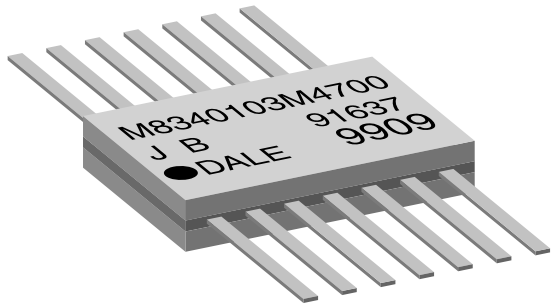
## Thick Film Resistor Networks, Military, MIL-PRF-83401 Qualified, Type RZ030, Schematics A (11), B (12), J (15)




### FEATURES

- 11, 12, 15 Schematics; hot-solder dipped
- MIL-PRF-83401 qualified
- Thick film resisitive 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 | POWER RATING $P_{70\ °C}$ ELEMENT W | POWER RATING $P_{70\ °C}$ PACKAGE W | CIRCUIT SCHEMATIC | LIMITING ELEMENT VOLTAGE MAX. V≅ | TEMPERATURE COEFFICIENT (1) (- 55 °C to + 125 °C) | STANDARD (2) TOLERANCE % | RESISTANCE RANGE Ω |
|---|---|---|---|---|---|---|---|
| DFM | 0.050 | 0.350 | 11 | 50 | K, M | 2 | 10R0 - 1M0 |
| | 0.025 | 0.325 | 12 | 50 | K, M | 2 | 10R0 - 1M0 |
| | 0.015 | 0.350 | 15 | 50 | K, M | 2 | see table |

**Notes**

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

(2) ± 1 % and ± 5 % tolerance available

- Consult factory for stocked values

### 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)**

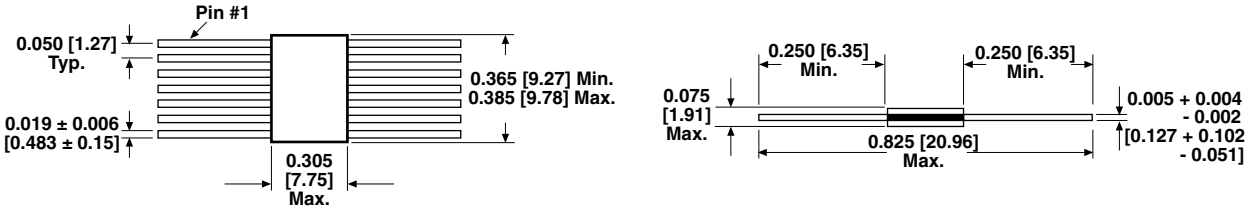
| M | 8 | 3 | 4 | 0 | 1 | 0 | 3 | K | A | 0 | 0 | 1 | G | J | D | 0 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| MIL STYLE | SPEC SHEET | CHARACTERISTIC | RESISTANCE VALUE | TOLERANCE | SCHEMATIC | PACKAGING |
|---|---|---|---|---|---|---|
| **M83401** | **03** | **K** = 100 ppm<br>**M** = 300 ppm | Per Std. MIL. Spec (see Impedence 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 |

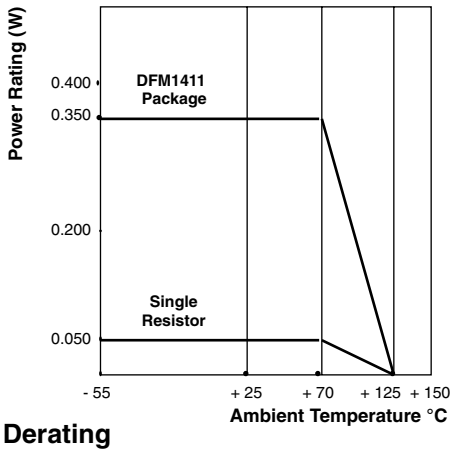
**Historical Part Number example: M8340103KA001GJ (will continue to be accepted)**

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

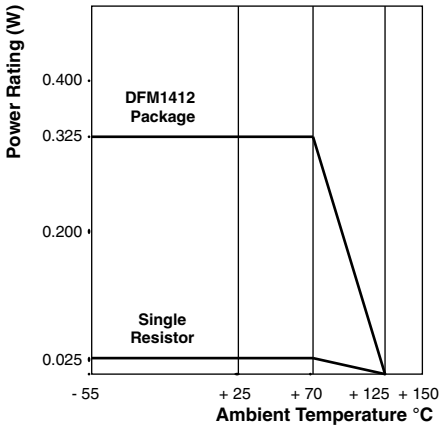
**DIMENSIONS** in inches [millimeters]



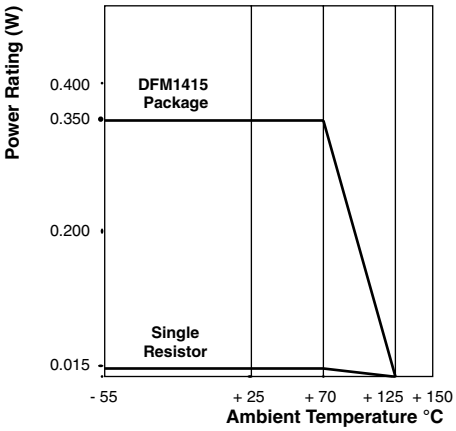

**11 Schematic**




**12 Schematic**




**15 Schematic**




**Derating**

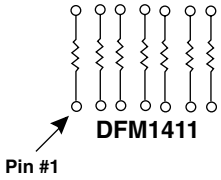
| MECHANICAL SPECIFICATIONS | |
|---|---|
| Marking Resistance to Solvents | Permanency testing per MIL-PRF-83401 |
| Solderability | Per MIL-PRF-83401 |
| Terminals | Per MIL-STD-1276<br>DFM1411, DFM1412 and DFM1415 = Type G (hot solder dipped)<br>Hot solder dipped leads supplied as standard finish.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

**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**



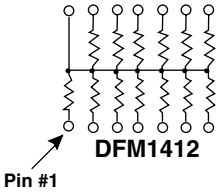

**DFM1411 (M8340103xxxxxxA)**

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
- Line Termination
- LED Current Limiting
- Power Driven Pull-up
- ECL Output Pull-down
- Power Gate Pull-up
- TTL Input Pull-down
- Long-line Impedance balancing

**12 Schematic**



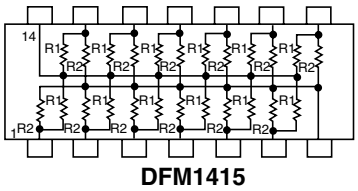

**DFM1412 (M8340103xxxxxxB)**

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/
- "Wired OR" Pull-up
- Digital Pulse Squaring
- Pull-down
- Power Driven Pull-up
- TTL Input Pull-down
- Open Collector Pull-up
- TTL Unused Gate Pull-up
- 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 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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