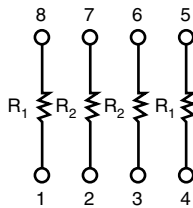


Molded, 50 mil Pitch, Dual-In-Line Thin Film Divider, Surface Mount Resistor Network



Vishay Dale Thin Film ORN series Dividers provide optimum ratio precision, small size and exceptional stability for most applications. They offer a wide ratio range that is listed in the selection guide and are available for immediate delivery. The tight ratio tolerance offered on the standard ratios will provide exceptional performance throughout life.

SCHEMATIC



FEATURES

- 0.068" (1.73 mm) maximum seated height
- Rugged molded case construction with no internal solder (JEDEC MS-012 variation AA package)
- Low TCR tracking ± 5 ppm/ $^{\circ}\text{C}$
- Compliant to RoHS Directive 2002/95/EC
- Halogen-free according to IEC 61249-2-21 definition



RoHS*
COMPLIANT
HALOGEN
FREE

Note

* Pb containing terminations are not RoHS compliant, exemptions may apply

TYPICAL PERFORMANCE

	ABSOLUTE	TRACKING
TCR	25	5
	ABSOLUTE	RATIO
TOL.	0.1	0.05

STANDARD RESISTANCE OFFERING (R_1/R_2)

RATIO	R_1	R_2
100:1	100K	1K
50:1	50K	1K
25:1	25K	1K
20:1	20K	1K
10:1	10K	1K
5:1	10K	2K
2:1	10K	5K

STANDARD ELECTRICAL SPECIFICATIONS

TEST	SPECIFICATIONS	CONDITIONS
Material	Passivated nichrome	-
Pin/Lead Number	8	-
Resistance Range	1000 Ω to 100 k Ω per resistor	-
TCR: Absolute	± 25 ppm/ $^{\circ}\text{C}$	- 55 $^{\circ}\text{C}$ to + 125 $^{\circ}\text{C}$
TCR: Tracking	± 5 ppm/ $^{\circ}\text{C}$	- 55 $^{\circ}\text{C}$ to + 125 $^{\circ}\text{C}$
Tolerance: Absolute	± 0.1 %	+ 25 $^{\circ}\text{C}$
Tolerance: Ratio	± 0.05 %	+ 25 $^{\circ}\text{C}$
Power Rating: Resistor	100 mW	Maximum at + 70 $^{\circ}\text{C}$
Power Rating: Package	400 mW	Maximum at + 70 $^{\circ}\text{C}$
Stability: Absolute	$\Delta R \pm 0.05$ %	2000 h at + 70 $^{\circ}\text{C}$
Stability: Ratio	$\Delta R \pm 0.015$ %	2000 h at + 70 $^{\circ}\text{C}$
Voltage Coefficient	< 0.1 ppm/V	-
Working Voltage	100 V max. not to exceed $\sqrt{P \times R}$	-
Operating Temperature Range	- 55 $^{\circ}\text{C}$ to + 125 $^{\circ}\text{C}$	-
Storage Temperature Range	- 55 $^{\circ}\text{C}$ to + 150 $^{\circ}\text{C}$	-
Noise	< - 30 dB	-
Thermal EMF	0.08 $\mu\text{V}/^{\circ}\text{C}$	-
Shelf Life Stability: Absolute	$\Delta R \pm 0.01$ %	1 year at + 25 $^{\circ}\text{C}$
Shelf Life Stability: Ratio	$\Delta R \pm 0.002$ %	1 year at + 25 $^{\circ}\text{C}$

Note

- Tantalum nitride film is custom, consult factory

DIMENSIONS AND IMPRINTING in inches and millimeters			
	DIMENSION	INCHES	MILLIMETERS
	A	0.157	3.99
	B	0.0165 ± 0.005	0.4 ± 0.06
	C	0.050	1.27
	D	0.195 max.	4.93
	E	0.008 ± 0.001	0.20 ± 0.03
	F	0.028 ± 0.001	0.71 ± 0.02
	G	0.239 ± 0.005	6.07 ± 0.13
	H	0.068 max.	1.73
	I	0.008 ± 0.002	0.22 ± 0.06
Ø	2° to 6°	2° to 6°	

Note

- Marking - Vishay symbol, part number from ordering information

MECHANICAL SPECIFICATIONS	
Resistive Element	Passivated nichrome
Substrate Material	Silicon
Body	Molded epoxy
Terminals	Copper alloy
Lead (Pb)-free Option	100 % matte tin
Tin Lead Option	Sn90
Tin Lead and Lead (Pb)-free Finish	Plated



GLOBAL PART NUMBER INFORMATION												
New Global Part Numbering: ORNA5-1UF												
	O	R	N	A		5	-	1		U	F	
	O	R	N	T	A	1	0	0	-	1	U	F
GLOBAL MODEL (4 or 5 digits)	RESISTANCE (3, 4 or 5 digits)				PACKAGING							
ORNA (Tin/lead)	2-1 5-1 10-1 20-1 25-1 50-1 100-1				TAPE AND REEL T0 = 100 min., 100 mult T1 = 1000 min., 1000 mult T3 = 300 min., 300 mult T5 = 500 min., 500 mult TF = Full reel 3000 TS = 100 min., 1 mult UF = TUBED							
ORNTA (Lead (Pb)-free) (e3)												
Historical Part Number example: ORNA2-1 (for reference purposes only)												
ORNA2-1	2:1	10K	5K	2								
PART NUMBER	DIVIDER NETWORK	R ₁ VALUE	R ₂ VALUE	R ₁ /R ₂ RATIO								



Vishay Dale Thin Film Land Patterns

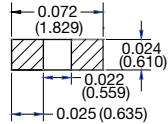
1. Scope

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.

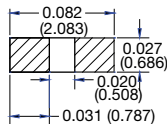
2. Product Series

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

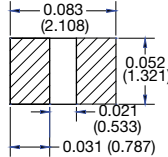
0402 Land Pattern



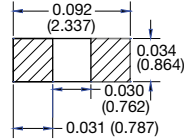
0502 Land Pattern



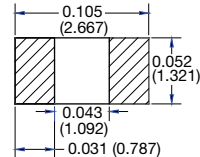
0505 Land Pattern



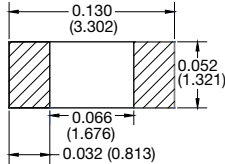
0603 Land Pattern



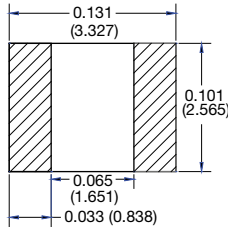
0705 Land Pattern



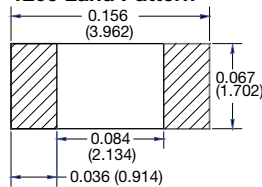
1005 Land Pattern



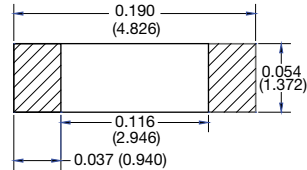
1010 Land Pattern



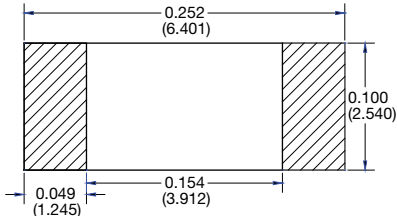
1206 Land Pattern



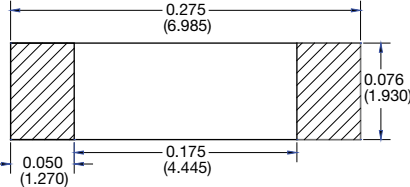
1505 Land Pattern



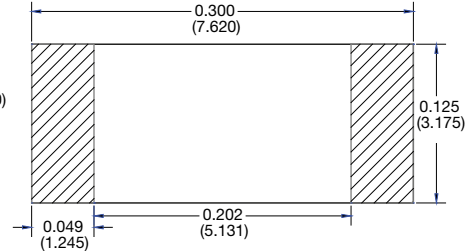
2010 Land Pattern



2208 Land Pattern

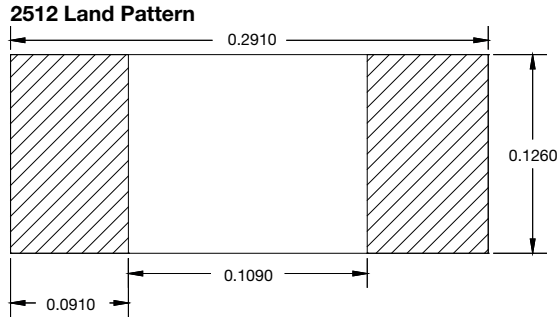
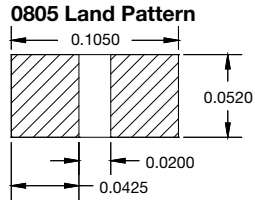
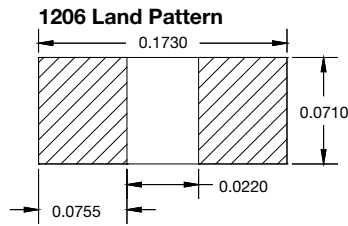
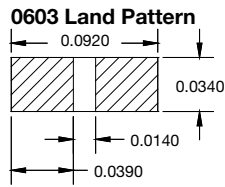


2512 Land Pattern

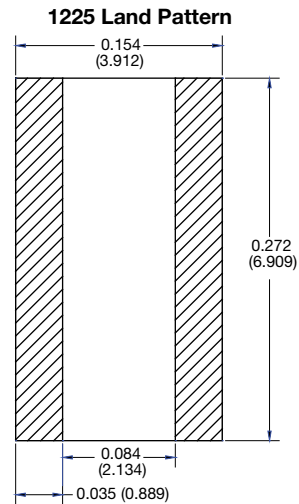
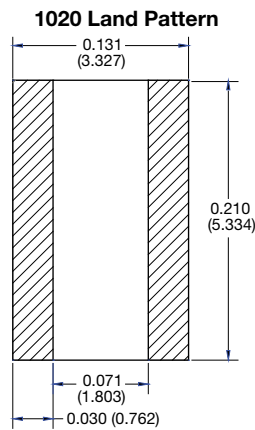
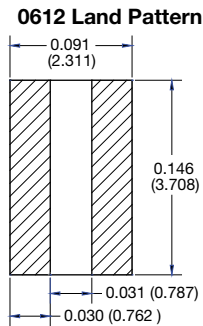
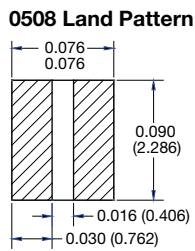




Thin Film Surface Mount Chip Resistors (PHP, PCAN Series)

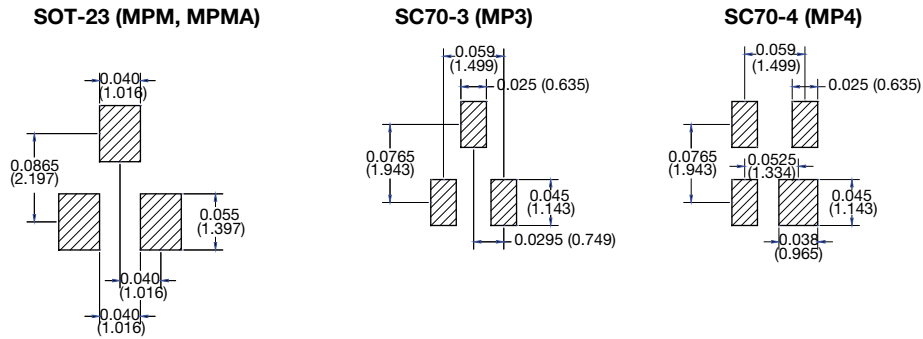


Thin Film Surface Mount Chip Resistors Long Axis Termination (L Series)

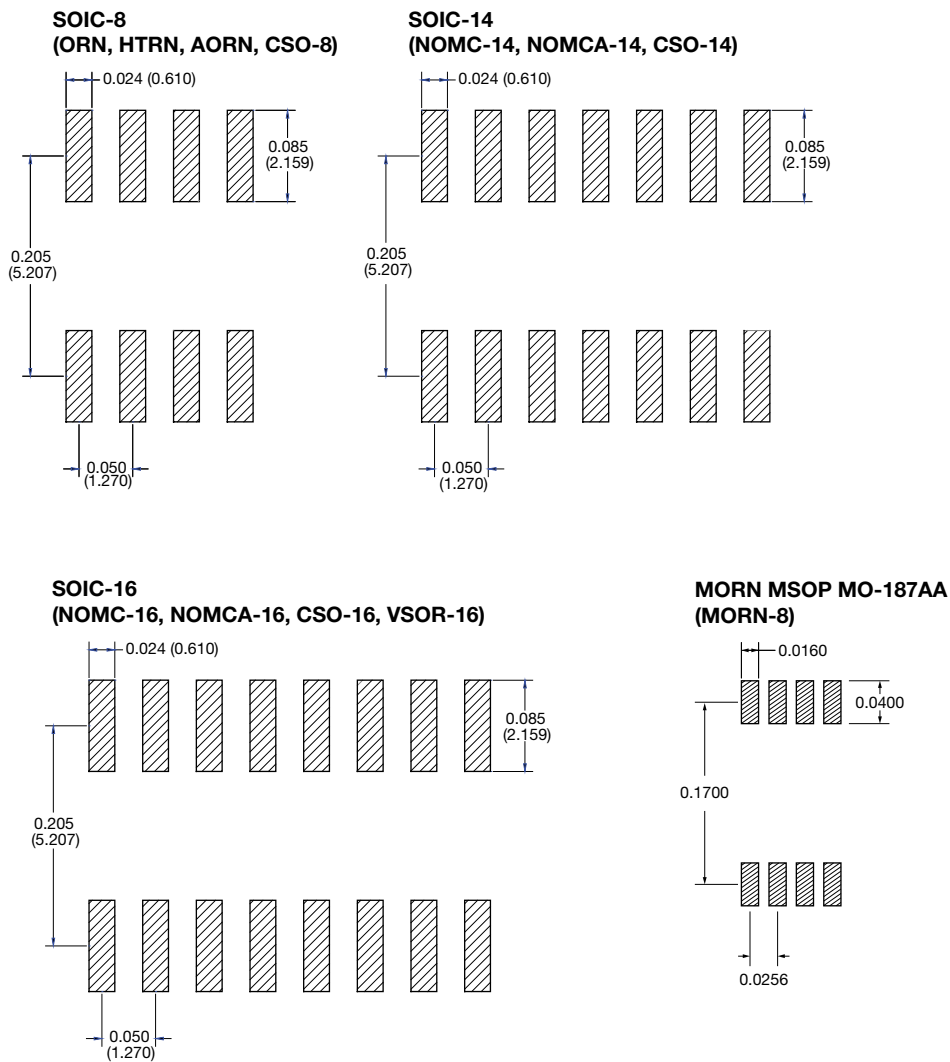




Surface Mount Networks (MPM, MP3, MP4 Series)

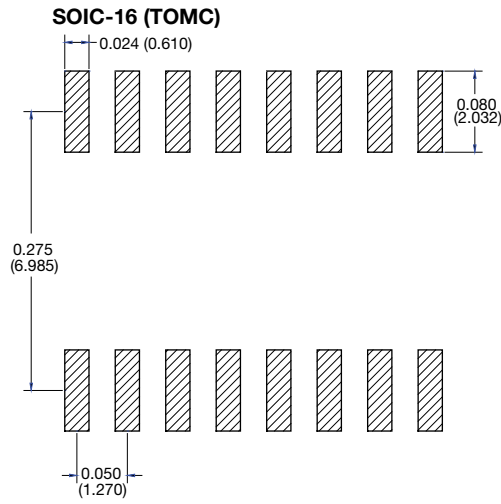


Surface Mount Networks SOIC Narrow Body 150 mils (ORN, CSO, MOMC, HTRN, AORN, MORN Series)

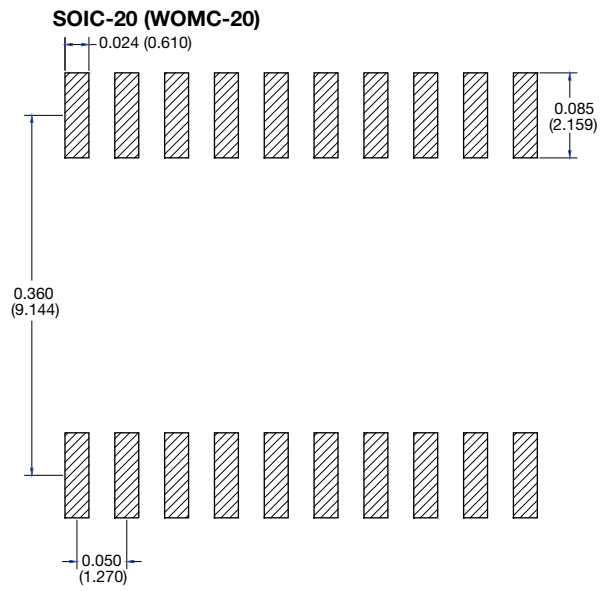
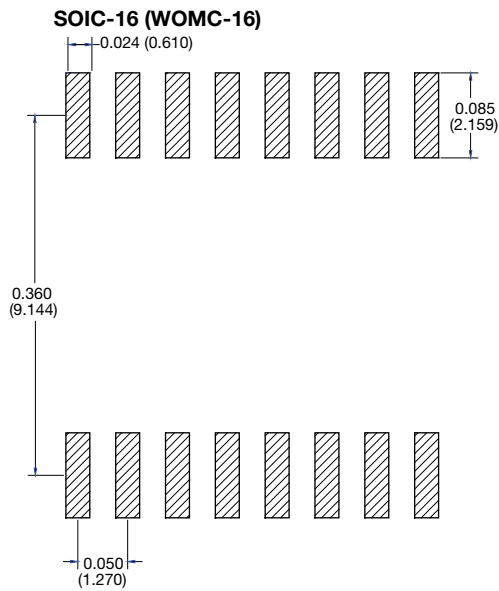




Surface Mount Networks SOIC Medium Body 220 mils (TOMC Series)



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

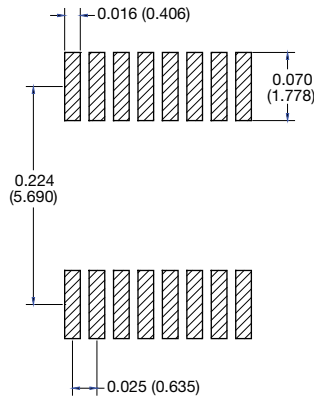




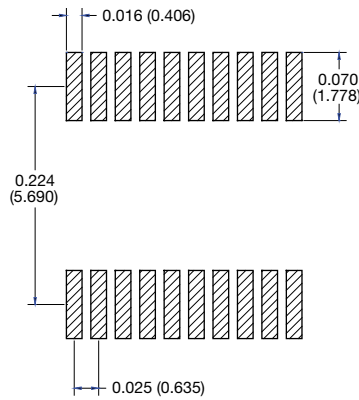
Surface Mount Networks High Density SSOP, TSOP (VSSR, VTSR Series)

SSOP MO-137

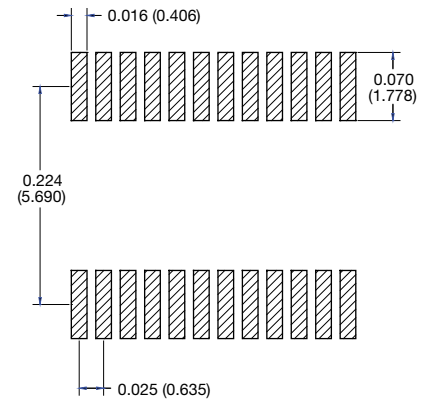
OSOP-16, VSSR-16



OSOP-20, VSSR-20

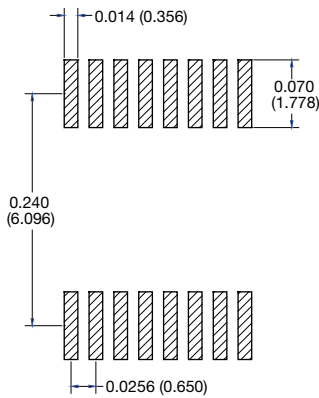


OSOP-24, VSSR-24, HD-CSO-24

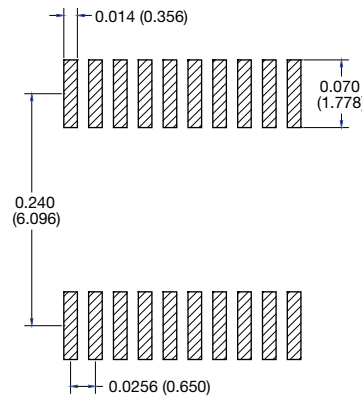


TSSOP MO-153

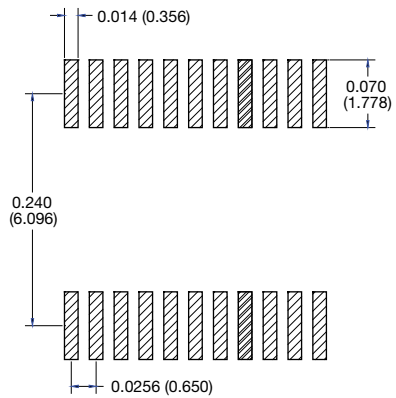
VTSR-16



VTSR-20

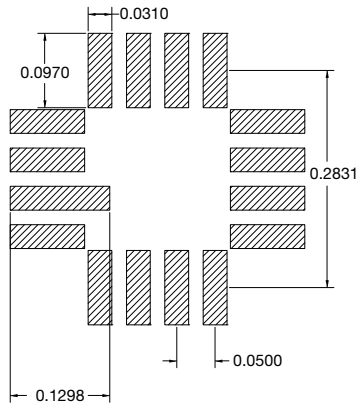


VTSR-24

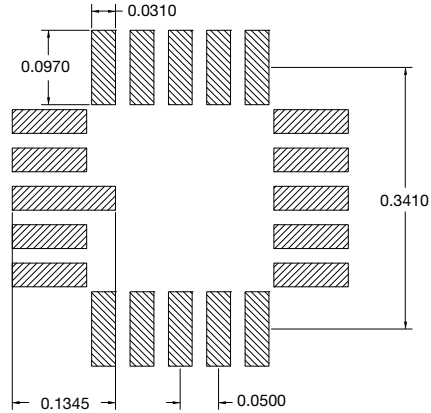


Surface Mount Leadless Networks (LCC Series)

16 Pin LCC

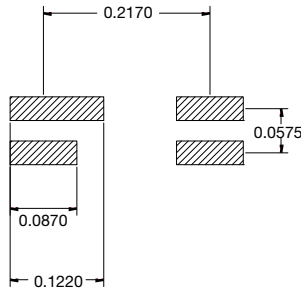


20 Pin LCC



Surface Mount Leadless Networks (MPH Series)

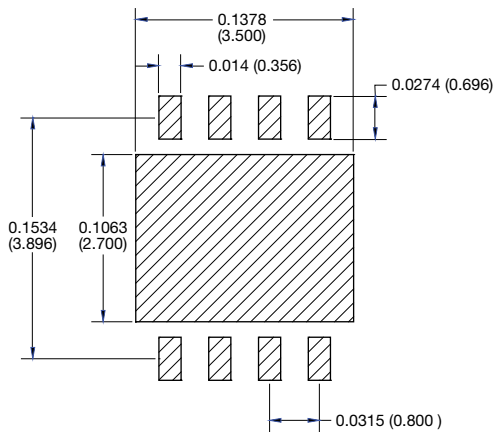
4 Pin LCC



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

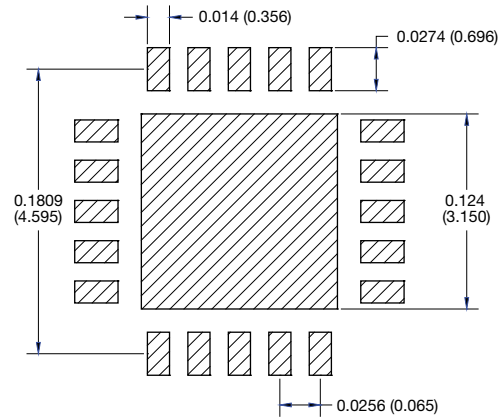
DFN MLP

DFN-8 4 x 5 mm Sq

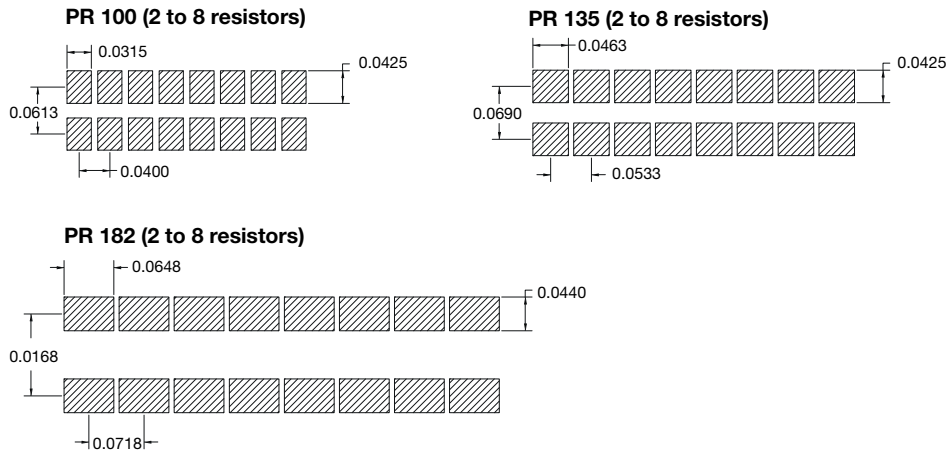


QFN MLP

QFN-20 5 x 5 mm Sq



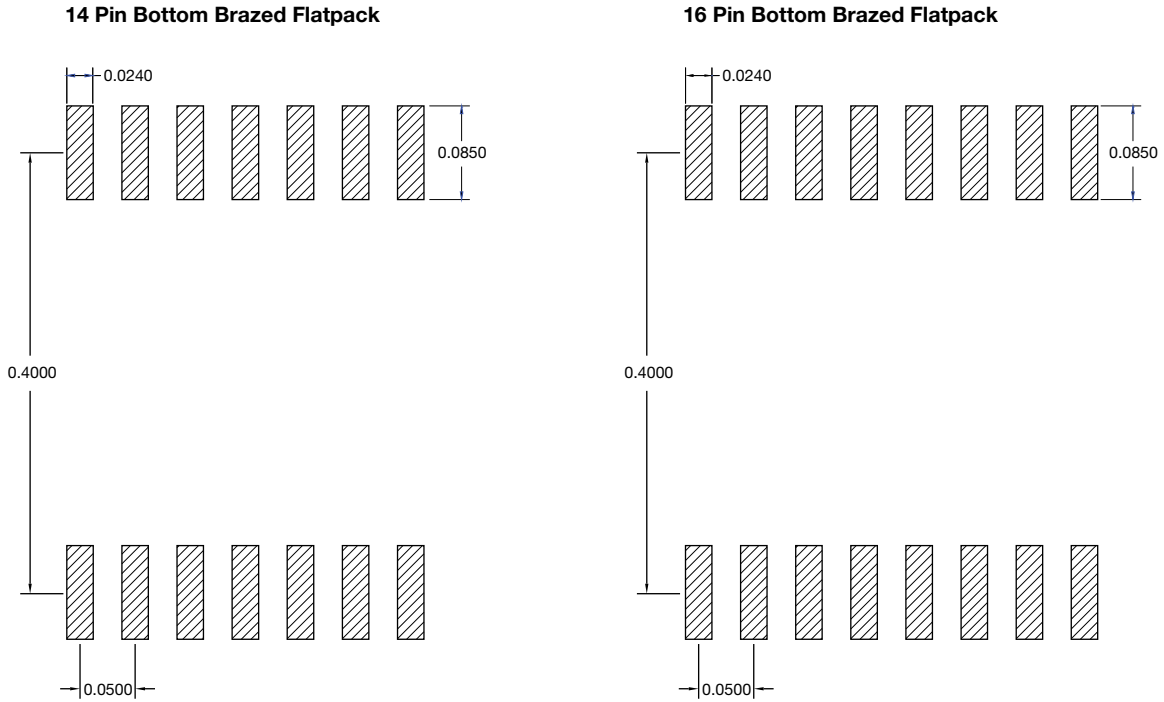
Surface Mount Leadless Resistor Arrays (PR Series)



Note

- All dimensions in inches (mm)

Flatpack





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[M8340108K1202GGD03](#) [M8340108K3901GGD03](#) [M8340108K4992FGD03](#) [M8340108K5111FGD03](#) [M8340109K2202GCD03](#)
[RKC8BD104J](#) [DFNA100-1TS](#)