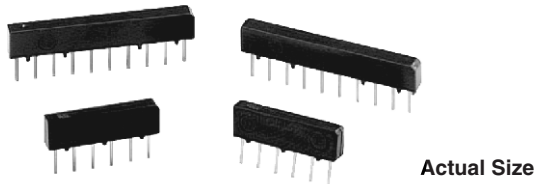


Molded, Commercial, Single In-Line Thin Film Resistor, Through Hole Network (Standard)



Designed to meet MIL-PRF-83401 characteristic “V” and “H”

These resistor networks are available in 6 pins, 8 pins and 10 pins styles in both standard and custom circuits. They incorporate Vishay Dale Thin Film’s patented passivated nichrome film to give superior performance on temperature coefficient of resistance, thermal stability, noise, voltage coefficient, power handling and resistance stability. The leads are attached to the metallized alumina substrates by Thermo-Compression bonding. The body is molded thermoset plastic with gold plated copper alloy leads. This product will outperform all of the requirements of characteristic “V” and “H” of MIL-PRF-83401.

FEATURES

- Lead (Pb)-free gold plated terminals standard
- Gold to gold terminations (no internal solder)
- Exceptional ratio stability over time and temperature ($\Delta R \pm 0.015\%$ 2000 h at 70 °C)
- Rugged low profile molded case 6 pins, 8 pins, and 10 pins available
- Compatible with automatic insertion equipment
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



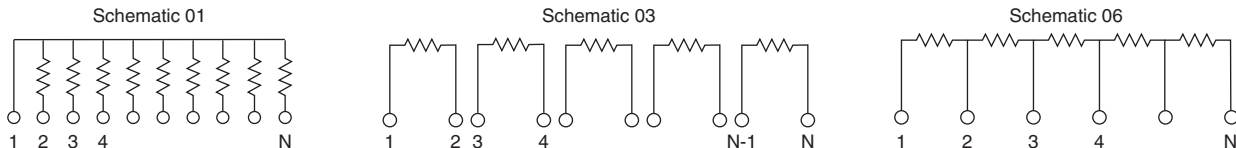
Note

* 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.

TYPICAL PERFORMANCE

	ABSOLUTE	TRACKING
TCR	25	2
	ABSOLUTE	RATIO
TOL.	0.1	0.05

SCHEMATIC



STANDARD ELECTRICAL SPECIFICATIONS		
TEST	SPECIFICATIONS	CONDITIONS
Material	Passivated nichrome	-
Pin/Lead Number	6, 8, 10	-
Resistance Range	100 Ω to 200 k Ω per resistor	-
TCR: Absolute	± 25 ppm/°C (standard)	- 55 °C to + 125 °C
TCR: Tracking	± 2 ppm/°C (typical less 1 ppm/°C equal values) ⁽¹⁾	- 55 °C to + 125 °C
Tolerance: Absolute	$\pm 0.1\%$ to $\pm 1.0\%$	+ 25 °C
Tolerance: Ratio	$\pm 0.05\%$ to $\pm 0.1\%$ to R ₁	+ 25 °C
Power Rating: Resistor	0.100 W (per element typical at + 25 °C)	Maximum at + 70 °C
Power Rating: Package	0.500 W	Maximum at + 70 °C
Stability: Absolute	$\Delta R \pm 0.05\%$	2000 h at + 70 °C
Stability: Ratio	$\Delta R \pm 0.015\%$	2000 h at + 70 °C
Voltage Coefficient	< 0.1 ppm/V	-
Working Voltage	100 V	-
Operating Temperature Range	- 55 °C to + 125 °C	-
Storage Temperature Range	- 55 °C to + 125 °C	-
Noise	< - 30 dB	-
Thermal EMF	< 0.08 μ V/°C	-
Shelf Life Stability: Absolute	$\Delta R \pm 0.01\%$	1 year at + 25 °C
Shelf Life Stability: Ratio	$\Delta R \pm 0.002\%$	1 year at + 25 °C

Note

⁽¹⁾ Consult factory for TCR tracking specifications 01 schematic

DIMENSIONS AND IMPRINTING in inches and millimeters			
	DIMENSION	INCHES	MILLIMETERS
	A	0.035	0.89
	B	0.040	1.02
	C	0.100 ± 0.005 non-accum.	2.54 ± 0.13
	D	0.019 ± 0.006 typical	0.48 ± 0.15
	E	0.187 ± 0.010	4.75 ± 0.25
	F	0.135	3.43
	G	0.095	2.41
	H	0.012 ± 0.004	0.31 ± 0.10
	L (6 Pins)	0.583 ± 0.015	14.81 ± 0.38
L (8 Pins)	0.783 ± 0.015	19.89 ± 0.38	
L (10 Pins)	0.983 ± 0.015	24.97 ± 0.38	

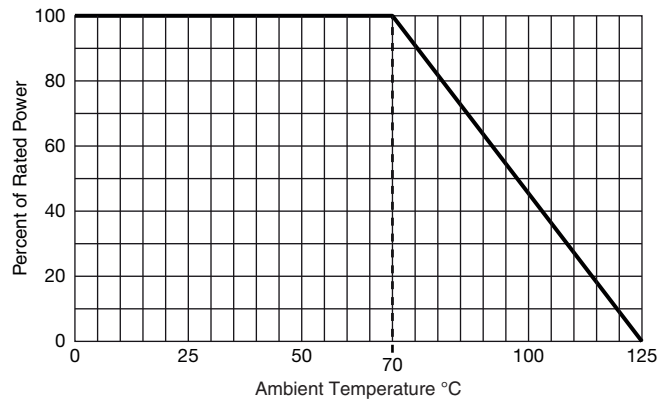
CONSTRUCTION	

MECHANICAL SPECIFICATIONS	
Resistive Element	Passivated nichrome or tantalum nitride
Substrate Material	Alumina
Body Molded	Epoxy
Terminals	Copper alloy
Plating	Nickel/gold
Model TSP - Lead (Pb)-free Standard	Gold plated
Model TSPS - Lead (Pb)-free Solder Coated Option	Sn96.5, Ag3.0, Cu0.5
Model TSPL - Tin/Lead Solder Coated Option	Sn63
Tin/Lead and Lead (Pb)-free Finish	Hot solder dip

GLOBAL PART NUMBER INFORMATION																																		
New Global Part Numbering: TSP6011002BUF																																		
<table border="0" style="width: 100%; text-align: center;"> <tr> <td>T</td><td>S</td><td>P</td><td>6</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td><td>2</td><td>B</td><td>U</td><td>F</td> </tr> <tr> <td>T</td><td>S</td><td>P</td><td>S</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td><td>2</td><td>C</td><td>U</td><td>F</td> </tr> </table>							T	S	P	6	0	1	1	0	0	2	B	U	F	T	S	P	S	1	0	0	1	1	0	0	2	C	U	F
T	S	P	6	0	1	1	0	0	2	B	U	F																						
T	S	P	S	1	0	0	1	1	0	0	2	C	U	F																				
GLOBAL MODEL (3 or 4 digits)	PIN COUNT (1 or 2 digits)	SCHEMATICS	TCR CHARACTERISTICS	RESISTANCE	TOLERANCE AND RATIO TOLERANCE		PACKAGING																											
TSP (Lead (Pb)-free) (e4) TSPL (Tin/lead) TSPS (Lead (Pb)-free) (e1)	6 8 10	01 ⁽¹⁾ = 5, 7 or 9 resistors with Pin 1 common 03 = 3, 4 or 5 isolated resistors 06 = 5, 7 or 9 series connected	R = ± 25 ppm/°C ⁽²⁾ H = ± 50 ppm/°C K = ± 100 ppm/°C Note ⁽²⁾ 01 Schematic greater than 250 Ω only	First 3 digits are significant figures and the last digit specifies the number of zeroes to follow. e.g.: 1001 = 1K 1002 = 10K	Absolute A = 0.1 % ⁽³⁾ B = 0.1 % C = 0.25 % D = 0.5 % F = 1.0 % Ratio 0.05 % 0.1 % 0.1 % 0.5 %	UF = Tubed																												
Note ⁽¹⁾ Consult factory for TCR tracking specifications 01 schematic																																		
Note ⁽³⁾ Tol. available on 1K and up only. R ₁ is reference resistor.																																		
Historical Part Number example: TSP803R1001F (for reference purposes only)																																		
TSP	8	03	R	1001	F																													
SERIES	PINS	SCHEMATIC	TCR CHARACTERISTIC	RESISTANCE	TOLERANCE AND RATIO TOLERANCE																													



DERATING CURVE





Vishay Dale Thin Film Land Patterns

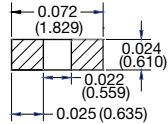
1. Scope

This technical note provides sample land patterns for Vishay Dale Thin Film SMT resistive products. The following drawings are based on IPC-SM-782 Surface Mount Design and Land Pattern Standard. These drawings are for reference only Vishay Thin Film recommends that the user contacts their PC board supplier for actual land patterns required. The pads are intended for lead (Pb)-free and tin / lead solder types.

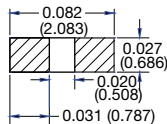
2. Product Series

Thin Film Surface Mount Chip Resistors (FC, L, P, PTN, PLT, PLTT, PLTU, PAT, PATT, PNM, M/D55342 QPL Series)

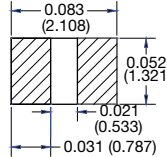
0402 Land Pattern



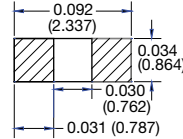
0502 Land Pattern



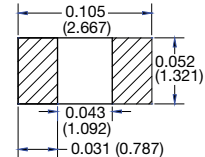
0505 Land Pattern



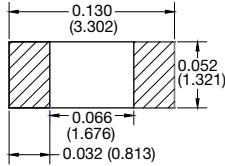
0603 Land Pattern



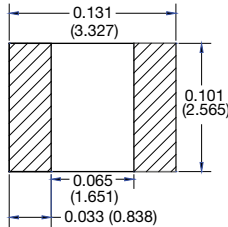
0705 Land Pattern



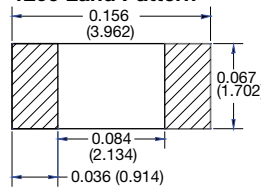
1005 Land Pattern



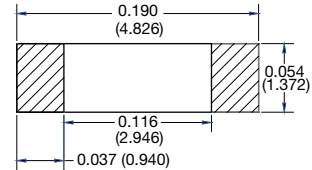
1010 Land Pattern



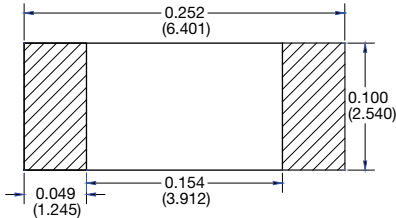
1206 Land Pattern



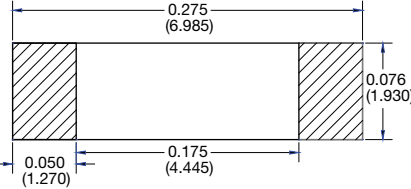
1505 Land Pattern



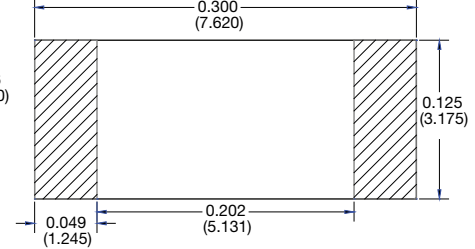
2010 Land Pattern



2208 Land Pattern

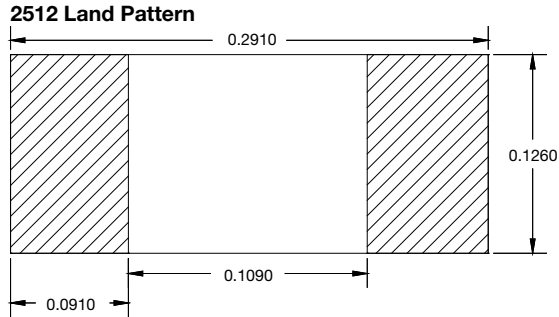
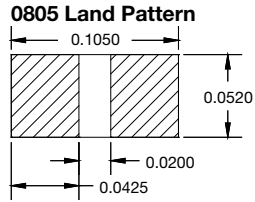
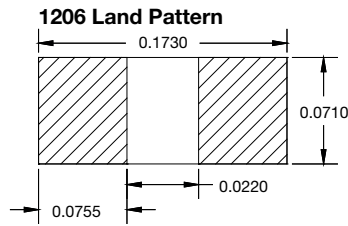
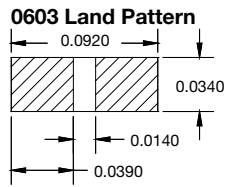


2512 Land Pattern

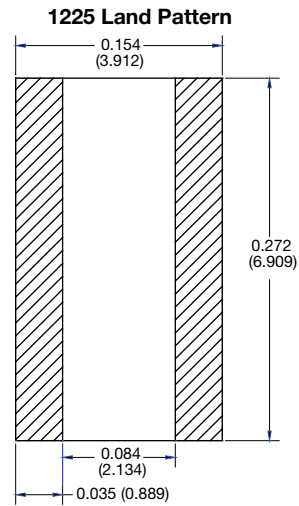
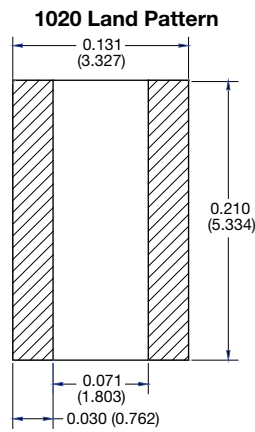
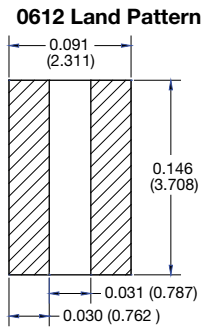
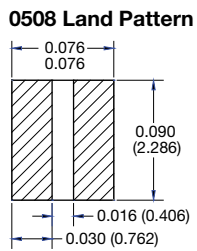




Thin Film Surface Mount Chip Resistors (PHP, PCAN Series)

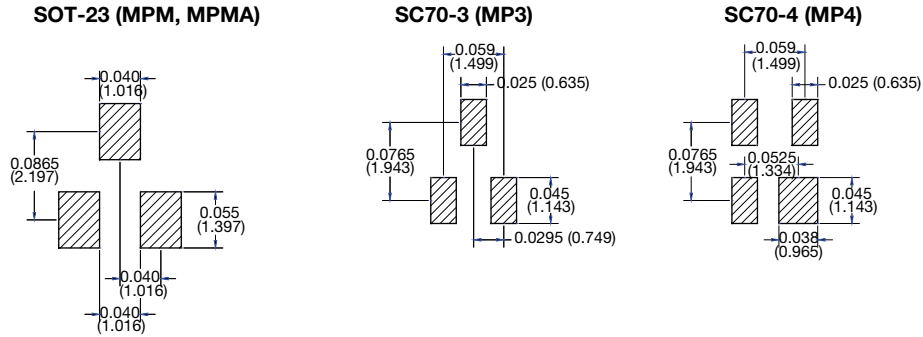


Thin Film Surface Mount Chip Resistors Long Axis Termination (L Series)

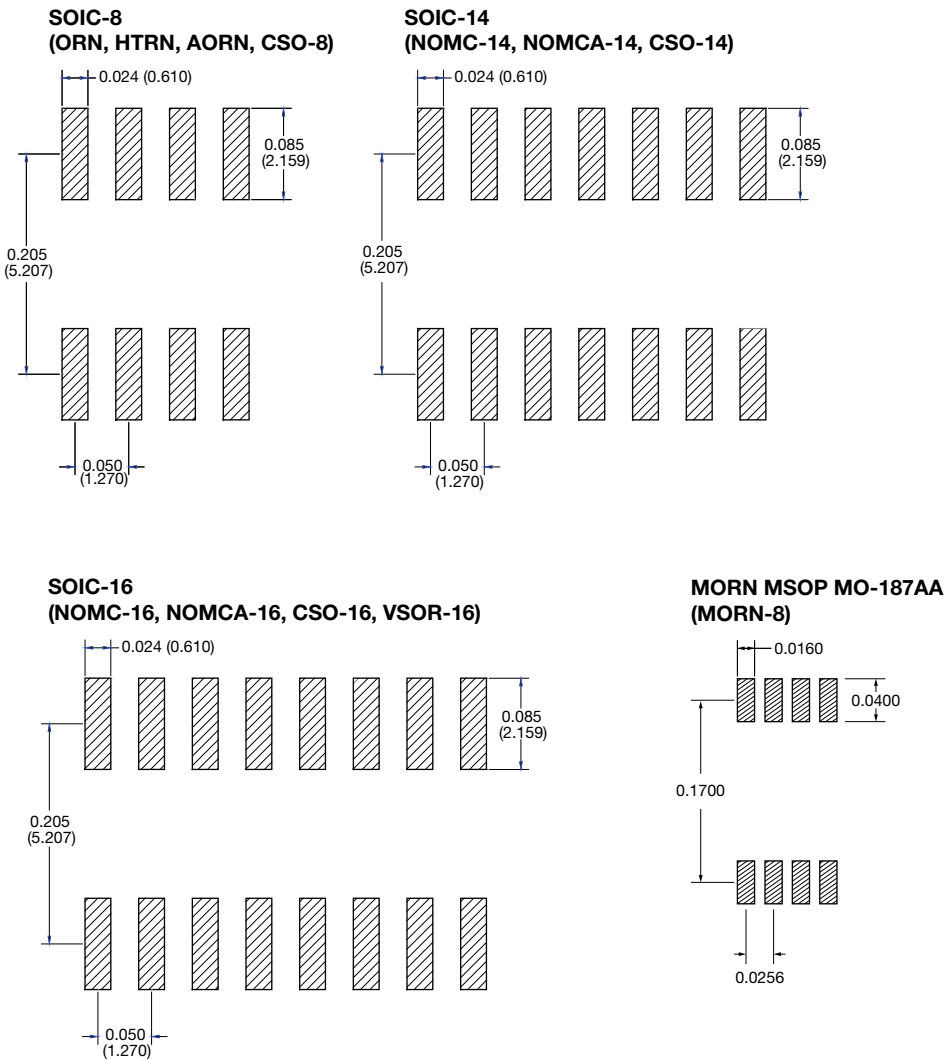




Surface Mount Networks (MPM, MP3, MP4 Series)

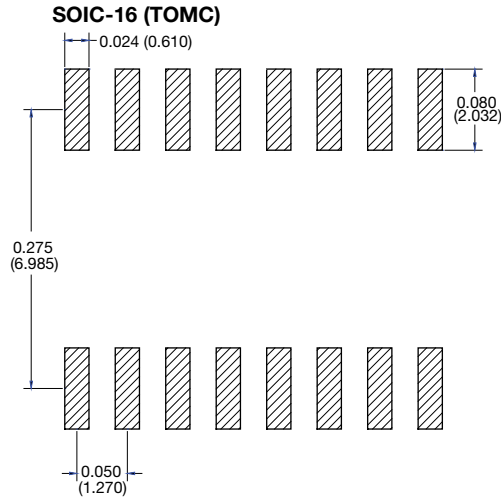


Surface Mount Networks SOIC Narrow Body 150 mils (ORN, CSO, MOMC, HTRN, AORN, MORN Series)

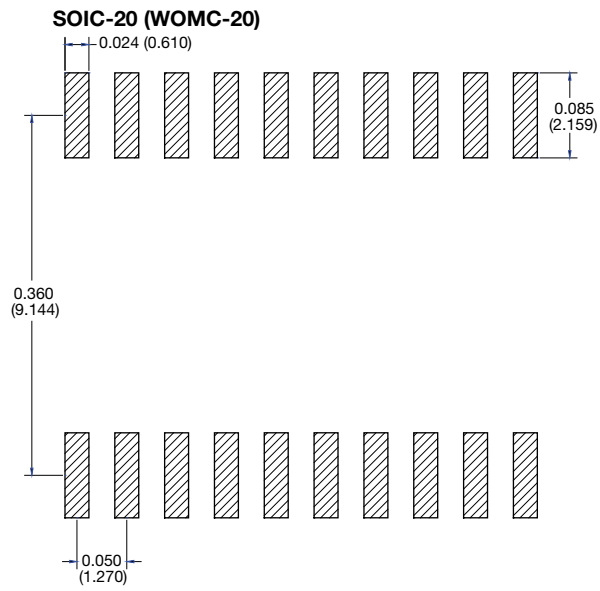
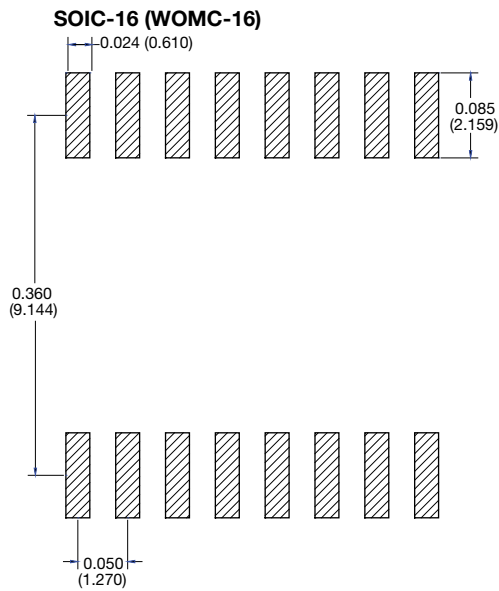




Surface Mount Networks SOIC Medium Body 220 mils (TOMC Series)



Surface Mount Networks SOIC Wide Body 300 mils (WOMC Series)

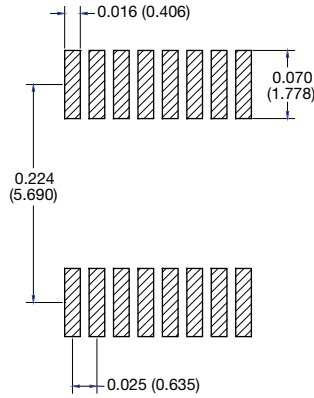




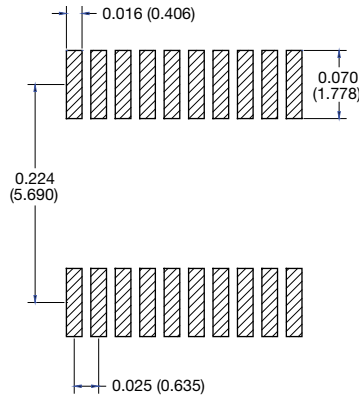
Surface Mount Networks High Density SSOP, TSOP (VSSR, VTSR Series)

SSOP MO-137

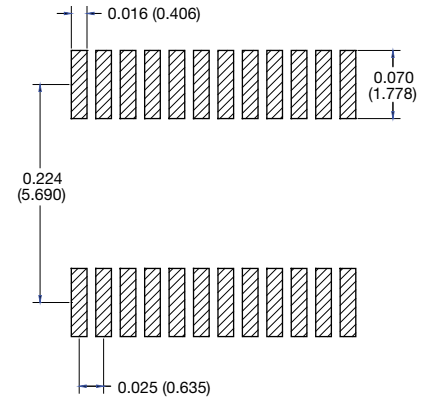
OSOP-16, VSSR-16



OSOP-20, VSSR-20

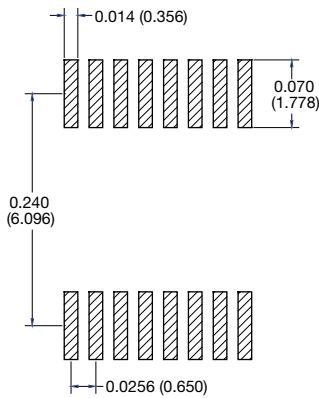


OSOP-24, VSSR-24, HD-CSO-24

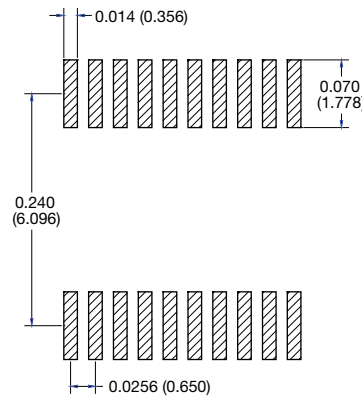


TSSOP MO-153

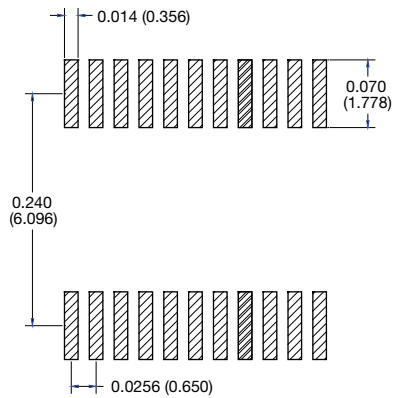
VTSR-16



VTSR-20

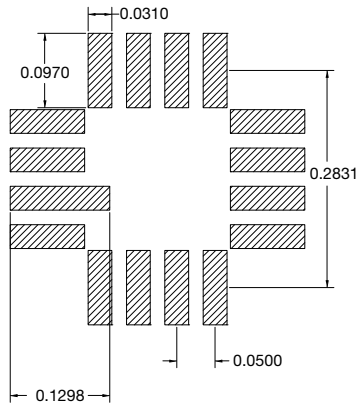


VTSR-24

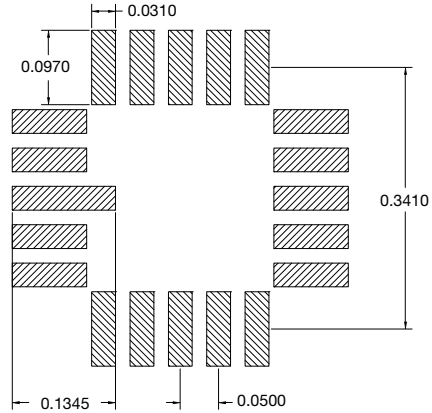


Surface Mount Leadless Networks (LCC Series)

16 Pin LCC

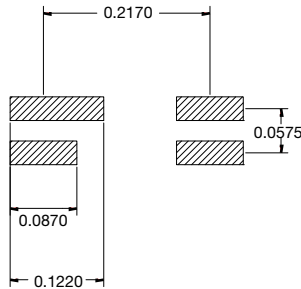


20 Pin LCC



Surface Mount Leadless Networks (MPH Series)

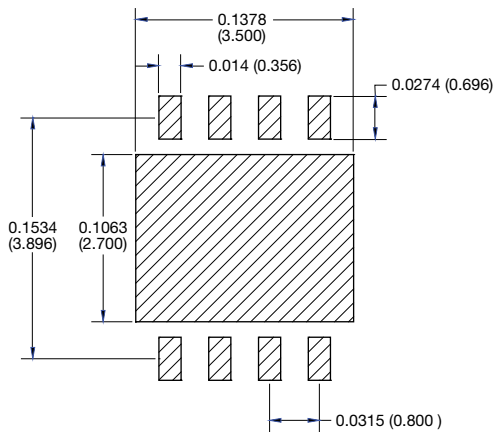
4 Pin LCC



Surface Mount Leadless Packages DUAL/ QUAD Flat No Lead (DFN, QFN Series)

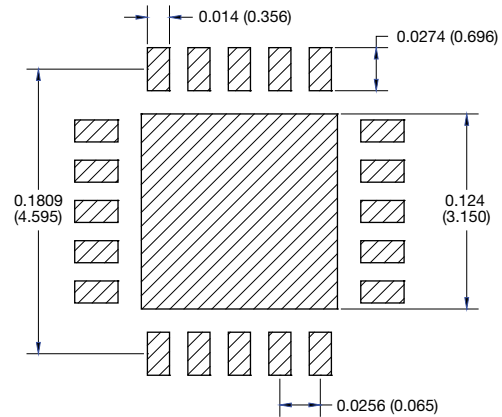
DFN MLP

DFN-8 4 x 5 mm Sq

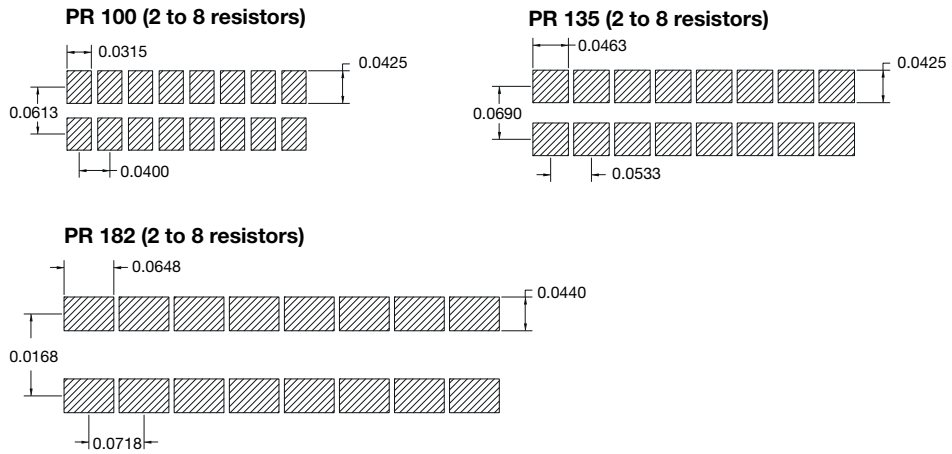


QFN MLP

QFN-20 5 x 5 mm Sq



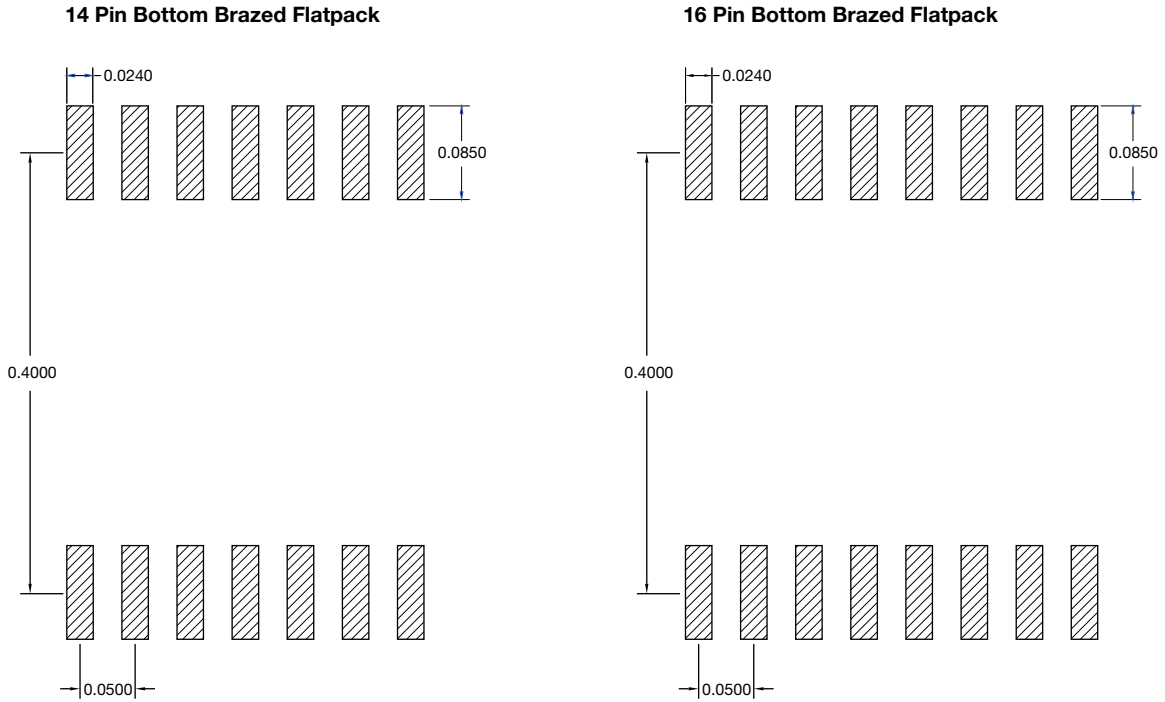
Surface Mount Leadless Resistor Arrays (PR Series)



Note

- All dimensions in inches (mm)

Flatpack





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[PBVW10](#) [8B472TR4](#) [268-15K](#) [ACAS06S0830341P100](#) [ACAS06S0830342P100](#) [ACAS06S0830345P100](#) [EXB-U14470JX](#) [EXB-U18330JX](#)
[266-10K](#) [M8340102K1051FBD04](#) [M8340105M1001JCD03](#) [M8340106K4701GGD03](#) [M8340107K1004GGD03](#) [M8340108K1000GGD03](#)
[M8340108K1202GGD03](#) [M8340108K3901GGD03](#) [M8340108K4992FGD03](#) [M8340108K5111FGD03](#) [M8340109K2202GCD03](#)
[RKC8BD104J](#) [DFNA100-1TS](#)