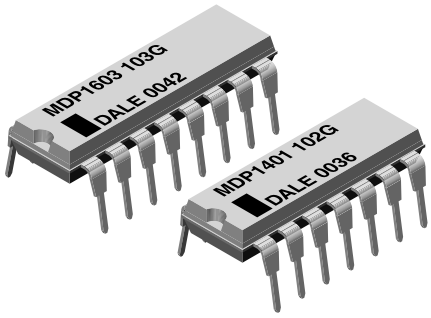
Thick Film Resistor Networks, Dual-In-Line, Molded DIP



FEATURES

- Isolated, bussed, and dual terminator schematics available
- 0.160" (4.06 mm) maximum seated height and rugged, molded case construction
- Thick film resistive elements
- Low temperature coefficient (-55 °C to +125 °C) ± 100 ppm/°C
- Reduces total assembly costs
- Compatible with automatic inserting equipment
- Wide resistance range (10 Ω to 2.2 MΩ)
- Uniform performance characteristics
- Available in tube pack
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

Pb Available

e1 RoHS* Available

Note

* This datasheet provides information about parts that are RoHS-compliant and/or parts that are non-RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information/tables in this datasheet for details.

STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL/ NO. OF PINS	SCHEMATIC	POWER RATING ELEMENT (1) $P_{70\,°C}$ W	RESISTANCE RANGE Ω	TOLERANCE (3) ± %	TEMPERATURE COEFFICIENT (-55 °C to +125 °C) ± ppm/°C	TCR TRACKING (2) (-55 °C to +125 °C) ± ppm/°C	WEIGHT g
MDP 14	01	0.125	10 to 2.2M	1, 2, 5	100	50	1.3
	03	0.250	10 to 2.2M			50	
	05	0.125	Consult factory			100	
MDP 16	01	0.125	10 to 2.2M	1, 2, 5	100	50	1.5
	03	0.250	10 to 2.2M			50	
	05	0.125	Consult factory			100	

Notes

(1) For resistor power ratings at +25 °C see derating curves
(2) Tighter tracking available
(3) ± 2 % standard, ± 1 %, and ± 5 % available

GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: MDP1403100RGD04 (preferred part numbering format)

M	D	P	1	4	0	3	1	0	0	R	G	D	0	4			

GLOBAL MODEL	PIN COUNT	SCHEMATIC	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING	SPECIAL
MDP	**14** = 14 pin **16** = 16 pin	**01** = Bussed **03** = Isolated **00** = Special	**R** = Ω **K** = kΩ **M** = MΩ **10R0** = 10 Ω **680K** = 680 kΩ **1M00** = 1.0 MΩ **0000** = 0 Ω Jumper	**F** = ± 1 % **G** = ± 2 % **J** = ± 5 % **S** = Special **Z** = 0 Ω Jumper	**E04** = Lead (Pb)-free, tube **D04** = Tin/lead, tube	Blank = Standard (Dash Number) (up to 3 digits) From **1 to 999** as applicable

Historical Part Number Example: MDP1403101G (will continue to be accepted)

MDP	14	03	101	G	D04
HISTORICAL MODEL	PIN COUNT	SCHEMATIC	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING

New Global Part Numbering: MDP1405121CGD04 (preferred part numbering format)

M	D	P	1	4	0	5	1	2	1	C	G	D	0	4			

GLOBAL MODEL	PIN COUNT	SCHEMATIC	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING	SPECIAL
MDP	**14** = 14 pin **16** = 16 pin	**05** = Dual terminator	3 digit impedance code, followed by alpha modifier (see Impedance Codes table)	**F** = ± 1 % **G** = ± 2 % **J** = ± 5 %	**E04** = Lead (Pb)-free, tube **D04** = Tin/lead, tube	Blank = Standard (Dash Number) (up to 3 digits) From **1 to 999** as applicable

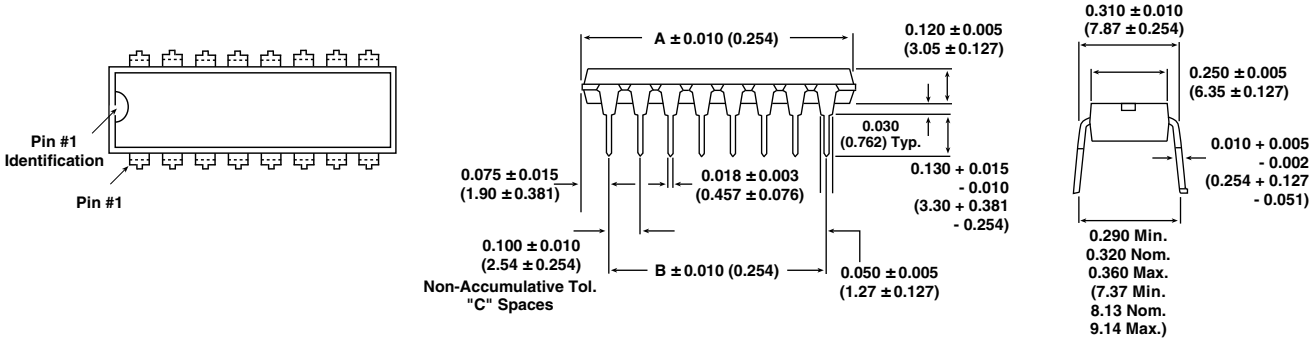
Historical Part Number Example: MDP1405221271G (will continue to be accepted)

MDP	14	05	221	271	G	D04
HISTORICAL MODEL	PIN COUNT	SCHEMATIC	RESISTANCE VALUE 1	RESISTANCE VALUE 2	TOLERANCE CODE	PACKAGING

Note

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

DIMENSIONS in inches (millimeters)



GLOBAL 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	MDP14	MDP16
Package Power Rating (Maximum at +70 °C)	W	1.73	1.92
Voltage Coefficient of Resistance	V_{eff}	< 50 ppm typical	
Dielectric Strength	V_{AC}	200	
Insulation Resistance	Ω	> 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	Solder plated leads
Weight	14 pin = 1.3 g; 16 pin = 1.5 g

IMPEDANCE CODES

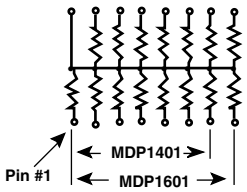
CODE	R_1 (Ω)	R_2 (Ω)	CODE	R_1 (Ω)	R_2 (Ω)
500B	82	130	141A	270	270
750B	120	200	181A	330	390
800C	130	210	191A	330	470
990A	160	260	221B	330	680
101C	180	240	281B	560	560
111C	180	270	381B	560	1.2K
121B	180	390	501C	620	2.7K
121C	220	270	102A	1.5K	3.3K
131A	220	330	202B	3K	6.2K

Note

- For additional impedance codes, refer to the Dual Terminator Impedance Code Table document (www.vishay.com/doc?31530).

CIRCUIT APPLICATIONS

01 Schematic

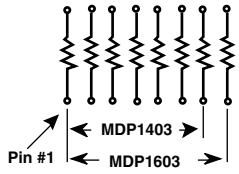


13 and 15 resistors with one pin common

The MDPXX01 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

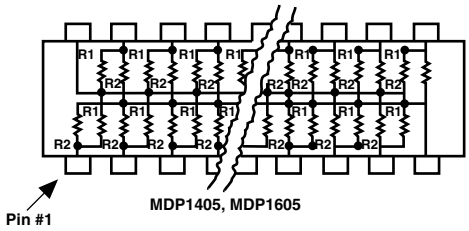


7 or 8 isolated resistors

The MDPXX03 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



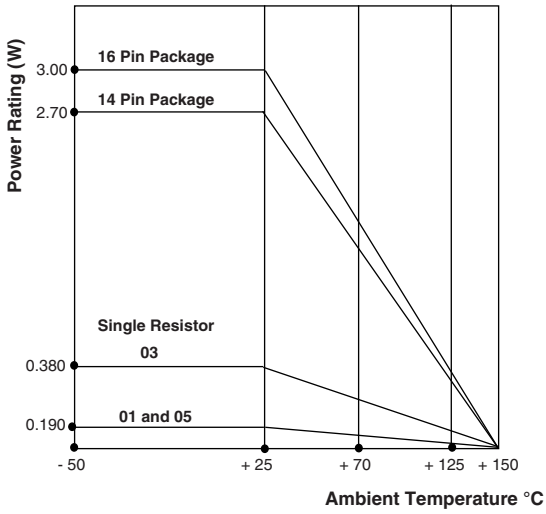
TTL dual-line terminator; pulse squaring

The MDPXX05 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.

Note

- Standard E24 resistance values stocked. Consult factory.

DERATING



PERFORMANCE		
TEST	**CONDITIONS**	**MAX. Δ*R* (TYPICAL TEST LOTS)**
Power Conditioning	1.5 rated power, applied 1.5 h “ON” and 0.5 h “OFF” for 100 h ± 4 h at +25 °C ambient temperature	± 0.50 % Δ*R*
Thermal Shock	5 cycles between -65 °C and +125 °C	± 0.50 % Δ*R*
Short Time Overload	2.5 x rated working voltage 5 s	± 0.25 % Δ*R*
Low Temperature Operation	45 min at full rated working voltage at -65 °C	± 0.25 % Δ*R*
Moisture Resistance	240 h with humidity ranging from 80 % RH to 98 % RH	± 0.50 % Δ*R*
Resistance to Soldering Heat	Leads immersed in +350 °C solder to within 1/16" of device body for 3 s	± 0.25 % Δ*R*
Shock	Total of 18 shocks at 100 *g*’s	± 0.25 % Δ*R*
Vibration	12 h at maximum of 20 *g*’s between 10 Hz and 2000 Hz	± 0.25 % Δ*R*
Load Life	1000 h at +70 °C, rated power applied 1.5 h “ON, 0.5 h “OFF” for full 1000 h period. Derated according to the curve.	± 1.00 % Δ*R*
Terminal Strength	4.5 pound pull for 30 s	± 0.25 % Δ*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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