GRM Chip Resistors

Features

Ⅰ It can reduce the area and weight of the PCB for its small size and weight.

Ⅱ Operating ambient temperature :-55℃—125℃

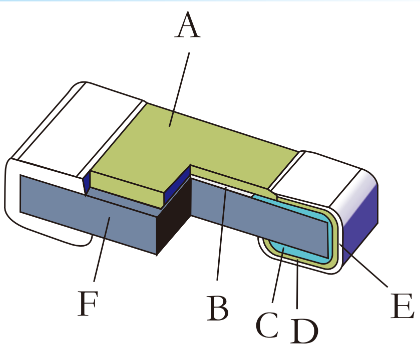
Ⅲ High credibility :the thick metal film resistor body is added with glass protective layer and three layers of electrode composition.

Ⅳ The appearance dimension is symmetrical and accurate for easy assembly.

Ⅴ Resistance tolerance: ±1%, ±5%.

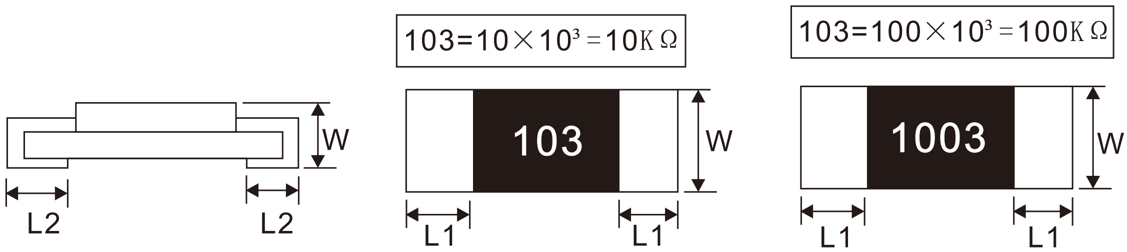
Ⅵ AEC-Q200 qualified for automotive applications

Construction



A	Protective coating
B	Resistive film
C	Inner electrode
D	Middle electrode (Ni Plating)
E	Outer electrode (Sn Plating)
F	Ceramic substrate

Dimensions



Type	Size inch(mm)	Power	Dimensons (mm)				
			L	W	H	L1	L2
GRM	0201(0603)	1/20W	0.60± 0.03	0.30±0.03	0.23±0.03	0.10±0.05	0.15±0.05
	0402(1005)	1/16W	1.00± 0.10	0.50±0.10	0.30±0.10	0.20±0.10	0.25±0.10
	0603(1608)	1/16W ,1/10W	1.60±0.15	0.80±0.15	0.40±0.10	0.30±0.20	0.30±0.20
	0805(2012)	1/10W ,1/8W	2.00±0.20	1.25±0.15	0.50±0.10	0.40±0.20	0.40±0.20
	1206(3216)	1/8W ,1/4W	3.20±0.20	1.60±0.15	0.60±0.10	0.50±0.20	0.50±0.15
	1210(3225)	1/4W, 1/3W	3.20±0.20	2.50±0.20	0.60±0.10	0.50±0.20	0.50±0.20
	2010(5025)	1/2W, 3/4W	5.00±0.20	2.50±0.20	0.60±0.10	0.60±0.20	0.60±0.20
	2512(6432)	1W, 1/2W	6.40±0.20	3.20±0.20	0.60±0.10	1.00±0.20	1.00±0.20

Reference Standards

JISC 5202

Ordering Information

Example

GRM	0201	20	J	H	5	100R0
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Series Name	Size	Power Rating	Resistance Tolerance	T.C.R.	Packing	Resistance

(1)Type: GRM

(2)Size:0201,0402,0603,0805,1206,1210,2010,2512

(3)Power Rating: 20=1/20W,16=1/16W,10=1/10W,18=1/8W,13=1/3W,14=1/4W,12=1/2W, 34=3/4W,1B=1W,2B=2W

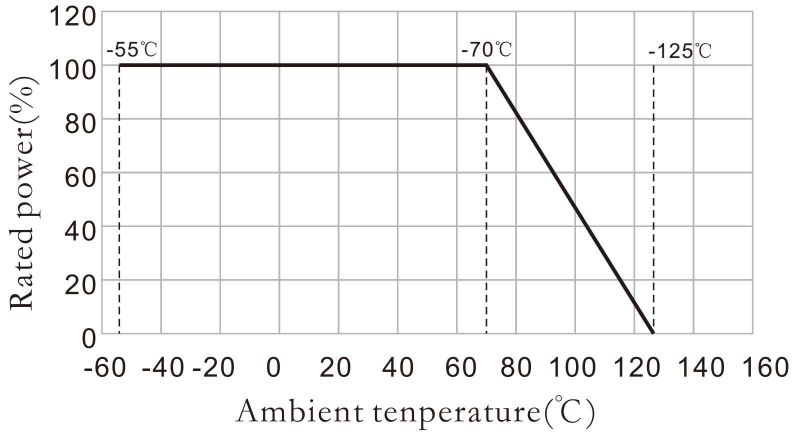
(4)Resistance Tolerance: F=±1%,J=±5%

(5)T.C.R:G=Normal,H=±100PPM,I=±200PPM,J=±250PPM,K=±300PPM,L=±350PPM, M=±400PPM,N=±500PPM

(6)Packing:1=1K PCS,4=4K PCS,5=5KPCS

(7)Resistance Value:R1000=0.1Ω,1R000=1Ω,100R0=100Ω,1K000=1KΩ

Derating curve



Power And Resistance etc.

Type	Size inch(mm)	Power	Max. working voltage	Max. Overload voltage	Resistance range	Tolerance	TCR
GRM	0201(0603)	1/20W	25V	50V	10Ω～1MΩ	F=±1% J=±5%	±1%: ±100ppm/ ±200ppm/ ±5% ±200ppm/℃ ±400ppm/℃
	0402(1005)	1/16W	50V	100V	0Ω～10MΩ		
	0603(1608)	1/16W ,1/10W	75V	100V	0Ω～22MΩ		
	0805(2012)	1/10W ,1/8W	150V	300V	0Ω～22MΩ		
	1206(3216)	1/8W ,1/4W	200V	400V	0Ω～22MΩ		
	1210(3225)	1/4W, 1/3W	200V	400V	0Ω～22MΩ		
	2010(5025)	1/2W, 3/4W	200V	400V	0Ω～22MΩ		
	2512(6432)	1W, 1/2W	200V	400V	0Ω～22MΩ		

Performance

Item	Performance	Conditons test(JIS C 5201—1)
Temperature coefficients	±1%:±100PPM/℃、 ±100PPM/℃ ±5%:±200PPM/℃、 ±400PPM/℃	$T.C.R=\frac{R2-R1}{R1\times(T2-T1)}\times10^{-6}PPM/℃$ R1:normal temperature(T1)resistance value R2:normal temperature+100℃(T2)resistance value
Short time overload	1%: △R≤±(1.0%R0+0.05Ω) 5%: △R≤±(2.0%R0+0.05Ω)	Account 5 times rated power to account the voltage or max ,overload voltage(get the lower) 5 seconds.
Pulse overload	△R≤±(1.0%R0+0.05Ω)	At 4× rated voltage or max. pulse overload voltage (get the lower) cycle 1000±200 times(1second ON, 25second OFF)
Terminal strength	△R≤±(1.0%R0+0.05Ω)	Bending distance:3 mm (10 seconds)
Resistance to soldering heat	△R≤±(1.0%R0+0.05Ω)	Immerge into the 350±10℃ tin stove for2—3second
solderability	The soldering area is over95%	Immerge into the 245±3℃ tin stove for2—3second
Temperature cycling	1%: △R≤±(0.5%R0+0.05Ω) 5%: △R≤±(1.0%R0+0.05Ω)	At -55℃ for 30 min ,then at 25℃ for 10—15min,then at 275℃ for 30 min ,then at 25℃ fo10—15min,total 5 cycles.
load life in humidity	1%: △R≤±(1.0%R0+0.05Ω) 5%: △R≤±(3.0%R0+0.05Ω)	Overload rated voltage or max, working voltage(get the lower) for 1000 hours(1.5 hours on and half -hour off) at the 70±2℃.
load life in heat	1%: △R≤±(1.0%R0+0.05Ω) 5%: △R≤±(3.0%R0+0.05Ω)	Overload rated voltage or max, working voltage (get the lower) for 1000 hours (1.5 hours on and half-hour off) at the 70±2℃.