.0±0.10	2.0±0.05	$1.50^{+0.1/-0}$	0.75±0.1
1210	2.85±0.2	3.05±0.2	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.10	4.0±0.10	2.0±0.05	$1.50^{+0.1/-0}$	0.75±0.1

PACKAGING SPECIFICATIONS





Size	Reel Dimension (mm)							
	Quantity	Tape Width	Diameter	ϕA	ϕB	ϕC	W	T
2010	Plastic 4K	12mm	7”	178.0±2.0	60±1.0	13.5±1.0	13.0±0.1	11.5±2.0
2512	Plastic 4K	12mm	7”	178.0±2.0	60±1.0	13.5±1.0	13.0±0.1	16.0±2.0

Size	Plastic Tape Dimension (mm)									
	A	B	W	E	F	P_0	P_1	P_2	ΦD_0	T
2010	2.8±0.2	5.6±0.2	12.0±0.1	1.75±0.1	5.5±0.05	4.0±0.10	4.0±0.10	2.0±0.05	$1.50^{+0.1/-0}$	0.85±0.15
2512	3.40±0.2	6.7±0.2	12.0±0.1	1.75±0.1	5.5±0.05	4.0±0.10	4.0±0.10	2.0±0.05	$1.50^{+0.1/-0}$	0.85±0.15

*Specifications subject to change without notice.