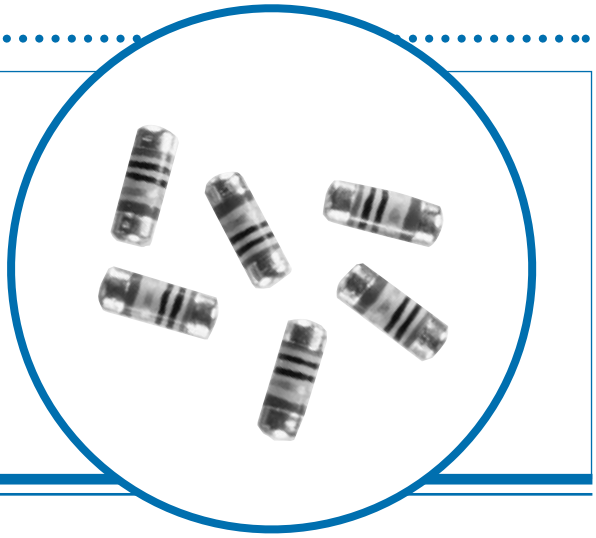
Mini Melf Resistors

TT electronics
Welwyn Components

WRM Series

- **High reliability**
- **Predictable pulse handling capability**
- **Tolerances down to 0.1%**
- **TCR down to 5 ppm/°C**



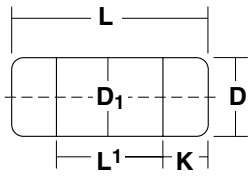
Electrical Data

		WRM 0102	WRM 0204	WRM 0207
Power rating at 70°C	watts	0.2	0.25	0.4
Resistance range	ohms	R22 – 2M21	R22 – 10M	R22 – 8M2
Limiting element voltage	volts	150	200	250
TCR	ppm/°C	15, 25, 50	5, 15, 25, 50	25, 50
Resistance tolerance	%	0.1, 0.25, 0.5, 1.0, 2, 5		
Standard values		E24 & E96		
Thermal impedance	k/W	250	200	140
Ambient temperature range	°C	-55 to +125		
Insulation resistance	ohms	$>10^{10}$		

Physical Data

Dimensions (mm) and weight (g)

Type	L max	D max	D^1 max	K min	Weight
WRM 0102	2.2	1.1	1.1	0.35	0.01
WRM 0204	3.6	1.4	1.4	0.5	0.02
WRM 0207	6.0	2.2	2.2	1.1	0.08



Construction

A metal film is deposited onto a high dissipation ceramic former to which tin plated teminating caps are fitted.

The resistor is adjusted to value by a helical cut in the film and the body is protected by a lacquer coating.

Marking

Resistance values are colour coded with 4 or 5 bands depending on type.

Terminations

Material Plated steel cap.

Solderability The pure tin finish produces ageing free contacts on which low melting solders can be used. Dipped area shall be covered with a smooth and bright solder coating after 3 seconds immersion at 215°C.

Solvent Resistance

The body protection and marking are resistant to all normal industrial cleaning solvents suitable for printed circuit boards.

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TCR and Tolerance Range

Type Reference	TCR	Tolerance					
		5%	2%	1.0%	0.5%	0.25%	0.1%
WRM0102	±50ppm	R22 – R91	IRO – 9R1	10R – 2.21M	47RS – 221K	100R – 221K	–
WRM0102	±25ppm	–	–	10R – 221K	47R5 – 221K	100R – 221K	100R – 100K
WRM0102	±15ppm	–	–	–	100R – 100K	100R – 100K	100R – 100K
WRM0102	±10ppm	–	–	–	–	–	–
WRM0102	±05ppm	–	–	–	–	–	–
WRM0204	±50ppm	R22 – R91	–	1R – 10M	10R – 475K	22R – 332K	43R – 332K
WRM0204	±25ppm	–	–	10R – 475K	10R – 475K	22R – 332K	43R – 332K
WRM0204	±15ppm	–	–	–	10R – 221K	22R – 221K	43R – 221K
WRM0204	±10ppm	–	–	–	–	22R – 221K	43R – 221K
WRM0204	±05ppm	–	–	–	–	100R – 100K	100R – 100K
WRM0207	±50ppm	R22 – R91	–	1R – 8.2M	10R – 1M	–	–
WRM0207	±25ppm	–	–	–	10R – 1M	–	–
WRM0207	±15ppm	–	–	–	–	–	–
WRM0207	±10ppm	–	–	–	–	–	–
WRM0207	±05ppm	–	–	–	–	–	–

* TC 10ppm & 5ppm is specified over the temperature range -10°C to +85°C.

Performance Data

Test		**Results Δ R/R ±**		
		Stability class		
Description		0.25	0.5	1.0
			10 Ω – <75 Ω	0.22 Ω – <10 Ω
		75 Ω – <100 kΩ	>100 kΩ – 332 kΩ	>332 kΩ – 10 MΩ
Short time overload*		≤ 0.05% + 0.01 Ω	≤ 0.1% + 0.01 Ω	≤ 0.25% + 0.05 Ω
Bending test*		≤ 0.05% + 0.01 Ω	≤ 0.1% + 0.01 Ω	≤ 0.25% + 0.05 Ω
Resistance to soldering heat		≤ 0.05% + 0.01 Ω	≤ 0.1% + 0.01 Ω	≤ 0.25% + 0.05 Ω
Temperature rapid change		≤ 0.05% + 0.01 Ω	≤ 0.1% + 0.01 Ω	≤ 0.25% + 0.05 Ω
Endurance*				
Load life	1000h	≤ 0.25% + 0.05 Ω	≤ 0.25% + 0.05 Ω	≤ 0.5% + 0.05 Ω
	8000 h	≤ 0.5% + 0.05 Ω	≤ 0.5% + 0.05 Ω	≤ 1.0% + 0.05 Ω
Climatic sequence*		≤ 0.25% + 0.05 Ω	≤ 0.5% + 0.05 Ω	≤ 1.0% + 0.05 Ω
Damp heat steady state*		≤ 0.25% + 0.05 Ω	≤ 0.5% + 0.05 Ω	≤ 1.0% + 0.05 Ω
Current noise		< 0.05 μV/V	< 0.25 μV/V	< 3 μV/V
Solderability		Dipped area shall be covered with a smooth and bright solder coating of at least 96%		
Voltage coefficient		< 0.5 . 10^{-6}/V		
Voltage proof		200V	300V	500V

* Resistors to be mounted on a PC-board according to IEC 115-1, clause 4.27.1

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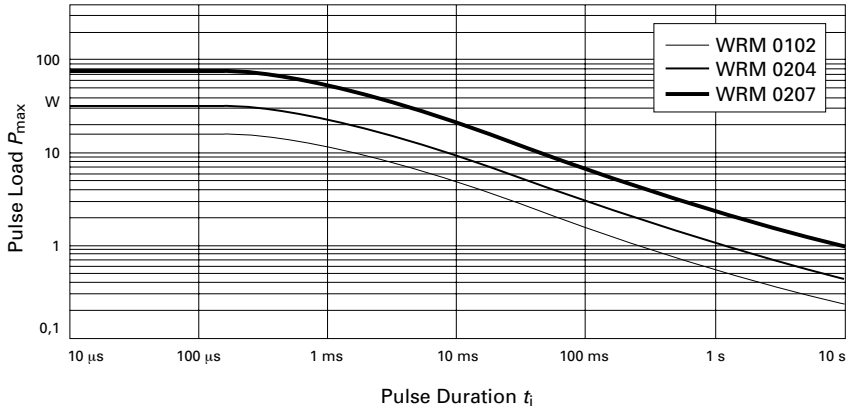

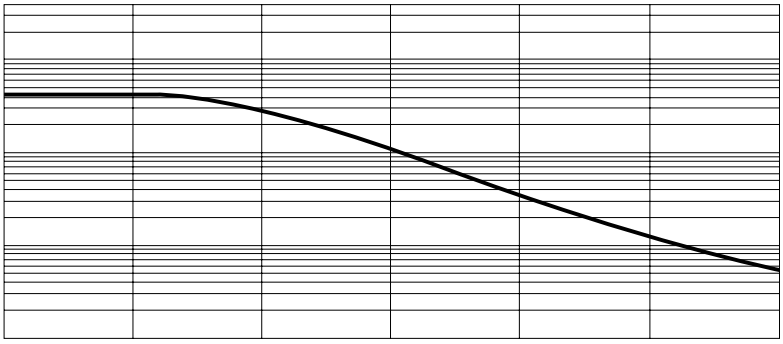

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