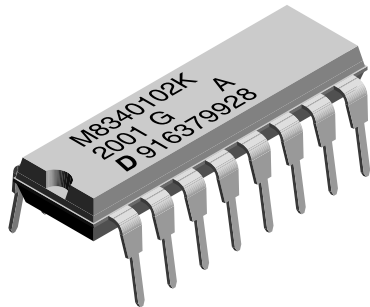




Thick Film Resistor Networks, Military, MIL-PRF-83401 Qualified, Type RZ010 and RZ020 Dual-In-Line, Molded DIP



FEATURES

- Isolated, bussed and dual terminator schematics available
- MIL-PRF-83401 qualified
- Epoxy molded construction
- All device leads are hot-solder dipped
- Available in tube pack
- TCR available in "K" (± 100 ppm/ $^{\circ}$ C) or "M" (± 300 ppm/ $^{\circ}$ 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 | | | | | | | | | |
|------------------------------------|-----------|-----------------|-----------|---|---|---------------------------|----------------------------------|--|----------|
| VISHAY DALE MODEL/ PIN NO. | MIL STYLE | MIL SPEC. SHEET | SCHEMATIC | POWER RATING ELEMENT $P_{70^{\circ}\text{C}}$ W | POWER RATING PACKAGE $P_{70^{\circ}\text{C}}$ W | RESISTANCE RANGE Ω | TOLERANCE \pm % ⁽²⁾ | TEMPERATURE COEFFICIENT ⁽¹⁾ (-55 $^{\circ}$ C to +125 $^{\circ}$ C) \pm ppm/ $^{\circ}$ C | WEIGHT g |
| MDM14 | RZ010 | 01 | 01 (B) | 0.10 | 1.30 | 10 to 1M | 1, 2, 5 | 100, 300 | 1.3 |
| | | | 03 (A) | 0.20 | 1.40 | 10 to 1M | | | |
| | | | 05 (J) | 0.05 | 1.20 | Consult factory | | | |
| MDM16 | RZ020 | 02 | 01 (B) | 0.10 | 1.50 | 10 to 1M | 1, 2, 5 | 100, 300 | 1.5 |
| | | | 03 (A) | 0.20 | 1.60 | 10 to 1M | | | |
| | | | 05 (J) | 0.05 | 1.40 | Consult factory | | | |

Notes

- ⁽¹⁾ K = ± 100 ppm/ $^{\circ}$ C; M = ± 300 ppm/ $^{\circ}$ C
- ⁽²⁾ ± 2 % standard, ± 1 % and ± 5 % available

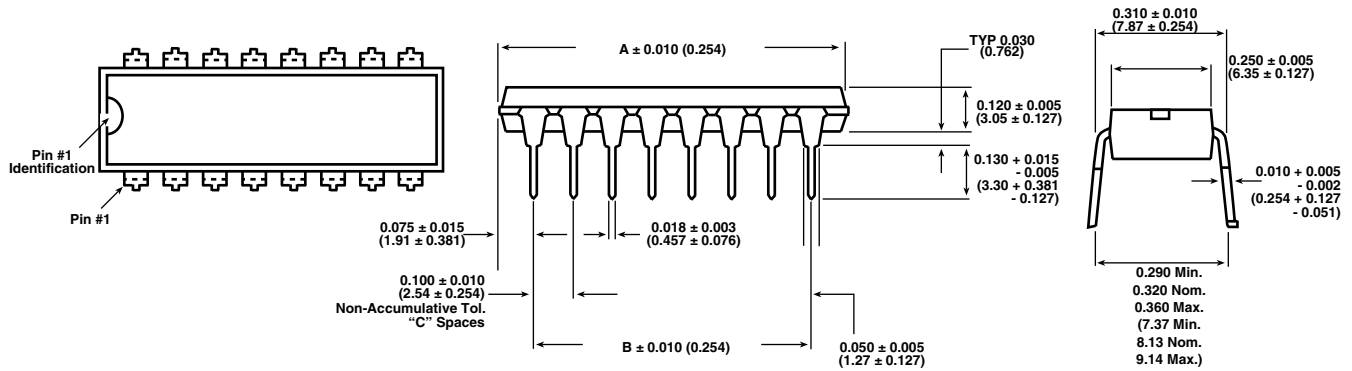
| GLOBAL PART NUMBER INFORMATION | | | | | | | | | | | | | | | | | |
|---|----------------------------|----------------------------|---|---|---|---|---|----------------------------|--|---|---|---|---|---|---|---|---|
| New Global Part Numbering: M8340101M2201GBD04 (preferred part numbering format) | | | | | | | | | | | | | | | | | |
| M | 8 | 3 | 4 | 0 | 1 | 0 | 1 | M | 2 | 2 | 0 | 1 | G | B | D | 0 | 4 |
| MIL STYLE | SPEC SHEET | CHARACTERISTIC | RESISTANCE VALUE | | | | TOLERANCE | SCHEMATIC | PACKAGING | | | | | | | | |
| M83401 | 01 = 14 pin 02 = 16 pin | K = 100 ppm M = 300 ppm | 3 digit significant figure, followed by a multiplier 10R0 = 10 Ω 3302 = 33 k Ω 1004 = 1 M Ω | | | | F = ± 1 % G = ± 2 % J = ± 5 % | A = Isolated B = Bussed | D04 = Tin/lead, tube DSL = Tin/lead, tube, single lot date code | | | | | | | | |
| Historical Part Number Example: M8340101M2201GB (will continue to be accepted) | | | | | | | | | | | | | | | | | |
| M83401 | 01 | M | 2201 | | | | G | B | D04 | | | | | | | | |
| MIL STYLE | SPEC SHEET | CHARACTERISTIC | RESISTANCE VALUE | | | | TOLERANCE | SCHEMATIC | PACKAGING | | | | | | | | |
| New Global Part Numbering: M8340102KA001GJD04 (preferred part numbering format) | | | | | | | | | | | | | | | | | |
| M | 8 | 3 | 4 | 0 | 1 | 0 | 2 | K | A | 0 | 0 | 1 | G | J | D | 0 | 4 |
| MIL STYLE | SPEC SHEET | CHARACTERISTIC | RESISTANCE VALUE | | | | TOLERANCE | SCHEMATIC | PACKAGING | | | | | | | | |
| M83401 | 01 = 14 pin 02 = 16 pin | K = 100 ppm M = 300 ppm | Per Std. MIL. Spec. (see Impedance Codes table) | | | | F = ± 1 % G = ± 2 % J = ± 5 % | J = Dual terminator | D04 = Tin/lead, tube DSL = Tin/lead, tube, single lot date code | | | | | | | | |
| Historical Part Number Example: M8340102KA001GJ (will continue to be accepted) | | | | | | | | | | | | | | | | | |
| M83401 | 02 | K | A001 | | | | G | J | D04 | | | | | | | | |
| MIL STYLE | SPEC SHEET | CHARACTERISTIC | RESISTANCE VALUE | | | | TOLERANCE | SCHEMATIC | PACKAGING | | | | | | | | |

Note

- For additional information on packaging, refer to the Through-Hole Network Packaging document (www.vishay.com/doc?31542).



DIMENSIONS in inches (millimeters)



| VISHAY DALE MODEL | A | B | C |
|-------------------|---------------|---------------|---|
| MDM14 | 0.750 (19.05) | 0.600 (15.24) | 6 |
| MDM16 | 0.850 (21.59) | 0.700 (17.78) | 7 |

| IMPEDANCE CODES | | | | | |
|-----------------|--------------------|--------------------|------|--------------------|--------------------|
| CODE | R ₁ (Ω) | R ₂ (Ω) | CODE | R ₁ (Ω) | R ₂ (Ω) |
| 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 |

| TECHNICAL SPECIFICATIONS | | |
|-----------------------------------|------------------|-------------|
| PARAMETER | UNIT | MDM SERIES |
| Maximum Operating Voltage | V _{DC} | 100 |
| Voltage Coefficient of Resistance | V _{eff} | < 50 ppm |
| Dielectric Strength | V _{AC} | 200 per min |
| Insulation Resistance | Ω | 10 000 M |
| Operating Temperature Range | °C | -55 to +125 |
| Storage Temperature Range | °C | -55 to +150 |

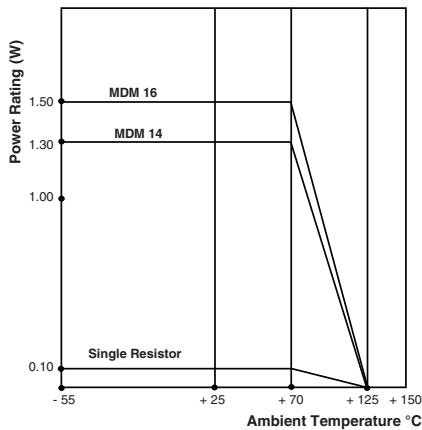
| MECHANICAL SPECIFICATIONS | |
|--------------------------------|--------------------------------------|
| Marking Resistance to Solvents | Permanency testing per MIL-PRF-83401 |
| Solderability | Per MIL-PRF-83401 |
| Body | Molded epoxy |
| Terminals | Copper alloy, hot-solder dipped |

| CIRCUIT APPLICATIONS | |
|----------------------------|---|
| <p>01 Schematic</p> | <p>MDM1401 (M8340101xxxxxB) MDM1601 (M8340102xxxxxB)</p> <p>13 or 15 resistors with one pin common</p> <p>The MDMxx01 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:</p> <ul style="list-style-type: none"> • 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 |
| <p>03 Schematic</p> | <p>MDM1403 (M8340101xxxxxA) MDM1603 (M8340102xxxxxA)</p> <p>7 or 8 isolated resistors</p> <p>The MDMxx03 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:</p> <ul style="list-style-type: none"> • “Wired OR” Pull-up • Power Driven Pull-up • Power Gate Pull-up • Line Termination • Long-line Impedance Balancing • LED Current Limiting • ECL Output Pull-down • TTL Input Pull-down |
| <p>05 Schematic</p> | <p>MDM1405 (M8340101xxxxxJ) MDM1605 (M8340102xxxxxJ)</p> <p>12 or 14 resistor pairs</p> <p>The MDMxx05 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.</p> |

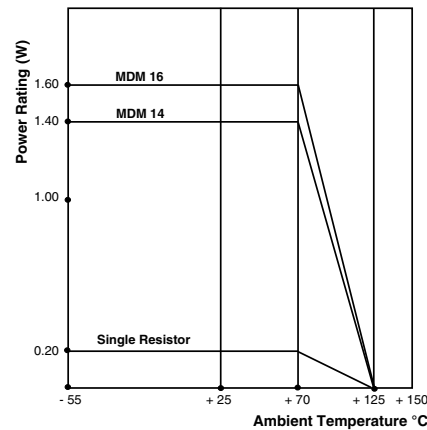
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DERATING

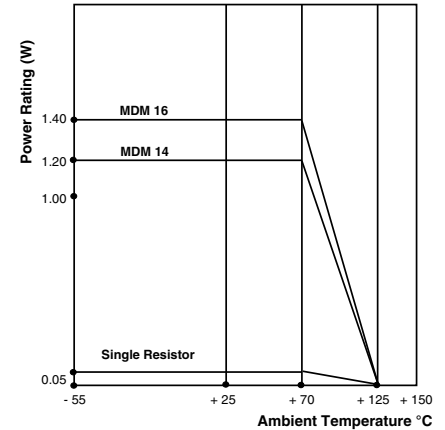
01 Schematic



03 Schematic



05 Schematic





| PERFORMANCE | | |
|---------------------------------|---|--|
| TEST | CONDITIONS | MAX. ΔR (TYPICAL TEST LOTS) |
| Power Conditioning | 1.5 x rated power, applied 1.5 h "ON" and 0.5 h "OFF" for 100 h ± 4 h at +25 °C ambient temperature | ± 0.50 % ΔR |
| Thermal Shock | 5 cycles between -65 °C and +125 °C | ± 0.50 % ΔR |
| Short Time Overload | 2.5 x rated working voltage for 5 s | ± 0.25 % ΔR (Char. K) ± 0.50 % ΔR (Char. M) |
| Low Temperature Operation | 45 min at full rated working voltage at -65 °C | ± 0.25 % ΔR (Char. K) ± 0.50 % ΔR (Char. M) |
| Moisture Resistance | 240 h with humidity ranging from 80 % RH to 98 % RH | ± 0.50 % ΔR |
| Resistance to Soldering Heat | Leads immersed in +260 °C solder to within 1/16" of body for 10 s | ± 0.25 % ΔR |
| Shock | Total of 18 shocks at 100 g's | ± 0.25 % ΔR |
| Vibration | 12 h at maximum of 20 g's between 10 Hz and 2000 Hz | ± 0.25 % ΔR |
| Load Life | 1000 h at +70 °C, rated power applied 1.5 h "ON", 0.5 h "OFF" for full 1000 h period | ± 0.50 % ΔR (Char. K) ± 2.00 % ΔR (Char. M) |
| Terminal Strength | 4.5 pound pull for 30 s | ± 0.25 % ΔR |
| Insulation Resistance | 10 000 MΩ (minimum) | - |
| Dielectric Withstanding Voltage | No evidence of arcing or damage (200 V _{RMS} for 1 min) | - |



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