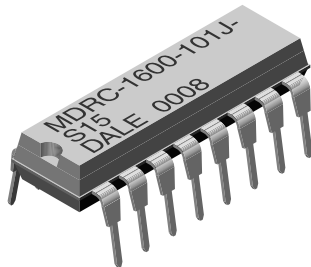


# Thick Film Resistor/Capacitor Networks, Dual-In-Line, Molded DIP



## FEATURES

- ECL terminator, ECL pull-down and thevenin equivalent terminator schematics available
- 0.190" (4.83 mm) maximum seated height
- Rugged molded case construction
- Thick film resistive elements
- Reduces total assembly cost
- Low temperature coefficient (-30 °C to +85 °C) ± 100 ppm/°C
- Compatible with automatic insertion equipment
- Reduces PC board space
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### 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	SCHEMATIC	RESISTOR CHARACTERISTICS						CAPACITOR CHARACTERISTICS		
		POWER RATING ELEMENT $P_{25\text{ }^\circ\text{C}}$ (max.) W	POWER RATING PACKAGE $P_{25\text{ }^\circ\text{C}}$ (max.) W	RESISTANCE RANGE $\Omega$	RES. TOL. <sup>(1)</sup> $\pm\%$	TEMP. COEFF. (-20 °C to +85 °C) (typ.) $\pm$ ppm/°C	TCR TRACKING $\pm$ ppm/°C	CAP. VALUES	CAP. TOL. %	CAP. VOLTAGE $V_{bc}$
MDRC	1641	0.15	2.0	50, 68, 75, 100	2	100	50	0.1 $\mu$ F	+ 40, - 20	25
MDRC	1642	0.15	2.0	510	2	100	50	0.1 $\mu$ F	+ 40, - 20	25
MDRC	1643	0.20	2.0	81/130, 121/195, 162/260	2	100	50	0.1 $\mu$ F	+ 40, - 20	25

### Note

<sup>(1)</sup>  $\pm 2\%$  or  $2\ \Omega$ , whichever is greater

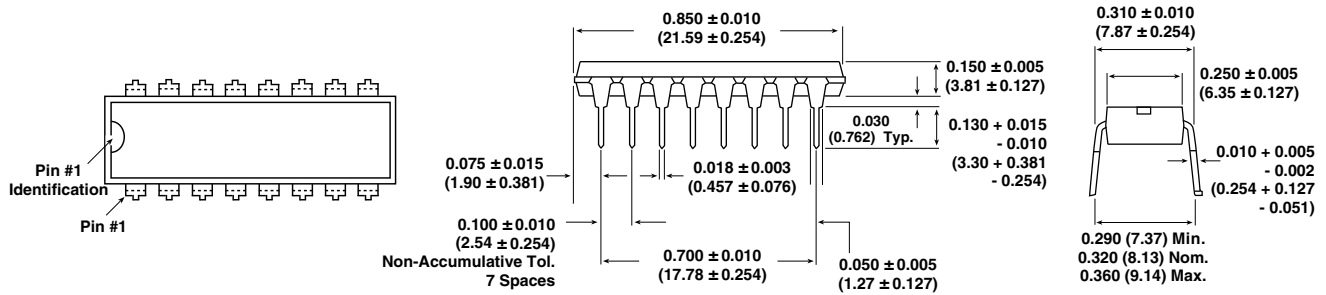
GLOBAL PART NUMBER INFORMATION																	
New Global Part Numbering: MDRC1641500GD04 (preferred part numbering format)																	
M	D	R	C	1	6	4	1	5	0	0	G	D	0	4			
GLOBAL MODEL	PIN COUNT	SCHEMATIC	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING	SPECIAL											
MDRC	16 = 16 pin	41 = ECL terminator 42 = ECL pull-down 00 = special	2 digit significant figure, followed by a multiplier 680 = 68 $\Omega$ 511 = 510 $\Omega$	G = $\pm 2\%$ S = special	E04 = lead (Pb)-free, tube D04 = tin/lead, tube	Blank = standard (dash number) (up to 1 digit)											
Historical Part Number example: MDRC1641500G (will continue to be accepted)																	
MDRC	16	41	500	G	D04												
HISTORICAL MODEL	PIN COUNT	SCHEMATIC	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING												
New Global Part Numbering: MDRC1643750GD04 (preferred part numbering format)																	
M	D	R	C	1	6	4	3	7	5	0	G	D	0	4			
GLOBAL MODEL	PIN COUNT	SCHEMATIC	IMPEDANCE VALUE	TOLERANCE CODE	PACKAGING	SPECIAL											
MDRC	16 = 16 pin	43 = thevenin terminator	2 digit significant figure, followed by a multiplier 500 = 50 $\Omega$	G = $\pm 2\%$ S = special	E04 = lead (Pb)-free, tube D04 = tin/lead, tube	Blank = standard (dash number) (up to 1 digit)											
Historical Part Number example: MDRC1643750G (will continue to be accepted)																	
MDRC	16	43	750	G	D04												
HISTORICAL MODEL	PIN COUNT	SCHEMATIC	IMPEDANCE VALUE	TOLERANCE CODE	PACKAGING												

### Note

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



**DIMENSIONS** in inches (millimeters)



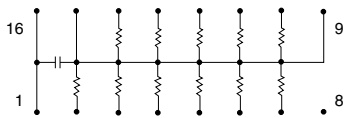
RESISTANCE VALUE IN $\Omega$ (G Tolerance)			
MDRC1641 50, 68, 75, 100	MDRC1643		
	R1	R2	Z0
	81	130	50
MDRC1642 510	121	195	75
	162	260	100

TECHNICAL SPECIFICATIONS		
PARAMETER	UNIT	MDRC
Operating voltage (at +25 °C)	V <sub>AC</sub>	50 maximum
Capacitor dissipation factor	%	< 3
Voltage coefficient of resistance (typical)	ppm/V	< 50
Operating temperature range	°C	-30 to +85
Storage temperature range	°C	-30 to +85

MATERIAL SPECIFICATIONS	
Marking resistance to solvents	Permanency testing per MIL-STD-202, method 215
Solderability	Per MIL-STD-202, method 208E
Terminals	Copper alloy, solder plated
Body	Molded epoxy
Weight	1.5 g

**CIRCUIT APPLICATIONS**

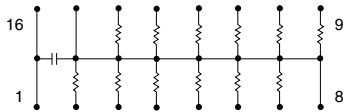
**MDRC1641 Schematic**



- 2.0 V and - 5.2 V ECL Terminator

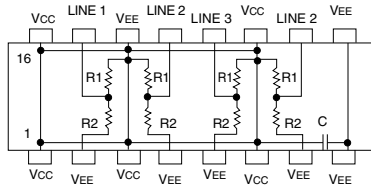
The MDRC1641 circuit contains 11 resistors of nominally equal value and a 0.01 mF decoupling capacitor. The MDRC1641 is designed for ECL line termination to a - 2.0 V buss. The 0.01 mF decoupling capacitor is for bypassing transients between supply voltages.

**MDRC1642 Schematic**



The MDRC1642 circuit contains 12 resistors of 510 Ω each and a 0.01 mF decoupling capacitor. The MDRC1642 is designed for ECL pull-down to a - 5.2 V buss. The 0.01 mF decoupling capacitor is for bypassing voltage transients on the voltage buss.

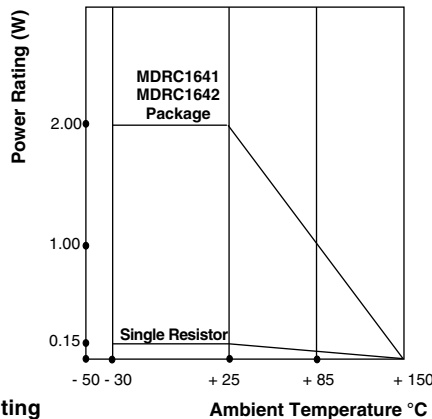
**MDRC1643 Schematic**



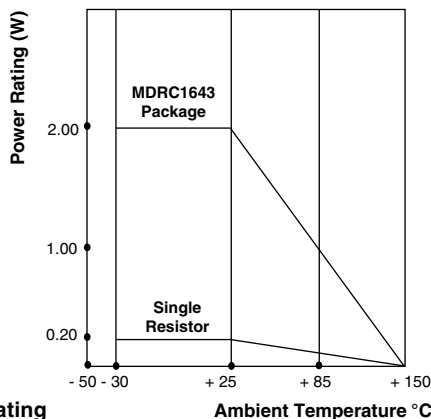
Thevenin Equivalent Terminator

The MDRC1643 contains four pair of series resistors. The circuit is compatible with ECL pin configurations. Each terminator section (series pair) contains a voltage divider between V<sub>CC</sub> (0 V) and V<sub>EE</sub> (- 5.2 V) providing a thevenin equivalent voltage of - 2.0 V. A 0.01 mF decoupling capacitor bypasses the V<sub>EE</sub> buss.

**MDRC1641 and MDRC1642**



**MDRC1643**





PERFORMANCE		
TEST	CONDITIONS	MAX. $\Delta R$ (TYPICAL TEST LOTS)
Thermal shock	MDRC1641 and MDRC1642, 5 cycles between -30 °C and +85 °C MDRC1643, 5 cycles between -65 °C and +125 °C	$\pm 0.50 \% \Delta R$
Short time overload	2.5 x rated working voltage 5 s	$\pm 0.25 \% \Delta R$
Low temperature operation	MDRC1641 and MDRC1642, 45 min at full rated working voltage at -30 °C MDRC1643, 45 min at full rated working voltage at -65 °C	$\pm 0.25 \% \Delta R$
Moisture resistance	240 h 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 s	$\pm 0.25 \% \Delta R$
Shock	Total of 18 shocks at 100 g's	$\pm 0.25 \% \Delta R$
Vibration	12 h at maximum of 20 g's between 10 Hz and 2000 Hz	$\pm 0.25 \% \Delta R$
Load life	1000 h at +70 °C, rated power applied 1.5 h "ON", 0.5 hour "OFF" for full 1000 h period. Derated according to the curve.	$\pm 0.50 \% \Delta R$
Terminal strength	4.5 pound pull for 30 s	$\pm 0.25 \% \Delta R$
Insulation resistance	10 000 M $\Omega$ (minimum)	-
Dielectric withstanding voltage	(200 V <sub>RMS</sub> for 1 min)	-



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