

# 74000 & 75000 Series

10-150 V- $\mu$ s ET Constant Pulse Transformer

**PICO**  
Electronics, Inc.

## PRODUCT OVERVIEW

The 74000 & 75000 series are pulse transformers in an encapsulated package with design layouts as through-hole and surface mount types. They can operate over a wide temperature range of -55°C to +130°C. Our proprietary materials and methods allow extreme temperatures of vapor phase, IR or other reflow procedures without degrading the high reliability of their physical form and electrical performance.

Typical applications:

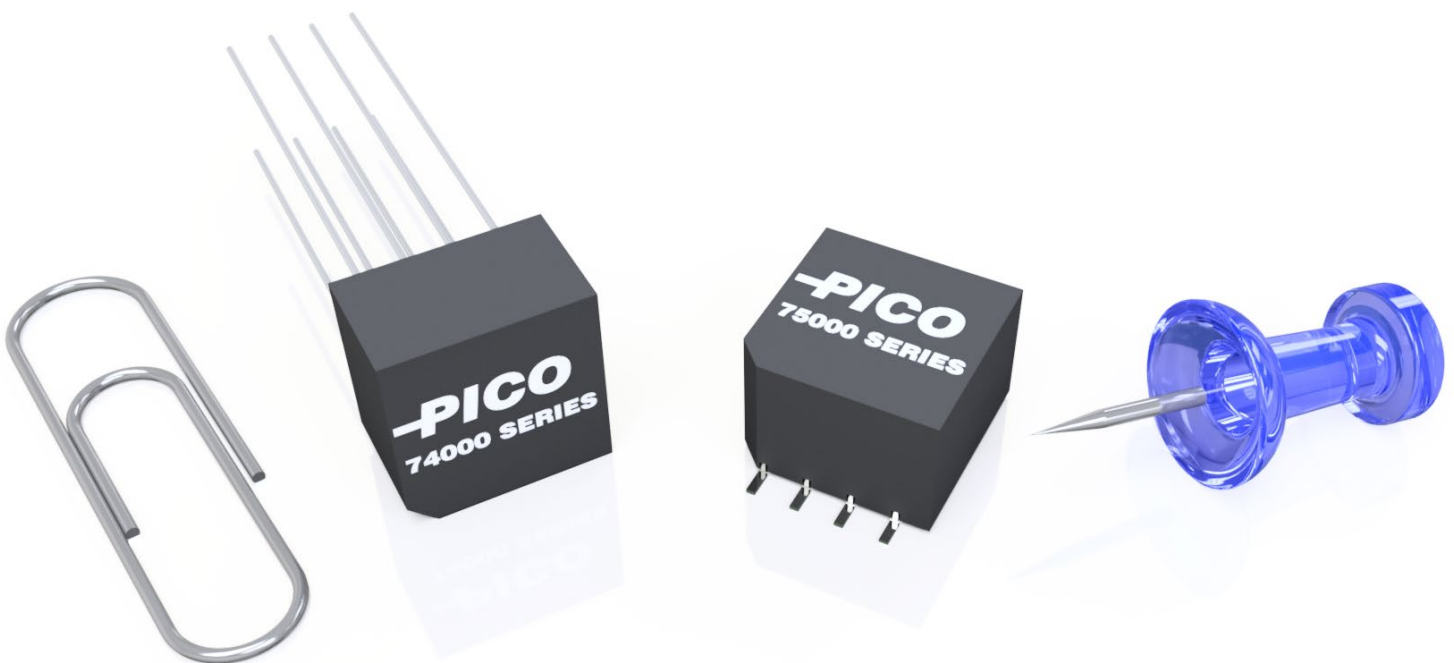
- Sensors
- Radars
- Avionic flight controls
- Airborne systems
- Naval electronics
- Military, aerospace, or commercial aircraft

## FEATURES

- Extreme resistance to impact, shock, and vibration
- Manufactured to MIL-PRF-21038
- High reliability for space and mission critical applications
- Ultra miniature in size and minimalistic design
- Design layouts in through-hole or surface mount types

Contact Pico for part number of available options:

- Screening and qualification criteria to flight standard
- Fully RoHS compliant or with exemption 7(a)
- Modifications to mechanical design and electrical characteristics
- Custom new design and parameters

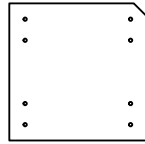
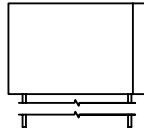


# 74000 & 75000 Series | Pulse Transformer

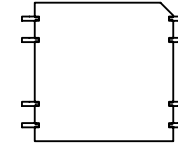


## SPECIFICATIONS - SIZE 1

### 74000 SERIES - THROUGH HOLE



### 75000 SERIES - SURFACE MOUNT



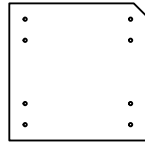
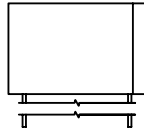
Through Hole	Surface Mount	Turns Ratio PRI/SEC 5% tolerance	Inductance [μH] typ.	Leakage Inductance		Winding Resistance			Interwinding Capacitance		Primary ET Rating V-μs max.
				LL (N1-N2) [μH] typ.	LL (N1-N3) [μH] typ.	R (N1) [Ω] ±25%	R (N2) [Ω] ±25%	R (N3) [Ω] ±25%	C1 (N1-N2) [pF] typ.	C2 (N1-N3) [pF] typ.	
74005	75005	1:1:1	150	.100	.250	.070	.080	.085	25	12	10
74010	75010	1:1:1	600	.400	1.1	.15	.18	.21	25	12	20
74015	75015	1:1:1	1300	.900	2.5	.45	.51	.58	25	12	30
74020	75020	1:1:1	2400	1.6	4.2	1.14	1.27	1.39	25	12	40
74025	75025	1:1:1	3700	3.0	6.5	2.0	2.3	2.5	25	12	50
74030	75030	2:1:1	150	.250	.450	.062	.014	.014	25	12	10
74035	75035	2:1:1	600	1.0	1.5	.15	.074	.087	25	12	20
74040	75040	2:1:1	1300	1.5	3.5	.45	.10	.13	25	12	30
74045	75045	2:1:1	2400	2.2	6.0	1.14	.17	.20	25	12	40
74050	75050	2:1:1	3700	3.4	9.0	2.07	.29	.32	25	12	50
74055	75055	3:1:1	200	.617	1.0	.081	.018	.018	25	12	12
74060	75060	3:1:1	800	1.2	1.5	.18	.035	.040	25	12	24
74065	75065	3:1:1	1800	2.5	5.0	.37	.15	.16	25	12	36
74070	75070	3:1:1	3200	4.5	10.0	.62	.25	.28	25	12	48
74075	75075	3:1:1	5300	7.0	15.0	1.28	.25	.28	25	12	60
74080	75080	3:3:1	200	200	1.0	.082	.096	.025	25	12	12
74085	75085	3:3:1	800	1.0	1.5	.18	.22	.042	25	12	24
74090	75090	3:3:1	1800	2.5	5.0	.58	.73	.28	25	12	36
74095	75095	3:3:1	3200	4.5	10.0	.95	1.18	.55	25	12	48
74100	75100	3:3:1	5300	7.0	15.0	1.56	1.78	.69	25	12	60
74105	75105	4:2:1	200	.506	2.0	.047	.024	.019	25	12	12
74110	75110	4:2:1	800	1.5	3.0	.18	.071	.041	25	12	24
74115	75115	4:2:1	1800	3.0	5.5	.46	.28	.16	25	12	36
74120	75120	4:2:1	3200	5.5	10.0	.77	.46	.25	25	12	48
74125	75125	4:2:1	5300	8.0	15.0	1.25	.72	.40	25	12	60

# 74000 & 75000 Series | Pulse Transformer

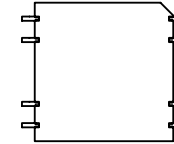


## SPECIFICATIONS - SIZE 2

### 74000 SERIES - THROUGH HOLE



### 75000 SERIES - SURFACE MOUNT



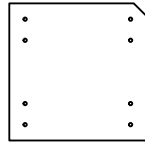
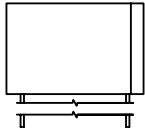
Through Hole	Surface Mount	Turns Ratio PRI/SEC 5% tolerance	Inductance [μH] typ.	Leakage Inductance		Winding Resistance			Interwinding Capacitance		Primary ET Rating V-μs max.
				LL (N1-N2) [μH] typ.	LL (N1-N3) [μH] typ.	R (N1) [Ω] ±25%	R (N2) [Ω] ±25%	R (N3) [Ω] ±25%	C1 (N1-N2) [pF] typ.	C2 (N1-N3) [pF] typ.	
74210	75210	1:1:1	250	.350	.712	.038	.046	.048	35	18	16
74215	75215	1:1:1	1000	.650	1.2	.12	.15	.17	35	18	32
74220	75220	1:1:1	2250	1.5	3.0	.28	.32	.37	35	18	48
74225	75225	1:1:1	4000	2.5	5.0	.59	.66	.74	35	18	65
74230	75230	1:1:1	6200	4.0	8.0	1.27	1.48	1.56	35	18	80
74235	75235	2:1:1	250	.400	.815	.038	.014	.015	35	18	16
74240	75240	2:1:1	1000	.800	1.6	.12	.044	.049	35	18	32
74245	75245	2:1:1	2250	1.8	3.6	.28	.11	.13	35	18	48
74250	75250	2:1:1	4000	3.2	6.4	.59	.17	.20	35	18	65
74255	75255	2:1:1	6200	5.0	10.0	1.26	.29	.31	35	18	80
74260	75260	3:1:1	350	.400	.900	.036	.017	.023	35	18	19
74265	75265	3:1:1	1400	1.1	2.2	.15	.035	.039	35	18	38
74270	75270	3:1:1	3000	2.4	5.0	.42	.062	.068	35	18	57
74275	75275	3:1:1	5500	4.2	8.0	.75	.23	.24	35	18	76
74280	75280	3:1:1	9000	6.5	10.0	1.02	.39	.41	35	18	95
74285	75285	3:3:1	350	.450	1.0	.063	.068	.049	35	18	19
74290	75290	3:3:1	1400	1.2	2.6	.15	.17	.065	35	18	38
74295	75295	3:3:1	3000	2.5	5.0	.42	.48	.089	35	18	57
74300	75300	3:3:1	5500	4.5	9.0	.94	1.14	.43	35	18	76
74305	75305	3:3:1	9000	7.0	14.0	1.54	1.74	.64	35	18	95
74310	75310	4:2:1	350	.700	1.64	.040	.023	.014	35	18	19
74315	75315	4:2:1	1400	1.3	2.7	.12	.067	.035	35	18	38
74320	75320	4:2:1	3000	2.7	5.5	.42	.12	.070	35	18	57
74325	75325	4:2:1	5500	4.8	9.0	.94	.27	.15	35	18	76
74330	75330	4:2:1	9000	7.5	15.0	1.53	.35	.19	35	18	95

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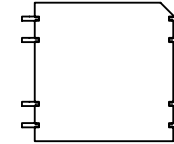


## SPECIFICATIONS - SIZE 3

### 74000 SERIES - THROUGH HOLE



### 75000 SERIES - SURFACE MOUNT



Through Hole	Surface Mount	Turns Ratio PRI/SEC 5% tolerance	Inductance [μH] typ.	Leakage Inductance		Winding Resistance			Interwinding Capacitance		Primary ET Rating V-μs max.
				LL (N1-N2) [μH] typ.	LL (N1-N3) [μH] typ.	R (N1) [Ω] ±25%	R (N2) [Ω] ±25%	R (N3) [Ω] ±25%	C1 (N1-N2) [pF] typ.	C2 (N1-N3) [pF] typ.	
74515	75515	1:1:1	300	.300	.400	.035	.040	.045	45	25	25
74520	75520	1:1:1	1200	1.25	1.9	.095	.11	.13	45	25	50
74525	75525	1:1:1	2700	1.75	4.2	.22	.26	.29	45	25	75
74530	75530	1:1:1	4800	3.0	7.3	.46	.53	.60	45	25	100
74535	75535	1:1:1	7500	4.6	11.4	.78	.96	1.15	45	25	125
74540	75540	2:1:1	300	.514	.630	.035	.013	.014	45	25	25
74545	75545	2:1:1	1200	.900	1.7	.095	.043	.047	45	25	50
74550	75550	2:1:1	2700	2.0	3.7	.22	.10	.12	45	25	75
74555	75555	2:1:1	4800	3.0	6.5	.46	.17	.19	45	25	100
74560	75560	2:1:1	7500	4.88	10.0	.80	.28	.34	45	25	125
74565	75565	3:1:1	400	.686	.800	.042	.010	.012	45	25	30
74570	75570	3:1:1	1600	1.25	3.0	.12	.035	.038	45	25	60
74575	75575	3:1:1	3600	2.75	6.5	.33	.062	.068	45	25	90
74580	75580	3:1:1	6400	4.6	1.20	.58	.14	.15	45	25	120
74585	75585	3:1:1	10,000	7.2	18.0	1.16	.12	.14	45	25	150
74590	75590	3:3:1	400	.400	1.02	.054	.060	.011	45	25	30
74595	75595	3:3:1	1600	1.25	1.5	.12	.14	.040	45	25	60
74600	75600	3:3:1	3600	3.0	2.9	.33	.38	.070	45	25	90
74605	75605	3:3:1	6400	5.3	5.0	.58	.73	.18	45	25	120
74610	75610	3:3:1	10,000	8.2	7.8	1.16	1.43	.14	45	25	150
74615	75615	4:2:1	400	.580	1.12	.042	.015	.009	45	25	30
74620	75620	4:2:1	1600	1.2	3.0	.12	.052	.028	45	25	60
74625	75625	4:2:1	3600	2.75	7.0	.33	.15	.084	45	25	90
74630	75630	4:2:1	6400	4.6	12.0	.59	.15	.082	45	25	120
74635	75635	4:2:1	10,000	7.1	19.6	1.16	.27	.15	45	25	150

## SPECIFICATIONS

### GENERAL

Parameter	Condition	Min.	Typ.	Max.	Units
Dielectric Strength	60Hz	-	500	-	V <sub>RMS</sub>
Insulation Resistance	700VDC	10	-	-	GΩ
Operating Temperature Range	Ambient with temperature rise	-55	-	+130	°C
Storage Temperature Range	Ambient	-55	-	+105	°C
Size	Size 1 - Length x Width x Height	0.45 x 0.45 x 0.30 (11.43 x 11.43 x 7.493)			inches (mm)
	Size 2 - Length x Width x Height	0.55 x 0.55 x 0.35 (13.97 x 13.97 x 8.763)			
	Size 3 - Length x Width x Height	0.65 x 0.65 x 0.45 (16.51 x 16.51 x 11.43)			
Weight	Size 1	-	2.5	-	grams
	Size 2	-	4.5	-	
	Size 3	-	8	-	
Case	74000 & 75000 Series	Glass Reinforced Polymer			
Potting	Vacuum Impregnated Epoxy				
Box Packaging (W x H x L)	74000 Series	10.65 x 2.49 x 0.95 (270.51 x 63.246 x 24.13)			inches (mm)
Tube Packaging (W x H x L)	75000 Series - Size 1	0.83 x 0.46 x 20.0 (21.184 x 11.684 x 508)			
	75000 Series - Size 2	0.93 x 0.52 x 20.0 (23.724 x 13.081 x 508)			
	75000 Series - Size 3	1.03 x 0.60 x 20.0 (26.264 x 15.113 x 508)			
Tape & Reel Packaging	Upon request				
Moisture Sensitivity Level	Surface Mount only	Level 3			

### OPTIONAL DESIGN CRITERIA

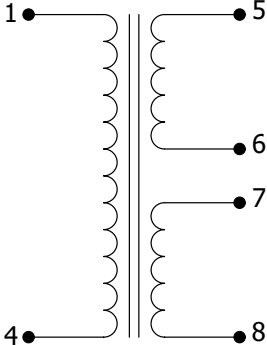
Test	Standard	Description
Vibration	MIL-STD-202	Method 204, Vibration, High Frequency
Shock	MIL-STD-202	Method 213, Shock (Specified Pulse)
Immersion	MIL-STD-202	Method 104, Immersion
Moisture Resistance	MIL-STD-202	Method 106, Moisture Resistance
Flammability	MIL-STD-202	Method 111, Flammability (External Flame)
Thermal Shock	MIL-STD-202	Method 107, Thermal Shock

### OPTIONAL SCREENING AND QUALIFICATION

Standard	Screening & Qualification	Test <sup>(2)</sup>
MIL-PRF-27	a.) Group A inspection Level-T - Table VII b.) Qualification inspection, Grade 5 - Table V	I. Thermal Shock II. Vibration III. Burn-in IV. Induced Voltage V. Shock VI. Dielectric Withstanding Voltage (at reduced pressure) VII. Insulation Resistance VIII. Electrical Characteristics IX. Visual and Mechanical Examination (External) X. Life XI. Radiographic Inspection
MIL-STD-981	a.) Group A screening tests - Table VI b.) Group B tests - Table XII, Class S	
EEE-INST-002, Section M1	a.) Magnetics Screening Req. - Table 2 b.) Magnetics Part Qual. - Table 3	

Note 2: Screening and qualification tests are not limited to the options in the chart above. Each standard may also be stringent or exclude certain tests from one another. Please contact Pico for specific application needs and for Pico part number.

ELECTRICAL SCHEMATIC



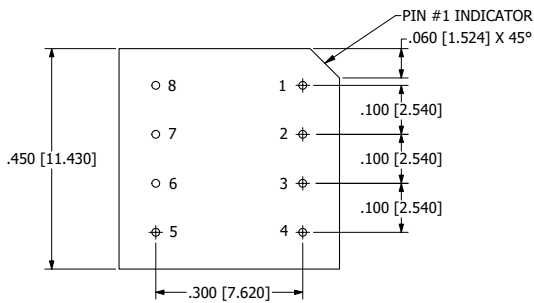
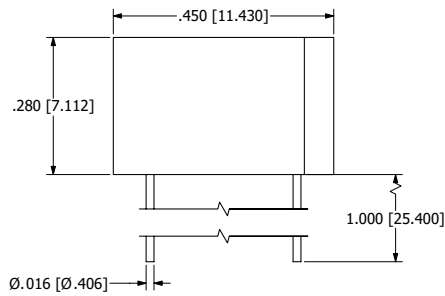
NOTES

a. TERMINALS 2 & 3 HAVE NO CONNECTION. MECHANICAL STABILITY ONLY.

## MECHANICAL DRAWINGS

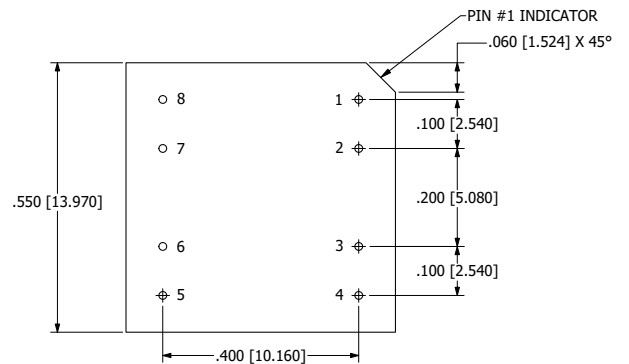
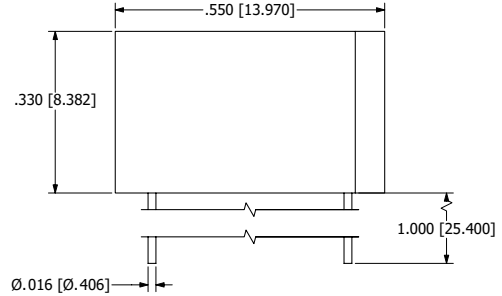
### 74000 SERIES - THROUGH HOLE

**SIZE 1**



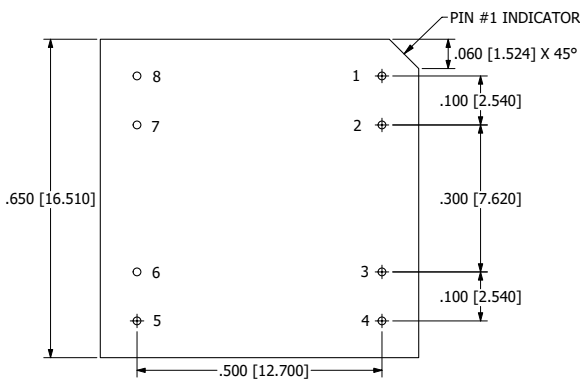
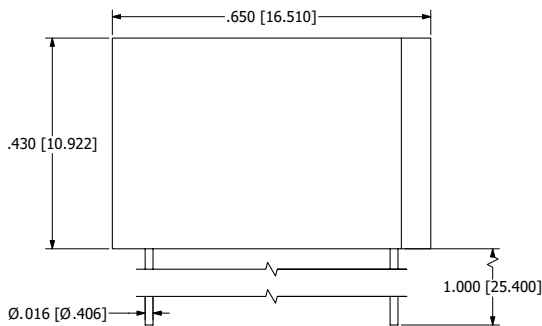
**BOTTOM VIEW**

**SIZE 2**



**BOTTOM VIEW**

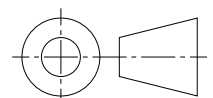
**SIZE 3**



**BOTTOM VIEW**

**NOTES**

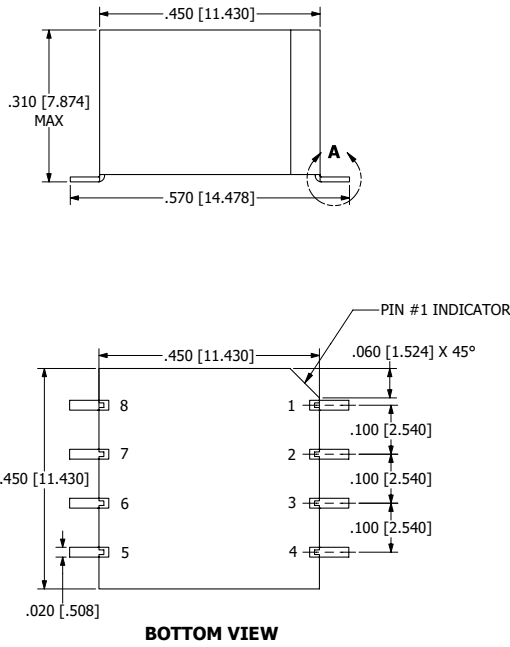
- a. ALL DIMENSIONS ARE IN INCHES, [ ] = MM
- b. TERMINALS ARE CLOCKWISE FROM PIN #1
- c. PIN #2 & #3 HAVE NO CONNECTION



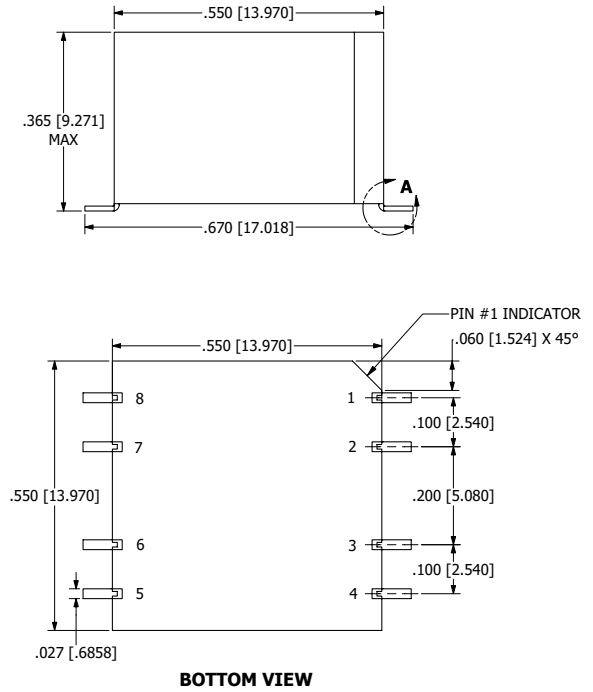
## MECHANICAL DRAWINGS

### 75000 SERIES - SURFACE MOUNT

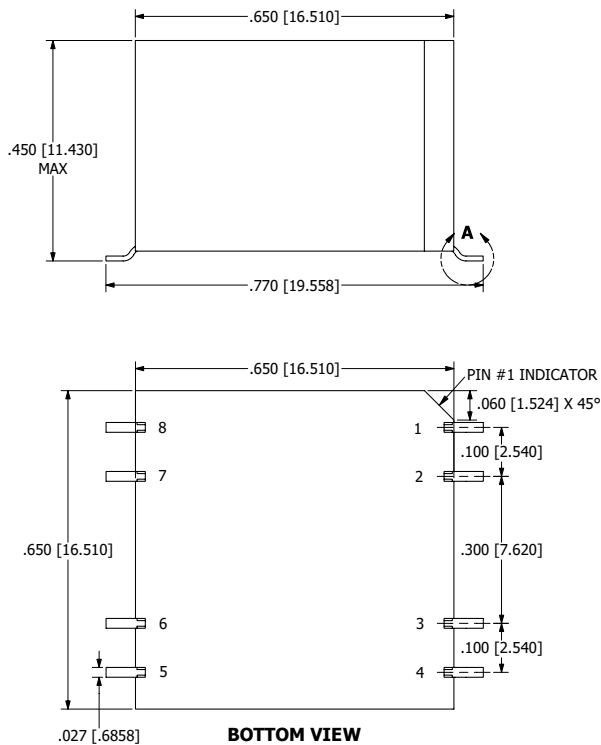
**SIZE 1**



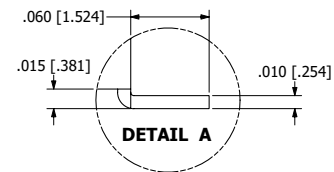
**SIZE 2**



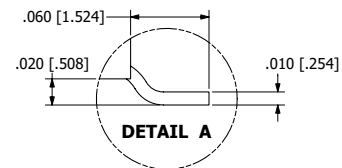
**SIZE 3**



**LEAD DETAILS - SIZE 1 & 2**

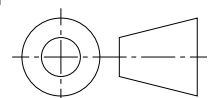


**LEAD DETAILS - SIZE 3**



**NOTES**

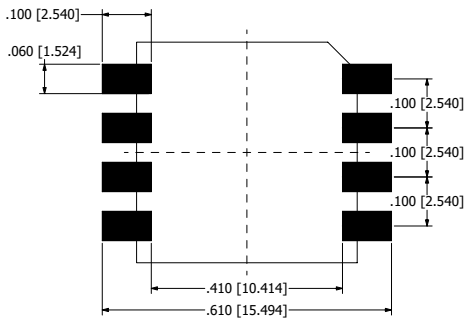
- a. ALL DIMENSIONS ARE IN INCHES, [ ] = MM
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- c. PIN #2 & #3 HAVE NO CONNECTION



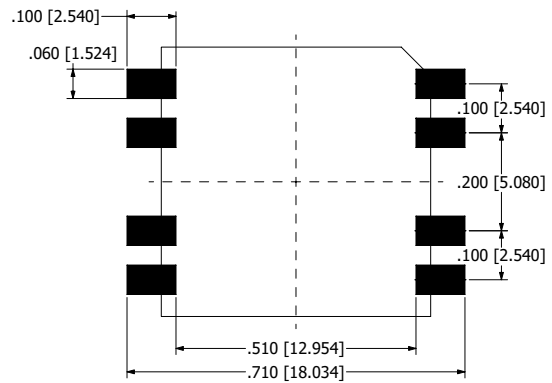


## RECOMMENDED LAND PATTERN DIMENSIONS

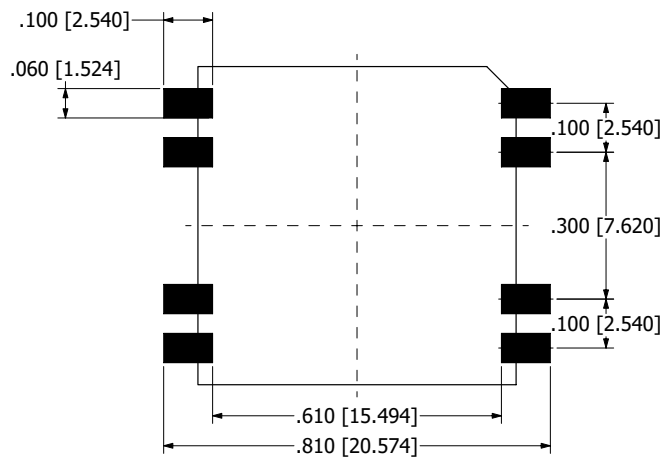
### 75000 SERIES - SIZE 1



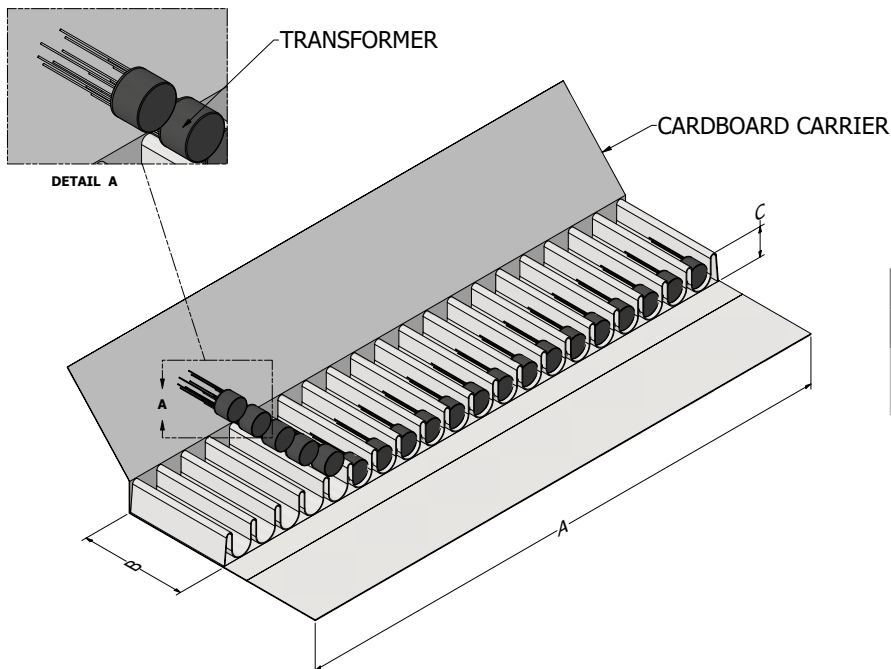
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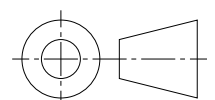
### 75000 SERIES - SIZE 3



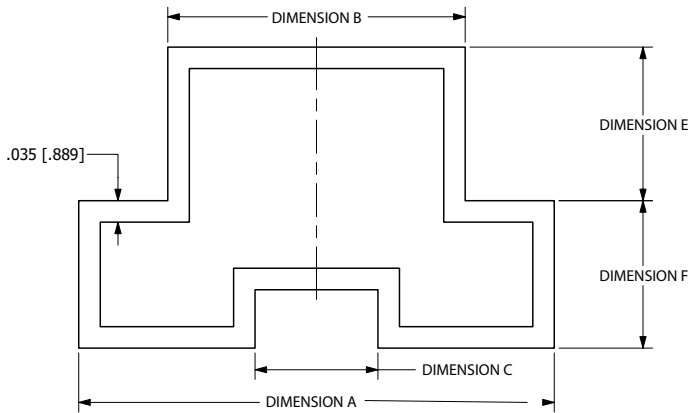
## BOX PACKAGING - 74000 SERIES (THROUGH HOLE)



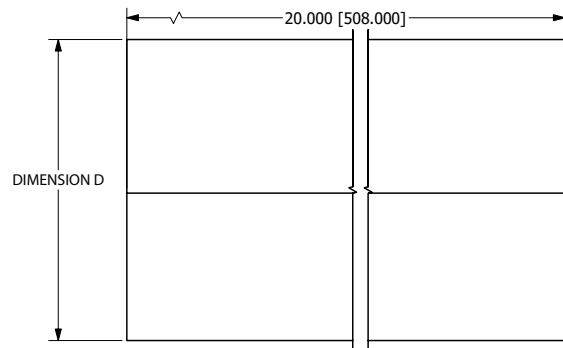
Dimension		
A	B	C
10.65	2.49	0.95
[270.51]	[63.246]	[24.13]



## TUBE PACKAGING - 75000 SERIES (SURFACE MOUNT)

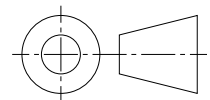
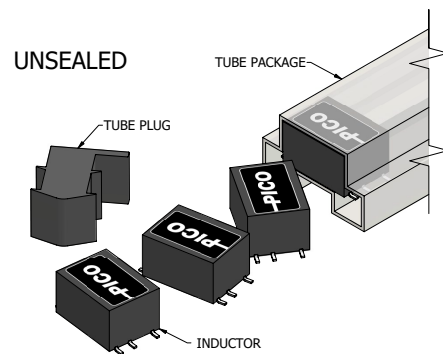
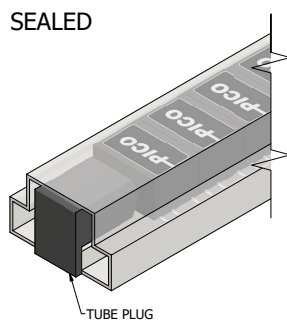


**PLAN VIEW**



**ELEVATION VIEW**

Size	Dimension					
	A	B	C	D	E	F
1	.834 [21.184]	.544 [13.818]	.160 [4.064]	.460 [11.684]	.220 [5.588]	.240 [6.096]
2	.934 [23.724]	.644 [16.358]	.240 [6.096]	.515 [13.081]	.275 [6.985]	.240 [6.096]
3	1.034 [26.264]	.744 [18.898]	.340 [8.636]	.595 [15.113]	.355 [9.017]	.240 [6.096]



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