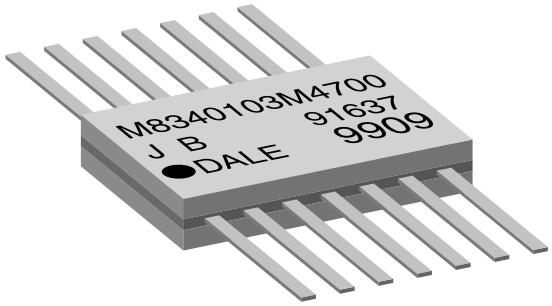
# Thick Film Resistor Networks, Military, MIL-PRF-83401 Qualified, Type RZ030, Flat Pack




## FEATURES

- Isolated, bussed and dual terminator schematics available
- Hot-solder dipped leads
- MIL-PRF-83401 qualified
- Thick film resistive elements
- TCR available in "K" (± 100 ppm/°C) or "M" (± 300 ppm/°C) characteristic
- 100 % screen tested per group A, subgroup 1 of MIL-PRF-83401
- 0.065" (1.65 mm) height for high density packaging

## STANDARD ELECTRICAL SPECIFICATIONS

| VISHAY DALE MODEL/ PIN NO. | MIL STYLE | MIL SPEC. SHEET | SCHEMATIC | POWER RATING ELEMENT $P_{70\,°C}$ W | POWER RATING PACKAGE $P_{70\,°C}$ W | RESISTANCE RANGE Ω | TOLERANCE (2) ± % | TEMPERATURE COEFFICIENT (1) (-55 °C to +125 °C) ± ppm/°C | WEIGHT g |
|---|---|---|---|---|---|---|---|---|---|
| DFM14 | RZ030 | 03 | 11 (A) | 0.050 | 0.350 | 10 to 1M | 1, 2, 5 | 100, 300 | 0.4 |
| | | | 12 (B) | 0.025 | 0.325 | 10 to 1M | | | |
| | | | 15 (J) | 0.015 | 0.350 | Consult factory | | | |

**Notes**

- Consult factory for stocked values.

(1) K = ± 100 ppm/°C; M = ± 300 ppm/°C.

(2) ± 2 % standard, ± 1 % and ± 5 % available.

## GLOBAL PART NUMBER INFORMATION

**New Global Part Numbering: M8340103M6801GAD05 (preferred part numbering format)**

| M | 8 | 3 | 4 | 0 | 1 | 0 | 3 | M | 6 | 8 | 0 | 1 | G | A | D | 0 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| MIL STYLE | SPEC SHEET | CHARACTERISTIC | RESISTANCE VALUE | TOLERANCE | SCHEMATIC | PACKAGING |
|---|---|---|---|---|---|---|
| **M83401** | **03** | **K** = 100 ppm<br>**M** = 300 ppm | 3 digit significant figure, followed by a multiplier<br>**10R0** = 10 Ω<br>**3302** = 33 kΩ<br>**1004** = 1 MΩ | **F** = ± 1 %<br>**G** = ± 2 %<br>**J** = ± 5 % | **A** = Isolated<br>**B** = Bussed | **D05** = Tin/lead, tube<br>**DSL** = Tin/lead, tube, single lot date code |

**Historical Part Number Example: M8340103M6801GA (will continue to be accepted)**

| M83401 | 03 | M | 6801 | G | A | D05 |
|---|---|---|---|---|---|---|
| MIL STYLE | SPEC SHEET | CHARACTERISTIC | RESISTANCE VALUE | TOLERANCE | SCHEMATIC | PACKAGING |

**New Global Part Numbering: M8340103KA001GJD05 (preferred part numbering format)**

| M | 8 | 3 | 4 | 0 | 1 | 0 | 3 | K | A | 0 | 0 | 1 | G | J | D | 0 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| MIL STYLE | SPEC SHEET | CHARACTERISTIC | RESISTANCE VALUE | TOLERANCE | SCHEMATIC | PACKAGING |
|---|---|---|---|---|---|---|
| **M83401** | **03** | **K** = 100 ppm<br>**M** = 300 ppm | Per Std. MIL. Spec. (see Impedance Codes table) | **F** = ± 1 %<br>**G** = ± 2 %<br>**J** = ± 5 % | **J** = Dual terminator | **D05** = Tin/lead, tube<br>**DSL** = Tin/lead, tube, single lot date code |

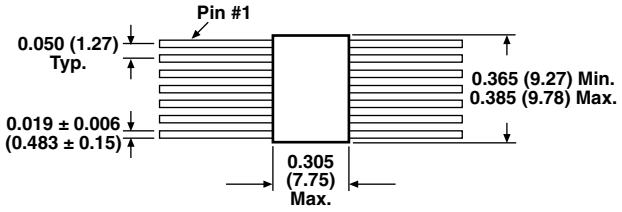
**Historical Part Number Example: M8340103KA001GJ (will continue to be accepted)**

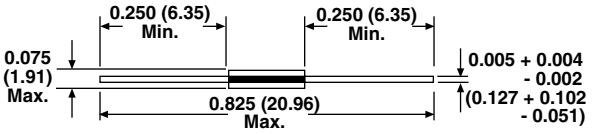
| M83401 | 03 | M | A001 | G | J | D05 |
|---|---|---|---|---|---|---|
| MIL STYLE | SPEC SHEET | CHARACTERISTIC | RESISTANCE VALUE | TOLERANCE | SCHEMATIC | PACKAGING |

**Note**

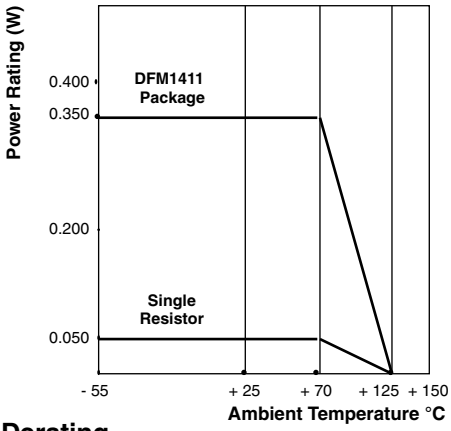
- For additional information on packaging, refer to the Surface Mount Network Packaging document (www.vishay.com/doc?31540).

## DIMENSIONS in inches (millimeters)

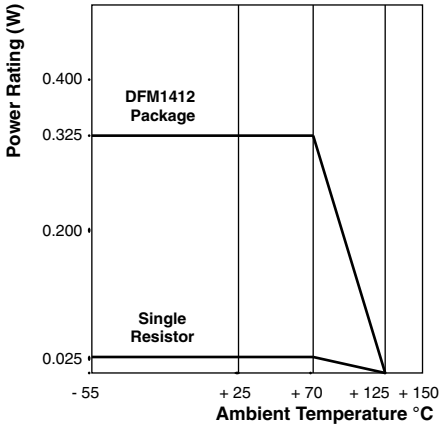


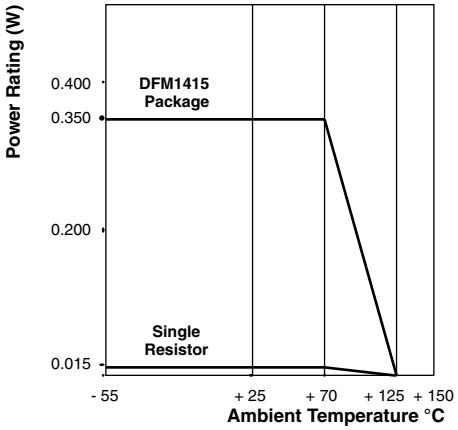

### 11 Schematic




### 12 Schematic




### 15 Schematic




### Derating

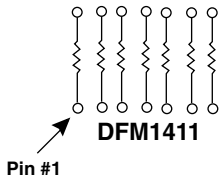
| MECHANICAL SPECIFICATIONS | |
|---|---|
| Marking resistance to solvents | Permanency testing per MIL-PRF-83401 |
| Solderability | Per MIL-PRF-83401 |
| Terminals | Per MIL-STD-1276<br>DFM1411, DFM1412 and DFM1415 = Type G (hot solder dipped)<br>Hot solder dipped leads supplied as standard finish |
| Body | Epoxy filled ceramic sandwich |

| TECHNICAL SPECIFICATIONS | | |
|---|---|---|
| **PARAMETER** | **UNIT** | **MDM SERIES** |
| Maximum operating voltage | $V_{DC}$ | 50 |
| Voltage coefficient of resistance | $V_{eff}$ | < 50 ppm |
| Dielectric strength | $V_{AC}$ | 100 min. |
| Insulation resistance | Ω | 10 000M |
| Operating temperature range | °C | -55 to +125 |
| Storage temperature range | °C | -55 to +150 |

| 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 |

## CIRCUIT APPLICATIONS

**11 Schematic**

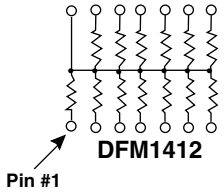



**DFM1411 (M8340103xxxxxxA)**
7 isolated resistors

The DFM1411 provides the user with 7 nominally equal resistors with each resistor isolated from all others. Commonly used in the following applications:

- "Wired OR" pull-up
- Power driven pull-up
- TTL input pull-down
- Line termination
- ECL output pull-down
- Long-line impedance balancing
- LED current limiting
- Power gate pull-up

**12 Schematic**

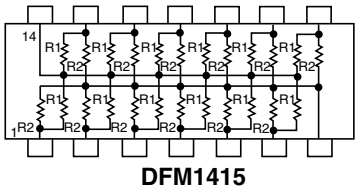



**DFM1412 (M8340103xxxxxxB)**
13 resistors with one pin common

The DFM1412 provides the user with a choice of 13 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 unused gate pull-up
- Digital pulse squaring
- TTL input pull-down
- High speed parallel pull-up

**15 Schematic**




**DFM1415 (M8340103xxxxxxJ)**
12 pairs of resistors

The DFM1415 provides the user with a choice of 12 pairs of R1/R2 resistor values for pulse squaring and TTL dual-line terminating requirements.

**CAGE CODE: 91637**

| PERFORMANCE | | |
|---|---|---|
| **TEST** | **CONDITIONS** | **MAX. $\Delta R$ (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 % $\Delta R$ |
| Thermal shock | 5 cycles between -65 °C and +125 °C | ± 0.50 % $\Delta R$ |
| Short time overload | 2.5 x rated working voltage for 5 s | ± 0.25 % $\Delta R$ (char. K)<br>± 0.50 % $\Delta R$ (char. M) |
| Low temperature operation | 45 min at full rated working voltage at -65 °C | ± 0.25 % $\Delta R$ (char. K)<br>± 0.50 % $\Delta R$ (char. M) |
| Moisture resistance | 240 h with humidity ranging from 80 % RH to 98 % RH | ± 0.50 % $\Delta R$ |
| Resistance to soldering heat | Leads immersed in +260 °C solder to within 1/16" of body for 10 s | ± 0.25 % $\Delta R$ |
| Shock | Total of 18 shocks at 100 *g*'s | ± 0.25 % $\Delta R$ |
| Vibration | 12 h at maximum of 20 *g*'s between 10 Hz and 2000 Hz | ± 0.25 % $\Delta R$ |
| 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 % $\Delta R$ (char. K)<br>± 2.0 % $\Delta R$ (char. M) |
| Terminal strength | 1.5 pound pull for 30 s | ± 0.25 % $\Delta R$ |
| 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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