

68500 Series

Electrical Surface Mount Equivalent of QPL MIL-PRF-21038/27

PICO
Electronics, Inc.

PRODUCT OVERVIEW

Pico's 65000 series is the surface mount version but electrical equivalent to the QPL of data-bus transformers in MIL-PRF-21038/27. This design with gull wing terminals is convenient than the through-hole versions of the MIL-PRF-21038/27 for pick and place manufacturing process on the PCB. These parts are reliable for enabling data transmission and electrical isolation in MIL-STD-1553 compliant systems.

Typical applications:

- Propulsion Control
- Precision Guiding Systems
- Air Traffic Control
- Communication
- Sensors
- Data Management
- MIL-STD-1553 Interfaces

FEATURES

- Extreme resistance to impact, shock, and vibration
- Manufactured to MIL-PRF-21038 and MIL-STD-1553
- High reliability for space and mission critical applications
- Miniature in size and minimalistic design

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



SPECIFICATIONS

Pico Part Number	Turns Ratio	Primary Pins	Secondary Pins	DC Resistance		Impedance		Config. Reference
				Pins	[Ω] min.	Pins	[MΩ] min.	
68500	1:1 1:0.707	1-3 1-3	4-8 5-7	1-3 4-8	2.90 1.42	1-3	4	A
68505	1.4:1 2:1	1-3 1-3	4-8 5-7	1-3 4-8	2.90 1.08	1-3	7.2	A
68510	1.25:1 1.66:1	1-3 1-3	4-8 5-7	1-3 4-8	2.90 1.20	1-3	4	A
68515	2.3:1 3.2:1	4-8 5-7	1-3 1-3	1-3 4-8	1.20 3.00	5-7	3	A ⁽¹⁾
68520	1:1.41	1-3	4-6	1-3 4-6	0.82 1.95	4-6	3	C
68525	1:1	1-3	4-6	1-3 4-6	2.05 2.14	1-3	3	B
68530	1:1.41	1-3	4-6	1-3 4-6	0.80 2.05	4-6	3	B
68535	1:1.66	1-3	4-6	1-3 4-6	0.72 2.05	4-6	3	B
68540	1:2	1-3	4-6	1-3 4-6	0.52 2.05	4-6	3	B
68545	2.12:1 1.5:1	4-8 5-7	1-3 1-3	1-3 4-8	0.82 2.12	4-8	4	A
68550	1:2.5 1:1.79	1-3 1-3	4-8 5-7	1-3 4-8	0.87 2.52	4-8	4	A
68555	1:1.5	1-3	4-6	1-3 4-6	0.75 2.05	4-6	3	B
68560	1:1.79	1-3	4-6	1-3 4-6	0.71 2.05	4-6	3	B
68565	1:2.5	1-3	4-6	1-3 4-6	0.50 2.10	4-6	3	B

Note 1: P/N 68515 electrical schematic differs from other Configuration A electrical schematic. Please see Electrical Schematic section.

SPECIFICATIONS

GENERAL

Parameter	Condition	Min.	Typ.	Max.	Units
Impedance	75 kHz to 1 MHz	3	-	-	kΩ
Dielectric Strength	60Hz	-	100	-	V _{RMS}
Droop		-	-	20	%
Overshoot	Peak	-1		1	V
Common Mode Rejection		45	-	-	dB
Insulation Resistance	250VDC	1	-	-	GΩ
Operating Temperature Range	Ambient with temperature rise	-55	-	+130	°C
Storage Temperature Range	Ambient	-55	-	+130	°C
Size (L x W x H)	Config. A	0.625 x 0.625 x 0.275 (15.875 x 15.875 x 6.985)			inches (mm)
	Config. B & C	0.4 x 0.4 x 0.25 (10.16 x 10.16 x 6.35)			
Weight		-	-	5	grams
Case	Glass Reinforced Polymer				
Potting	Vacuum Impregnated Epoxy				
Tube Packaging (W x H x L)	Config. A	0.93 x 0.52 x 20.0 (23.724 x 13.081 x 508)			inches (mm)
	Config. B & C	0.77 x 0.49 x 20.0 (19.660 x 12.446 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

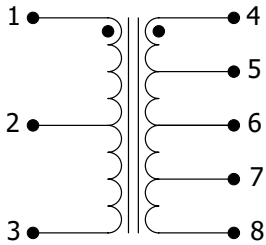
OPTIONAL SCREENING AND QUALIFICATION

Standard	Screening & Qualification	Test ⁽²⁾
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	

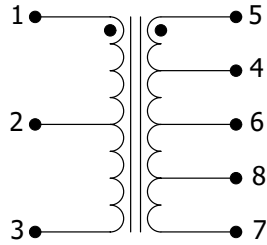
Note 2: Screening and qualification tests are not limited to the options in the chart above. Each standard may also be stringent or exclude certain tests from one another. Please contact Pico for specific application needs and for Pico part number.

ELECTRICAL SCHEMATIC

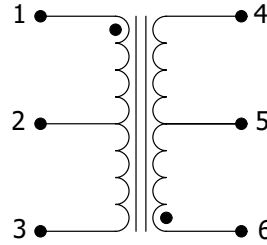
CONFIG. A



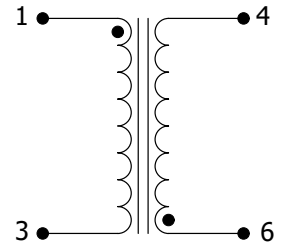
P/N 68515 ONLY



CONFIG. B

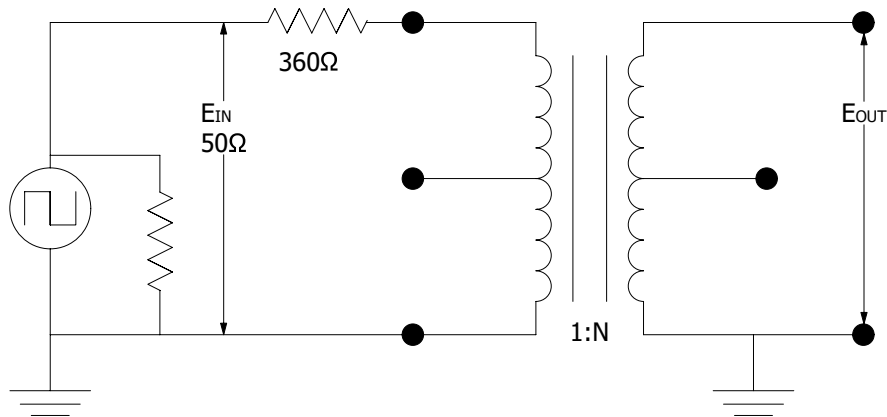


CONFIG. C

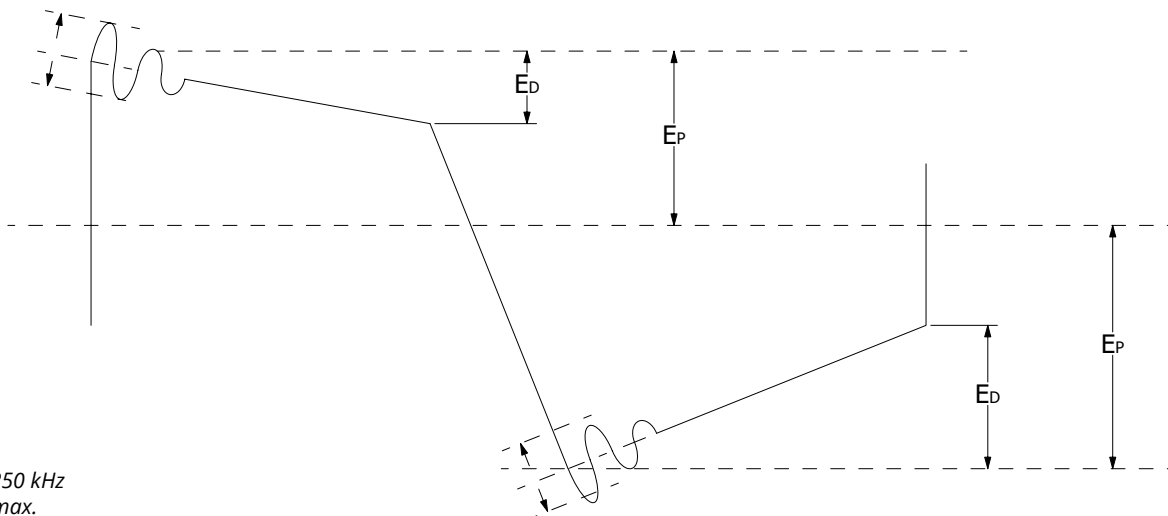


MEASUREMENT SCHEMATICS

DROOP



DROOP GRAPH

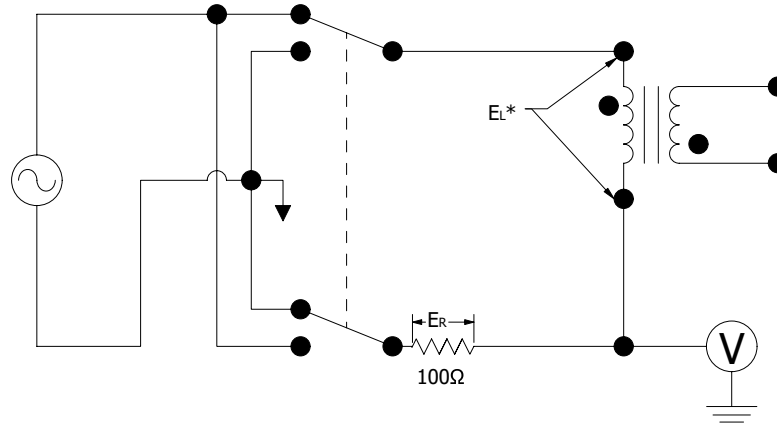


Notes

$E_{IN} = 27 V_{P-P}$
 Frequency = 250 kHz
 $T_{AIN} = 100 ns max.$

MEASUREMENT SCHEMATICS

IMPEDANCE

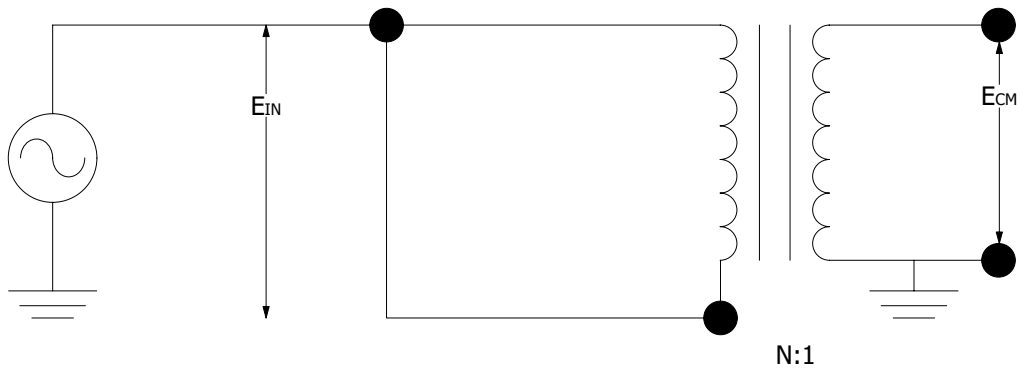


* ACROSS HIGH TURN SIDE

Notes

$$Z = \frac{E_L \times 100\Omega}{E_R}$$

COMMON MODE REJECTION

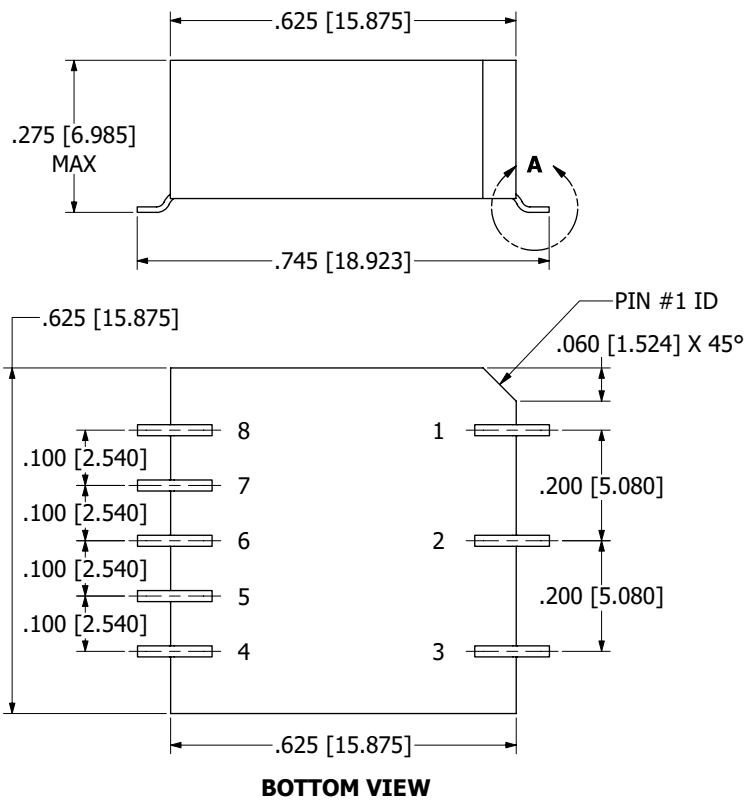


Notes

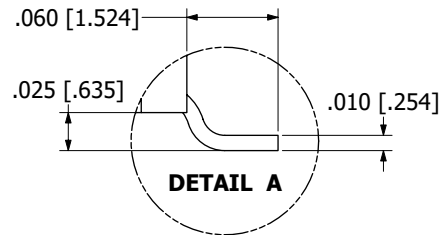
$E_{IN} = 10 V_{RMS}$
 Frequency = 1 MHz
 $CMR = 20 \text{ Log}_{10} (E_{LIN} / E_{CM})$

MECHANICAL DRAWINGS

CONFIG. A



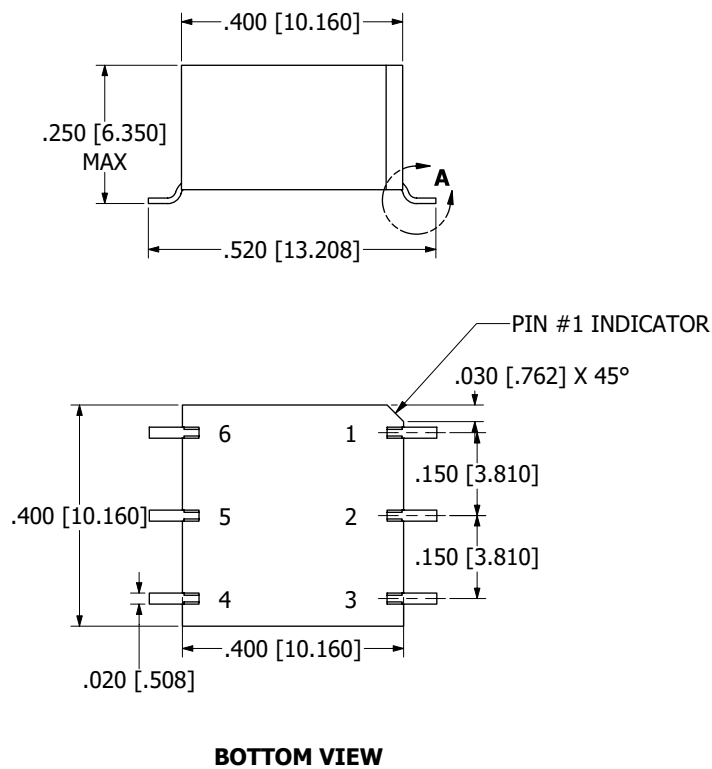
LEAD DETAILS



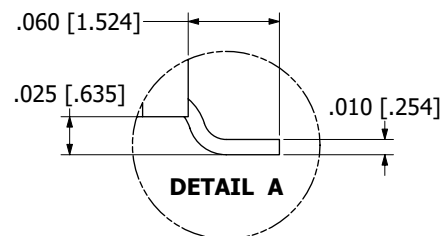
NOTES

- a. ALL DIMENSIONS ARE IN INCHES, [] = MM
- b. TERMINALS ARE CLOCKWISE FROM PIN #1

CONFIG. B & C

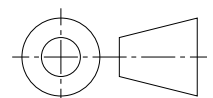


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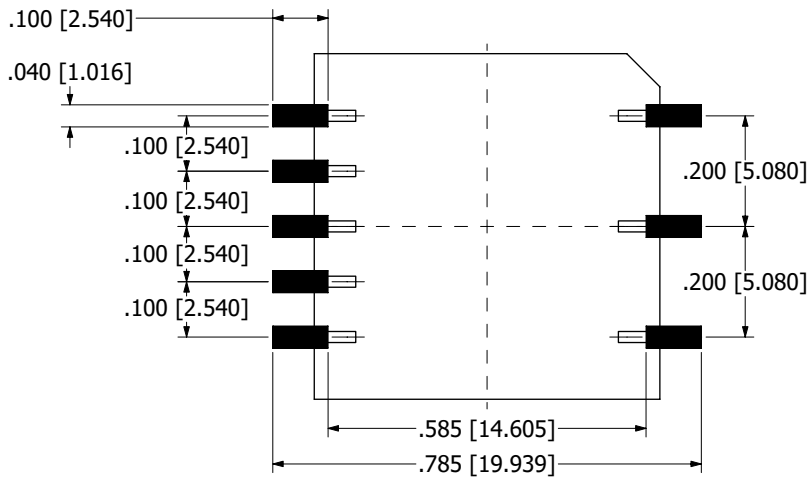
NOTES

- a. ALL DIMENSIONS ARE IN INCHES, [] = MM
- b. TERMINALS ARE CLOCKWISE FROM PIN #1
- c. PIN #2 & #5 HAVE NO CONNECTION

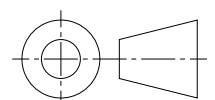
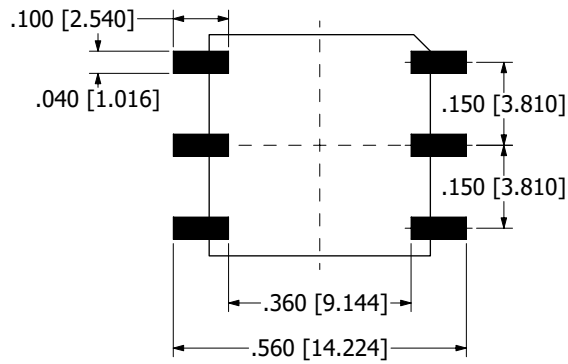


RECOMMENDED LAND PATTERN DIMENSIONS

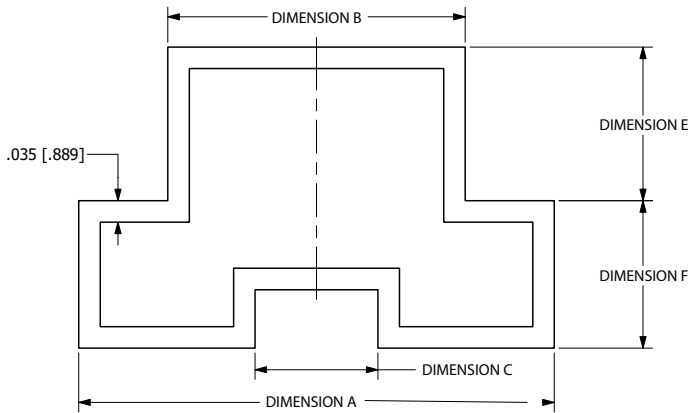
CONFIG. A



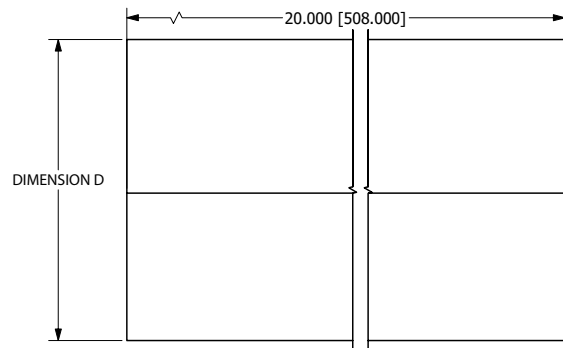
CONFIG. B & C



TAPE & REEL PACKAGING

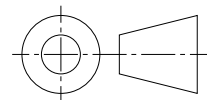
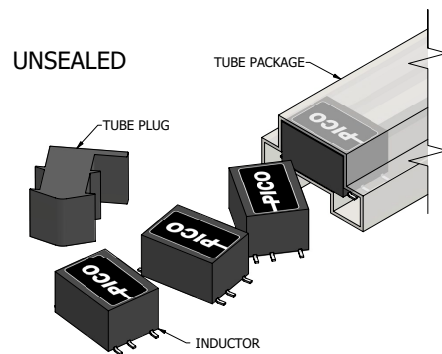
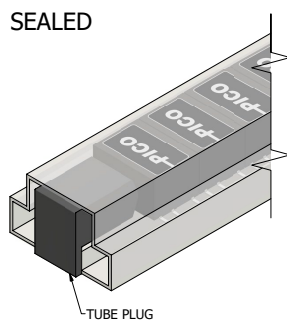


PLAN VIEW



ELEVATION VIEW

Configuration Reference	Dimension					
	A	B	C	D	E	F
A	.934 [23.724]	.644 [16.358]	.240 [6.096]	.515 [13.081]	.275 [6.985]	.240 [6.096]
B & C	.774 [19.660]	.484 [12.294]	.200 [5.080]	.490 [12.446]	.250 [6.350]	.240 [6.096]



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