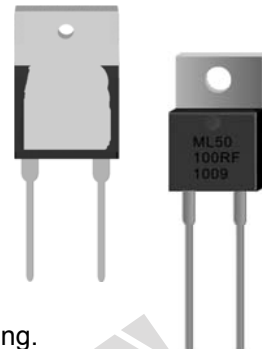


SINLOON®

**TO220 Power Resistor**  
**Resistance Range: 0.01R ~ 51K ohm**

**ML Series**  
**25W/35W/50W**

Mayloon Products Power Resistor ML series resistors satisfy demanding applications for accurate and stable power resistors housed in the convenient TO-220 case. The resistance element is isolated from the mounting tab by an alumina ceramic layer, providing very low thermal resistance and ensuring high insulation resistance between terminals and tab. The non-inductive design makes these products especially useful in high frequency and high speed pulse applications.



**Features:**

- ◆ Non- inductive.
- ◆ Available in 25W,35W,or 50W
- ◆ TO-220 Style Power Package
- ◆ Single Screw Mounting to Heat Sink.
- ◆ High stability film resistance elements
- ◆ Molded Case for Protection and Easy to Mount.
- ◆ 50 Watt at 25°C Case Temperature Heat Sink Mounted
- ◆ **RoHS compliant**

**Applications:**

- ◆ UPS
- ◆ Snubbers Circuit
- ◆ Voltage Regulation.
- ◆ Low Energy Pulse Loading.
- ◆ Gate Resistors in Power Supplies.
- ◆ Terminal Resistance in RF Power Amplifiers.
- ◆ Load and Dumping Resistors in CRT Monitors.

**ORDERING PROCEDURE:**

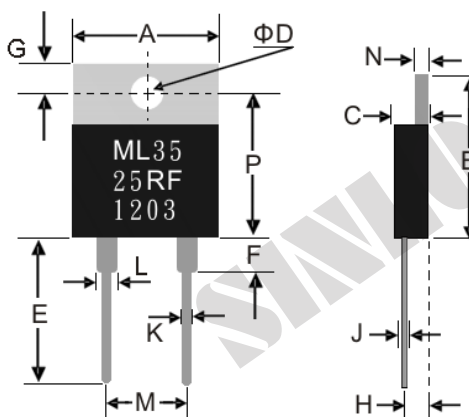
Example: ML35JE100RP

Type	Power:	Part No.	Tol.	T.C.R/°C	Resistance	Package
TO220	25W	ML25	K = ±10%	D=±50ppm	R100=0.1Ω	TB = T/Box.
TO220	35W	ML35	J = ±5%	E=±100ppm	1R00=1Ω	B = Bulk
TO220	50W	ML50	F = ±1%	K=±150ppm	10R0=10Ω	R=Reel Type
			D = ±0.5%	F=±200ppm	100R=100Ω	P=Plastic Fistulous

**DIMENSION**

Dim	inch	mm
A	0.398	10.1±0.2
B	0.59	15.0±0.2
C	0.177	4.5±0.2
ΦD	0.142	3.6±0.1
E	0.61	15.5±1.0
F	0.158	4.0±0.5
G	0.118	3±0.2
H	0.108	2.75±0.2
J	0.02	0.5±0.05
K	0.029	0.75±0.05
L	0.059	1.5±0.05
M	0.2	5.08±0.1
N	0.59	1.5±0.05
P	0.63	16.0±0.1

Note: Metal tab is electrically isolated



Lead Material: Tin Plated Copper  
Tab Material: Nickel Plated Copper

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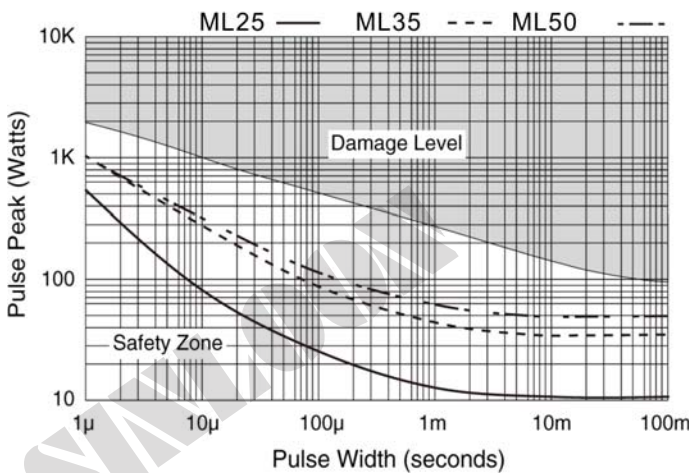
**Electrical Data**

Type	Power Rating <sup>1</sup>		Voltage Rating <sup>4</sup>	Thermal Resistance	Resistance Range		Tolerances	Nominal Resistance	Typ. Temperature Coefficient
	Heatsink <sup>2</sup>	Free Air <sup>3</sup>			Min	Max			
ML-25	25W	2.00W	350V	5.9°C/W	0.01Ω	0.09Ω	±5%	E6	±200ppm/°C
					0.1Ω	9.1Ω	±1%,±5%	E24	±150ppm/°C
					10Ω	51KΩ	±1%,±5%	E24	±150ppm/°C
ML-35	35W	2.25W	350V	3.3°C/W	0.01Ω	0.09Ω	±5%	E6	±200ppm/°C
					0.1Ω	9.1Ω	±1%,±5%	E24	±150ppm/°C
					10Ω	51KΩ	±1%,±5%	E24	±150ppm/°C
ML-50	50W	2.50W	500V	2.3°C/W	0.01Ω	0.09Ω	±5%	E6	±200ppm/°C
					0.1Ω	9.1Ω	±1%,±5%	E24	±150ppm/°C
					10Ω	51KΩ	±1%,±5%	E24	±150ppm/°C

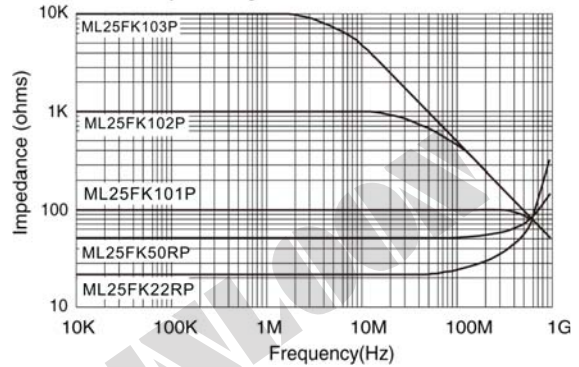
- 1) Maximum current 25 amps
- 2) Power rating based on 25°C tab temperature
- 3) Without a heatsink, when in free air at 25°C, the power rated to decrease.
- 4) Maximum voltage or  $\sqrt{P \times R}$
- 5) See TCR Chart for resistance values below 1 ohm

註: 所示功率須配合散熱片使用, 在無加裝散熱片使用下功率降<sup>3</sup>。

**Pulse Energy Durability**



**Frequency Characteristics**



**Environmental Data**

Test	Method	Specification - Performance
Thermal Shock	MIL-STD-202 Method 107 Condition F	±0.30%+50mΩ
Moisture Resistance	MIL-STD-202 Method 106	±1.0%+50mΩ
Vibration	MIL-STD-202 Method 204 Condition D	±0.25%50mΩ
Load Life	MIL-STD-202 Method 108 1,000 Hours	±1.0%+50mΩ
Resistance to Solder Heat	MIL-STD-202 Method 210 Condition B	±0.25%+50mΩ
Dielectric Withstanding Voltage	MIL-STD-202 Method 301	2200 volts DC or 1500 volts AC; 60 seconds
Insulation Resistance(between)	MIL-STD-202 Method 302	>1000MΩ
Solderability	MIL-STD-202 Method 208	>95% coverage
Operating Temperature Range		-55°C to +155°C

◆ During soldering, the soldering temperature profile must not cause the metal tab of this device to exceed 220°C

※ Other requirements not specified in the specifications sent by e-mail inquiries welcome.

\* Others data not in the specification of data, please contact us. (如果你要求的規格不在本規格書裡請與我們聯絡.)

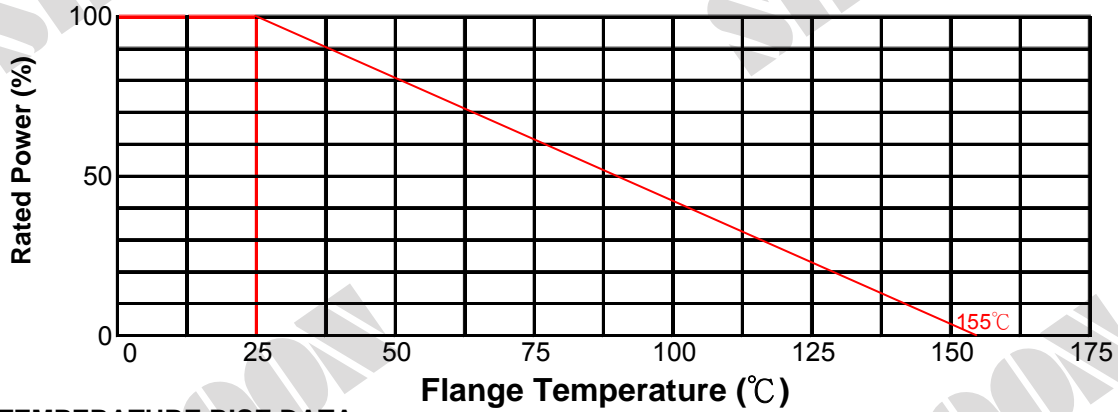
SINLOON®

**TO220 Power Resistor**  
Resistance Range: 0.01R ~ 51K ohm

**ML Series**  
25W/35W/50W

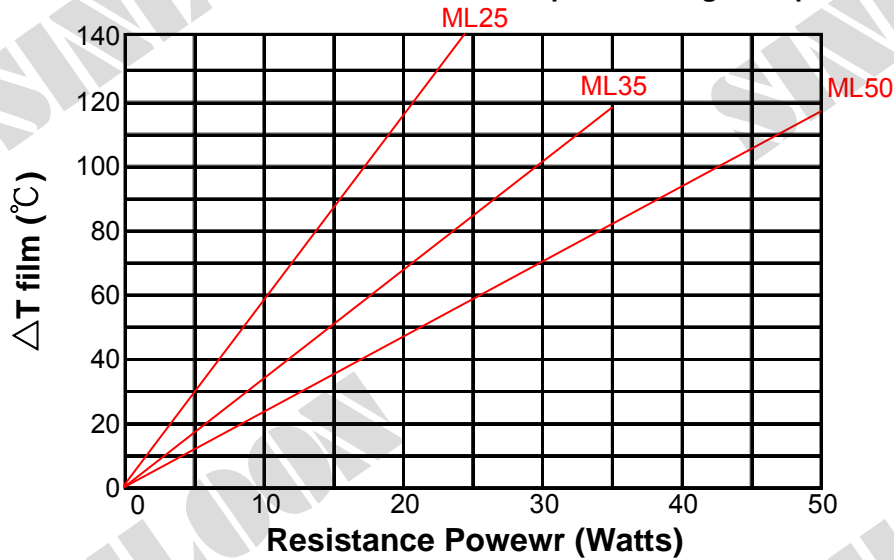
POWER DERATING CURVE

**Power Derating Data**

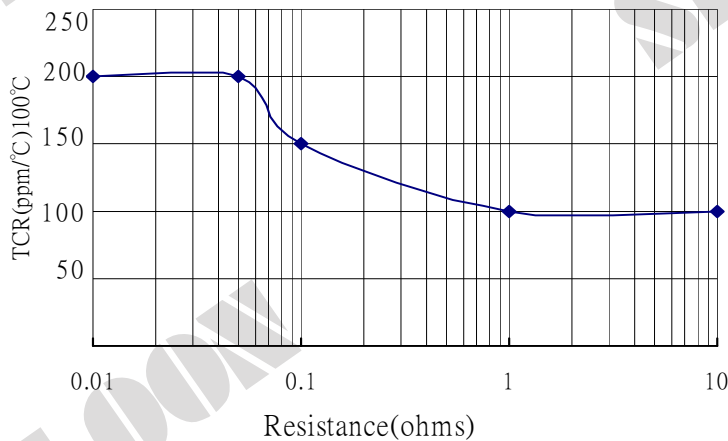


TEMPERATURE RISE DATA

**Resistor Film Tem. Rise with Respect to Flange Temp.**



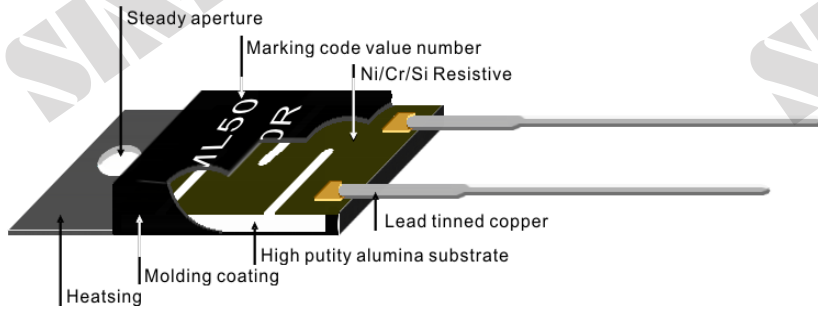
**Typical TCR For Values**



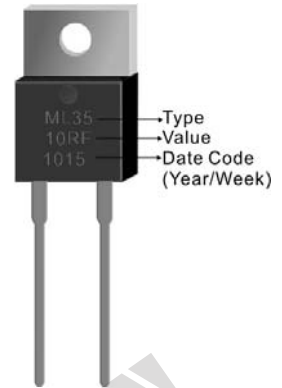
**SINLOON® TO220 Power Resistor**  
**Resistance Range: 0.01R ~ 51K ohm**

**ML Series**  
**25W/35W/50W**

**CONSTRUCTION**



**Body Marking Code**



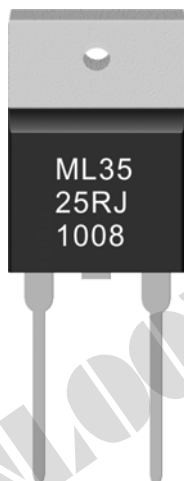
**RESISTANCE STANDARD VALUE**

E3	10				22						47						
E6	10		15		22		33		47		68						
E12	10	12	15	18	22	27	33	39	47	56	68	82					
E24	10	11	12	13	15	16	18	20	22	24	27	30	33	36	39	43	47
	51	56	62	68	75	82	91										
E96	100	102	105	107	110	113	115	118	121	124	127	130	133	137	140	143	147
	150	154	158	162	165	169	174	178	182	187	191	196	200	205	210	215	221
	226	232	237	243	249	255	261	267	274	280	287	294	301	309	316	324	332
	340	348	357	365	374	383	392	402	412	422	432	442	453	464	475	487	499
	511	523	536	549	562	576	590	604	619	634	649	665	681	698	715	732	750
	768	787	806	825	845	866	887	909	931	953	976						

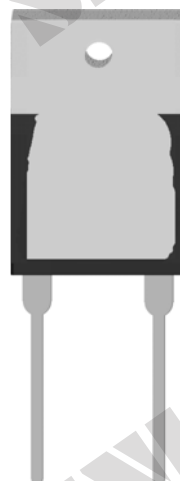
**Application Notes:**

1. insulating material is unnecessary between the heat sink and the tab, as the resistor film is isolated by the internal alumina substrate
2. When mounting with a fastener, thermal grease is recommended
3. Thermal design should satisfy the following equation: Case Temperature(Tc)+[Thermal Resistance(RθJC)× Power applied(Watts)] ≤ 155°C over the full operating temperature of the application
4. Resistor film temperature is not to exceed 155°C during operation
5. This product is RoHS compliant by exemption according to RoHS directive 2002/95/EC exemptions 5&7 , as they apply to lead in glass and internal solder connections.

**Plan front side**



**Plant back side**



### □ Package Mounting Guide

It is important that the packages are correctly mounted if full functionality is to be achieved. Mounting of the package to a heat sink must be done such that there is sufficient pressure from the mounting screws to insure good contact with the heat sink for efficient heat flow. Incorrect mounting may lead to both thermal and mechanical problems. Over tightening the mounting screws will cause the package to warp reducing the contact area with the heat sink and increasing the thermal resistance from the package case to the heat sink, resulting in higher operating die temperatures. Extreme over tightening of the mounting screws beyond the recommended torque force will cause severe physical stress resulting in cracked die and catastrophic IC failure. Though the reliability of the package is excellent, the use of inappropriate techniques or unsuitable tools during the mounting process can affect the long term reliability of the device and even damage it.

Figure (1)

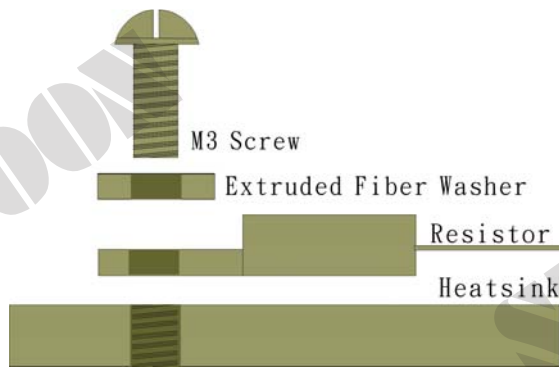
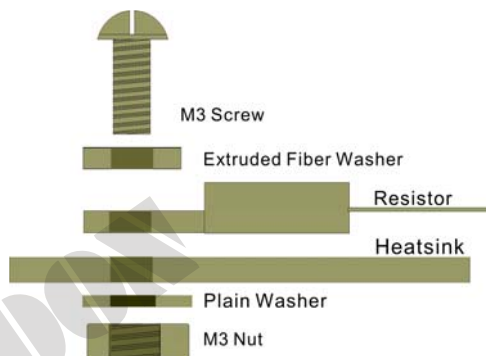


Figure (2)



### □ TO220 功率電阻使用指南及其重要性的說明:

要得到更好的特性功能和效率,正确完整的安裝散熱器是必須做的。要有配合外加散熱器來共同使用,上緊螺絲以保證本體部件和散熱片有良好的接觸面達致有高效的熱流量。不正確的使用可能會導致部件產生的熱量影響整體部件的功效。收緊螺絲不當將導致本體部件和散熱片接觸面積減少,熱電阻的增加導致更高的工作環境溫度。過度的收緊螺絲而超出了承受的壓力會導致零部件的失效。雖然該部件的可靠性非常好,使用不當或選擇不適合的外加散熱器,在使用過程中可能會影響長期使用壽命,甚至破壞。

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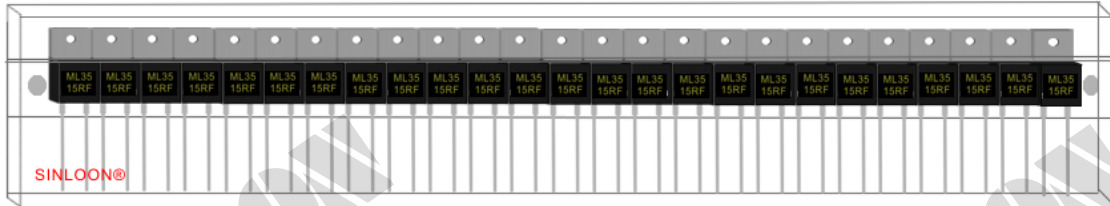
**TO220 Power Resistor**  
**Resistance Range: 0.01R ~ 51K ohm**

**ML Series**  
**25W/35W/50W**

**Package**

Type:		Power	Fistulous	In Box	Carton
TO-220	ML25	25W	50 pcs	10 Fistulous	5K/Ctn
TO-220	ML35	35W	50 pcs	10 Fistulous	5K/Ctn
TO-220	ML50	50W	50 pcs	10 Fistulous	5K/Ctn

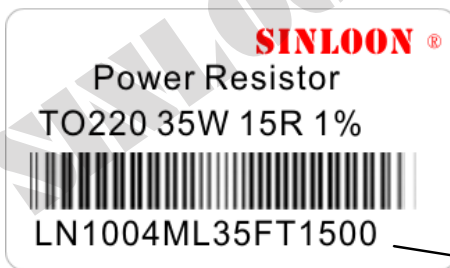
Plastic Fistulous : 50 pcs  
Size: 520x33x7.0mm



Inside Box :  
In box Size:561x83x72mm  
Quantity : 500 pcs



Carton : 10 / Inner Box  
Carton Size 580x450x175mm  
Quantity: 5000 pcs



Brand Label:**SINLOON®**

- ※Other requirements not specified in the specifications sent by e-mail inquiries welcome。
- ※美隆電子產品規格特性參數的改變或更新,不會另行通知。
- ※Mayloon characteristic parameters of electronic product specification changes or updates without prior notice。