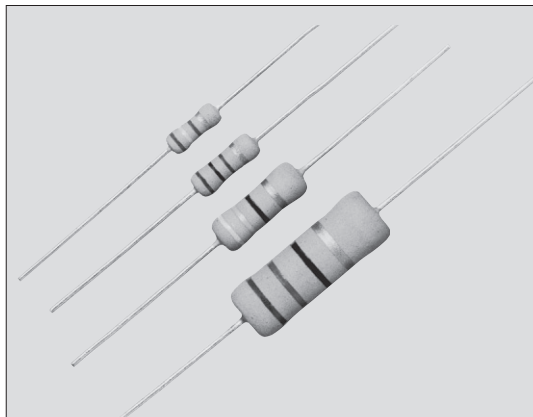


MO 涂层绝缘型氧化金属膜固定电阻器

Coat-Insulated Fixed Metal Oxide Film Resistors

MOX 涂层绝缘型金属膜固定电阻器

Coat-Insulated Fixed Metal Film Resistors



外观颜色: 青灰色 Coating color: Blue gray
表示: 彩色码 Marking: Color code

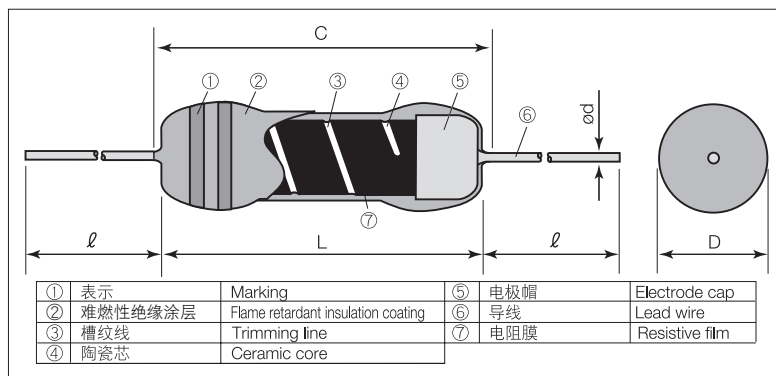
特点 Features

- 通用功率型电阻器。
- 是难燃性涂层 (相当UL94 V-0品)。
- 可以用于自动插装机。
- 可以进行各种成形加工。
- 高可靠性。
- 对应欧盟RoHS。
- General purpose power type resistors.
- Flame retardant coating. (Equivalent to UL94 V-0)
- Automatic insertion is applicable.
- Various types of formings are available.
- High reliability.
- Products meet EU-RoHS requirements.

参考标准 Reference Standards

IEC 60115-4
JIS C 5201-4
EIAJ RC-2138

结构图 Construction



外形尺寸 Dimensions

型号 Type	尺寸 Dimensions (mm)				Weight (g) (1000pcs)
	L	C Max.	D	d (Nominal)	
MO (X) 1/2	9.0±1.0	11.1	3.2±0.5	0.7	480
MO (X) 1	12.0±1.0	15.0	4.0±0.5	0.8	800
MO (X) 2	15.5±1.0	18.0	6.0±1.0		1,400
MO (X) 3	24.5±1.0	28.0	9.0±1.0		4,600

※ 引线长度按照成型和编带而改变。

※ Lead length changes depending on taping and forming type.

品名构成 Type Designation

实例 Example

MO	2	C	T631	A	103	J
品种 Product Code	额定功率 Power Rating	端子表面材质 Terminal Surface Material	二次加工 Taping & Forming	包装 Packaging	公称电阻值 Nominal Resistance	阻值允许偏差 Resistance Tolerance
MO: 涂饰绝缘型氧化金属膜固定电阻 Coat-insulated Fixed Metal Oxide Film Resistors MOX: 涂饰绝缘型金属膜固定电阻 Coat-insulated Fixed Metal Film Resistors	1/2: 0.5W 1: 1W 2: 2W 3: 3W	C: SnCu	参照下述 See table below	A: AMMO包装 A: AMMO R: 卷 R: REEL 空栏: 箱子 Nil: BOX	3 digits	G: ±2% J: ±5%

预知关于此产品含有的环境负荷物质详情 (除EU-RoHS以外), 请与我们联系。
编带细节请参考卷末附录C。

Contact us when you have control request for environmental hazardous material other than the substance specified by EU-RoHS.

For further information on taping, please refer to APPENDIX C on the back pages.

二次加工对应表 Taping & Forming Matrix

型号 Type	轴向编带 Axial Taping			成型编带 Stand-off Axial Taping			L成形 L Forming						U成形 U Forming	M成形 M Forming		
	T52	T521	T631	L52	L521	L631	L12.5A	L15A	L20A	L25A	L30A	L35A	U	M15	M20	M25
MO (X) 1/2C	○	—	—	○	—	—	○	○	—	—	—	—	○	M15F	—	—
MO (X) 1C	○	○	—	—	○	—	—	○	○	—	—	—	○	M15S	—	—
MO (X) 2C	—	○	○	—	—	○	—	—	○	○	—	—	○	—	M20E	M25C
MO (X) 3C	—	—	—	—	—	—	—	—	—	—	○	○	—	—	—	—

额定值 Ratings

型 号 Type	额定功率 Power Rating	电阻值范围 (Ω) Resistance Range (E24)		电阻温度系数 T.C.R. (×10 ⁻⁶ /K)	最高使用电压 Max. Working Voltage	最高过载电压 Max. Overload Voltage	耐电压 Dielectric Withstanding Voltage	编带和包装数/AMMO包装 Taping&Q'ty/AMMO pack (pcs)		
		G: ±2%	J: ±5%					T52A	T521A	T631A
MO1/2C	0.5W	10~47k	10~47k	±200	250V	400V	400V	2,000	—	—
MO1C	1W		10~47k		350V	600V	500V	1,000	1,000	—
MO2C	2W	10~100k	10~120k		500V	800V		—	500	1,000
MO3C	3W		10~150k		E = √P×R	E×2.5	400V	—	—	—
MOX1/2C	0.5W	5.1~9.1	0.2~9.1					2,000	—	—
MOX1C	1W							1,000	1,000	—
MOX2C	2W							—	500	1,000
MOX3C	3W							—	—	—

额定环境温度 Rated Ambient Temperature : +70℃

使用温度范围 Operating Temperature Range: -55℃~+200℃

额定电压是√额定功率×公称电阻值所算出的值或表中最高使用电压两者中小的值为额定电压。

Rated voltage = √Power Rating × Resistance value or Max. working voltage, whichever is lower.

本样本手册中记载的产品规格如有变更, 恕不一一奉告。订购以及使用之前, 请仔细确认规格表的内容。

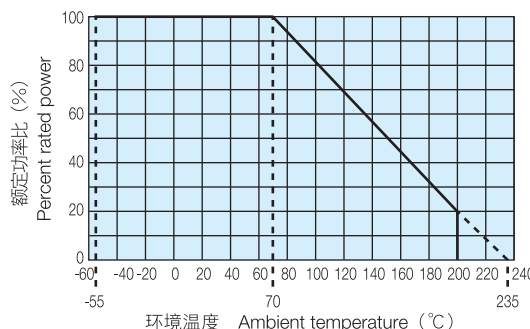
用于车载设备、医疗设备、航空设备以及其它涉及人身安全、或可能引起重大损失的设备上时, 请务必事先与我司联系。这些产品在这类用途中出现故障或失灵可能导致人身事故或严重损坏。

Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.

Contact our sales representatives before you use our products for applications including automobiles, medical equipment and aerospace equipment.

Malfunction or failure of the products in such applications may cause loss of human life or serious damage.

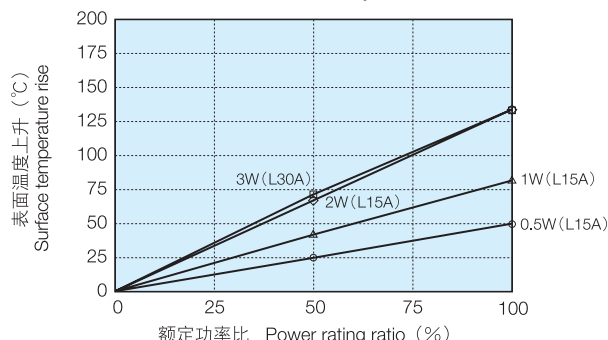
■ 负荷特性曲线 Derating Curve



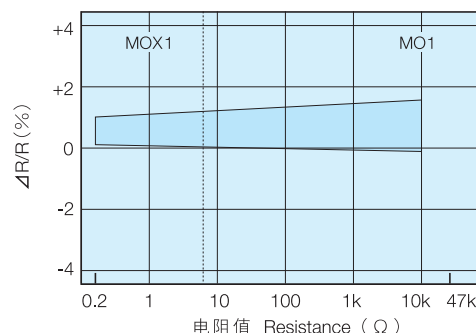
在环境温度70℃以上使用时，应按照上图负荷特性曲线，减小额定功率。

For resistors operated at an ambient temperature of 70°C or above, a power rating shall be derated in accordance with the above derating curve.

■ 表面温度上升 Surface Temperature Rise



■ 耐久性（额定负荷） Load Life At 70℃1000h



■ 性能 Performance

试验项目 Test Items	标准值 Performance Requirements $\Delta R \pm (\% + 0.05 \Omega)$		试验方法 Test Methods
	保证值 Limit	代表值 Typical	
电阻值 Resistance	在规定的允许偏差内 Within specified tolerance	—	测定处应离主体10mm±1mm Measuring points are 10mm±1mm from the end cap.
电阻温度系数 T.C.R.	在规定的允许偏差内 Within specified tolerance	—	室温/100℃以上 Room temperature + 100℃
过载（短时间） Overload (Short time)	1	0.5	额定电压×2.5倍或最高过载电压中低的一方施加5秒钟。 Rated voltage × 2.5 or Max. overload vol., whichever is lower, for 5s
耐焊接热 Resistance to soldering heat	1	0.5	260℃±5℃, 10s±1s
端子强度 Terminal strength	应当导线没有脱落、端子没有松动 No lead-coming off and loose terminals	—	Twist 360°, 5 times
温度突变 Rapid change of temperature	1	0.5	−55℃ (30min.) / +125℃ (30min.) 5 cycles
耐湿负荷 Moisture resistance	± (5%+0.1Ω)	2	40℃±2℃, 90%~95%RH, 1000h 1.5小时ON、0.5小时OFF的周期 1.5h ON/0.5h OFF cycle
在70℃时的耐久性 Endurance at 70℃	± (5%+0.1Ω)	2	70℃±2℃, 1000h 1.5小时ON、0.5小时OFF的周期 1.5h ON/0.5h OFF cycle
高温放置 High temperature exposure	± (2%+0.1Ω)	1	+125℃, 100h
耐溶剂性 Resistance to solvent	应当外观没有异常，表示容易辨认 No abnormality in appearance. Marking shall be easily legible	—	进行异丙醇的超声波清洗2分钟 Ultrasonic washing with Isopropyl alcohol for 2 min. 输出 Power : 0.3W/cm², 频率 f : 28kHz, 温度阻燃性 Temp : 35℃±5℃
阻燃性 Flame retardant	应不发火和自动发火。 No evidence of flaming or self-flaming.	—	耐火性：把试验火焰在主体上烧15秒钟，取下15秒钟，5次循环。 Flame test : The test flame shall be applied and removed for each 15 sec respectively to repeat the cycle 5 times. 过载耐燃性：把相当于额定功率2倍、4倍、8倍、16倍、32倍的电力（AC）分别施加1分钟直至断线。 但施加电压不应超过最高使用电压的4倍。 Overload flame retardant : Power (AC) corresponding to 2, 4, 8, 16 and 32 times the power rating shall be applied for each 1min. until disconnection occurs. However the applied voltage shall not exceed the value of 4 times the maximum operating voltage.

■ 使用注意事项 Precautions for Use

- 由于包装涂层是难燃性特种涂料，对外部冲击比较脆弱，使用时应注意。清洗应在最小限度。清洗后涂层膜相当脆弱，因此，在充分干燥前在涂层膜上不要施加外力。由于干燥后才返回原来的强度，因此应注意在清洗后约20分钟内，不施加外力到电阻的涂层膜上。
- Be careful to handle these resistors because outer coatings are comparatively weak to outer shock due to flameproof special coats. Please wash them to a minimum. No external force is given to the coating films until they are well dried because the coating films become weaker right after washing. The original strength will be returned after they are dried, so please pay attention not to apply any external force onto the coating film of resistors for 20 minutes after drying. Especially no PC boards shall be piled up.

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