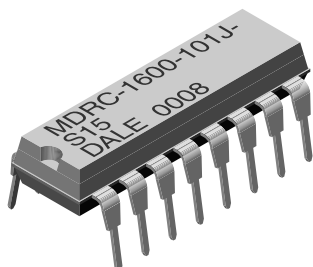


Thick Film Resistor/Capacitor Networks, Dual-In-Line, Molded DIP



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


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	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 Ω	RES. TOL. ⁽¹⁾ $\pm \%$	TEMP. COEFF. (-20 °C to +85 °C) (typ.) \pm ppm/°C	TCR TRACKING \pm ppm/°C	CAP. VALUES	CAP. TOL. %	CAP. VOLTAGE V_{DC}
MDRC	1641	0.15	2.0	50, 68, 75, 100	2	100	50	0.1 μ F	+ 40, - 20	25
MDRC	1642	0.15	2.0	510	2	100	50	0.1 μ F	+ 40, - 20	25
MDRC	1643	0.20	2.0	81/130, 121/195, 162/260	2	100	50	0.1 μ F	+ 40, - 20	25

Note

⁽¹⁾ $\pm 2 \%$ or 2 Ω , 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 Ω 511 = 510 Ω				G = ± 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)

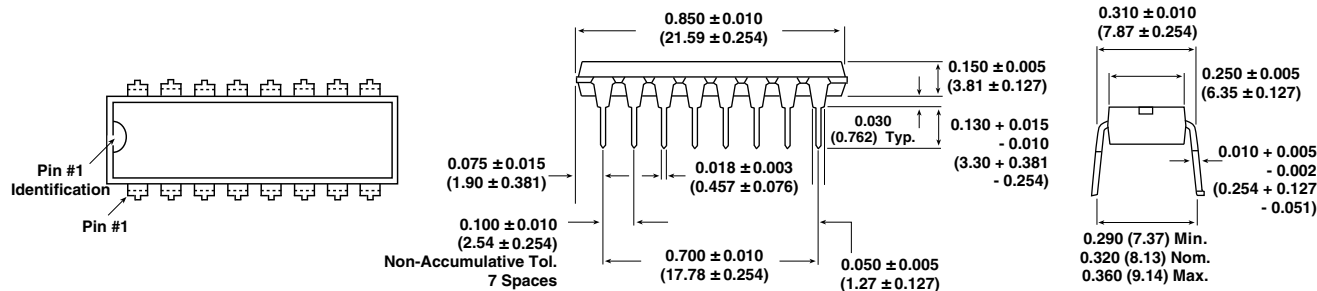
M	D	R	C	1	6	4	3	7	5	0	G	D	0	4			
GLOBAL MODEL		PIN COUNT		SCHEMATIC		IMPEDANCE VALUE		TOLERANCE CODE		PACKAGING		SPECIAL					
MDRC		16 = 16 pin		43 = thevenin terminator		2 digit significant figure, followed by a multiplier 500 = 50 Ω		G = ± 2 % S = special		E04 = lead (Pb)-free, tube D04 = tin/lead, 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).

**DIMENSIONS** in inches (millimeters)**RESISTANCE VALUE IN Ω (G Tolerance)**

MDRC1641 50, 68, 75, 100	MDRC1643		
	R1	R2	Z0
	81	130	50
MDRC1642 510	121	195	75
	162	260	100

TECHNICAL SPECIFICATIONS

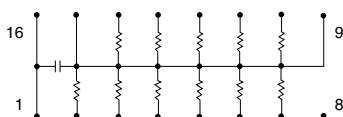
PARAMETER	UNIT	MDRC
Operating voltage (at +25 °C)	V _{AC}	50 maximum
Capacitor dissipation factor	%	< 3
Voltage coefficient of resistance (typical)	ppm/V	< 50
Operating temperature range	°C	-30 to +85
Storage temperature range	°C	-30 to +85

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

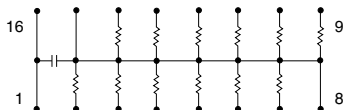
MDRC1641 Schematic



- 2.0 V and - 5.2 V ECL Terminator

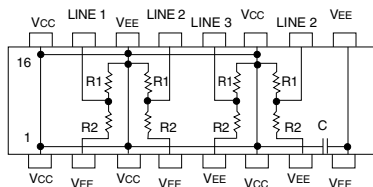
The MDRC1641 circuit contains 11 resistors of nominally equal value and a 0.01 mF decoupling capacitor. The MDRC1641 is designed for ECL line termination to a - 2.0 V buss. The 0.01 mF decoupling capacitor is for bypassing transients between supply voltages.

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.

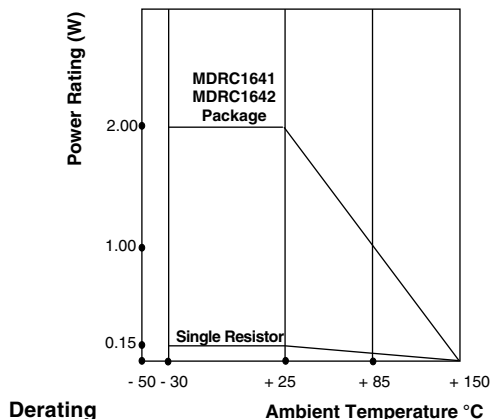
MDRC1643 Schematic



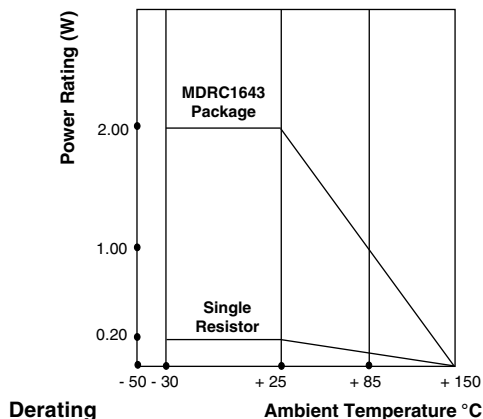
Thevenin Equivalent Terminator

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_{CC} (0 V) and V_{EE} (- 5.2 V) providing a thevenin equivalent voltage of - 2.0 V. A 0.01 mF decoupling capacitor bypasses the V_{EE} buss.

MDRC1641 and MDRC1642



MDRC1643





PERFORMANCE		
TEST	CONDITIONS	MAX. ΔR (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 Ω (minimum)	-
Dielectric withstanding voltage	(200 V _{RMS} for 1 min)	-



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.