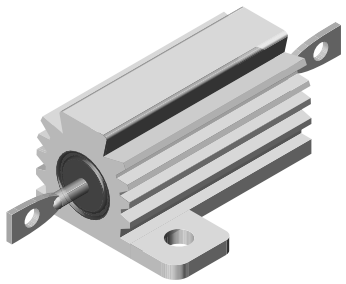
Wirewound Resistors, Industrial Power, Aluminum Housed, Chassis Mount



FEATURES

- Molded construction for total environmental protection
- Complete welded construction
- Available in non-inductive styles (NI special) with Ayrton-Perry winding for lowest reactive components
- Mounts on chassis to utilize heat-sink effect
- Excellent stability in operation (< 1 % change in resistance)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

e4

RoHS COMPLIANT

HALOGEN FREE GREEN (5-2008)

STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	HISTORICAL MODEL	POWER RATING $P_{25\,°C}$ W	RESISTANCE RANGE Ω	TOLERANCE ± %	WEIGHT (typical) g
TMC005	TMC-5	7.5	0.02 to 24.5K	1, 3, 5	3
TMC005…NI	TMC-5-…-NI	7.5	0.05 to 12.75K	1, 3, 5	3
TMC010	TMC-10	12.5	0.01 to 47.1K	1, 3, 5	5
TMC010…NI	TMC-10-…-NI	12.5	0.05 to 23.5K	1, 3, 5	5
TMC025	TMC-25	25	0.01 to 95.2K	1, 3, 5	12
TMC025…NI	TMC-25-…-NI	25	0.05 to 47.6K	1, 3, 5	12
TMC050	TMC-50	50	0.01 to 273K	1, 3, 5	28
TMC050…NI	TMC-50-…-NI	50	0.05 to 136K	1, 3, 5	28
TMC100	TMC-100	100	0.05 to 90K	1, 3, 5	353
TMC100…NI	TMC-100-…-NI	100	0.05 to 37.5K	1, 3, 5	353
TMC250	TMC-250	250	0.05 to 116K	1, 3, 5	637
TMC250…NI	TMC-250-…-NI	250	0.05 to 48.5K	1, 3, 5	637

Note

- The NI is for two digit "special" number to indicate a non-inductive part.

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	TMC RESISTOR CHARACTERISTICS
Temperature Coefficient	ppm/°C	± 20 for 10 Ω and above; ± 50 for 1 Ω to 9.9 Ω, ± 100 for 0.5 Ω to 0.99 Ω
Maximum Working Voltage	V	$(P \times R)^{1/2}$
Insulation Resistance	Ω	10 000 MΩ minimum dry, 1000 MΩ minimum after moisture test
Solderability	-	Meets requirements of ANSI J-STD-002
Operating Temperature Range	°C	-55 to +250

GLOBAL PART NUMBER INFORMATION

Global Part Numbering example: TMC0054R125FE02NI (visit www.vishay.net Vishay Dale parts numbering manual for all options)

T	M	C	0	0	5	4	R	1	2	5	F	E	0	2	N	I

GLOBAL MODEL (6 digits)	VALUE (5 digits)	TOLERANCE (1 digit)	PACKAGING CODE (3 digits)	SPECIAL (up to 2 digits)
(See Standard Electrical Specifications Global Model column for options)	**R** = decimal **K** = thousand **15R00** = 15 Ω **10K00** = 10 kΩ	**F** = 1 % **H** = 3 % **J** = 5 %	**E02** = lead (Pb)-free, card pack (TMC005 to TMC050) **E01** = lead (Pb)-free, skin pack (TMC100 and TMC250)	**NI** = non-inductive (dash number) from **1** to **99** as applicable

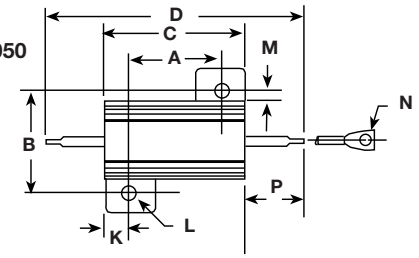
Historical Part Number example: TMC-5-4.125-1%-NI

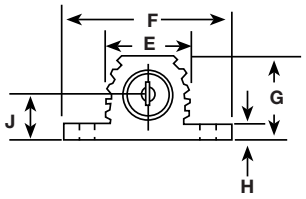
TMC-5	4.125 Ω	1 %	NI
HISTORICAL MODEL	RESISTANCE VALUE	TOLERANCE	SPECIAL

For technical questions, contact: ww2aresistors@vishay.com

DIMENSIONS in inches [millimeters]

TMC005, 010, 025, 050
TMC005…NI, 010, 025, 050

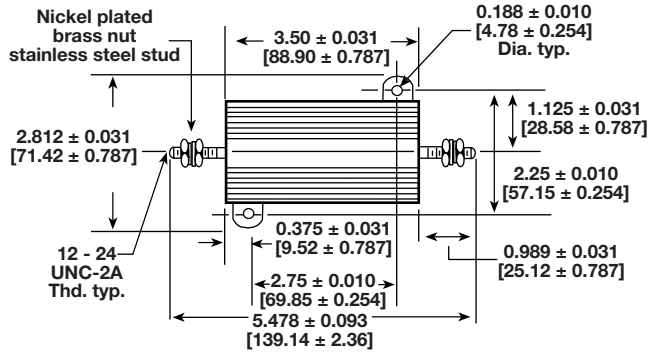


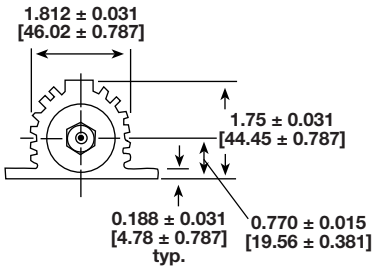


GLOBAL MODEL	DIMENSIONS in inches [millimeters]													
	A	B	C	D	E	F	G	H	J	K	L	M	N	P
TMC005 TMC005…NI	0.444 ± 0.005 [11.28 ± 0.127]	0.490 ± 0.005 [12.45 ± 0.127]	0.600 ± 0.030 [15.24 ± 0.787]	1.125 ± 0.062 [28.58 ± 1.57]	0.334 ± 0.015 [8.48 ± 0.381]	0.646 ± 0.015 [16.41 ± 0.381]	0.320 ± 0.015 [8.13 ± 0.381]	0.065 ± 0.010 [1.65 ± 0.254]	0.133 ± 0.010 [3.38 ± 0.254]	0.078 ± 0.010 [1.98 ± 0.254]	0.093 ± 0.005 [2.36 ± 0.127]	0.078 ± 0.015 [1.98 ± 0.381]	0.050 ± 0.005 [1.27 ± 0.127]	0.266 ± 0.062 [6.76 ± 1.57]
TMC010 TMC010…NI	0.562 ± 0.005 [14.27 ± 0.127]	0.625 ± 0.005 [15.88 ± 0.127]	0.750 ± 0.031 [19.05 ± 0.787]	1.375 ± 0.062 [34.93 ± 1.57]	0.420 ± 0.015 [10.67 ± 0.381]	0.800 ± 0.015 [20.32 ± 0.381]	0.390 ± 0.015 [9.91 ± 0.381]	0.075 ± 0.010 [1.91 ± 0.254]	0.165 ± 0.010 [4.19 ± 0.254]	0.093 ± 0.010 [2.36 ± 0.254]	0.094 ± 0.005 [2.39 ± 0.127]	0.102 ± 0.015 [2.59 ± 0.381]	0.085 ± 0.005 [2.16 ± 0.127]	0.312 ± 0.062 [7.92 ± 1.57]
TMC025 TMC025…NI	0.719 ± 0.005 [18.26 ± 0.127]	0.781 ± 0.005 [19.84 ± 0.127]	1.062 ± 0.031 [26.97 ± 0.787]	1.938 ± 0.062 [49.23 ± 1.57]	0.550 ± 0.015 [13.97 ± 0.381]	1.080 ± 0.015 [27.43 ± 0.381]	0.546 ± 0.015 [13.87 ± 0.381]	0.075 ± 0.010 [1.91 ± 0.254]	0.231 ± 0.010 [5.87 ± 0.254]	0.172 ± 0.010 [4.37 ± 0.254]	0.125 ± 0.005 [3.18 ± 0.127]	0.115 ± 0.015 [2.92 ± 0.381]	0.085 ± 0.005 [2.16 ± 0.127]	0.438 ± 0.062 [11.13 ± 1.57]
TMC050 TMC050…NI	1.562 ± 0.005 [39.67 ± 0.127]	0.844 ± 0.005 [21.44 ± 0.127]	1.968 ± 0.031 [49.99 ± 0.787]	2.781 ± 0.062 [70.64 ± 1.57]	0.630 ± 0.015 [16.00 ± 0.381]	1.140 ± 0.015 [28.96 ± 0.381]	0.610 ± 0.015 [15.49 ± 0.381]	0.088 ± 0.010 [2.24 ± 0.254]	0.260 ± 0.010 [6.60 ± 0.254]	0.196 ± 0.010 [4.98 ± 0.254]	0.125 ± 0.005 [3.18 ± 0.127]	0.107 ± 0.015 [2.72 ± 0.381]	0.085 ± 0.005 [2.16 ± 0.127]	0.438 ± 0.062 [11.13 ± 1.57]

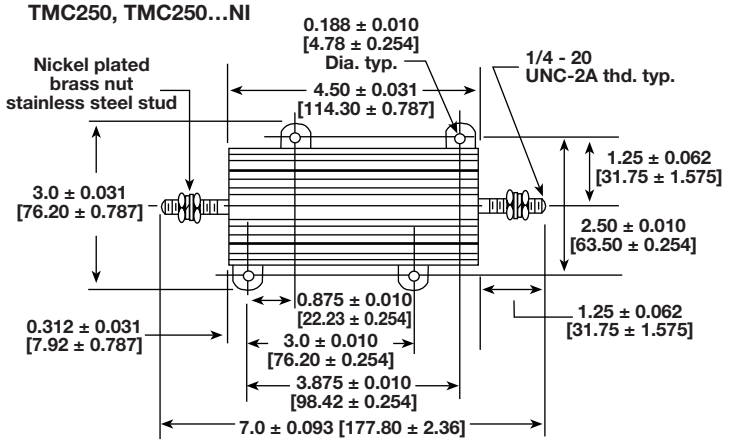
DIMENSIONS in inches [millimeters]

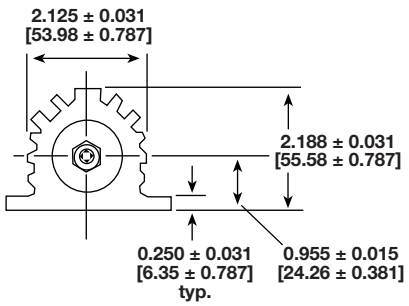
TMC100, TMC100…NI





TMC250, TMC250…NI





POWER RATING

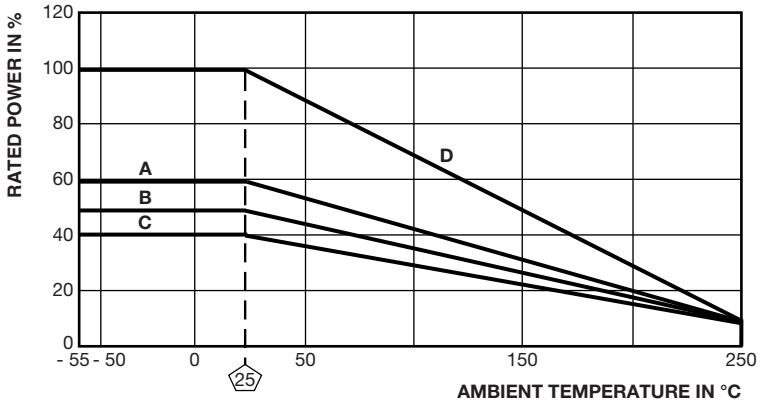
Vishay TMC resistor wattage ratings are based on mounting to the following heat sink:

TMC005 and TMC010: 4" x 6" x 2" x 0.040" thick aluminum chassis (129 sq. in. surface area)
TMC025: 5" x 7" x 2" x 0.040" thick aluminum chassis (167 sq. in. surface area)
TMC050: 12" x 12" x 0.059" thick aluminum panel (291 sq. in. surface area)
TMC100 and TMC250: 12" x 12" x 0.125" thick aluminum panel (294 sq. in. surface area)

FREE AIR POWER RATING						
GLOBAL MODEL	**TMC005 TMC005...NI**	**TMC010 TMC010...NI**	**TMC025 TMC025...NI**	**TMC050 TMC050...NI**	**TMC100 TMC100...NI**	**TMC250 TMC250...NI**
W at 25 °C	4.5	7.5	12.5	20	40	100

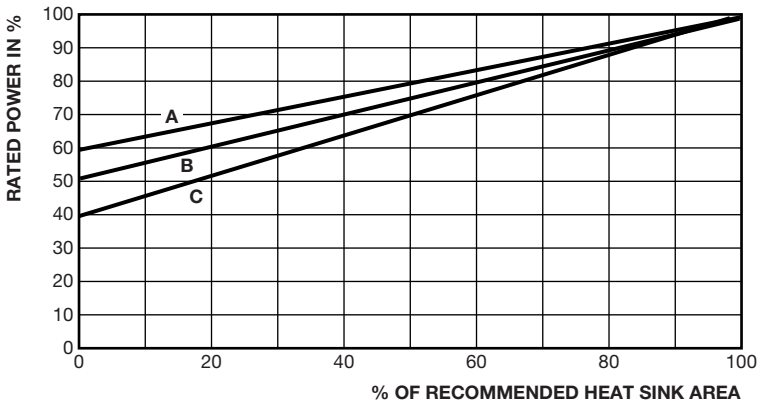
AMBIENT TEMPERATURE DERATING

Derating is required for ambient temperatures above 25 °C, see the following graph.
Curves **A**, **B**, **C** apply to operation of unmounted resistors. Curve **D** applies to all types when mounted to specified heat sink.
A = TMC005 and TMC010 size resistor, unmounted
B = TMC025 size resistor, unmounted
C = TMC050, TMC100 and TMC250 size resistor, unmounted
D = All types mounted to recommended aluminum heat sink



REDUCED HEAT SINK DERATING

Derating is also required when recommended heat sink area is reduced.
A = TMC005 and TMC010 size resistor
B = TMC025 size resistor
C = TMC050, TMC100 and TMC250 size resistor



MATERIAL SPECIFICATIONS

Element: copper-nickel alloy or nickel-chrome alloy, depending on resistance value

Core: ceramic, steatite or alumina, depending on physical size

Encapsulant: silicone molded construction

Housing: aluminum with hard anodic coating

End Caps: stainless steel

Standard Terminals: For TMC005 through TMC050 size terminal finish - Lead (Pb)-free is Ni/Pd/Au, finish is on copper clad steel core terminal. For TMC100 and TMC250 terminals are threaded stainless steel.

Part Marking: HEI, model, wattage, value, tolerance, date code

TMC NON-INDUCTIVE

Models of equivalent physical and electrical specifications are available with non-inductive (Ayrton-Perry) winding. They are identified by model number with special (TMC005…NI, for example).

SPECIAL MODIFICATIONS

A number of special modifications to the aluminum housed resistor style are available upon request. Special modifications include:

- Terminal configurations and materials
- Resistance values and tolerances
- Low resistance temperature coefficient (RTC)
- Housing configuration
- Threaded mounting holes
- Preconditioning and other additional testing

PERFORMANCE		
TEST	**CONDITIONS OF TEST**	**TEST LIMITS**
Thermal Shock	Rated power applied until thermally stable, then a minimum of 15 min at -55 °C	± (0.5 % + 0.05 Ω) ΔR
Short Time Overload	5x rated power for 5 s	± (0.5 % + 0.05 Ω) ΔR
Dielectric Withstanding Voltage	1000 V_{RMS} TMC005, TMC010 and TMC025; 2000 V_{RMS} for TMC050; 4500 V_{RMS} for TMC100 and TMC250; duration 1 min	± (0.2 % + 0.05 Ω) ΔR
High Temperature Storage	250 °C for 2 h	± (0.5 % + 0.05 Ω) ΔR
Moisture Resistance	MIL-STD-202 Method 106, 7b not applicable	± (1.0 % + 0.05 Ω) ΔR
Shock, Specified Pulse	MIL-STD-202 Method 213, 100 *g*'s for 6 ms, 10 shocks	± (0.2 % + 0.05 Ω) ΔR
Vibration, High Frequency	Frequency varied 10 Hz to 2000 Hz, 20 *g* peak, 2 directions 6 h each	± (0.2 % + 0.05 Ω) ΔR
Load Life	1000 h at rated power, +25 °C, 1.5 h "ON", 0.5 h "OFF"	± (1.0 % + 0.05 Ω) ΔR
Terminal Strength	30 s, 5 pound pull test for TMC005 and TMC010, 10 pound pull test for other sizes	± (0.2 % + 0.05 Ω) ΔR

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