

Type MM and ML Precision Film Resistors

High Temperature Resistors for Geophysical, Industrial, and Military Requirements

Type MM and ML resistors have a proven performance history in industrial and military applications. Utilizing our proven Micronox® resistance films, these resistors are available with power ratings up to 1 Watt and resistance values to 10 Megohms. These resistors are ideal for applications requiring tolerances as close as 0.1% and extended life stability of 0.1% per 1,000 hours.

Some models of Type MM and ML resistors are manufactured with Caddock's Non-Inductive Design that provides for neighboring lines to carry current in opposite directions. This efficient non-inductive construction is accomplished without derating of any performance advantages.



Type MM features:

- Max. Operating Temperature to +275°C.
- High Power Rating at +125°C.
- TC of 50 ppm/°C from -15°C to +105°C.
- Non-Inductive Performance Available.

Type ML features:

- TC of 50 ppm/°C from -15°C to +105°C.
- Non-Inductive Performance Available.

MM112, ML104	
MM125, ML114	
MM152, ML124	
MM177, ML131	
MM215, ML181	

Model No.	Wattage	Max. Voltage	Oper. Temp. (Max.)	Dielect. Strength	Resistance		Dimensions in inches and (millimeters)		
					Min.	Max.	A	B	C
MM112	0.12	200	275°C	400	45 Ω	500 K	.160 ±.010 (4.06 ±.26)	.065 ±.010 (1.65 ±.26)	.018 ±.004 (.48 ±.10)
MM125	0.25	200	275°C	500	30 Ω	1 Meg	.188 ±.020 (4.78 ±.51)	.070 ±.015 (1.78 ±.38)	.020 ±.002 (.51 ±.05)
MM152	0.4	300	275°C	750	30 Ω	2 Meg	.250 ±.020 (6.35 ±.51)	.094 ±.006 (2.39 ±.15)	.025 ±.002 (.64 ±.05)
MM177	0.6	500	275°C	750	45 Ω	5 Meg	.313 ±.020 (7.95 ±.51)	.094 ±.006 (2.39 ±.15)	.025 ±.002 (.64 ±.05)
MM215	1.0	800	275°C	1,000	45 Ω	10 Meg	.400 ±.020 (10.16 ±.51)	.150 ±.010 (3.81 ±.26)	.025 ±.002 (.64 ±.05)
ML104	0.08	200	175°C	400	50 Ω	300 K	.160 ±.010 (4.06 ±.26)	.065 ±.010 (1.65 ±.26)	.018 ±.004 (.48 ±.10)
ML114	0.15	200	175°C	500	50 Ω	500 K	.188 ±.020 (4.78 ±.51)	.070 ±.015 (1.78 ±.38)	.020 ±.002 (.51 ±.05)
ML124	0.25	300	175°C	750	50 Ω	600 K	.250 ±.020 (6.35 ±.51)	.094 ±.006 (2.39 ±.15)	.025 ±.002 (.64 ±.05)
ML131	0.4	500	175°C	750	50 Ω	1 Meg	.313 ±.020 (7.95 ±.51)	.094 ±.006 (2.39 ±.15)	.025 ±.002 (.64 ±.05)
ML181	0.6	600	175°C	750	50 Ω	5 Meg	.400 ±.020 (10.16 ±.51)	.150 ±.010 (3.81 ±.26)	.025 ±.002 (.64 ±.05)

Models with low inductance construction are in shaded areas.
 Models with Caddock's Non-Inductive Resistance Pattern are in non-shaded areas.

Replacement Notes:

Model MM216 replaced by MS221
 Model MM217 replaced by MS223
 Model MM224 replaced by MS244
 Model MM225 replaced by MS245
 Model MM236 replaced by MS260

Model ML212 replaced by MS221
 Model ML213 replaced by MS223
 Model ML218 replaced by MS244
 Model ML219 replaced by MS245
 Model ML226 replaced by MS260

Ordering Information:

Model Number: ML124 - 20.0K - 1% Tolerance
 Resistor Value: _____

Note: The MM and ML resistors are intended for high performance electronics applications that are outside the scope of the RoHS directive. Contact Caddock Applications Engineering for an RoHS compliant alternative.

Specifications:

Resistance Tolerance: ±1% (tolerances to 0.1% on special order).

Temperature Coefficient: 50 ppm/°C referenced to +25°C, ΔR taken at -15°C and +105°C.

Insulation Resistance: 10,000 Megohms, min.

Overload/Overvoltage: 5 times rated power with applied voltage not to exceed 1.5 times maximum continuous operating voltage for 5 seconds, ΔR 0.5% max. or 0.5 ohm max., whichever is greater.

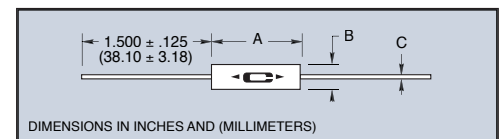
Thermal Shock: Mil-Std-202, Method 107, Cond. F, ΔR 0.2% max. or 0.5 ohm max., whichever is greater.

Moisture Resistance: Mil-Std-202, Method 106, ΔR 0.5% max. or 0.5 ohm max., whichever is greater.

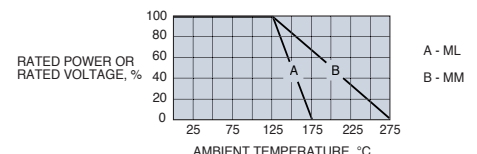
Loadlife: 1,000 hours at +125°C at rated power, not to exceed rated voltage, ΔR 0.5% max. or 0.5 ohm max., whichever is greater.

Solderable leads

Encapsulation: Transfer Molded.



Derating Curve:



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 Roseburg, Oregon 97470-9422
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Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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