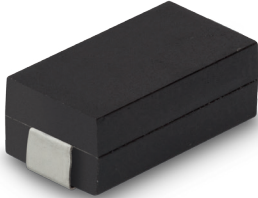


# RESISTORS

## SMD - Resistors

## MSI Series



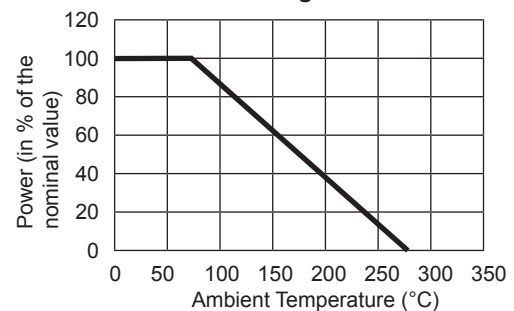
- SMD - Wirewound Resistor
- Power: up to 4Watt
- Any Resistance from 0,01Ω to 50kΩ
- Tolerance  $\pm 1\%$  (to  $\pm 0,01\%$ )
- Standard TCR  $\pm 20\text{ppm/K}$  ( $> 10\Omega$ )
- Non - Inductance Type (Option)
- Tape on Reel or Bulk Packaging

Specifications	MSI-1	MSI-2	MSI-4	MSI-5
Resistance Range	0,01Ω - 400Ω	0,005Ω - 3kΩ	0,01Ω - 15kΩ	0,01Ω - 50kΩ
Power Rating	0,5W	1W	2W	4W
Standard Tolerances (other on request)	0,01% to 1%			
Temperature Coefficient	$\pm 20\text{ppm/K}$ ( $R \geq 10\Omega$ ) $\pm 50\text{ppm/K}$ ( $1\Omega \geq R < 10\Omega$ ) $\pm 90\text{ppm/K}$ / $120\text{ppm}$ ( $R < 1\Omega$ )			
Temperature Range	-55 °C - 275 °C			
Operating Voltage (max.)	33V	58V	127V	212V
Dielectric	1000 VAC			
Insulation Resistance	$\geq 1\text{G}\Omega$			

### Mechanical Data

Housing	Epoxy - Moulded
Resistance Element	Special Alloy
Bobbin	Multi - Chamber Coil
Connecting Wire	Tin plated Copper

Power Derating Curve



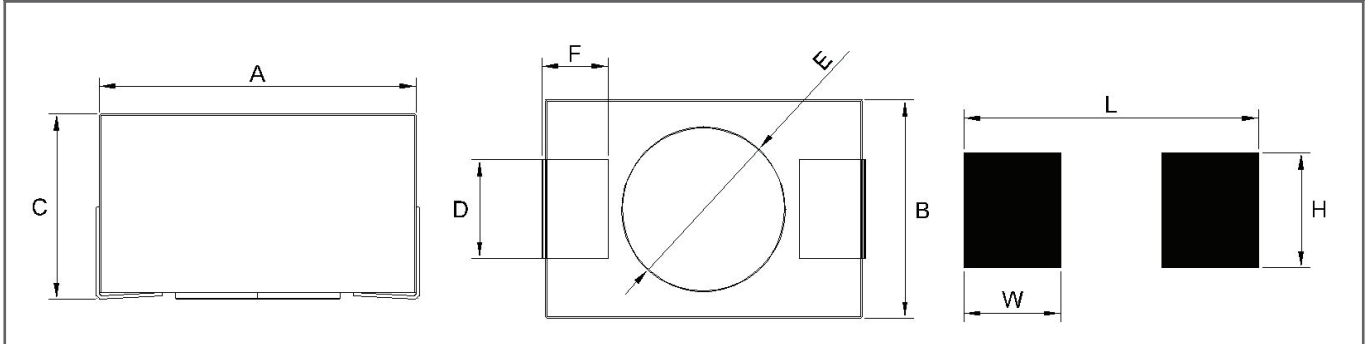
Test	Condition	$\Delta R$
Load Life	90 min ON, 30 min OFF, 1000h at 25°C	$\pm 1\% + 0,05\Omega$
Shelf Stability	15°C - 35°C, r.H. 15 - 75%, 10000h	$\pm 1\% + 0,05\Omega$
Moisture Resistance	90 - 95% RH, 0,1W, 1000h at 40°C	$\pm 1\% + 0,05\Omega$
Temperature Test	-55°C 30 min, +155°C 30min. 1000h	$\pm 0,25\% + 0,05\Omega$
5X Overload (5s)		$\pm 0,5\% + 0,05\Omega$
Shock	IEC 60068-2-27 10G, 6ms, Sawtooth	$\pm 0,5\% + 0,05\Omega$
Soldering	350°C $\pm 5^\circ\text{C}$ 3 Seconds	$\pm 0,1\% + 0,05\Omega$

# RESISTORS

SMD - Resistors

MSI Series

## Technical Drawing



Typ	A	B	C	Connectors			Distance Holder		Contact Surface		
				D	F	Stärke	Ø E	Höhe	H	L	W
MSI-1	4,8 ±0,4	3,3 ±0,4	2,8 ±0,4	1,5 ±0,4	1,0 ±0,4	0,15 ±0,05	2,5 ±0,4	0,13 ±0,05	2,5 ±0,4	6,4 ±0,4	1,6 ±0,4
MSI-2	6,6 ±0,4	3,9 ±0,4	3,2 ±0,4	1,8 ±0,4	1,8 ±0,4	0,15 ±0,05	3,0 ±0,4	0,13 ±0,05	2,8 ±0,4	8,6 ±0,4	2,4 ±0,4
MSI-4	11,4 ±0,4	6,4 ±0,4	4,6 ±0,4	3,0 ±0,4	2,5 ±0,4	0,15 ±0,05	4,8 ±0,4	0,13 ±0,05	5,8 ±0,4	13,7 ±0,4	3,9 ±0,4
MSI-5	20,8 ±0,4	7,5 ±0,4	7,1 ±0,4	4,8 ±0,4	4,8 ±0,4	0,15 ±0,05	6,2 ±0,4	0,13 ±0,05	6,4 ±0,4	22,9 ±0,4	5,6 ±0,4

All Dimensions in mm

Packaging	Quantity per unit (reel)	Belt Width
MSI-1	3000	12mm
MSI-2	2000	16mm
MSI-4	1000	24mm
MSI-5	500	32mm

Options	Remark
Non- Inductive Winding (upon request)	Attention, divide max. resistance by 2, TCR: 120ppm
Leaded Connectors	For special requirements (not RoHS!)

Ordering Information			
MSI-1 Type	W1% Resistance Tolerance ±0,01%; ±0,05%; ±0,25% ; ±0,5%; ±1%	TK50 Temperature Coefficient >10Ω: ±20ppm/K 1Ω to 10Ω: ±50ppm/K <1Ω: ±90ppm/K	10k000 Resistance Value (0,01Ω - 50kΩ)