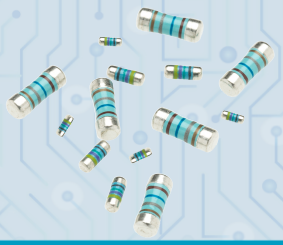


ZCM Series Datasheet

SMD Precision Metal Film Resistors | MELF Style

ORDERING CODE-Example

New SAP Part Nr.:

ZCM	207	F	K	E	07-	1K	AA
Serie	Power rating	Tol.	Pack-Code	TCR	Forming type	R Value	Special
	102 = 0,2W 204 = 0,4W 207 = 1,0W	**B** = ±0,1% **C** = ±0,25% **D** = ±0,5% **F** = ±1% **G** = ±2% **J** = ±5% **-** = Jumper	**K** = Blister tape reel	**C** = ±15ppm **D** = ±25ppm **E** = ±50ppm **F** = ±100ppm **-** = Jumper	**07-** = 07 inch (Reel diameter) or **13-** = 13 inch (Reel diameter)	**0R** = Jumper	**AA** = Standard

Historical VTM Part Nr.:

ZC	0207	F	K	E	07	1K
Type	Size	Tol.	K = Blister tape reel	TC	Reel diam.	R Value

APPLICATIONS

- Automotive
- Alternative Energy
- Home Appliances
- Charger
- Power Supply
- Industrial

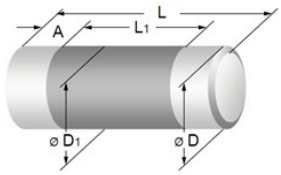
FEATURES

- Precision MELF resistor
- Advanced MELF technology
- Excellent stability in different environmental conditions
- Best in class pulse load capability
- AEC – Q200 Qualified
- Intrinsic sulfur resistance
- RoHs & REACH Compliant

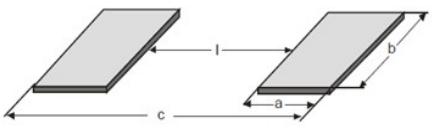
ELECTRICAL SPECIFICATIONS

Type		ZCM102	ZCM204	ZCM207
Historical Part Number	SMD	-	ZC0204	ZC0207
Nominal Power Rating P_{70}	[W]	0,2	0,4	1,0
Resistance Range (Other values upon request)	[Ω] Min	10R	0R22	0R16
	[Ω] Máx	2M21	10M	10M
E-Series		E24 / E96 / E192		
Tolerances	±[%]	B = 0,1%, F = 1%	B = 0,1% , C = 0,25% , D = 0,5% , F = 1% , G = 2% , J = 5%	
Temperature Coefficient *IEC60115-1 clause 4.2 ; 4.8 (+20 / -55[°C] and (+20 / +125[°C])*	$\pm[10^{-6}K^{-1}]$	Depends on the value, please check the table below		
Working Temperature Range	[ºC]	-55 … +125	-55 … +155	
Permissible film temperature *(ϑF max.)*	[ºC]	125	155	
Max. Working Voltage	$[AC\ or\ DC]_{RMS}$	150	200	350
Dielectric Withstanding Voltage IEC115-1 clause 4.7 (1[min])	$[V]_{RMS}$	200	300	500

DIMENSIONS [mm]



Type	*Historical P/N:*	*L*	*Ø D*	*L_1*	*Ø D_1*	*A*	*MASS (mg)*
ZCM102	-	$2,2^{+0/-0,15}$	$1,1^{+0/-0,1}$	$1,2^{min.}$	$D^{+0/-0,1}$	$0,40^{\pm0,05}$	7
ZCM204	ZC0204	3,6 +0 /-0,2	1,4 +0 /-0,1	1,8 min.	D +0 /-0,15	0,80 ±0,10	22
ZCM207	ZC0207	5,8 +0 /-0,3	2,2 ±0,2	2,6 min.	D +0 /-0,2	1,25 ±0,2	77



Recommended solder pads dimensions								
Type	Wave soldering				Reflow soldering			
	l	*a*	*b*	*c*	*l*	*a*	*b*	*c*
ZCM102	0.7	1.2	1.5	3.1	1.1	0.8	1.3	2.7
ZCM204	1,5	1,5	1,8	4,5	1,7	1,2	1,6	4,1
ZCM207	2,4	2,3	2,6	7,0	2,6	2,0	24	6,6

ZCM Series Datasheet

PERFORMANCE DATE

Type				ZCM102	ZCM204	ZCM207
Historical Part Number				-	ZC0204	ZC0207
Climatic Category				55/155/56		
Short Time Overload *IEC60115-1 clause 4.13* *($U=2{,}5*\sqrt{P_{70}\times R}$, ≤2* U_{max} 5 [s])*	Standard operation	±[%]		0,1 (<211kΩ) ; 0,15(>211kΩ)	0,03 (≤1M) ; 0,15 (>1M)	0,03 (≤1M) ; 0,15 (>1M)
	Power operation			-	0,05 (≤1M) ; 0,15 (>1M)	0,05 (≤1M) ; 0,15 (>1M)
Single pulse high voltage overload *IEC60115-1 clause 4.27* *($U=10*\sqrt{P_{70}\times R}$,Severity 4, 10 pulses 10[µs]/700[µs]*	Standard operation	±[%]		-	0,15	0,25
	Power operation			-	0,15	0,5
Periodic electric overload *IEC60115-1 clause 4.39* *($U=15*\sqrt{P_{70}\times R}$,0.1[s]on, 2.5[s]off,1000 cycles*	Standard operation	±[%]		-	0,15	0,15
	Power operation			-	0,3	0,3
Failure Rate (Total, 90 , max, 60[%] cont. lev.)		[10^{-9} h^{-1}]		≤ 0,1		
Endurance at 70ºC, *IEC60115-1 clause 4.25.1* *($U=\sqrt{P_{70}\times R}$ U_{max}, 1,5[h]ON ; 0,5[h]OFF)*	Precision operation	±[%]	1000h	-	0.05 (10R≤1M)	0.05 (10R≤1M)
			8000h	-	0.1 (10R≤1M)	0.1 (10R≤1M)
	Standard operation	±[%]	1000h	0,25 (<211kΩ) ;0,5(>211kΩ)	0.15 (<10R) ; 0.1 (10R≤1M) ; 0.25	0.15 (≤1M) ; 0.5 (>1M)
			8000h	0,5 (<211kΩ) ; 1 (>211kΩ)	0.3 (<10R) ; 0.2 (10R≤1M) ; 0.5	0.3 (≤1M) ; 1 (>1M)
	Power operation	±[%]	1000h	-	0.25	0,25 (≤1M) ; 0,5 (>1M)
			8000h	-	0.5	0,5 (≤1M) ; 1 (>1M)
Endurance at upper Category Temp. *IEC60115-1 clause 4.25.3* *(1000[h]*		±[%]	125ºC	0,25 (<211kΩ) ; 1 (>211kΩ)	0,15 (≤1M) ; 0,5 (>1M)	0.15 (<10R) ; 0.1 (10R≤1M) ; 0.25 (>1M)
			155ºC	-	0,3 (≤1M) ; 1 (>1M)	0.3 (<10R) ; 0.2 (10R≤1M) ; 0.5 (>1M)
Damp Heat, Steady State *IEC60115-1 clause 4.24* *($40^{\pm2}$[°C], $93^{\pm3}$[% r.h.], 56[d])*		±[%]		0,5 (<211kΩ) ; 1 (>211kΩ)	0,25 (≤ 1M) ; 1 (>1M)	0,25 (≤ 1M) ; 1 (>1M)
Damp Heat, Steady State, Accelerated *IEC60115-1 clause 4.37* *($85^{\pm2}$[°C], $85^{\pm5}$[%RH], U = 0.3*$\sqrt{P_{70}\times R}$)*		±[%]		-	0,25 (≤ 1M) ; 2 (>1M)	0,5 (≤ 1M) ; 2 (>1M)
Temperature Cycling *IEC60068-2-14 ; IEC60115-1 clause 4.19* *(30[min] each , 1000 cycles)*		±[%]	-55~125ºC	-	0,25	0,25
			-55~155ºC	-	0,5	0,5
Vibration *IEC60068-2-6 ; IEC60115-1 clause 4.22* *(10;2000[Hz], ≤1,5[mm] , or ≤200[m/s^2] 7,5[h])*		±[%]		-	0,05 (≤ 1M) ; 0,1 (>1M)	0,05
Resistance to Soldering Heat *IEC60115-1 clause 4.18* *($260^{\pm5}$[°C], $10^{\pm1}$[s])Solder bath method*		±[%]		0,1 (<211kΩ) ; 0,25(>211kΩ)	0,1 (≤ 10R) ; 0,05 (>10R)	0,1 (≤ 10R) ; 0,05 (>10R)
Electrostatic Discharge *IEC60115-1 clause 4.38 ; IEC61340-3-1* *(3 positives + 3 negatives discharges)*		±[%]		-	0,5 [2 kV]	0,5 [4 kV]
Voltage proof *IEC60115-1 clause 4.7 $U_{RMS}=U_{INS}$, 60 [s]*				-	No flash over or breakdown	
Flammability *IEC60115-1 clause 4.35, IEC60695-11-5* *Needle flame test, 10[s]*				-	No burning after 30[s]	
Solderability *IEC60068-2-20 ; IEC60115-1 clause 4.17* *($235^{\pm3}$[ºC] $2^{\pm0,2}$[s],$SnAg_3Cu_{0.5}$ or $SnAg_{3.5}$)*				-	≥ 95% covered, no visible damage	
Component Resistance to Solvents *IEC60068-2-45 ; IEC60115-1 clause 4.29* *(50[ºC] method 2)*				No visible damage		
Resistance to solvents of Marking *IEC60068-2-45 ; IEC60115-1 clause 4.30* *(50[ºC] method 1)*				Marking visible , no visible damage		
Marking *IEC60062*				Color code		

NOTES: MARKING [COLOR CODE]:

- **ZCM204** Color code marking is applied according to IEC 60062 in four bands (E24 series) for 5 % tolerance, or in five bands (E96 or E192 series). Each color band appears as a single solid line, voids are permissible if at least $^2/_3$ of the band is visible from each radial angle of view. The last color band for tolerance is approximately 50 % wider than the other bands.
- **ZCM207** Color code marking is applied according to IEC 60062 in four (E24 series) or six bands (E96 series). Each color band appears as a single solid line, voids are permissible if at least $^2/_3$ of the band is visible from each radial angle of view. The last color band represents the TCR for resistors with TCR ≤50 ppm/K and nominal tolerance ≤1 %.

Zero ohm jumpers are marked with one centered black band.

TEMPERATURE COEFFICIENT

ZCM102	ZCM204	ZCM207			
Resistance range			Tolerance	TCR	E-Series
-	0R22 … 0R91	0R16 … 0R91	± 5%	± 100 ppm/K	E24
-		0R22 … 0R91	± 2%		
10R…2M21	0R82… 10M	1R… 10M	± 1%	± 50 ppm/K	E24 / E96
-	10R… 1M65	1R… 2M21	± 0,5%		E24 / E192
-	10R… 1M65	43R… 1M	± 0,5%	± 25 ppm/K	E24 / E192
-	22R… 1M65	43R… 1M	± 0,25%		
100R… 100K	22R… 1M65	43R… 1M	± 0,1%		
-	10R… 221K	100R… 511K	± 0,5%	± 15 ppm/K	E24 / E192
-	22R… 221K	100R… 511K	± 0,25%		
100R… 100K	43R… 221K	100R… 511K	± 0,1%		
Jumper I_{max} = 2A	Jumper I_{max} = 3A	Jumper I_{max} = 5A	≤ 10 mΩ		

- The body coating color is light green for jumpers and for a temperature coefficient of ±50 or 100 [ppm], pink for ±25[ppm] and violet for ±15[ppm]

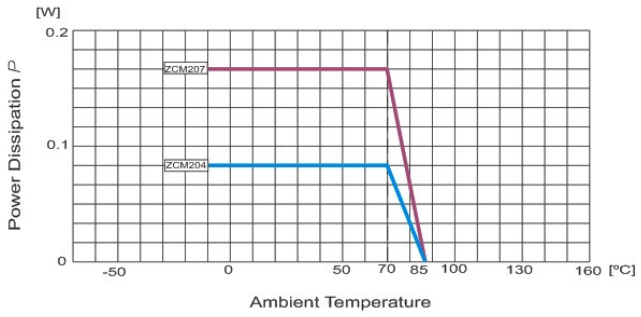
MAXIMUM RESISTANCE CHANGE AT RATED DISSIPATION

		ZCM102	ZCM204			ZCM207		
OPERATION MODE		STANDARD	PRECISION	STANDARD	POWER	PRECISION	STANDARD	POWER
Rated Power dissipation P_{70} [W]		0,2	0,07	0,25	0,4	0,125	0,4	1,0
Operating temp. range [ºC]		-55 to 125	-10 to 85	-55 to 125	-55 to 155	-10 to 85	-55 to 125	-55 to 155
Permissible film temperature ϑF Max [ºC]		125	85	125	155	85	125	155
Resistance range		10R – 2M21	10R – 1M	R22 – 1M	R22 – 10M	100R – 511K	1R0 – 1M	1R0 – 1M
Max. Resistance drift [%] [ΔR/R]	1000h	≤0,5	≤0,05	≤0,15	≤0,25	≤0,05	≤0,15	≤0,25
	8000h	≤1	≤0,1	≤0,3	≤0,5	≤0,1	≤0,3	≤0,5
	225 000h	-	≤0,25	≤0,75	-	≤0,25	≤1,0	-

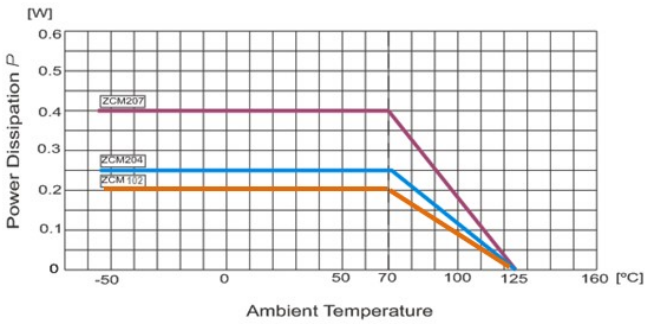
- A suitable low thermal resistance of the circuit board assembly must be safeguarded in order to maintain the film temperature of the resistors within the specified limits.

PERFORMANCE GRAPH's

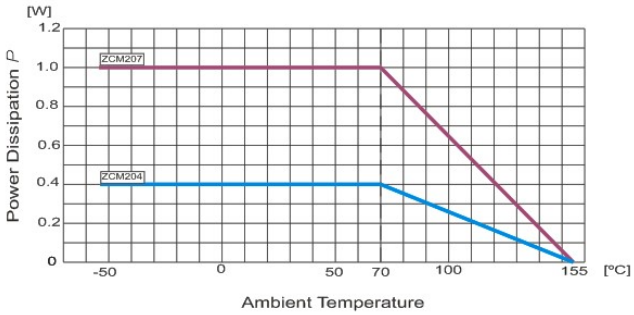
Derating – Precision Operation



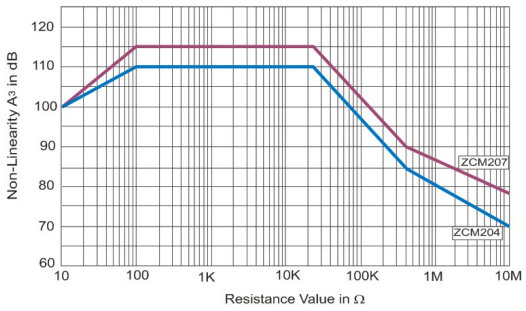
Derating – Standard Operation



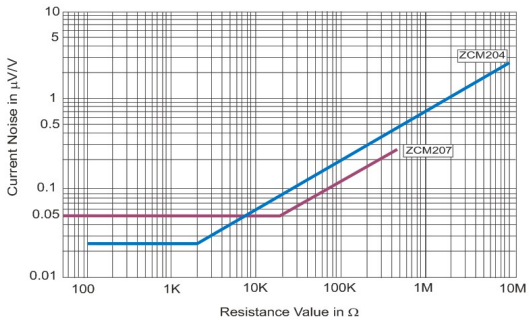
Derating – Power Operation



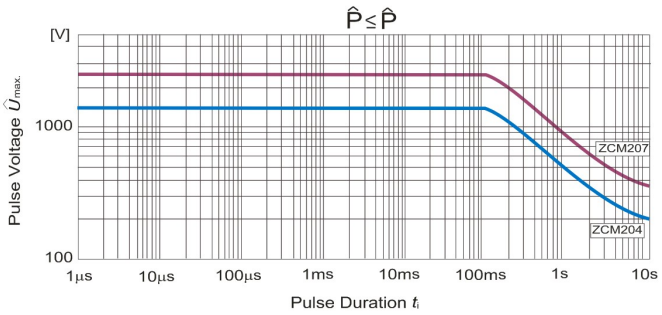
Non- Linearity



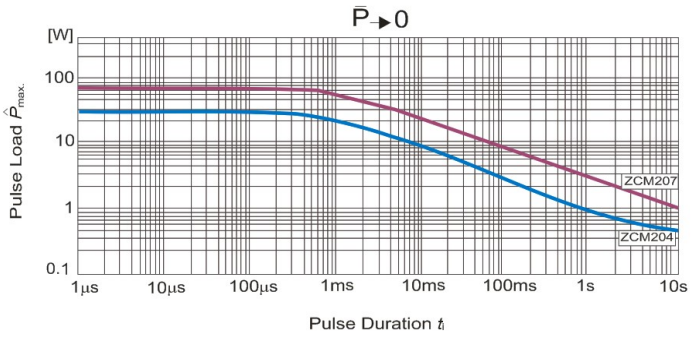
Current Noise



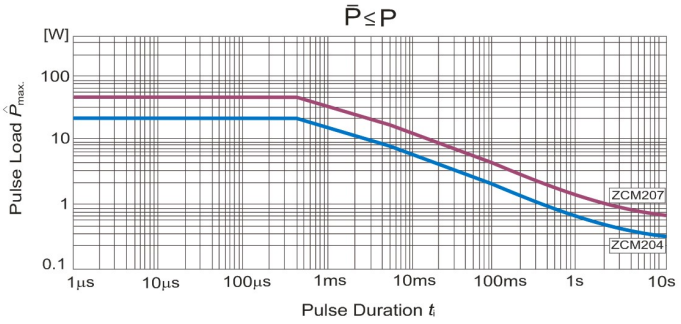
Pulse Voltage



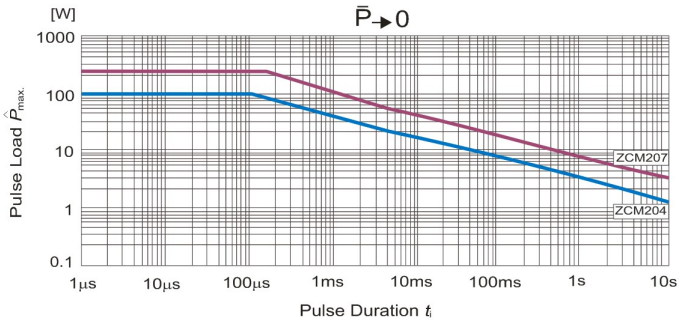
Single Pulse for *R* < 10Ω



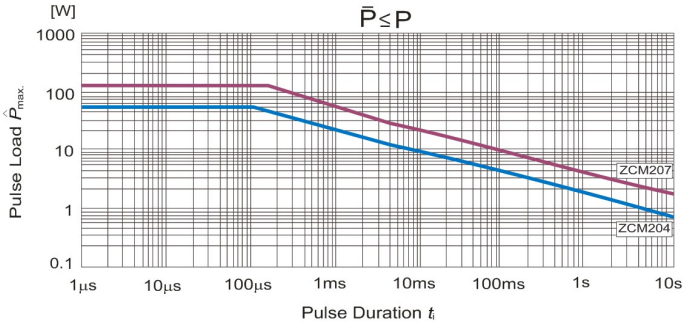
Continuous Pulse for *R* < 10Ω



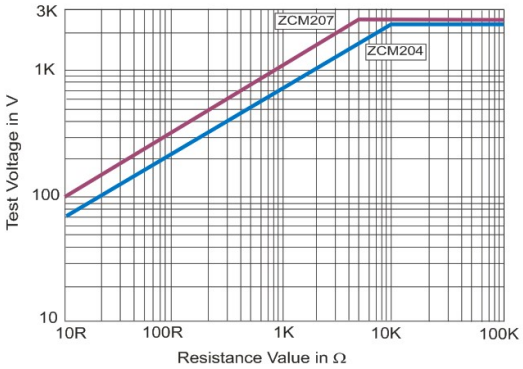
Single Pulse for *R* ≥ 10Ω



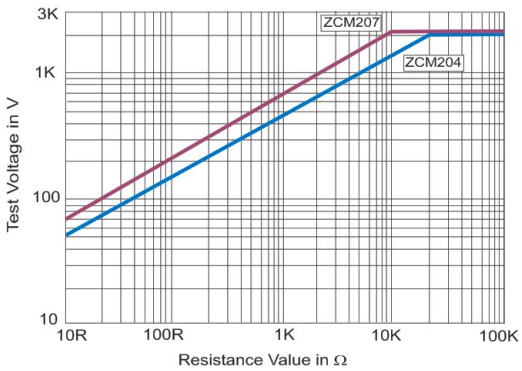
Continuous Pulse for *R* ≥ 10Ω



Single Pulse (1.2/50 [µs])

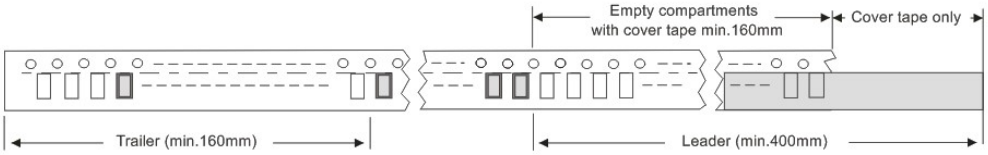


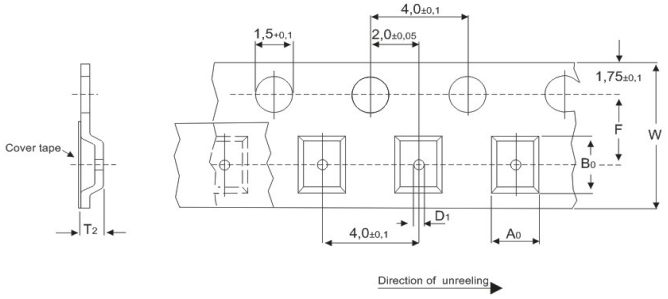
Single Pulse (10/700 [µs])



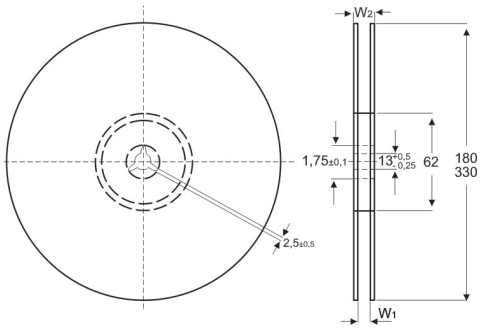
PACKAGING - Blister tape

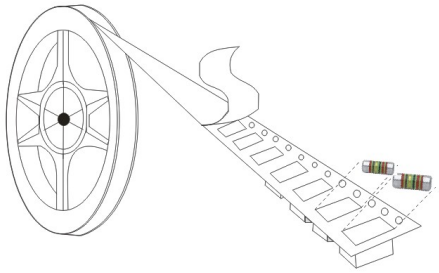
The type ZCM is packed in antistatic blister tape according to IEC60286-3, type 2a, packing details described below,





Type	A0	B0	F	W	D1	T2
ZCM102	1,3±0,1	2,47±0,1	3,5±0,05	8,0.±0,3/-0,1	1,0	≤ 1,65
ZCM204	1,55±0,1	3,7±0,1	3,5±0,05	8,0.±0,3	1,0	≤ 1,8
ZCM207	2,40±0,1	6,0±0,1	5,5±0,05	12,0.±0,3	1,5	≤ 2,7





Type	W1 [±1,5]	W2 [max]
ZCM102	8,4+1,5/-0	14,4
ZCM204	8,4	14,4
ZCM207	12,4	18,4

Type	Packaging [dimensions]	Quantity [pcs]
ZCM102	07(inch) Blister tape	3000
ZCM204		3000
ZCM207		1500
ZCM204	13(inch) Blister tape	10000
ZCM207		7500

单击下面可查看定价，库存，交付和生命周期等信息

>>Yageo(国巨)