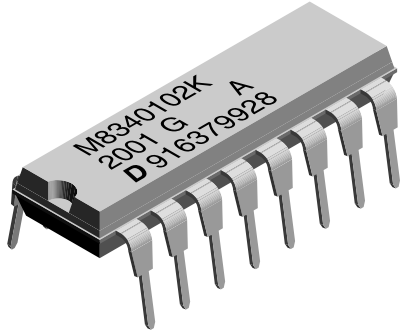


Thick Film Resistor Networks

Military, MIL-PRF-83401 Qualified, Type RZ

Dual-In-Line Package, 01, 03, 05 Schematics



FEATURES

- MIL-PRF-83401 qualified
- Epoxy molded construction
- All device leads are hot-solder dipped
- Available in tube pack
- TCR available in "K" ($\pm 100\text{ppm}/^\circ\text{C}$) or "M" ($\pm 300\text{ppm}/^\circ\text{C}$) depending on style
- 100% screen tested per Group A, Subgroup 1 of MIL-PRF-83401
- All devices are capable of passing the MIL-STD-202, Method 210, Condition D, "Resistance to Soldering Heat" test

STANDARD ELECTRICAL SPECIFICATIONS

| MODEL/ PIN NO./ PROFILE | SCHEMATIC | RESISTOR POWER RATING Max. @ 70°C W | PACKAGE POWER RATING Max. @ 25°C W | RESISTANCE RANGE Ω | STANDARD TOLERANCE % | TEMPERATURE COEFFICIENT** (- 55°C to + 125°C) | WEIGHT g |
|-------------------------------|-----------|--|---|---------------------------------|----------------------------|---|-------------|
| MDM 14 | 01 | 0.10 | 1.30 | 10 - 1M | $\pm 1, \pm 2, \pm 5$ | K, M | 1.3 |
| MDM 14 | 03 | 0.20 | 1.40 | 10 - 1M | $\pm 1, \pm 2, \pm 5$ | K, M | 1.3 |
| MDM 14 | 05 | 0.05 | 1.20 | Consult factory | $\pm 1, \pm 2, \pm 5$ | K, M | 1.3 |
| MDM 16 | 01 | 0.10 | 1.50 | 10 - 1M | $\pm 1, \pm 2, \pm 5$ | K, M | 1.5 |
| MDM 16 | 03 | 0.20 | 1.60 | 10 - 1M | $\pm 1, \pm 2, \pm 5$ | K, M | 1.5 |
| MDM 16 | 05 | 0.05 | 1.40 | Consult factory | $\pm 1, \pm 2, \pm 5$ | K, M | 1.5 |

* K = $\pm 100\text{ppm}/^\circ\text{C}$; M = $\pm 300\text{ppm}/^\circ\text{C}$

TECHNICAL SPECIFICATIONS

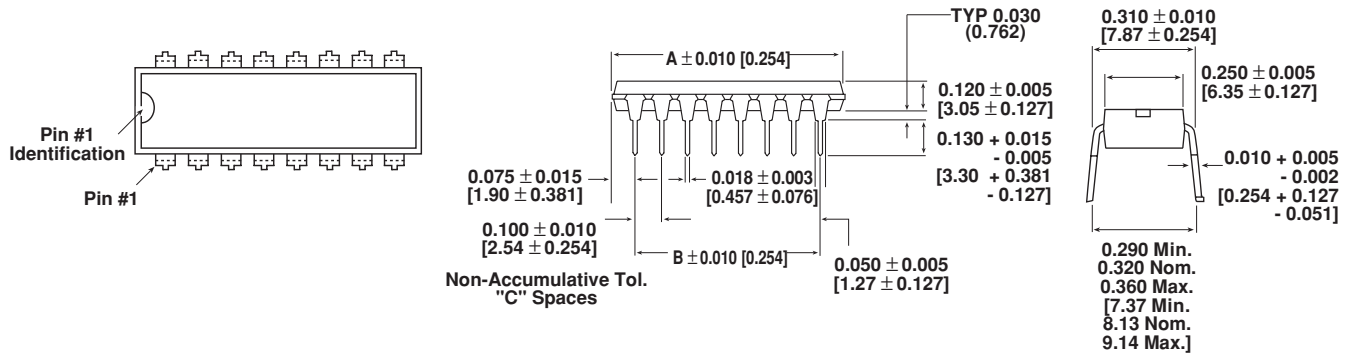
| PARAMETER | UNIT | MDM Series |
|-----------------------------------|------------------|---------------|
| Maximum Operating Voltage | VDC | 100 |
| Voltage Coefficient of Resistance | V_{eff} | < 50ppm |
| Dielectric Strength | VAC | 200 per min. |
| Insulation Resistance | Ω | 10,000M |
| Operating Temperature Range | $^\circ\text{C}$ | - 55 to + 125 |
| Storage Temperature Range | $^\circ\text{C}$ | - 55 to + 150 |

MECHANICAL SPECIFICATION

| | |
|---------------------------------|---------------------------------------|
| Marking Resistance to Solvents: | Permanency testing per MIL-PRF-83401. |
| Solderability: | Per MIL-PRF-83401. |
| Body: | Molded epoxy. |
| Terminals: | Copper alloy, hot-solder dipped. |



DIMENSIONS in inches [millimeters]



| TYPE | A | B | C |
|-------|---------------|---------------|---|
| MDM14 | 0.750 [19.05] | 0.600 [15.24] | 6 |
| MDM16 | 0.850 [21.59] | 0.700 [17.78] | 7 |

ORDERING INFORMATION - MILITARY PART NUMBER

| DETAIL SPEC. NO. | CHARACTERISTIC | RESISTANCE VALUE | TOLERANCE | SCHEMATIC |
|--|--|---|----------------------------------|-------------|
| M8340101 M8340102 M8340101 | M M K | 2201 4701 A001* | G G G | B A J |
| M8340101 = 14 Pin DIP RZ010 M8340102 = 16 Pin DIP RZ020 | "K" = ± 100ppm/°C "M" = ± 300ppm/°C | The first three digits are significant figures. The last digit specifies the number of zeros to follow = 01 and 03 Schematics. For 05 Schematic see footnote (*). | F = ± 1% G = ± 2% J = ± 5% | |

EXAMPLE:

M8340101M2201GB = A dual-in-line resistor network with 14 pins, a TCR of ± 300ppm/°C, resistance value of 2.2k ohm, tolerance of 2% and to Schematic "B".

EXAMPLE:

M8340102M4701GA = A dual-in-line resistor network with 16 pins, a TCR of ± 300ppm/°C, resistance value of 4.7k ohm, tolerance of 2% and to Schematic "A".

EXAMPLE:

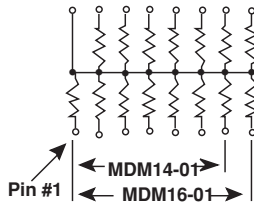
M8340101KA001GJ = A dual-in-line resistor network with 14 pins, a TCR of ± 100ppm/°C, R1 resistance value of 82 ohm, R2 resistance value of 130 ohm, tolerance of ± 2% and to Schematic "J".

* Schematic "J" resistance values are specified by a 4-digit code, which comes from MIL-R-83401. The codes and corresponding resistance values are:

| CODE | R1 (Ohms) | R1 (Ohms) | CODE | R1 (Ohms) | R1 (Ohms) |
|------|-----------|-----------|------|-----------|-----------|
| A001 | 82 | 130 | A010 | 330 | 470 |
| A002 | 120 | 200 | A011 | 330 | 680 |
| A003 | 130 | 210 | A012 | 1.5k | 3.3k |
| A004 | 160 | 260 | A013 | 3k | 6.2k |
| A005 | 180 | 240 | A014 | 180 | 270 |
| A006 | 180 | 390 | A015 | 270 | 270 |
| A007 | 220 | 270 | A016 | 560 | 560 |
| A008 | 220 | 330 | A017 | 560 | 1.2k |
| A009 | 330 | 390 | A018 | 620 | 2.7k |

CIRCUIT APPLICATIONS

01 Schematic



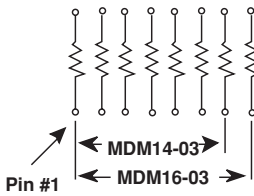
MDM14-01 (M8340101xxxxxB)
MDM16-01 (M8340102xxxxxB)

13 or 15 resistors with one pin common

The MDMxx-01 provides the user with a choice of 13 or 15 nominally equal resistors, each connected to a common pin. Commonly used in the following applications:

- MOS/ROM Pull-up/Pull-down
- Open Collector Pull-up
- "Wired OR" Pull-up
- Power Driven Pull-up
- TTL Input Pull-down
- Digital Pulse Squaring
- TTL Unused Gate Pull-up
- High Speed Parallel Pull-up

03 Schematic



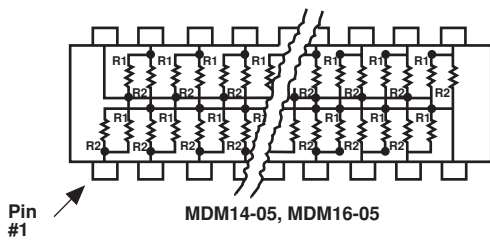
MDM14-03 (M8340101xxxxxA)
MDM16-03 (M8340102xxxxxA)

7 or 8 isolated resistors

The MDMxx-03 provides the user with a choice of 7 or 8 nominally equal resistors, with each resistor isolated from all others. Commonly used in the following applications:

- "Wired OR" Pull-up
- Power Driven Pull-up
- Line Termination
- Long-line Impedance Balancing
- LED Current Limiting
- ECL Output Pull-down
- TTL Input Pull-down

05 Schematic

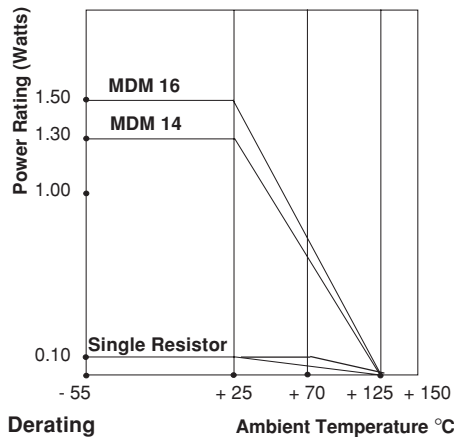


MDM14-05 (M8340101xxxxxJ)
MDM16-05 (M8340102xxxxxJ)

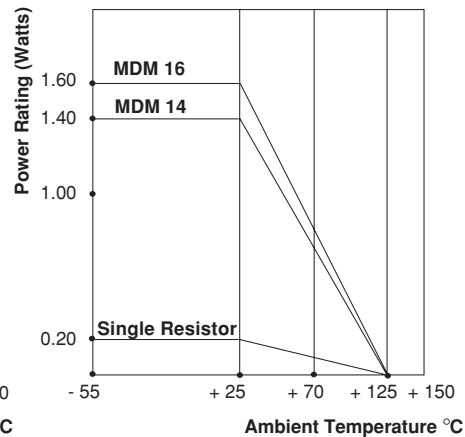
12 or 14 resistor pairs

The MDMxx-05 provides the user with a choice of 12 or 14 pairs of R1/R2 resistor values for pulse squaring and TTL dual-line terminating requirements.

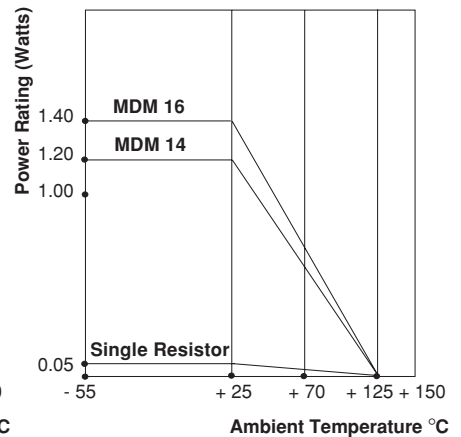
01 Schematic



03 Schematic



05 Schematic





| PERFORMANCE | | |
|---------------------------------|--|--|
| TEST | CONDITIONS | MAX. ΔR (Typical Test Lots) |
| Power Conditioning | 1.5 x rated power, applied 1.5 hours "ON" and 0.5 hour "OFF" for 100 hours \pm 4 hours at + 25°C ambient temperature | \pm 0.50% ΔR |
| Thermal Shock | 5 cycles between - 65°C and + 125°C | \pm 0.50% ΔR |
| Short Time Overload | 2.5 x rated working voltage 5 seconds | \pm 0.25% ΔR (Char. K) \pm 0.50% ΔR (Char. M) |
| Low Temperature Operation | 45 minutes at full rated working voltage at - 65°C | \pm 0.25% ΔR (Char. K) \pm 0.50% ΔR (Char. M) |
| Moisture Resistance | 240 hours with humidity ranging from 80% RH to 98% RH | \pm 0.50% ΔR |
| Resistance to Soldering Heat | Leads immersed in + 260°C solder to within 1/16" of body for 10 seconds | \pm 0.25% ΔR |
| Shock | Total of 18 shocks at 100 G's | \pm 0.25% ΔR |
| Vibration | 12 hours at maximum of 20 G's between 10 and 2,000 Hz | \pm 0.25% ΔR |
| Load Life | 1,000 hours at + 70°C, rated power applied 1.5 hours "ON", 0.5 hour "OFF" for full 1000 hour period | \pm 0.50% ΔR (Char. K) \pm 2.00% ΔR (Char. M) |
| Terminal Strength | 4.5 pound pull for 30 seconds | \pm 0.25% ΔR |
| Insulation Resistance | 10,000 Megohm (minimum) | — |
| Dielectric Withstanding Voltage | No evidence of arcing or damage (200 V RMS for 1 minute) | — |