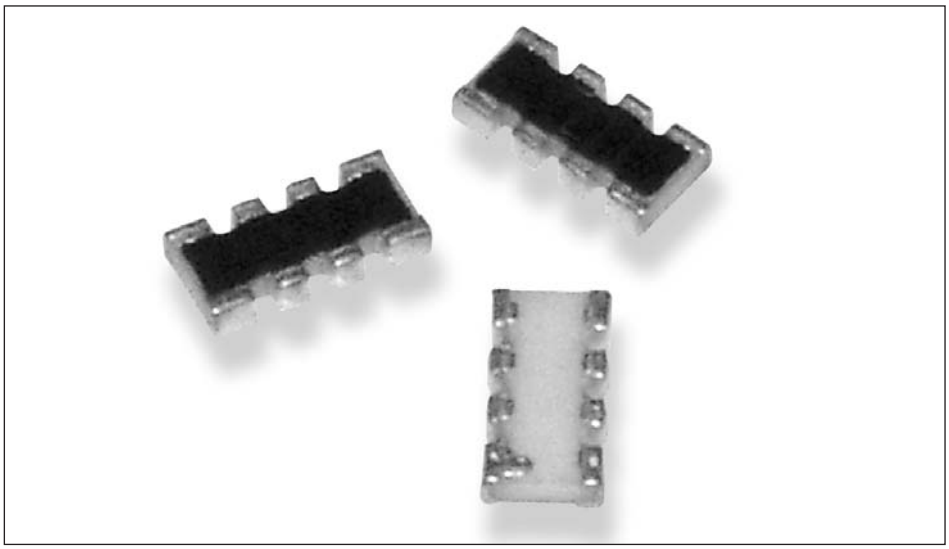
Type MRS Series

Key Features

- Suitable for tight spaces
- High precision thin film
- Wide value range
- Lower placement costs
- Range of stabilities
- Low cost in volume
- High reliability design
- RoHS compliant component compatible with lead (Pb) free soldering techniques

Applications

- Voltage divider
- Feedback circuits
- Signal conditioning



The MRS series is an entirely new chip network utilising nickel chrome sputtering on high purity alumina. This network has been designed for high volume applications and is offered with 4 isolated resistors on a single substrate (4 x 0603 resistors) at 0.1% with convex terminals. A wide value range and alternative TCRs (Temperature Coefficient of Resistance) make this a most versatile resistor solution.

Characteristics - Electrical

Rated Power at 70°C:	0.0625W			
Resistance Range Ω Min:	100		100	
Resistance Range Ω Max:	2K0		33K	
Resistance Tolerance:	±0.1%, ±0.5%, ±1%			
Temperature Coefficient of Resistance (ppm/°C):	±10	±15	±25	±50
Selection Series:	E24			
Maximum Operating Voltage:	50V			
Maximum Overload Voltage:	100V			
Operating Temperature Range:	-55 to +155°C			

Operating Voltage=√(P*R) or max. operating voltage listed above, whichever is lower
Overload Voltage=2.5*√(P*R) or max. overload voltage listed above, whichever is lower

Characteristics - Environmental

Item	Requirement		Test Method
	Tol. ≤ 0.25%	Tol. > 0.25%	
Temperature Coefficient of Resistance (T.C.R.):	As specified		MIL-STD-202F Method 304 +25/-55/+25/+125/+25°C
Short Time Overload:	ΔR±0.25%	ΔR±0.5%	JIS-C-5201-1 5.5 RCWV*2.5 or max. overload voltage for 5 seconds
Insulation Resistance:	1000MΩ		MIL-STD-202F Method 302 Apply 100VDC for 1 minute
Endurance:	ΔR±0.25%	ΔR±0.5%	MIL-STD-202F Method 108A 70±2°C, max. working voltage for 1000hrs with 1.5hrs "ON" and 0.5 hrs "OFF"
Damp Heat with Load:	ΔR±0.25%	ΔR±0.5%	MIL-STD-202F Method 103B 40±2°C, 90~95% R.H. max. working voltage for 1000hrs with 1.5hrs "ON" and 0.5 hrs "OFF"
Bending Strength:	ΔR±0.25%	ΔR±0.5%	JIS-C-5201-1 6.1.4 Bending amplitude 3mm for 10 seconds
Solderability:	95% min. coverage		MIL-STD-202F Method 208H 245±5°C for 3 seconds
Resistance to Soldering Heat:	ΔR±0.25%	ΔR±0.5%	MIL-STD-202F Method 210E 260±5°C for 10 seconds
Dielectric Withstand Voltage:	100V		MIL-STD-202F Method 301 max. overload voltage for 1 minute
Thermal Shock:	ΔR±0.25%	ΔR±0.5%	MIL-STD-202F Method 107G -55°C ~150°C, 100 cycles
Low Temperature Operation:	ΔR±0.25%	ΔR±0.5%	JIS-C-5201-1 7.1 1 hour, -65°C, followed by 45 minutes of RCWV

Storage Temperature: 25±3°C; Humidity < 80%RH

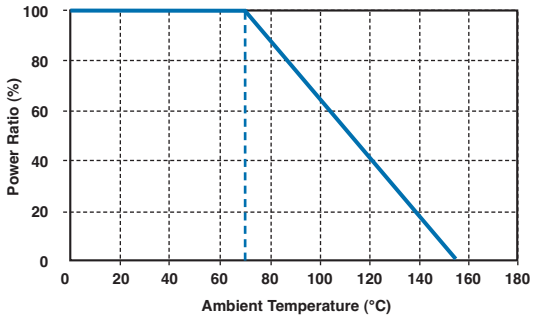
Dimensions are in millimeters and inches unless otherwise specified. Values in brackets are standard equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

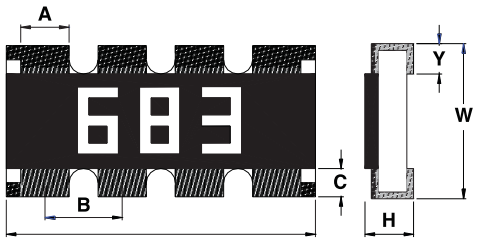
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Type MRS Series

Derating Curve

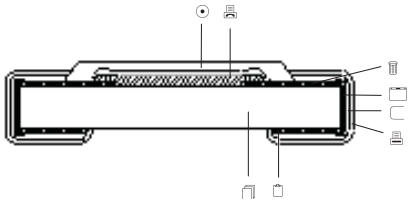


Dimensions



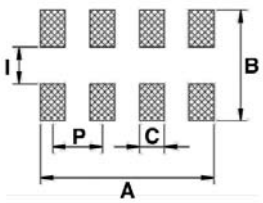
Type	No. of Resistors	Dimension							Weight (g) (1000 pcs)
		L	W	H	A	B	C	Y	
MRS	4	3.20 ±0.15	1.60 ±0.15	0.55 ±0.10	0.50 ±0.15	0.80 ±0.05	0.30 ±0.15	0.30 ±0.15	8.22

Construction



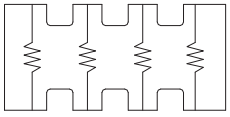
	Alumina Substrate		Barrier Layer (Ni)
	Bottom Electrode (Ag)		External Electrode (Sn)
	Top Electrode (Ag-Pd)		Resistor Layer (NiCr)
	Edge Electrode (Ag)		Overcoat (Epoxy)

Recommend Land Pattern



Type	A	B	C	I	P
MRS	2.85	3.10	0.45	0.80	0.80

Circuit Diagram

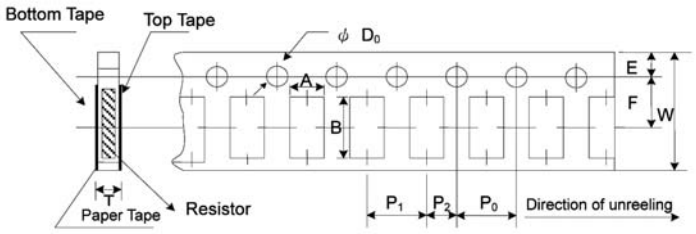


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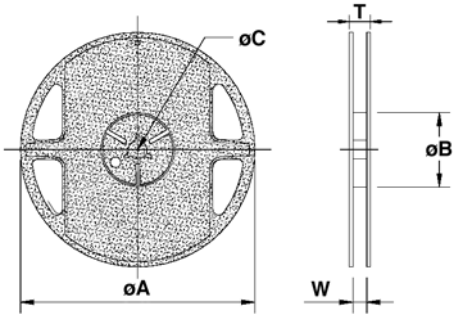
Type MRS Series

Paper Tape Specification



Type	A	B	W	E	F	P_0	P_1	P_2	$øD_0$	T
MRS	1.95 ±0.1	3.50 ±0.1	8.0 ±0.2	1.75 ±0.1	3.5 ±0.05	4.0 ±0.1	4.0 ±0.05	2.0 ±0.05	1.5 +0.1/-0	0.85 ±0.1

Packaging



Type	Packaging-Quantity	Tape Width	Reel Diameter	øA	øB	øC	W	T
MRS	Paper-5K	8mm	7 inch	178.5 ±1.5	60 +1/-0	13.0 ±0.2	9.0 ±0.5	12.5 ±0.5

Marking

Type	100R	2K2	0K	22K	33K
MRS	1000	2201	1002	2202	3302

How to Order

MRS	100R	B	F
Common Part	**Resistance Value**	**Tolerance**	**TCR**
MRS - Precision thin film chip network	100R (100 Ohms) 1K0 (1000 Ohms) 10K (10,000 Ohms) 100K (100,000 Ohms)	B - ±0.1% D - ±0.5% F - ±1%	C - ±10ppm/°C D - ±15ppm/°C F - ±25ppm/°C G - ±50ppm/°C

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