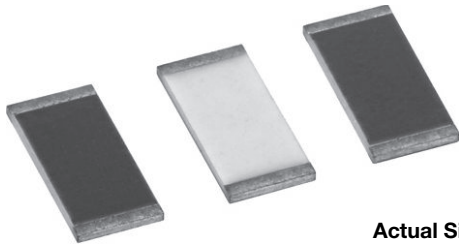
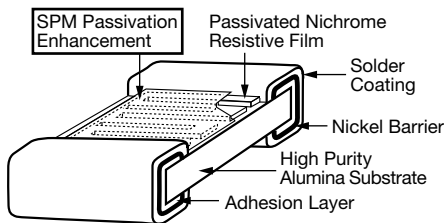


Precision Low TCR Thin Film Resistor, Surface Mount Chip, ± 5 ppm/°C TCR, 0.01 % Tolerance


Actual Size 0603

Vishay's proven precision thin film wraparound resistors will meet your exact requirements. These resistors are ideal for precision applications requiring low noise, stability, ultra low temperature coefficient of resistance, and low voltage coefficient. The chip resistors are available in any resistance ohmic value in the range specified below.

CONSTRUCTION



FEATURES

- TCR of ± 5 ppm/°C standard
- Tolerances to ± 0.01 %
- Anti corrosion resistant film with (SPM) special passivation method
- Stable film and performance characteristics ($\Delta R \pm 0.04\%$ at 70 °C, 10 000 h)
- Non-standard resistance values available
- Very low noise and voltage coefficient (< -30 dB, 0.1 ppm/V)
- UL 94 V-0 flame resistant
- 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

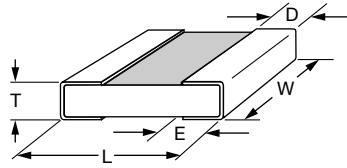
	ABSOLUTE
TCR	5
TOL.	0.01

STANDARD ELECTRICAL SPECIFICATIONS

TEST	SPECIFICATIONS	CONDITIONS
Material	Passivated nichrome	-
Resistance Range	50 Ω to 3 MΩ	-
TCR: Absolute	± 5 ppm/°C	-55 °C to +125 °C
Tolerance: Absolute	± 0.1 % to ± 0.01 %	+25 °C
Stability: Absolute	$\Delta R \pm 0.02\%$	2000 h at 70 °C
Stability: Ratio	-	-
Voltage Coefficient	± 0.1 ppm/V (typical)	-
Working Voltage	75 V to 200 V	-
Operating Temperature Range	-55 °C to +125 °C	-
Storage Temperature Range	-55 °C to +150 °C	-
Noise	< -35 dB (typical)	-
Shelf Life Stability: Absolute	$\Delta R \pm 0.01\%$	1 year at +25 °C

COMPONENT RATINGS

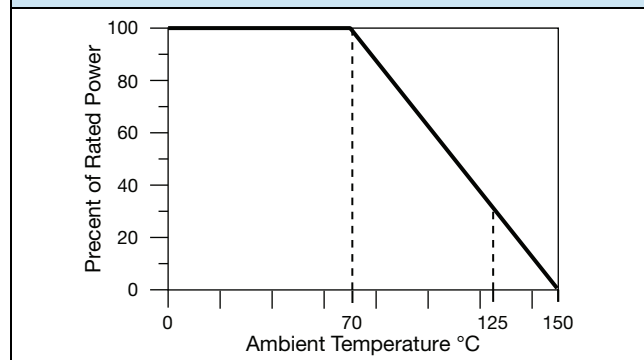
CASE SIZE	POWER RATING (mW)	WORKING VOLTAGE (V)	RESISTANCE RANGE (Ω)
0603	150	75	250 to 130K
0805	250	100	250 to 260K
1206	400	200	250 to 775K
2010	800	200	500 to 2M
2512	1000	200	500 to 3M

DIMENSIONS in inches


CASE SIZE	TERM	L	W	T	D	E
0603	B	0.064 ± 0.006	0.032 ± 0.005	0.020 max.	0.012 ± 0.005	0.015 ± 0.005
0805	B	0.080 ± 0.006	0.050 ± 0.005	0.015 to 0.033	0.016 ± 0.008	0.015 ± 0.005
1206	B	0.126 ± 0.008	0.063 ± 0.005	0.015 to 0.033	0.020 + 0.005/- 0.010	0.020 + 0.005/- 0.010
2010	G	0.209 ± 0.009	0.098 ± 0.005	0.015 to 0.033	0.020 ± 0.005	0.020 ± 0.005
2512	G	0.259 ± 0.009	0.124 ± 0.005	0.015 to 0.033	0.020 ± 0.005	0.020 ± 0.005

ENVIRONMENTAL TESTS - TYPICAL

ENVIRONMENTAL TEST	10 kΩ ΔR ± (%)	100 kΩ ΔR ± (%)
Thermal Shock	0.02	0.02
Short Time Overload	0.01	0.01
Low Temperature Operation	0.01	0.01
Resistance to Solder Heat	0.01	0.01
Moisture Resistance	0.02	0.02
High Temperature Exposure	0.02	0.02
Load Life (10 000 h, +70 °C)	0.04	0.04
TCR	± 5 ppm/°C	± 5 ppm/°C

DERATING CURVE

GLOBAL PART NUMBER INFORMATION

GLOBAL MODEL	CASE SIZE	TCR CHARACTERISTIC	RESISTANCE	TOLERANCE	TERMINATION	PACKAGING
PLT	0603 0805 1206 2010 2512	Z = ± 5 ppm/°C	The first 3 digits are significant figures and the last digit specifies the number of zeros to follow. "R" designates the decimal point. Example: 1001 = 1 kΩ 2500 = 250 Ω Special values with more than 4 significant figures, use a R for value below 1 kΩ and a K for values greater than 1 kΩ to signify a decimal point. 982R6 = 982.6 Ω 532R41 = 532.41 Ω	L = ± 0.01 % ⁽²⁾ Q = ± 0.02 % A = ± 0.05 % B = ± 0.1 % D = ± 0.5 % F = ± 1 %	B = Wraparound Sn/Pb solder w/Ni barrier (63 % Sn/37 % Pb w/ nickel barrier) S = Wraparound lead (Pb)-free solder 96.5 % Sn/3.0 % Ag/ 0.5 % Cu RoHS compliant - e1	WS = WAFFLE PACK W1 = 100 min., 1 mult (item single lot date code) WP = 100 min., 1 mult (package unit single lot date code) TAPE AND REEL T0 = 100 min., 100 mult T1 = 1000 min., 1000 mult ⁽¹⁾ T3 = 300 min., 300 mult T5 = 500 min., 500 mult TF = Full reel TS = 100 min., 1 mult TI = 100 min., 1 mult (item single lot date code) TP = 100 min., 1 mult (package unit single lot date code)

Notes

- (1) Preferred packaging code
- (2) L and Q tolerances are available only for resistance values > 250 Ω.



Vishay Dale Thin Film Land Patterns

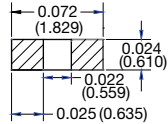
1. Scope

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.

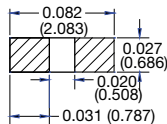
2. Product Series

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

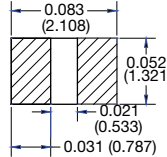
0402 Land Pattern



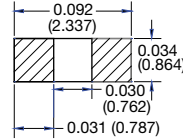
0502 Land Pattern



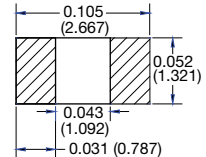
0505 Land Pattern



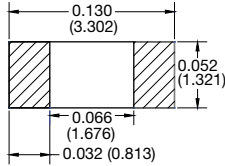
0603 Land Pattern



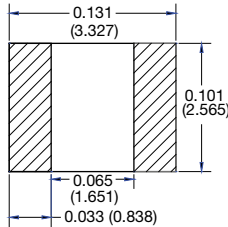
0705 Land Pattern



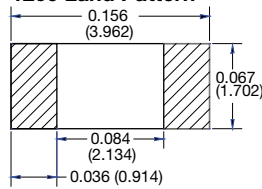
1005 Land Pattern



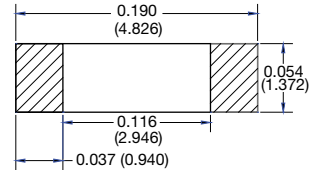
1010 Land Pattern



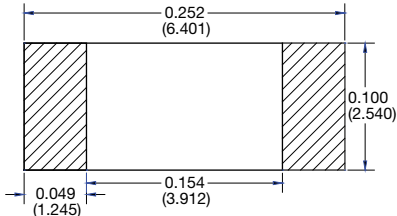
1206 Land Pattern



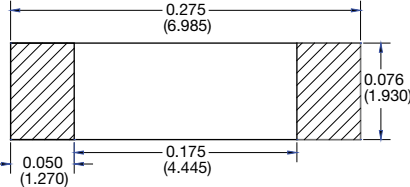
1505 Land Pattern



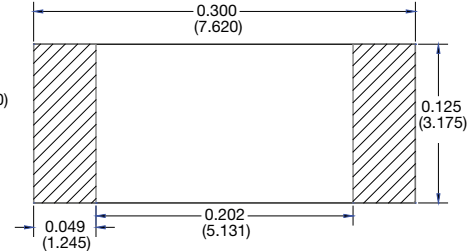
2010 Land Pattern



2208 Land Pattern

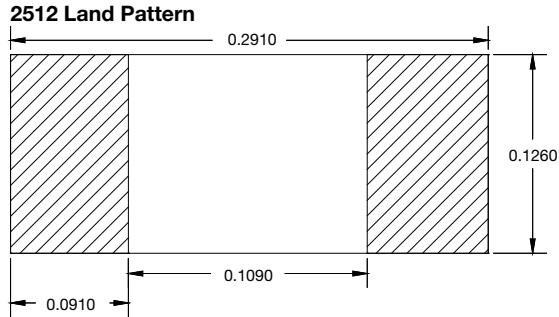
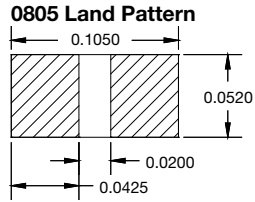
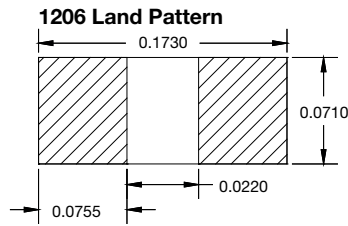
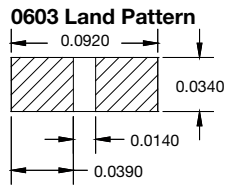


2512 Land Pattern

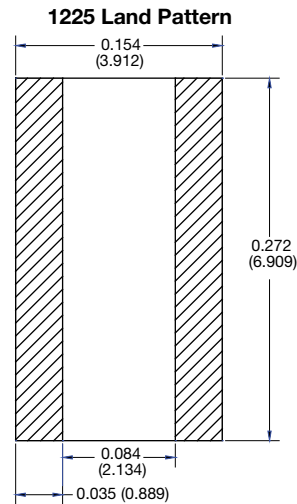
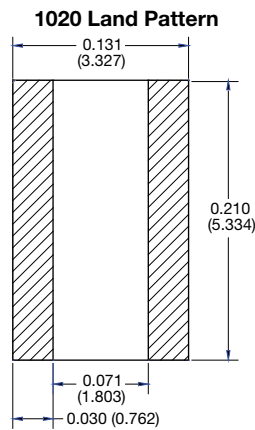
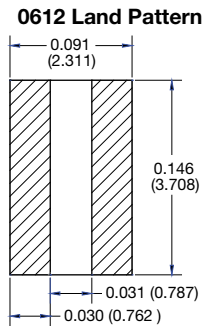
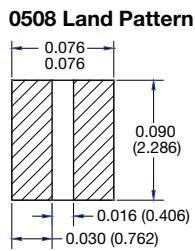




Thin Film Surface Mount Chip Resistors (PHP, PCAN Series)

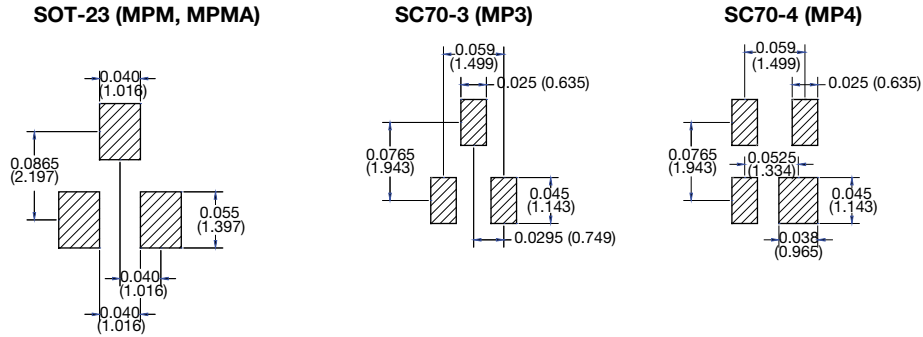


Thin Film Surface Mount Chip Resistors Long Axis Termination (L Series)

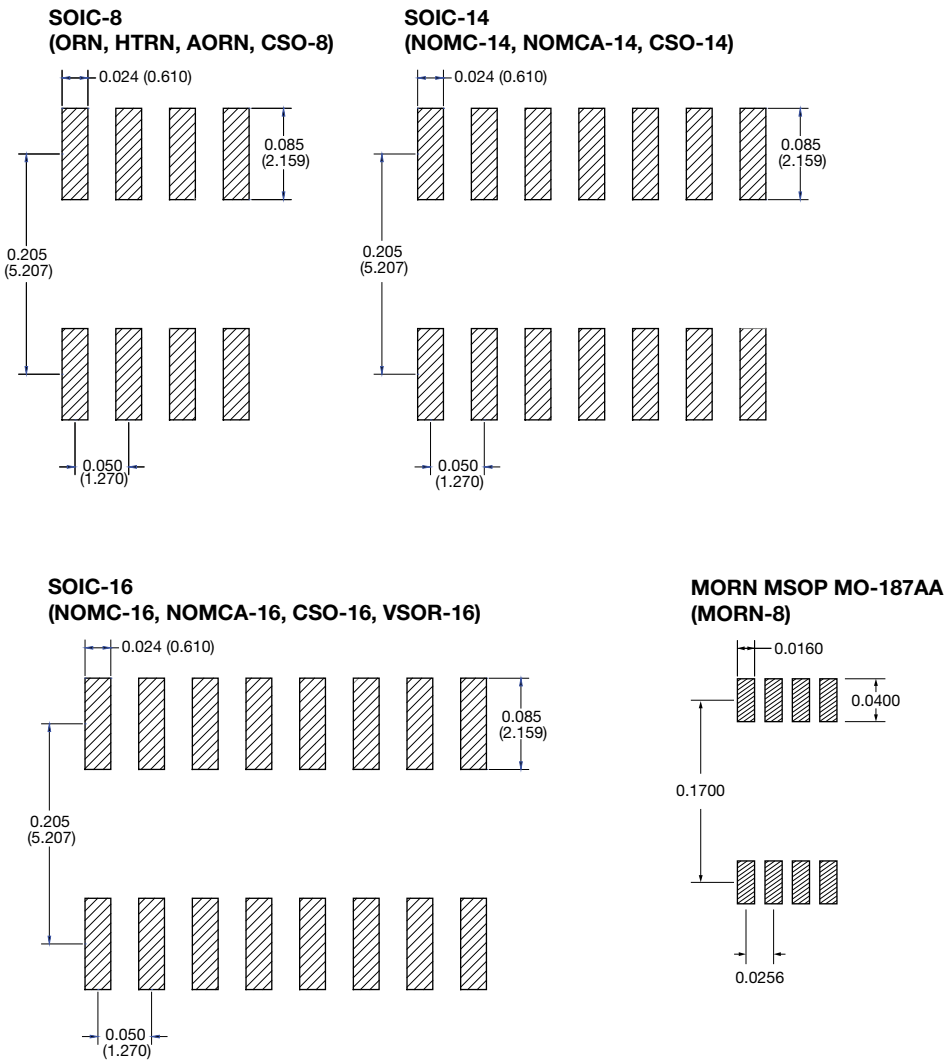




Surface Mount Networks (MPM, MP3, MP4 Series)

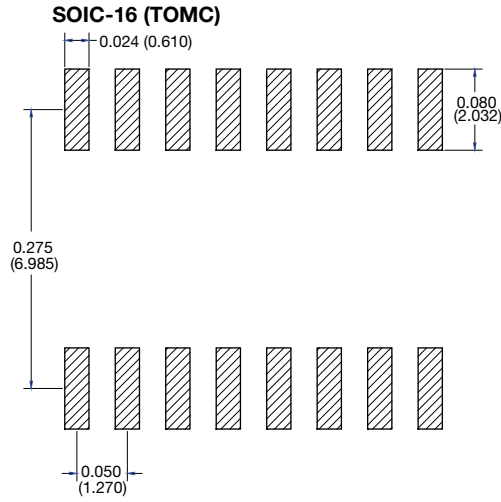


Surface Mount Networks SOIC Narrow Body 150 mils (ORN, CSO, MOMC, HTRN, AORN, MORN Series)

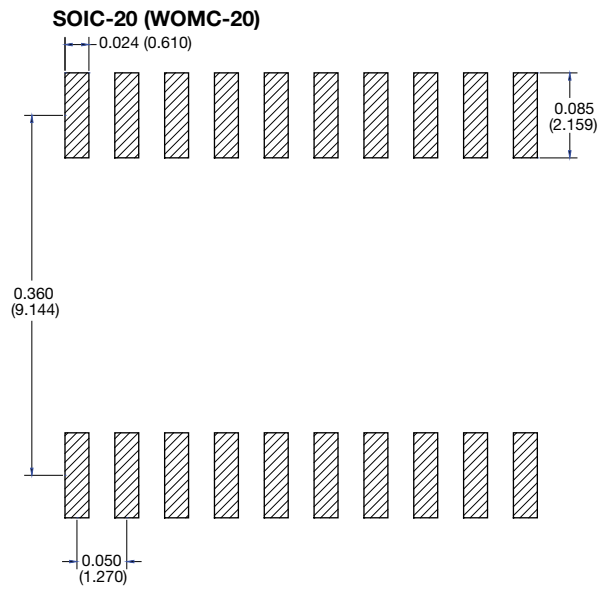
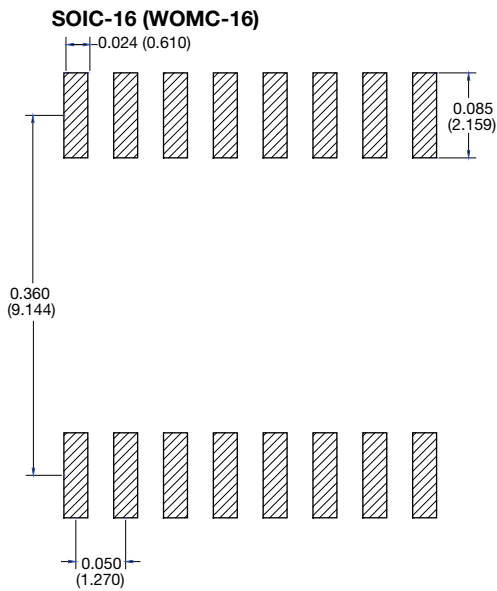




Surface Mount Networks SOIC Medium Body 220 mils (TOMC Series)



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

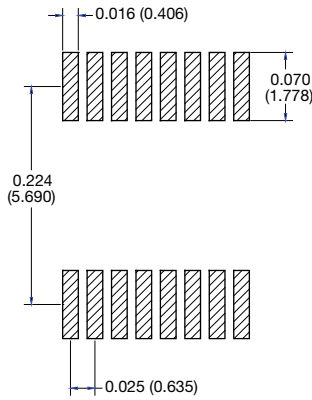




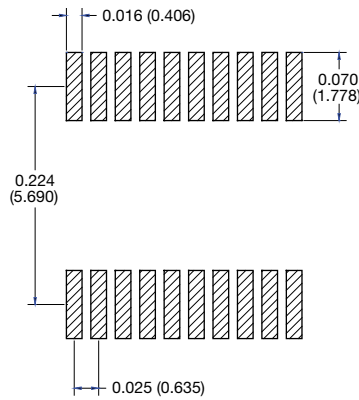
Surface Mount Networks High Density SSOP, TSOP (VSSR, VTSR Series)

SSOP MO-137

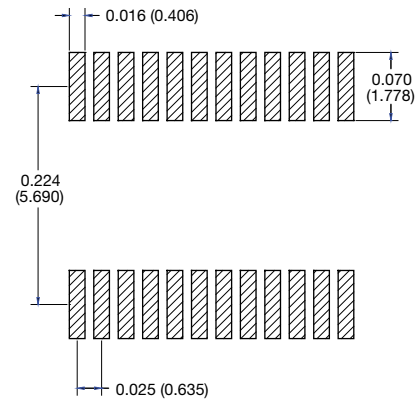
OSOP-16, VSSR-16



OSOP-20, VSSR-20

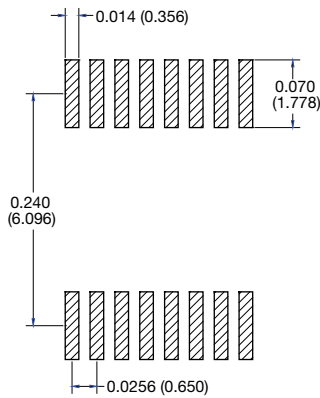


OSOP-24, VSSR-24, HD-CSO-24

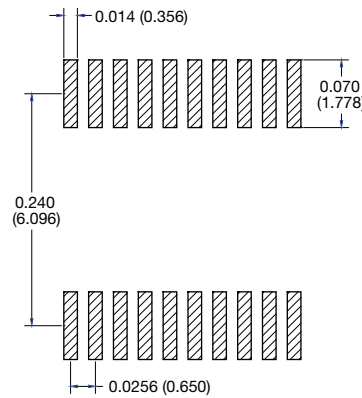


TSSOP MO-153

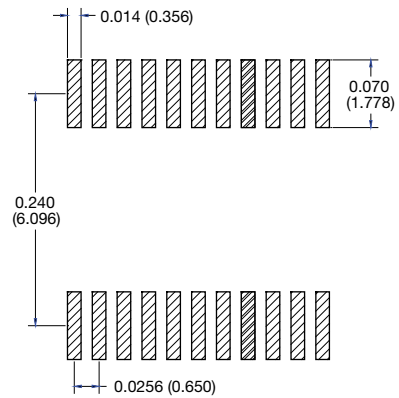
VTSR-16



VTSR-20

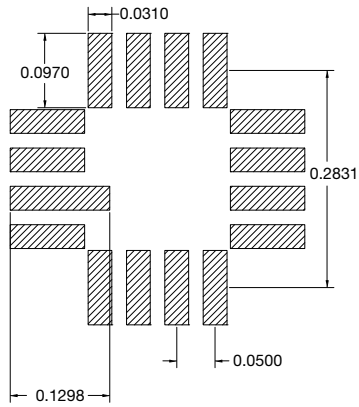


VTSR-24

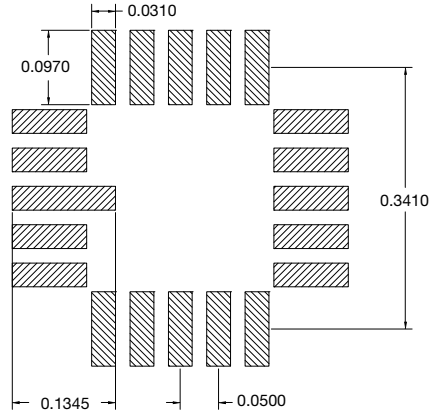


Surface Mount Leadless Networks (LCC Series)

16 Pin LCC

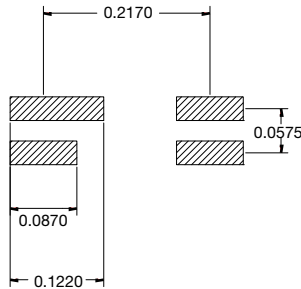


20 Pin LCC



Surface Mount Leadless Networks (MPH Series)

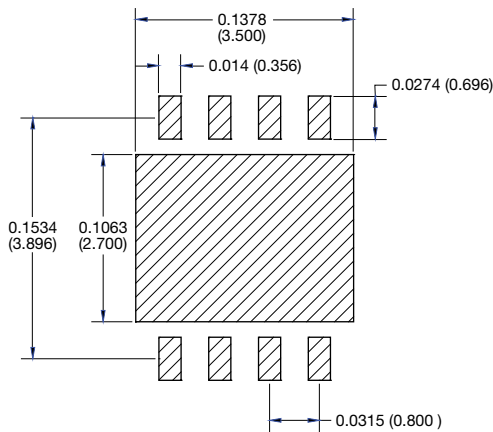
4 Pin LCC



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

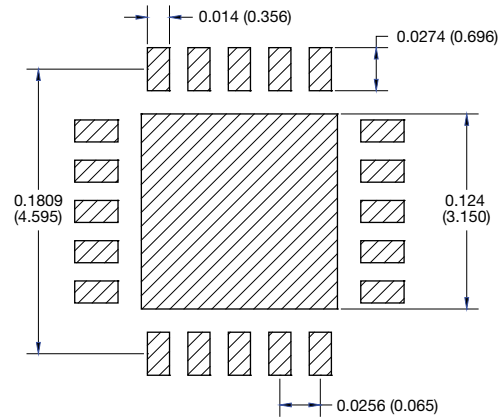
DFN MLP

DFN-8 4 x 5 mm Sq

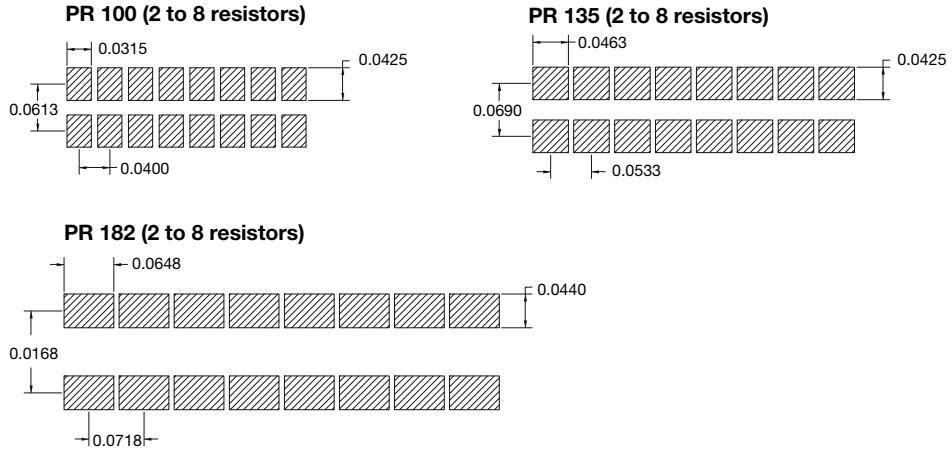


QFN MLP

QFN-20 5 x 5 mm Sq



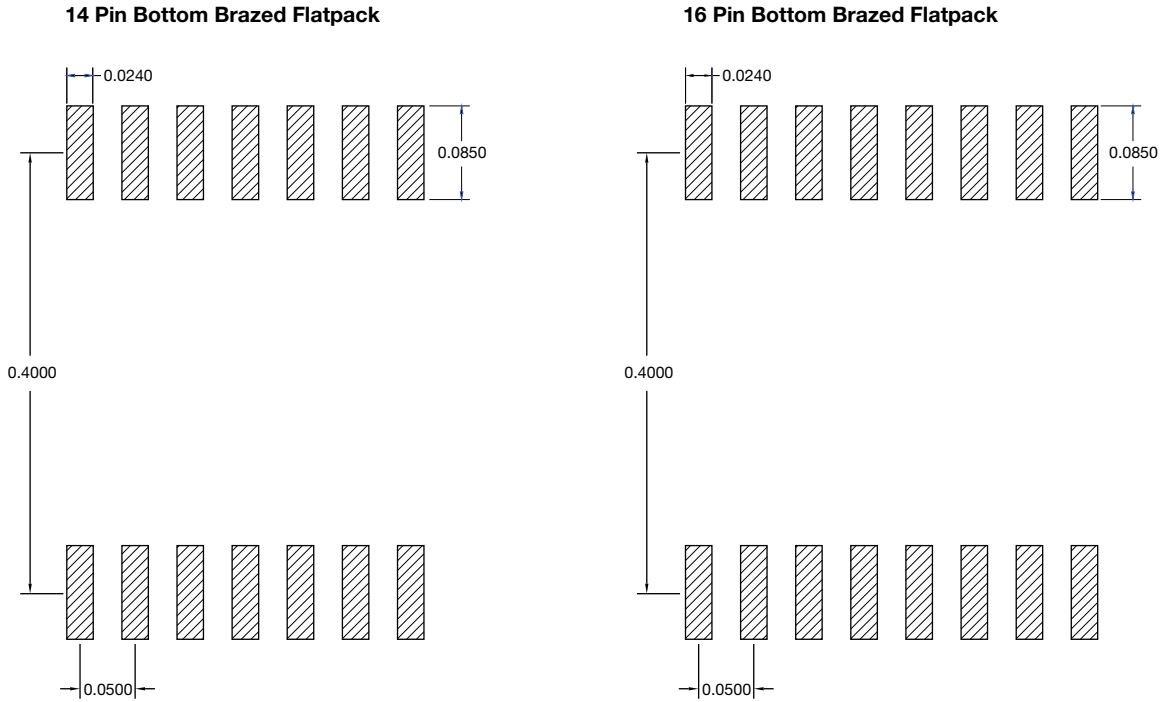
Surface Mount Leadless Resistor Arrays (PR Series)



Note

- All dimensions in inches (mm)

Flatpack





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