

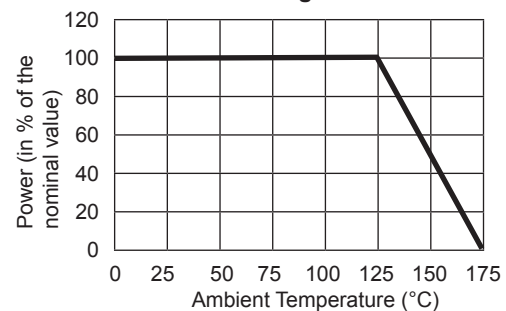
- SMD - size
- Any Resistance from 30Ω - 60kΩ
- Resistance Tolerance 0,01% (>1kΩ)
- TCR ±1ppm/K
- Temperature Range -65°C - +175°C
- Low Inductance and Current Noise
- Tape on Reel Packaging or Bulk

Spezifikation	MMP	MMQ
Resistance Range	30Ω - 30kΩ	30Ω - 60kΩ
Power (@ 125°C)	0,1W	0,125W
Standard Tolerances	>30Ω ±0,1%	>30Ω ±0,1%
	>100Ω ±0,1% / ±0,05% / ±0,02% >1kΩ ±0,1% / ±0,05% / ±0,02% / ±0,01%	>100Ω ±0,1% / ±0,05% / ±0,02% >1kΩ ±0,1% / ±0,05% / ±0,02% / ±0,01%
Temperature Coefficient	10ppm/K 30Ω to 100Ω	10ppm/K 30Ω to 100Ω
	5ppm/K 100Ω to 30kΩ	5ppm/K 100Ω to 60kΩ
	1ppm/K 100Ω to 20kΩ	1ppm/K 100Ω to 40kΩ
Temperature Range	-55 °C - 175 °C	
Max. Operating Temperature	125°C	
Working Voltage (max.)	50VDC	100VDC
Working Current (max.)	350 mA	

### Mechanical Data

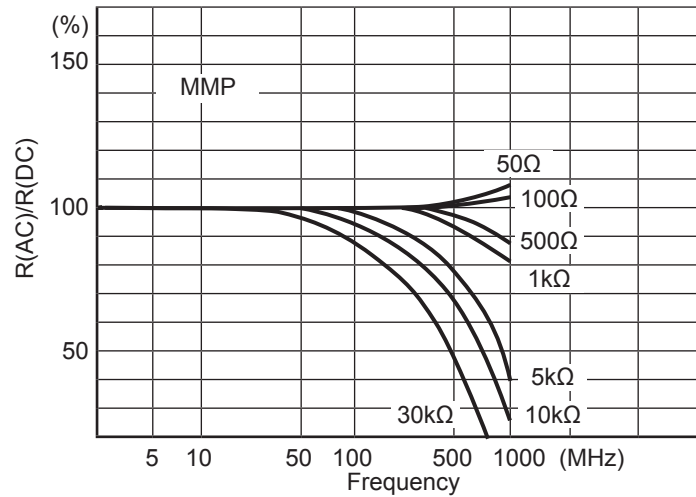
Housing	Epoxy - Moulded
Resistance Element	NiCr - Foil
Carrier	Ceramics
Connectors	Brass, silver plated

Power Derating Curve

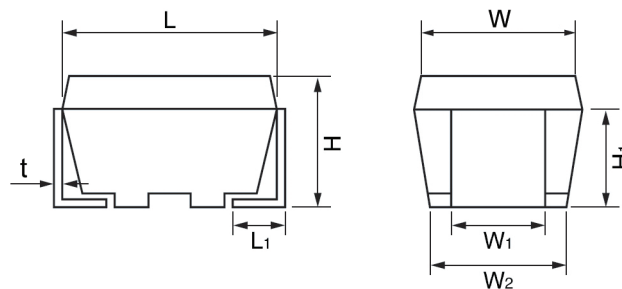


Test	Condition	Δ R
Thermal Shock	-65°C/30 min., +125°C/30 min., 5 cycles	±0,01%
Short Time Overload	Related Voltage x 2, 5 sec.	±0,01%
Soldering	260°C, 10 sec.	±0,01%
Insulation Resistance	100 VDC, 1 min.	über 10.000 MΩ
Shock	100G, 6 ms, Sawtooth Wave X,Y,Z	±0,01%
Vibration, High Frequency	20G, 10Hz-55Hz-10Hz, 20 min., X,Y,Z each 2,5h	±0,01%
Life	Rated Power, 0°C-125°C, 1,5h ON, 0,5h OFF, 2000h	±0,03% (typisch)
Shelf Stability	15° - 35°C, r.H. 15 - 75%, 10.000h	±0,0025%
Current Noise		-42 dB
Voltage Coefficient		0,00001 % / V

## Frequency Characteristics



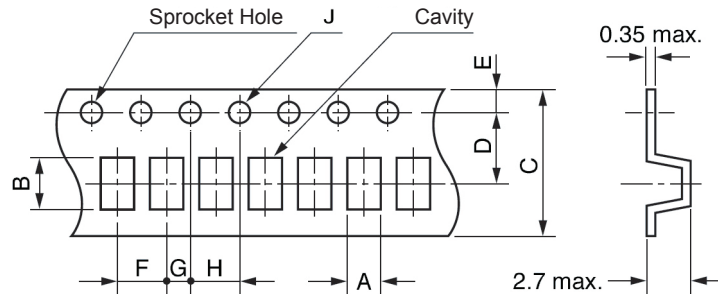
## Technical Drawing



Typ	L	W	H	L <sub>1</sub>	W <sub>1</sub>	W <sub>2</sub>	H <sub>1</sub>	t
MMP	3,2 ±0,2	2,5 ±0,2	2,0 ±0,2	0,6 ±0,2	1,4 ±0,2	2,3 ±0,2	1,5 ±0,2	0,15 ±0,05
MMQ	4,5 ±0,2	3,2 ±0,2	2,0 ±0,2	0,8 ±0,2	1,4 ±0,2	3,0 ±0,2	1,5 ±0,2	0,15 ±0,05

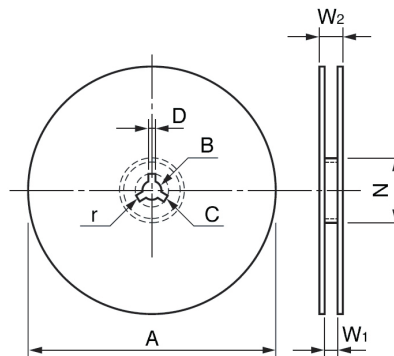
All Dimensions in mm

### Tape Dimensions



Dim. (mm)	A	B	C	D	E	F	G	H	J
MMP	2,8 ±0,2	3,9 ±0,2	12 ±0,3	5,5 ±0,05	1,75 ±0,1	4 ±0,1	2 ±0,05	4 ±0,1	Ø1,5 ±0,1
MMQ	3,6 ±0,2	5,2 ±0,2	12 ±0,3	5,5 ±0,05	1,75 ±0,1	8 ±0,1	2 ±0,05	4 ±0,1	Ø1,5 ±0,1

### Reel Dimensions



Dim. (mm)	A	N	B	C	D	W <sub>1</sub>	W <sub>2</sub>	r
	Ø178 ±0,2	Ø60 min	Ø13 ±0,5	Ø21 ±0,8	2 ±0,5	12,4 +2	18,4 max.	1 ±0,5

### Packaging

MMP

MMQ

Reel Capacity

1200

800

### Processing and storage instructions

- Do not store in high temperatures (>40°C) high humidity (>70% RH).
- Hand Soldering: soldering temperature 240°C - 265°C with soldering tip ≤ 3mm
- Soldering furnace: max. temperature 250°C+0/-5°C, holding time max. 10sec.
- Dip Soldering: max. temperature of the soldering bath 260°C
- After the different soldering methods an even cooling down has to be ensured. Avoid parts from any mech. stress.

### Ordering Information

MMP Type	Resistance Tolerance	TK5 Temperature Coefficient	10k000 Resistance Value
	W0,1%		
	>30Ω ±0,1%	10ppm/K 30Ω to 100Ω	(30Ω - 60kΩ)
	>100Ω ±0,1% / ±0,05% / ±0,02%	5ppm/K 100Ω to 60kΩ	
	>1kΩ ±0,1% / ±0,05% / ±0,02% / ±0,01%	1ppm/K 100Ω to 40kΩ	