Metal Alloy Low-Resistance Resistor-EMC

◆ General

- **Scope**

  This specification is available for metal alloy Low-Resistance Resistor manufactured by ELLON Electro-Mechanics co., ltd.

- **Quality**

  The resistor is manufactured by highly quality-controlled process and guaranteed high reliability. It meets RoHS & Halogen-Free requirement.

- **Standard measuring conditions**

  Temperature 20±2°C,Humidity 65±5%.Being no doubt about the judgment, measurements can be made Within the following temperature 5~35°C,Humidity 45~85%.

◆ Application

- **Inverter/Converter**
- **Power supply**
- **Consumer electronics**
- **Notebook**
- **Battery management system**

◆ Specification

- **Surface mount 0603/0805/1206 case sizes**
- **Resistance values up to 20mΩ**
- **High precision current sensing and voltage division**
- **Resistance tolerance 0.5%(D), ±1%(F),**
- **Low resistance / Low TCR**

◆ Part number system

EMC	06	F	0W5	R002	M	D	s
Product Type	Size (Inch)	Resistor Tolerance	Rated Power	Resistor Value	Material	Quantity (Pcs)	Remarks
EMC	06=0603 08=0805 16=1206	D =±0.5% F =±1%	0W5=0.5Watt W75=0.75 Watt 1W0=1.0Watt	R001=1mΩ --- R005=5mΩ R020=20mΩ	M:MnCu	E=5000	S=Standard G=High power

(1) EMC Series

(2): Size Code: 06=0603,08=0805, 16=1206

(3): Tolerance Code: D =±0.5%, F =±1%

(4): Power Rating: Ex. 0W5=0.5Watt ; W75=0.75Watt;1W0=1.0Watt

(5): Resistance Code: 1M50=1.5mΩ R005=5mΩ R010=10mΩ.

(6): Materials: M=MnCu; A=Alloy

(7): Optional piece reel quantity：

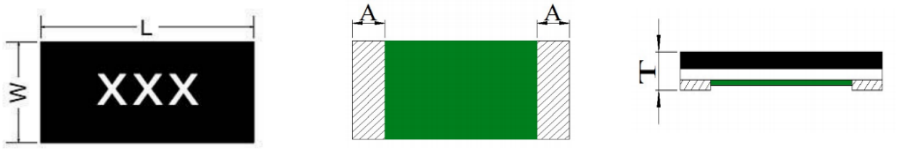
(8): Remarks: interior code

Metal Alloy Low-Resistance Resistor-EMC

◆ SPECIFICATIONS

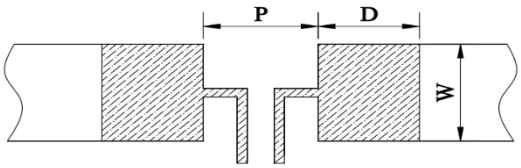
Type	EIA SIZE	Rating Power at 70℃	Material	Resistance Range (mΩ)		T.C.R. (ppm/℃)	Operating Temperature Range (℃)
				0.5%(D)	1.0%(F)		
EMC06	0603	0.5W	MnCu	--	R002-R003	≦±150	-55 ~ + 155
				--	R004-R005	≦±100	
				R005-R020	R006-R020	≦±75	
EMC08	0805	0.5W		--	R001	≦±200	
				--	1M50-R002	≦±100	
				--	R003-R005	≦±75	
				R005-R020	R006-R020	≦±50	
		0.75W		--	R001	≦±200	
				--	1M50-R002	≦±100	
				--	R003-R005	≦±75	
				R005-R020	R006-R020	≦±50	
EMC16	1206	1W		--	R001	≦±100	
				--	1M50-R004	≦±75	
				R005-R020	R005-R020	≦±50	

◆ Component Dimensions



Case Size	EIA SIZE	Rating Power	Resistance Range (Ω)	L	W	A	T
EMC06	0603	0.5W	R002	1.600±0.250	0.800±0.200	0.500±0.150	0.350±0.15
			R003-R004	1.600±0.250	0.800±0.200	0.350±0.150	0.350±0.15
			R005-R020	1.600±0.250	0.800±0.200	0.320±0.150	0.300±0.15
EMC08	0805	0.5W	R001	2.000±0.254	1.250±0.254	0.650±0.254	0.400±0.20
			1M50-R002	2.000±0.254	1.250±0.254	0.550±0.254	0.400±0.20
			R003-R005	2.000±0.254	1.250±0.254	0.400±0.254	0.400±0.20
			R006-R020	2.000±0.254	1.250±0.254	0.400±0.254	0.400±0.20
		0.75W	R001	2.000±0.254	1.250±0.254	0.650±0.254	0.400±0.20
			1M50-R002	2.000±0.254	1.250±0.254	0.550±0.254	0.400±0.20
			R003-R005	2.000±0.254	1.250±0.254	0.400±0.254	0.400±0.20
			R006-R020	2.000±0.254	1.250±0.254	0.400±0.254	0.400±0.20
EMC16	1206	1W	R001	3.200±0.254	1.600±0.254	1.20±0.254	0.40±0.20
			1M50-R002	3.200±0.254	3.200±0.254	1.00±0.254	0.40±0.20
			R002-R004	3.200±0.254	3.200±0.254	0.85±0.254	0.40±0.15
			R005-R020	3.200±0.254	3.200±0.254	0.60±0.254	0.40±0.15

◆ Recommended Solder Pad Layout



Unit:mm

Case Size	EIA Size	Resistance Range (Ω)	P	D	W
EMC06	0603	R002	0.90	1.95	1.74
		R003-R020	1.00	1.85	1.74
EMC08	0805	R001-R020	1.20	1.75	1.74
EMC16	1206	R001-R002	0.80	1.45	1.52
		R003-R005	0.50	1.35	0.92
		R006-R020	0.60	1.30	0.92

◆ Environmental characteristics

Item	Test Conditions	Reference Standard
Short Time Over Load	P= 2.5Pr ; T=25±2ºC , t = 5sec.	IEC60115-1 4.13
Low Temp. Storage	T = -55±2ºC ; t = 1000h	IEC60115-1 4.25.1 JIS-C5201 4.25.1
High Temp. Exposure	T = +155±2ºC ; t = 1000h	IEC60115-1 4.13 JIS-C5201 4.13
Moisture Load Life （60℃,95％RH）	Vtest = Vmax ; T=60±2ºC ; RH=95% ; t= 90min ON , 30min OFF , 1000h	IEC60115-1 4.25.1
Thermal Shock	[-55ºC 30min. → R.T. 3min. → +155ºC 30min. → R.T. 3min],	IEC60115-1 4.19
Load Life at 70ºC	Vtest = Vmax ; T=70±2ºC ;t= 90min ON , 30min OFF,1000h	IEC60115-1 4.25.1
Solderability	+245°C ± 5°C, 2 sec. ± 0.5sec.	IEC60115-1 4.17 JIS-C5201 4.17
Resistance to Solder Heat	Through Reflow T= 275±5ºC , t =20±1sec.	IEC60115-1 4.18 JIS-C5201 4.18
Mechanical Shock	a =100G , t =11ms, 5 times shock	IEC60115-1 4.21
Substrate Bending	Bending within 2mm	IEC60115-1 4.33 JIS-C5201 4.33
Core Body Strength	Central part pressurizing force:5N ,10 seconds	JIS-C5201-1 4.15
Bending Strength	Bending once 2mm for 10 seconds	JIS-C-5201-1 4.33 IEC-60115-1 4.33

Voltage and Current Ratings: Voltage and current ratings can be calculated for each part number by using the formulas below:

Current Rating Formula: I=$\sqrt{P/R}$
Example: EMC16F0R006MEG
P=1W
R=0.006Ω(6milli-ohm)

I=$\sqrt{P/R}$= $\sqrt{1.0/0.006}$=12.909A

Voltage Rating Formula: V =$\sqrt{P*R}$
Example: EMC16F0R006MEG
P=1W
R=0.006Ω(6milli-ohm)

V=$\sqrt{P*R}$= $\sqrt{1.0*0.006}$=0.07745V

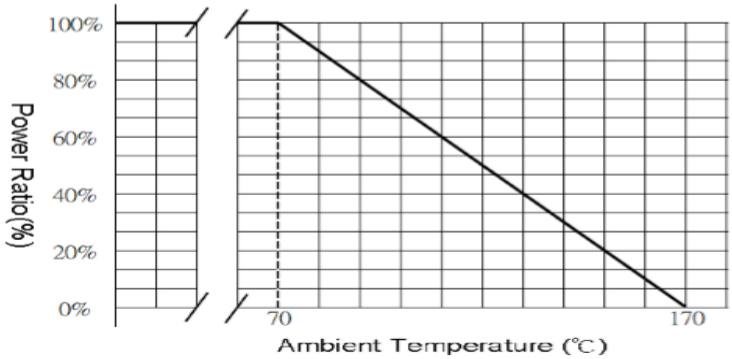
Thermal EMF Characteristics:
Thermal EMF=-1μV/℃

◆ **Performance characteristics**

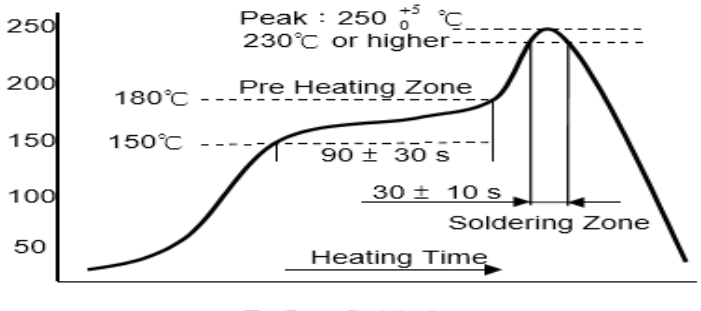
Power Derating Curve

The Operating Temperature Range: -55°C ~+155°C.

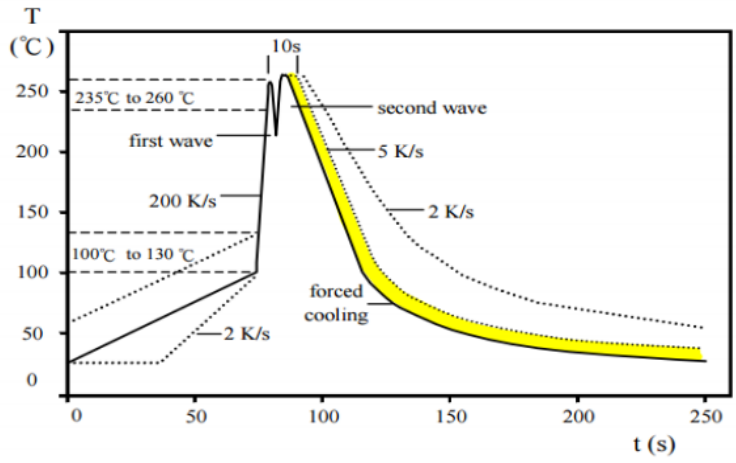
For resistors operated in ambient temperatures above 70°C, power rating must be derating in accordance with the curve below



◆ **Soldering Profile**



Reflow Soldering

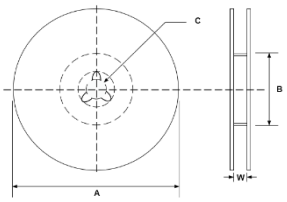


WAVE soldering.

◆ Packaging information

REEL DIMENIONS (mm) AND QUANTITY

Type	A	B	C	W	Quantity
EMC06	178 ±2.0	60 ±1.0	13 ±1.0	9.0 ±1.0	5000
EMC08					
EMC16					



◆ Storage Temperature

Temperature 20~30℃, Humidity 40~80%