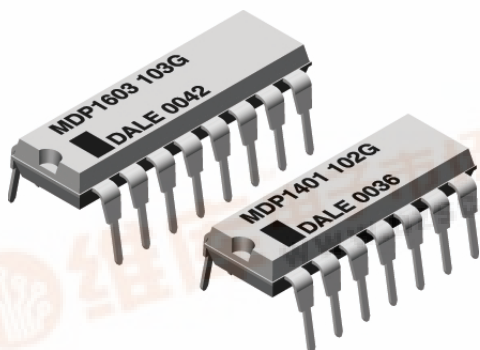


## MDP 14, 16

Vishay Dale

VISHAY

Thick Film Resistor Networks, Dual-In-Line,  
Molded DIP, 01, 03, 05 Schematics

## FEATURES

- 0.160" [4.06mm] maximum seated height and rugged, molded case construction.
- Highly stable thick film
- Low temperature coefficient (- 55°C to + 125°C)  $\pm 100\text{ppm}/^\circ\text{C}$
- Reduces total assembly costs
- Compatible with automatic inserting equipment
- Wide resistance range
- Uniform performance characteristics
- Available in tube pack

## STANDARD ELECTRICAL SPECIFICATIONS

| MODEL/<br>NO. OF<br>PINS | SCHEMATIC | RESISTOR<br>POWER RATING<br>Max. @ 70°C*<br>W | RESISTANCE<br>RANGE<br>$\Omega$ | STANDARD<br>TOLERANCE<br>% | TEMPERATURE<br>COEFFICIENT<br>(- 55°C to + 125°C)<br>ppm/°C | TCR<br>TRACKING**<br>(- 55°C to + 125°C)<br>ppm/°C | WEIGHT<br>g |
|--------------------------|-----------|-----------------------------------------------|---------------------------------|----------------------------|-------------------------------------------------------------|----------------------------------------------------|-------------|
| MDP 14                   | 01        | 0.125                                         | 10 - 2.2M                       | $\pm 1, \pm 2, \pm 5$      | $\pm 100$                                                   | $\pm 50$                                           | 1.3         |
|                          | 03        | 0.250                                         | 10 - 2.2M                       | $\pm 1, \pm 2, \pm 5$      |                                                             |                                                    |             |
|                          | 05        | 0.125                                         | Consult factory                 | $\pm 1, \pm 2, \pm 5$      |                                                             |                                                    |             |
| MDP 16                   | 01        | 0.125                                         | 10 - 2.2M                       | $\pm 1, \pm 2, \pm 5$      | $\pm 100$                                                   | $\pm 50$                                           | 1.5         |
|                          | 03        | 0.250                                         | 10 - 2.2M                       | $\pm 1, \pm 2, \pm 5$      |                                                             |                                                    |             |
|                          | 05        | 0.125                                         | Consult factory                 | $\pm 1, \pm 2, \pm 5$      |                                                             |                                                    |             |

\* For resistor power ratings @ + 25°C see derating curves.

\*\* Tighter tracking available

## ORDERING INFORMATION

## 01 and 03 Schematics

MDP  
MODEL14  
NUMBER OF PINS01  
03  
SCHEMATIC101  
RESISTANCE VALUEG  
TOLERANCE

First 2 digits (3 for "F" tolerance) are significant figures. Last digit specifies number of zeros to follow.

F =  $\pm 1\%$   
G =  $\pm 2\%$   
J =  $\pm 5\%$

## 05 Schematic

MDP  
MODEL14  
NUMBER OF PINS05  
SCHEMATIC221  
RESISTANCE VALUE R<sub>1</sub>271  
RESISTANCE VALUE R<sub>2</sub>G  
TOLERANCE

First two digits (3 for "F" tolerance) are significant figures. The last digit specifies the number of zeros to follow.

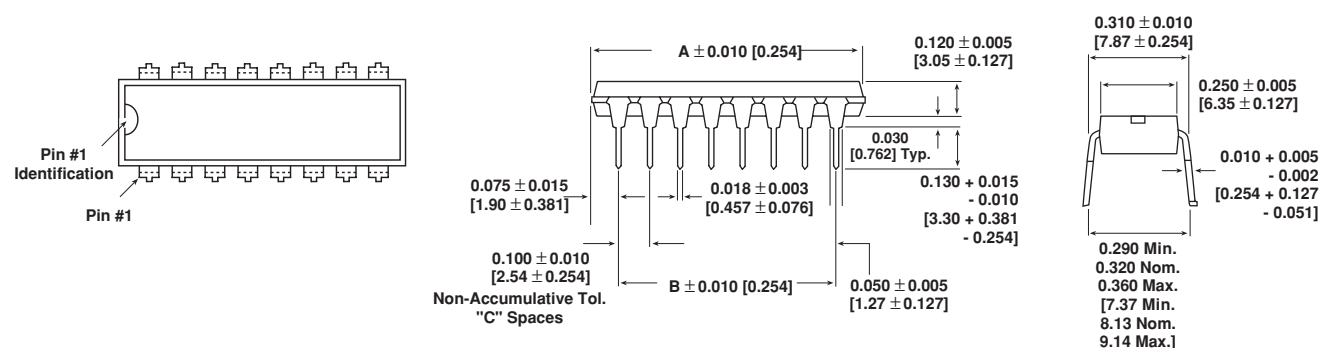
F =  $\pm 1\%$   
G =  $\pm 2\%$   
J =  $\pm 5\%$

## EXAMPLE:

MDP14-03-101G = A dual-in-line thick film resistor network with 14 pins on 0.100" [2.54mm] centers, 03 Schematic, resistance of 100 ohm and a tolerance of  $\pm 2\%$ .

## EXAMPLE:

MDP14-05-221/271G = A 14 pin dual-in-line thick film resistor network with 12 series pair of resistors of 220 ohm and 270 ohm per pair and a tolerance of  $\pm 2\%$ .

**DIMENSIONS** in inches [millimeters]

| MODEL  | A             | B             | C |
|--------|---------------|---------------|---|
| MDP 14 | 0.750 [19.05] | 0.600 [15.24] | 6 |
| MDP 16 | 0.850 [21.59] | 0.700 [17.78] | 7 |

**TECHNICAL SPECIFICATIONS**

| PARAMETER                                | UNIT             | MDP-14            | MDP-16 |
|------------------------------------------|------------------|-------------------|--------|
| Package Power Rating (Maximum at + 70°C) | W                | 1.73              | 1.92   |
| Voltage Coefficient of Resistance        | $V_{\text{eff}}$ | < 50ppm typical   |        |
| Dielectric Strength                      | VAC              | 200               |        |
| Insulation Resistance                    | $\Omega$         | > 10,000M minimum |        |
| Operating Temperature Range              | °C               | - 55 to + 125     |        |
| Storage Temperature Range:               | °C               | - 55 to + 150     |        |

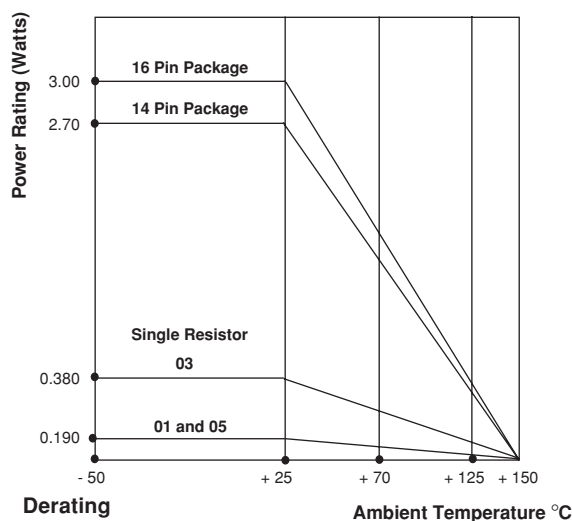
**MECHANICAL SPECIFICATIONS**

|                                 |                                                 |
|---------------------------------|-------------------------------------------------|
| Marking Resistance to Solvents: | Permanency testing per MIL-STD-202, Method 215. |
| Solderability:                  | Per MIL-STD-202, Method 208E.                   |
| Body:                           | Molded epoxy.                                   |
| Terminals:                      | Copper alloy, tin-lead plated.                  |
| Weight:                         | 14 pin = 1.3 grams; 16 pin = 1.5 grams          |

# MDP 14, 16

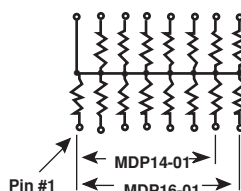
Vishay Dale

Thick Film Resistor Networks, DIP, Molded



## CIRCUIT APPLICATIONS

### 01 Schematic

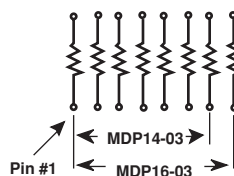


13 and 15 resistors with one pin common

The MDPXX-01 circuit provides a choice of 13 and 15 nominally equal resistors, each connected between a common pin (14 and 16) and a discrete PC board 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

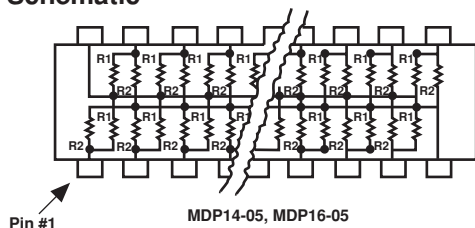


7 and 8 isolated resistors

The MDPXX-03 provides a choice of 7 and 8 nominally equal resistors, each resistor isolated from all others and wired directly across. Commonly used in the following applications:

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

### 05 Schematic



TTL dual-line terminator; pulse squaring

The MDPXX-05 circuit contains 12 and 14 series pair of resistors. Each series pair is connected between ground and a common line. The junction of these resistor pairs is connected to the input terminals. The 05 circuits are designed for TTL dual-line termination and pulse squaring.

Standard E-24 resistance values stocked. Consult factory



| PERFORMANCE                     |                                                                                                                                    |                                        |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| TEST                            | CONDITIONS                                                                                                                         | MAX. $\Delta R$<br>(Typical Test Lots) |
| Power Conditioning              | 1.5 rated power, applied 1.5 hours "ON" and 0.5 hour "OFF" for 100 hours<br>$\pm 4$ hours at + 25°C ambient temperature            | $\pm 0.50\% \Delta R$                  |
| Thermal Shock                   | 5 cycles between - 65°C and + 125°C                                                                                                | $\pm 0.50\% \Delta R$                  |
| Short Time Overload             | 2.5 x rated working voltage 5 seconds                                                                                              | $\pm 0.25\% \Delta R$                  |
| Low Temperature Operation       | 45 minutes at full rated working voltage at - 65°C                                                                                 | $\pm 0.25\% \Delta R$                  |
| Moisture Resistance             | 240 hours with humidity ranging from 80% RH to 98% RH                                                                              | $\pm 0.50\% \Delta R$                  |
| Resistance to Soldering Heat    | Leads immersed in + 350°C solder to within 1/16" of device body for 3 seconds                                                      | $\pm 0.25\% \Delta R$                  |
| Shock                           | Total of 18 shocks at 100 G's                                                                                                      | $\pm 0.25\% \Delta R$                  |
| Vibration                       | 12 hours at maximum of 20 G's between 10 and 2,000 Hz                                                                              | $\pm 0.25\% \Delta R$                  |
| Load Life                       | 1000 hours at + 70°C, rated power applied 1.5 hours "ON, 0.5 hour "OFF" for full 1000 hour period. Derated according to the curve. | $\pm 1.00\% \Delta R$                  |
| Terminal Strength               | 4.5 pound pull for 30 seconds                                                                                                      | $\pm 0.25\% \Delta R$                  |
| Insulation Resistance           | 10,000 Megohm (minimum)                                                                                                            | —                                      |
| Dielectric Withstanding Voltage | No evidence of arcing or damage (200 VRMS for 1 minute)                                                                            | —                                      |