MELF Resistors

WRM Series

- AEC-Q200
- High reliability
- Predictable pulse handling capability
- Tolerances down to 0.1%
- TCR down to 5 ppm/°C

All parts are Pb-free and comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

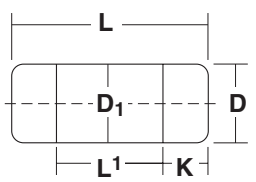
Electrical Data

		WRM 0102	WRM 0204	WRM 0207
Power rating @70°C	**watts**	0.2	0.25	0.4
Resistance Range	**ohms**	1R0- 1M0	R22-5M1	R22- 4M7
Limiting element voltage	**volts**	200	200	250
TCR	**ppm/°C**	15, 25, 50, 100	5, 10, 15, 25, 50, 100	15, 25, 50, 100
Resistance tolerance	**%**	0.1, 0.25, 0.5, 1, 5		
Standard values		E24 & E96		
Thermal impedance	**k/W**	250	200	140
Ambient temperature range	**°C**	-55 to +155	-55 to +125	
Insulation resistance	**ohms**	$>10^{10}$		
Zero ohm jumper current rating	**amps**	2		4
Zero ohm jumper maximum residual resistance	**mΩ**	15		

Physical Data

Dimensions (mm) & weight (g)

Type	L max	D max	D^1 max	K min	L^1 min	Weight
WRM 0102	2.3	1.35	1.3	0.3	1.1	0.01
WRM 0204	3.7	1.55	1.55	0.5	1.5	0.02
WRM 0207	6.1	2.4	2.4	0.5	2.9	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 four bands, three indicating value and one indicating the multiplier. (Note this describes standard marking, but certain values may still be supplied with the addition of a tolerance band following the multiplier.).

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.

General Note
TT Electronics reserves the right to make changes in product specification without notice or liability.
All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

© TT Electronics plc

TCR and Tolerance Range

Type Reference	TCR	Tolerance				
		5%	1.0%	0.5%	0.25%	0.1%
WRM0102	±100ppm	1R0- 1M0	1R0- 1M0	-	-	-
	±50ppm	1R0- 1M0	1R0- 1M0	8R2- 1M0	-	-
	±25ppm	-	49R9- 390K	49R9- 200K	100R- 82K	100R- 82K
	±15ppm	-	100R- 56K	100R- 56K	100R- 56K	100R- 56K
WRM0204	±100ppm	R22- R91	-	-	-	-
	±50ppm	-	1R- 5M1	10R- 1M6	22R- 332K	43R- 332K
	±25ppm	-	4R7- 500K	10R- 500K	22R- 402K	43R- 332K
	±15ppm	-	-	10R- 221K	22R- 221K	43R- 221K
	±10ppm	-	-	-	22R- 221K	43R- 221K
	±05ppm	-	-	-	100R- 100K	100R- 100K
WRM0207	±100ppm	R22- R91	-	-	-	-
	±50ppm	-	1R- 4M7	10R-1M6	-	-
	±25ppm	-	10R- 1M	10R- 680K	51R1- 330K	100R- 100K
	±15ppm	-	-	51R1- 10K	51R1- 10K	100R- 10K

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

Performance Data

Test		Δ R/R			
		0204 and 0207			0102
		75R - 100K	10R - <75R & >100K - 332K	<10R & >332K	All values
Short time overload*		≤0.05% + 0.01Ω	≤0.1% + 0.01Ω	≤0.25% + 0.05Ω	≤0.25% + 0.05Ω
Bending test*		≤0.05% + 0.01Ω	≤0.1% + 0.01Ω	≤0.25% + 0.05Ω	≤0.25% + 0.05Ω
Resistance to soldering heat		≤0.05% + 0.01Ω	≤0.1% + 0.01Ω	≤0.25% + 0.05Ω	≤0.25% + 0.05Ω
Temperature rapid change		≤0.05% + 0.01Ω	≤0.1% + 0.01Ω	≤0.25% + 0.05Ω	≤0.25% + 0.05Ω
Endurance*					
Load life	1000h	≤0.15% + 0.05Ω	≤0.15% + 0.05Ω	≤0.3% + 0.05Ω	≤0.5% + 0.05Ω
	8000h	≤0.3% + 0.05Ω	≤0.3% + 0.05Ω	≤0.6% + 0.05Ω	≤1.0% + 0.05Ω
	225,000h	≤0.9% + 0.05Ω	≤0.9% + 0.05Ω	≤1.8% + 0.05Ω	≤3.0% + 0.05Ω
Climatic sequence*		≤0.25% + 0.05Ω	≤0.5% + 0.05Ω	≤1.0% + 0.05Ω	≤1.0% + 0.05Ω
Damp heat steady state*		≤0.25% + 0.05Ω	≤0.5% + 0.05Ω	≤1.0% + 0.05Ω	≤1.0% + 0.05Ω
Current noise		<0.05µV/V	<0.25µV/V	<3µV/V	<3µV/V
Solderability		>95% coverage			
Voltage coefficient		0 to-0.5ppm/V			
Voltage proof		No flashover or breakdown			

* Resistors to be mounted on a PC-board according to IEC 115-1, clause 4.27.1.
* AEC-Q200 approval applies to all values up to and including 3M4 at TCRs above 5ppm/°C and to zero ohm jumpers.

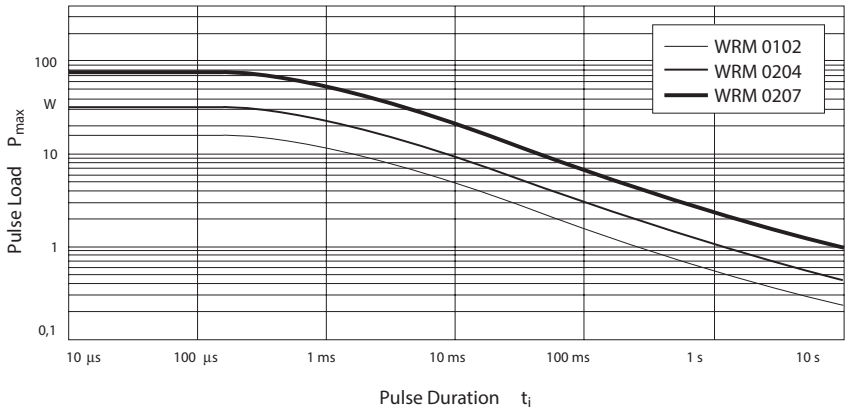
General Note

TT Electronics reserves the right to make changes in product specification without notice or liability.
All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

© TT Electronics plc

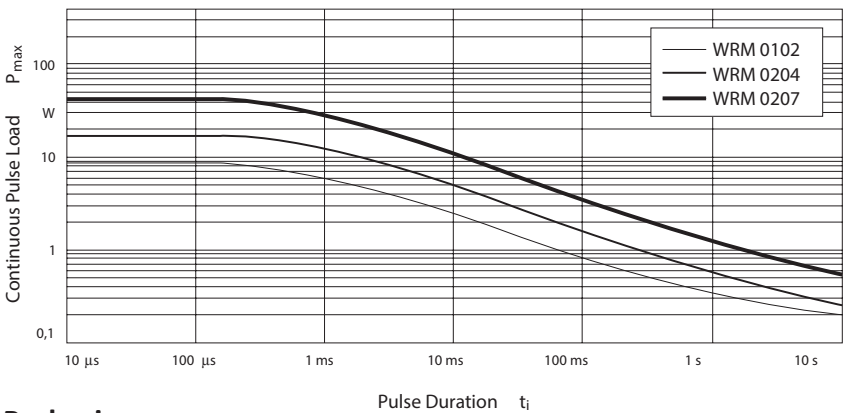
Single Pulse

Maximum Pulse Load



Continuous Pulses

Maximum Pulse Load



Packaging

The WRM 0102 and 0204 resistors are supplied reeled on 8mm blister tape.
WRM 0207 resistors are supplied on 12mm blister tape.
Packaging complies with the requirements of IEC 286-3.

Ordering Procedure

Example: WRM0204C-1K0FI (WRM0204, 50ppm/°C, 1 kilohm ±1%, Pb-free)
Example: WRM0204-R000I (WRM0204, zero ohm jumper, Pb-free)

W	R	M	0	2	0	4	C	-	1	K	0		F	I
1							2		3				4	5

1 Type	2 TCR	3 Value	4 Tolerance	5 Packing	
WRM0102	V = ±5ppm/°C	3/4 characters R = ohms K = kilohms M = megohms	B = ±0.1%	I = Standard	
WRM0204	T = ±10ppm/°C		C = ±0.25%	0102	3000 / 7" reel
WRM0207	Y = ±15ppm/°C		D = ±0.5%	0204	3000 / 7" reel[1]
	D = ±25ppm/°C		F = ±1%	0207	1500 / 7" reel
	C = ±50ppm/°C	R000 = Jumper	J = ±5%		
	Z = ±100ppm/°C		Omit for Jumper		
	Omit for Jumper				

Note 1: High precision parts may be supplied on 1000 piece reels – please enquire

General Note

TT Electronics reserves the right to make changes in product specification without notice or liability.
All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

© TT Electronics plc

LifeElectronics
Живое партнерство

ООО «ЛайфЭлектроникс» **“LifeElectronics” LLC**

ИНН 7805602321 КПП 780501001 Р/С 40702810122510004610 ФАКБ "АБСОЛЮТ БАНК" (ЗАО) в г.Санкт-Петербурге К/С 30101810900000000703 БИК 044030703

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- *Конкурентоспособные цены и скидки постоянным клиентам.*
- *Специальные условия для постоянных клиентов.*
- *Подбор аналогов.*
- *Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.*

- *Приемлемые сроки поставки, возможна ускоренная поставка.*
- *Доставку товара в любую точку России и стран СНГ.*
- *Комплексную поставку.*
- *Работу по проектам и поставку образцов.*
- *Формирование склада под заказчика.*

- *Сертификаты соответствия на поставляемую продукцию (по желанию клиента).*
- *Тестирование поставляемой продукции.*
- *Поставку компонентов, требующих военную и космическую приемку.*
- *Входной контроль качества.*
- *Наличие сертификата ISO.*

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- *Регистрацию проекта у производителя компонентов.*
- *Техническую поддержку проекта.*
- *Защиту от снятия компонента с производства.*
- *Оценку стоимости проекта по компонентам.*
- *Изготовление тестовой платы монтаж и пусконаладочные работы.*

Тел: +7 (812) 336 43 04 (многоканальный)
Email: org@lifeelectronics.ru

www.lifeelectronics.ru