

Printed Circuit Board (PCB) Layout

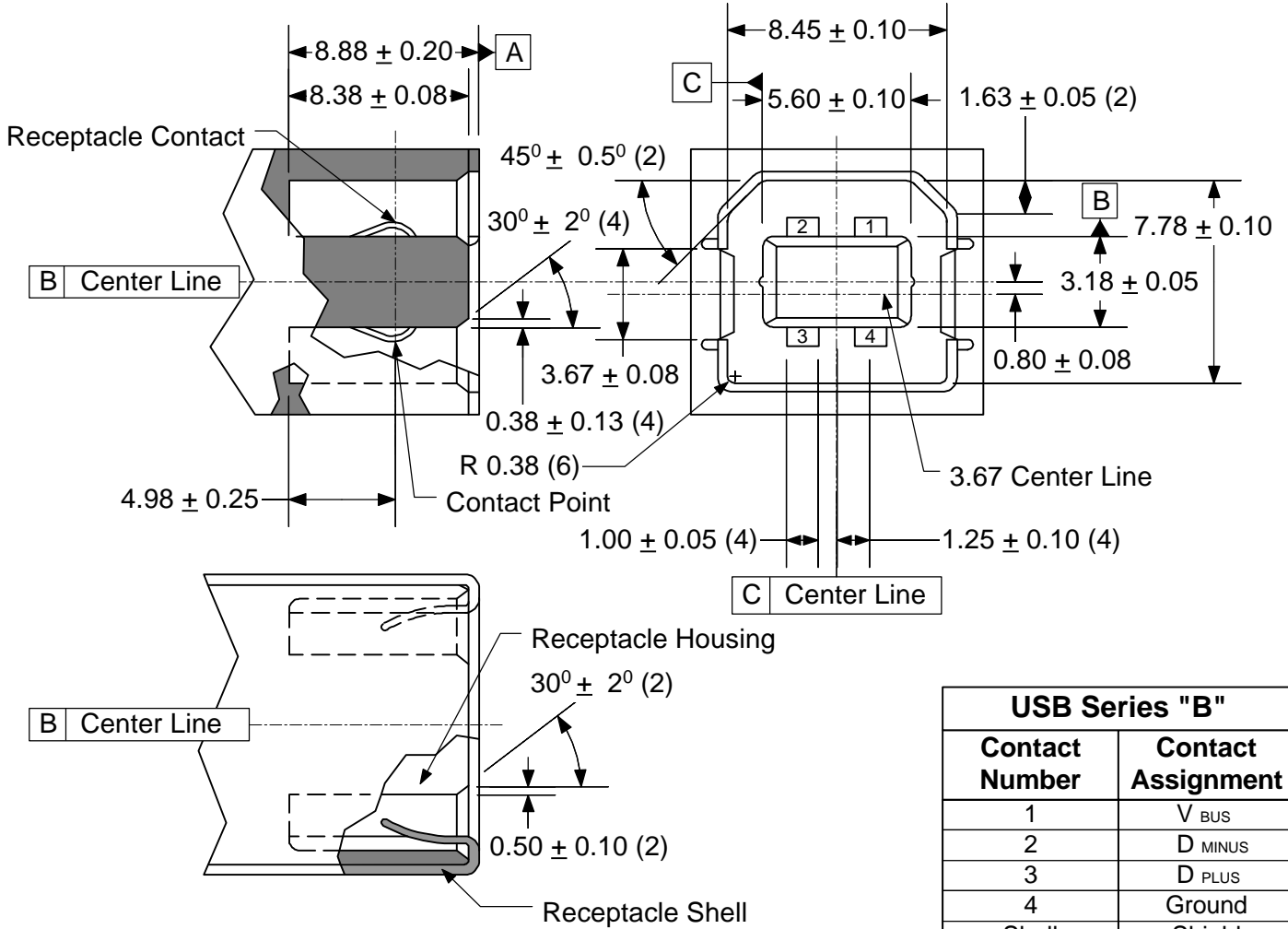
NOTES:

1. Critical Dimensions are **TOLERANCED** and should not be deviated.
2. Dimensions that are labeled **REF** are typical dimensions and may vary slightly from manufacturing lot to manufacturing lot.
3. PAGE 2 fully details the mechanical interface for Series "B" Receptacles.

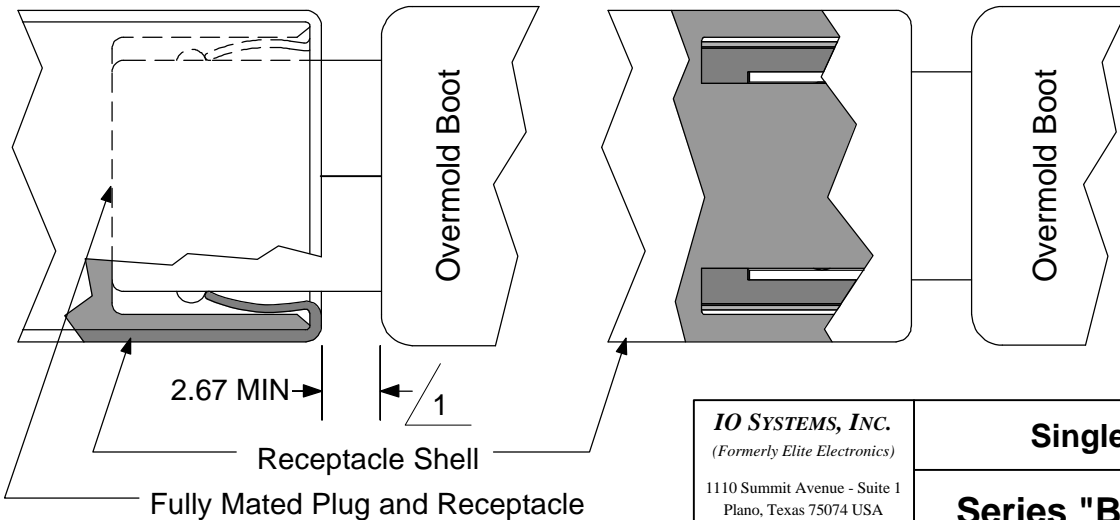
USB Series "B"	
Contact Number	Contact Assignment
1	V _{BUS}
2	D MINUS
3	D PLUS
4	Ground
Shell	Shield

Part Number	USB Series Type	Pin-Type Receptacle 1 = Single	Shell Plating 1 = Standard 2 = Premium	Contact Plating 1 = Standard 2 = Premium	IO SYSTEMS, INC. (Formerly Elite Electronics) 1110 Summit Avenue - Suite 1 Plano, Texas 75074 USA Tel: (972) 422-7292 Fax: (972) 422-9707 E-mail: sales@eliteld.com	Single Pin-Type			
						Series "B" Receptacle			
SIZE		DATE	DRAWING NUMBER		REV				
A		7/98	18 B 1xx		E				
SCALE: N/A			SHEET		1 of 4				

USB Series "B" Receptacle Interface



USB Series "B" Receptacle and Plug Mating Features



1 Allow a minimum spacing of 2.67mm between the face of the receptacle and the plug overmold boot.

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Single Pin-Type

Series "B" Receptacle

SIZE	DATE	DRAWING NUMBER	REV
A	7/98	18 B 1xx	E

SCALE: N/A SHEET 2 of 4

	8	7	6	5	4	3	2	1															
H	<p>1.0 Receptacle Injection Molded Thermoplastic Insulator Material. Minimum UL 94-V0 rated, thirty percent (30%) glass-filled polybutylene terephthalate (PBT), polyethylene terephthalate (PET) or better.</p> <p>1.1 Typical Colors:</p> <p>1.1.1 White. When ordering 'Black' colored insulators add "-001" to the part number.</p> <p>1.1.2 Black. When ordering 'Gray' colored insulators add "-002" to the part number.</p> <p>1.1.3 Gray. When ordering 'Natural' colored insulators add "-003" to the part number.</p> <p>1.2 Flammability Characteristics. UL 94-V0 rated.</p> <p>1.2.1 Flame Retardant Package must meet or exceed the requirements for UL, CSA, VDE, et cetera.</p> <p>1.2.2 Oxygen Index (LOI). Greater than 21%. ASTM D 2863.</p>								H														
G	<p>2.0 Receptacle Shell Materials.</p> <p>2.1 Substrate Material. 0.30 ± 0.05 mm phosphor bronze, nickel silver or other copper based high strength materials.</p> <p>2.2 Plating:</p> <p>2.2.1 Underplate. Optional. Minimum 1.00 micrometers (40 microinches) Nickel. In addition, manufacturer may use a copper underplate beneath the nickel.</p> <p>2.2.2 Outside. Minimum 2.5 micrometers (100 microinches) Bright Tin or Bright Tin-Lead.</p>								G														
F	<p>3.0 Receptacle Contact Materials:</p> <p>3.1 Substrate Material. 0.30 ± 0.05 mm minimum half-hard phosphor bronze or other the high strength copper based material.</p> <p>3.2 Plating. Contacts are to be selectively plated.</p> <p>3.2.1 Standard.</p> <p>A. Underplate. Minimum 1.25 micrometers (50 microinches) Nickel. Copper over base material is optional.</p> <p>B. Mating Area. Minimum 0.75 micrometers (30 microinches) Gold.</p> <p>C. Solder Tails. Minimum 3.8 micrometers (150 microinches) Bright Tin-Lead over the underplate.</p> <p>3.2.2 Premium — Option I.</p> <p>A. Underplate. Minimum 1.25 micrometers (50 microinches) Nickel. Copper over base material is optional.</p> <p>B. Mating Area. Minimum 0.05 micrometers (2 microinches) Gold over a minimum of 0.70 micrometers (28 microinches) Palladium.</p> <p>C. Solder Tails. Minimum 3.8 micrometers (150 microinches) Bright Tin-Lead over the underplate.</p> <p>3.2.3 Premium — Option II.</p> <p>A. Underplate. Minimum 1.25 micrometers (50 microinches) Nickel. Copper over base material is optional.</p> <p>B. Mating Area. Minimum 0.05 micrometers (2 microinches) Gold over a minimum of 0.75 micrometers (30 microinches) Palladium-Nickel.</p> <p>C. Solder Tails. Minimum 3.8 micrometers (150 microinches) Bright Tin-Lead over the underplate.</p>								F														
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D									D														
C									C														
B									B														
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H	<p>4.0 Performance Characteristics. IOS' USB connectors will meet or exceed the performance characteristics as specified in Chapter 6 of the most current version of the USB Specification. Minimum electrical and environmental performance capabilities shall be as follows:</p>								H																														
G	<p>4.1 Insulation Resistance (EIA 364 — 21). Test units must meet or exceed a minimum of 1,000MΩ.</p>								G																														
F	<p>4.2 Dielectric Withstanding Voltage (EIA 364 — 20). The dielectric must withstand 500 VAC for minute at sea level.</p>								F																														
E	<p>4.3 Low Level Contact Resistance (EIA 364 — 23). 30 mΩ maximum when measured at 20 mV maximum open circuit at 100 mA. Mated test contacts must be in a connector housing.</p>								E																														
D	<p>4.4 Contact Current Rating (EIA 364 — 70). 1.5 A at 250 VAC minimum when measured at +25°C. With power applied to the contacts, ΔT shall not exceed +30°C at any point in the USB connector under test.</p>								D																														
C	<p>4.5 Contact Capacitance (EIA 364 — 30). 2 pF maximum per unmated contact.</p>								C																														
B	<p>4.6 Insertion Force (EIA 364 — 13). 35 Newtons maximum at a maximum rate of 12.5 mm (0.492") per minute.</p>								B																														
A	<p>4.7 Extraction Force (EIA 364 — 13). 10 Newtons minimum at a maximum rate of 12.5 mm (0.492") per minute.</p>								A																														
	<p>4.8 Durability (EIA 364 — 09). 1500 'insertion'/'extraction' cycles at a maximum rate of 200 cycles per hour.</p>																																						
	<p>4.9 Accelerated Life Testing (EIA 364 — 17). 250 Hours at + 85°C with a 10 VPP 16 MHz square wave applied to mated contacts. (<i>Note: Mated contacts must be contained in an IOS connector body.</i>)</p>																																						
	<p>4.10 Humidity Life Testing (EIA 364 — 31). 168 Hours, seven (7) complete cycles.</p>																																						
	<p>4.11 Random Vibration (EIA 364 — 28). No discontinuities of 1μs or longer duration when mated USB connectors are subjected to 5.35 Gs RMS. 15 minutes in each of three mutually perpendicular planes.</p>																																						
	<p>4.12 Physical Shock (EIA 364 — 27). No discontinuities of 1μs or longer duration when mated USB connectors are subjected to 11 ms duration 30Gs half-sine shock pulses. Three shocks in each direction applied along three mutually perpendicular planes for 18 shocks.</p>																																						
	<p>4.13 Thermal Shock (EIA 364 — 62). 10 Cycles — -25°C and +85°C. The USB connectors under test must be mated.</p>																																						
	<p>4.14 Solderability (EIA 364 — 52). USB connector contact solder tails shall pass 95% coverage after one hour steam aging as specified in Category 2.</p>																																						
	<p>4.15 Flammability (UL94 — V-0). Upon request USB connector manufacturers may be required to provide a C of C that shows their insulator material's UL listing number or test data that shows the insulator material is capable of passing the UL94 V-0 Flame Impingement Test Criteria.</p>																																						
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