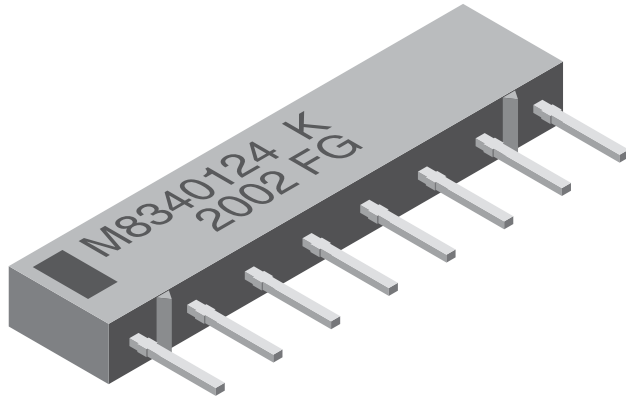




Thick Film Resistor Networks, Military, MIL-PRF-83401 Qualified, Type RZ240, Single-In-Line, Molded SIP



FEATURES

- Isolated, bussed, and dual terminator schematics available
- MIL-PRF-83401 qualified
- 0.195" (4.95 mm) "A" maximum seated height
- Thick film resistive elements
- TCR available in "K" (± 100 ppm/ $^{\circ}$ C) or "M" (± 300 ppm/ $^{\circ}$ C) characteristic
- All device leads are hot-solder dipped
- Rugged molded case construction
- Compatible with automatic insertion equipment
- 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
- Available in tube pack

| STANDARD ELECTRICAL SPECIFICATIONS | | | | | | | | | |
|--|-----------|-----------------|-----------|---|---|------------------------------|-------------------------------------|--|-------------|
| VISHAY DALE MODEL/ PIN NO/ PROFILE | 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 ⁽¹⁾ \pm % | TEMPERATURE COEFFICIENT ⁽²⁾ (-55 $^{\circ}$ C to +125 $^{\circ}$ C) \pm ppm/ $^{\circ}$ C | WEIGHT g |
| MSM10A-01-S4 | RZ240 | 24 | 01 (C) | 0.12 | 1.08 | 10 to 1M | 1, 2, 5 | 100, 300 | 0.6 |
| MSM10A-03-S2 | | | 03 (G) | 0.12 | 0.60 | 10 to 1M | | | |
| MSM10A-05-S3 | | | 05 (H) | 0.07 | 1.08 | Consult factory | | | |

Notes

- DSCC has created a drawing to support the need for a 10 pin, single in line package (SIP), 0.350" maximum seated height resistor network product with an extended lead length. Vishay Dale is listed as a resource on this drawing as follows:

| DSCC DRAWING NUMBER | VISHAY DALE MODEL | SCHEMATIC | POWER RATING ELEMENT $P_{70^{\circ}\text{C}}$ W | POWER RATING PACKAGE $P_{70^{\circ}\text{C}}$ W | RESISTANCE RANGE Ω | TOLERANCE ⁽¹⁾ \pm % | TEMPERATURE COEFFICIENT ⁽²⁾ (-55 $^{\circ}$ C to +125 $^{\circ}$ C) \pm ppm/ $^{\circ}$ C | MAX. WORKING VOLTAGE ⁽¹⁾ V |
|---------------------|-------------------|-----------|---|---|------------------------------|-------------------------------------|--|--|
| 92013 | MSP10C-01-S125 | 01 (C) | 0.2 | 1.8 | 10 to 1M | 1, 2, 5 | 100 | 50 |
| | MSP10C-03-S154 | 03 (G) | 0.2 | 1.0 | 10 to 1M | | | |
| | MSP10C-05-S122 | 05 (H) | 0.11 | 1.8 | Consult factory | | | |

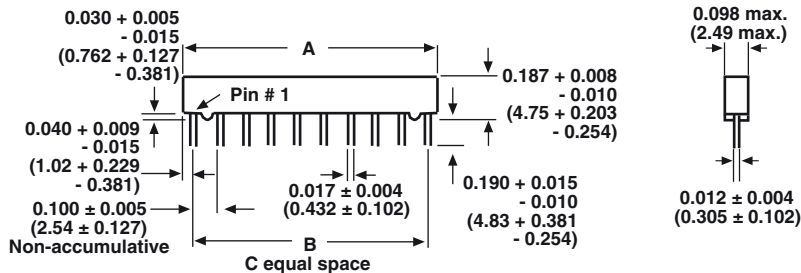
- This drawing can be viewed at: www.landandmaritime.dla.mil/Programs/MilSpec/ListDwgs.aspx?DocTYPE=DSCCdwg.
- ⁽¹⁾ ± 2 % standard, ± 1 % and ± 5 % available
- ⁽²⁾ K = ± 100 ppm/ $^{\circ}$ C; M = ± 300 ppm/ $^{\circ}$ C

| GLOBAL PART NUMBER INFORMATION | | | | | | | | | | | | | | | | | |
|---|--|----------------------------|--|-------------------------------------|----------------------------|--|---|---|---|---|---|---|---|---|---|---|---|
| New Global Part Numbering: M8340124K1003GCD03 (preferred part numbering format) | | | | | | | | | | | | | | | | | |
| M | 8 | 3 | 4 | 0 | 1 | 2 | 4 | K | 1 | 0 | 0 | 3 | G | C | D | 0 | 3 |
| MIL STYLE | SPEC. SHEET | CHARACTERISTIC | RESISTANCE VALUE | TOLERANCE | SCHEMATIC | PACKAGING | | | | | | | | | | | |
| M83401 | 24 = 10 pin, "A" profile, 0.190" leads | K = 100 ppm M = 300 ppm | 3 digit significant figure, followed by a multiplier 10R0 = 10 Ω 3302 = 33 kΩ 1004 = 1 MΩ | F = ± 1 % G = ± 2 % J = ± 5 % | C = Bussed G = Isolated | D03 = Tin/lead, tube DSL = Tin/lead, tube, single lot date code | | | | | | | | | | | |
| Historical Part Number: M8340124K1003GC (will continue to be accepted) | | | | | | | | | | | | | | | | | |
| M83401 | 24 | K | 1003 | G | C | D03 | | | | | | | | | | | |
| MIL STYLE | SPEC SHEET | CHARACTERISTIC | RESISTANCE VALUE | TOLERANCE | SCHEMATIC | PACKAGING | | | | | | | | | | | |
| New Global Part Numbering: M8340124KA001GHD03 (preferred part numbering format) | | | | | | | | | | | | | | | | | |
| M | 8 | 3 | 4 | 0 | 1 | 2 | 4 | K | A | 0 | 0 | 1 | G | H | D | 0 | 3 |
| MIL STYLE | SPEC. SHEET | CHARACTERISTIC | RESISTANCE VALUE | TOLERANCE | SCHEMATIC | PACKAGING | | | | | | | | | | | |
| M83401 | 24 = 10 pin, "A" profile, 0.190" leads | K = 100 ppm M = 300 ppm | Per Std. MIL. Spec. (see Impedance Codes table) | F = ± 1 % G = ± 2 % J = ± 5 % | H = Dual terminator | D03 = Tin/lead, tube DSL = Tin/lead, tube, single lot date code | | | | | | | | | | | |
| Historical Part Number: M8340124KA001GH (will continue to be accepted) | | | | | | | | | | | | | | | | | |
| M83401 | 24 | K | A001 | G | H | D03 | | | | | | | | | | | |
| 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)

"A" Profile


| VISHAY DALE MODEL | A | B | C |
|-------------------|----------------------------------|------------------|---|
| MSM10 | 0.983 ± 0.015 (24.97 ± 0.381) | 0.900 (22.86) | 9 |

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

| MECHANICAL SPECIFICATIONS | |
|---------------------------|---------------------------------|
| Body | Molded epoxy |
| Terminals | Copper alloy, hot-solder dipped |
| Solderability | Per MIL-PRF-83401 |

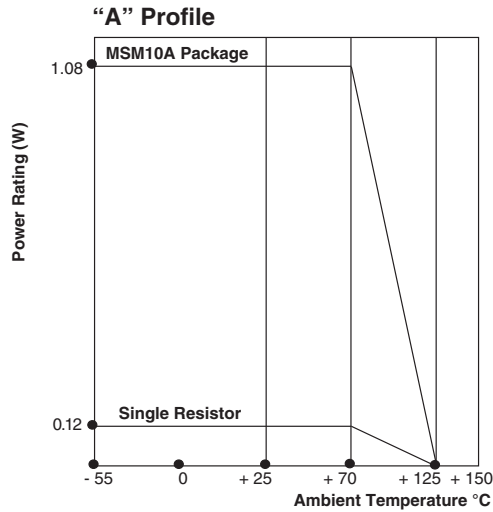
CAGE CODE: 91637 and 2799A (formerly SH903)



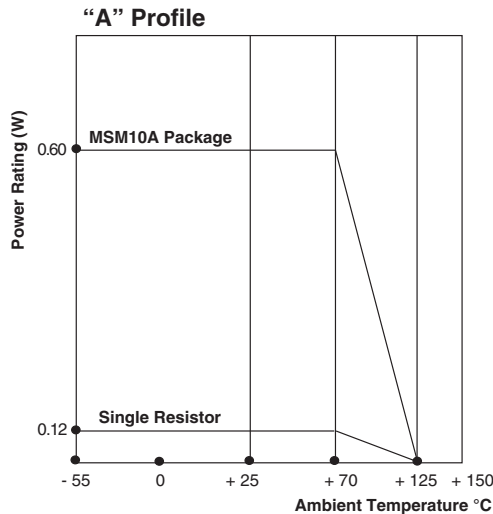
| MILITARY IMPEDANCE CODES | | | | | |
|--------------------------|--------------------|--------------------|------|--------------------|--------------------|
| CODE | R ₁ (Ω) | R ₂ (Ω) | CODE | R ₁ (Ω) | R ₂ (Ω) |
| A001 | 82 | 130 | A011 | 330 | 680 |
| A002 | 120 | 200 | A012 | 1.5K | 3.3K |
| A003 | 130 | 210 | A013 | 3K | 6.2K |
| A004 | 160 | 260 | A014 | 180 | 270 |
| A005 | 180 | 240 | A015 | 270 | 270 |
| A006 | 180 | 390 | A016 | 560 | 560 |
| A007 | 220 | 270 | A017 | 560 | 1.2K |
| A008 | 220 | 330 | A018 | 620 | 2.7K |
| A009 | 330 | 390 | A019 | 150 | 1K |
| A010 | 330 | 470 | A020 | 1K | 1K |

DERATING

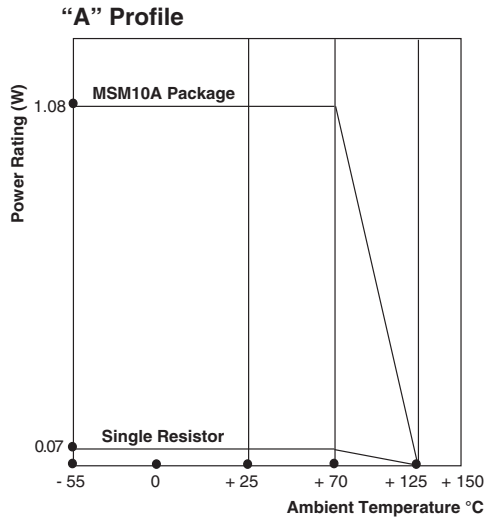
01 Schematic



03 Schematic



05 Schematic



| CIRCUIT APPLICATIONS | |
|----------------------------|--|
| <p>01 Schematic</p> | <p>9 resistors with one pin common "A" Profile MSM10A-01-S4 (M8340124xxxxxC)</p> <p>The MSM10A-01-S4 molded single-in-line resistor network provides the user with 9 nominally equal resistors, each connected to a common pin (pin no. 1).</p> <p>Commonly used in the following applications:</p> <ul style="list-style-type: none"> • "Wired OR" pull-up • Power gate pull-up • MOS/ROM pull-up/pull-down • Open collector pull-up • TTL input pull-down • TTL unused gate pull-up |
| <p>03 Schematic</p> | <p>5 isolated resistors "A" Profile MSM10A-03-S2 (M8340124xxxxxG)</p> <p>The MSM10A-03-S2 molded single-in-line resistor network provides the user with 5 nominally equal resistors. Each resistor is isolated from all others.</p> <p>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 balance • LED current limiting • ECL output pull-down • TTL input pull-down |
| <p>05 Schematic</p> | <p>8 resistor pairs "A" Profile MSM10A-05-S3 (M8340124xxxxxH)</p> <p>The MSM10A-05-S3 molded single-in-line resistor network provides the user with 8 pair of R_1/R_2 resistor values for pulse squaring and TTL dual-line terminating requirements.</p> |



| 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 \pm 4 h 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 for 5 s | \pm 0.25 % ΔR (Characteristic K) \pm 0.50 % ΔR (Characteristic M) |
| Low Temperature Operation | 45 min at full rated working voltage at -65 °C | \pm 0.25 % ΔR (Characteristic K) \pm 0.50 % ΔR (Characteristic M) |
| Moisture Resistance | 240 h 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 s | \pm 0.25 % ΔR |
| Shock | Total of 18 shocks at 100 g's | \pm 0.25 % ΔR |
| Vibration | 12 h at maximum of 20 g's between 10 Hz and 2000 Hz | \pm 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 | \pm 0.50 % ΔR (Characteristic K) \pm 2.00 % ΔR (Characteristic M) |
| Terminal Strength | 4 1/2 pound pull for 30 s | \pm 0.25 % ΔR |
| Insulation Resistance | 10 000 M Ω (minimum) | - |
| Dielectric Withstanding Voltage | No evidence of arcing or damage (200 V _{RMS} for 1 min) | - |



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