Low-Angle Mating / Unmating Interface Connectors

EX60B Series



Rotating mating/unmating guide Plug Receptacle (Cradle mount) (Portable device mount)

■Features

1. Angle Mating / Unmating

The cradle mount plug incorporates a unique rotating mating/unmating guide allowing the portable device to be placed or removed at an angle, up to 20° max. In addition, the angle mating force is approximately 3N(29 pos.), with extremely low unmating forces.

2. High durability

Bellow configuration of the contacts guarantees 10,000 angle mating/unmating cycles, without any degradation of electrical and mechanical performance.

3. High-Speed Data Transfer

A full eye pattern is maintained at a speed of 2.5 G bps, making it applicable for high-speed differential signals of the USB 2.0 and PCI-EXPRESS.

4. Secure attachment

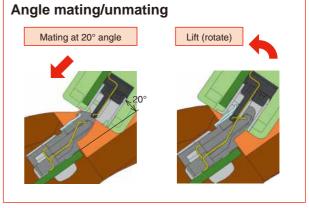
Standard or extended flange versions of the receptacle can be mounted directly to the portable device's case. The cradle mount plug is attached using screws.

5. Low profile - Space-Saving

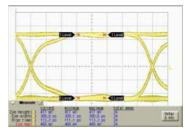
Small size (4 mm high \times 6.8 mm deep) of the Receptacle allows efficient use of space in a portable device.

Applications

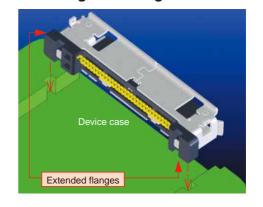
PDA and POS terminals, electronic books, tablet PCs, mobile TVs, media players, digital cameras and other devices requiring high durability angle mating/unmating connectors.



High speed data transfer 2.5 Gbps Eye Pattern Output Waveform



Extended flange mounting



■Specifications

Rating	Current raring 0.5A	Operating temperature range	-55℃ to +85℃
natility	Voltage rating 125V AC	Operating temperature range	-55 C 10 +65 C

Characteristic	Specification	Conditions				
1.Insulation resistance	1000MΩ min.	250V DC				
2.Dielectric withstanding voltage	No flashover or insulation breakdown.	250V AC/ one minute				
3.Contact resistance	60mΩ max.	100mA DC				
4. Vibration	No electrical discontinuity of 1μ sec. max.	Frequency: 10 to 55 Hz, single amplitude of 0.75mm,				
	Contact resistance: $100m\Omega$ max.	for 2 hours in 6 axis.				
5.Shock	No electrical discontinuity of 1μ sec. max.	Acceleration of 490 m/s², 11 ms duration, sine half-wave waveform,				
	Contact resistance: $100m\Omega$ max.	3 cycles in each of the 6 axis.				
6. Mating/un-mating	Mating: 10N max. (Horizontal),	With corresponding connector.				
forces	5N max. (At 20° angle)					
	Un-mating: 10N max. (Horizontal),					
	2N max. (At 20° angle)					
7.Durability	Contact resistance: 100mΩ max.	5000 cycles (Straight mating)				
(mating/un-mating)		10000 cycles (At 20° angle)				
8.Temperature cycle	Contact resistance: $100m\Omega$ max.	Temperature : -55° C $\rightarrow +15^{\circ}$ C to $+35^{\circ}$ C $\rightarrow +85^{\circ}$ C $\rightarrow +15^{\circ}$ C to $+35^{\circ}$ C				
	Insulation resistance: 1000M Ω min.	Time (Minutes) : 30 \rightarrow 2 to 3 \rightarrow 30 \rightarrow 2 to 3 5 cycles				
9.Humidity	Contact resistance: 100mΩ max.	96 hours at temperature of 60°C and humidity of 90% to 95%.				
	Insulation resistance: $5M\Omega$ min.(Dry state)					
10.Salt spray	No corrosions	5% salt water solution for 48 hours				

Note: Includes temperature rise caused by the current flow.

■Materials/ Finish

Receptacles (Portable device mount)

Component	Material	Finish	Remarks
Insulator	LCP	Color: Black	UL94V-0
Contacts	Copper alloy	Contact area: Gold plated	
Metal shield	Metal shield Stainless steel		

●Plugs (Cradle mount)

Component	Material	Finish	Remarks
Insulator	Polyamide	Color: Black	UL94V-0
Contacts	Copper alloy	Contact area: Gold plated	
Metal shield	Stainless steel	Tin-plated	
Guide	Stainless steel		
Spring	Stainless steel		

■Ordering information

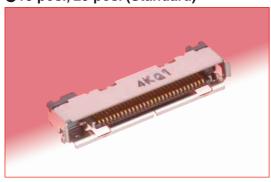
Receptacles (Portable device mount)

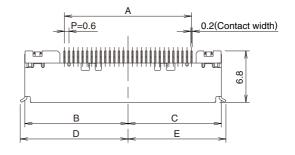
●Plugs (Cradle mount)

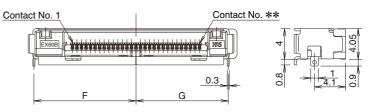
Series name	: EXB
2 Termination typ	e : 60 : Right angle SMT
Number of cont	tacts: 15, 29
4 Contact type	P : Male contact (Receptacle = device mount)
	S : Female contact (Plug = cradle mount)
6 Option	FL : Extended flanges

■Receptacles

●15 pos., 29 pos. (Standard)



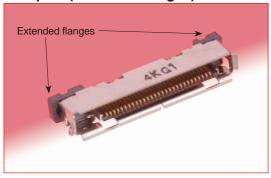


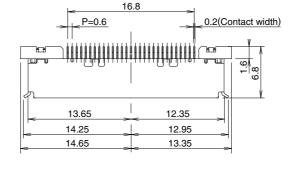


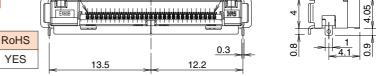
Part number	CL No.	HRS No.	А	В	С	D	Е	F	G	RoHS	
EX60B-29P	29	CL232-0611-5	16.8	13.65	12.35	14.25	12.95	13.5	12.2	2.2 YES	
EX60B-15P	15	CL232-0621-9	8.4	9.45	8.15	10.05	8.75	9.3	8.0	169	

Contact No. 1

●29 pos. (Extended flanges)







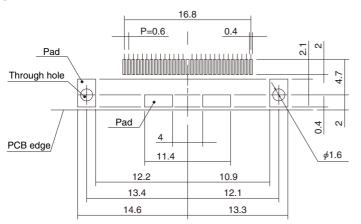
Contact No. 29

EX60B-29P-FL 232-0612-8 YES

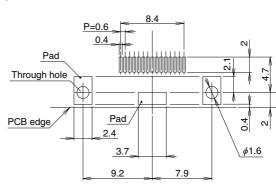
CL No.

●EX60B-29P and EX60B-29P-FL

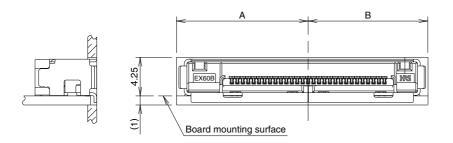
Part number



●EX60B-15P

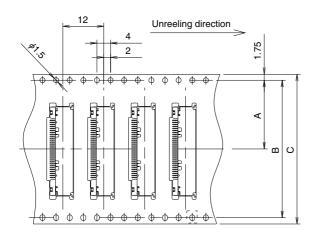


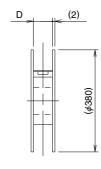
■Portable device case cutout

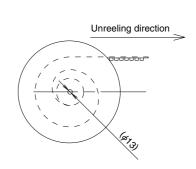


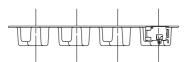
Part number	Α	В		
EX60B-29P	14.5	13.2		
EX60B-29P-FL	14.5			
EX60B-15P	10.3	9		

■Packaging specifications







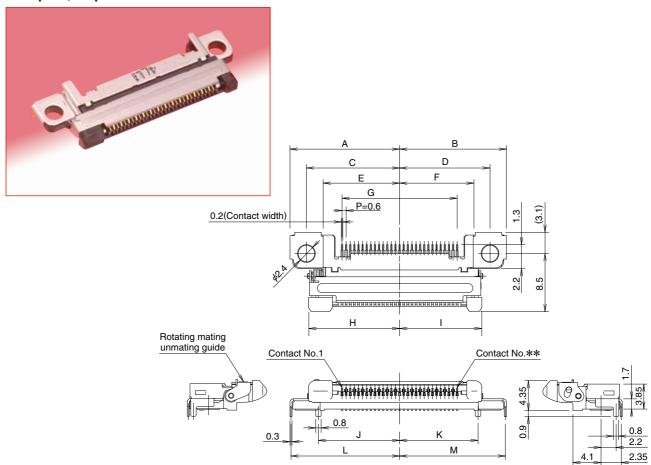


Part number	А	В	С	D	
EX60B-29P	20.2	40.4	44.0	44.4	
EX60B-29P-FL	20.2	40.4	44.0	44.4	
EX60B-15P	14.2	28.4	32.0	32.4	

Note: 1,200 pieces per reel.

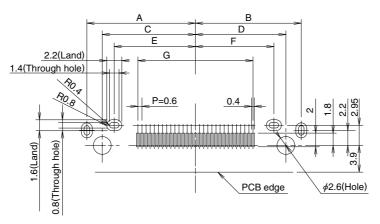
■Plug (Cradle mount)

●15 pos., 29 pos.



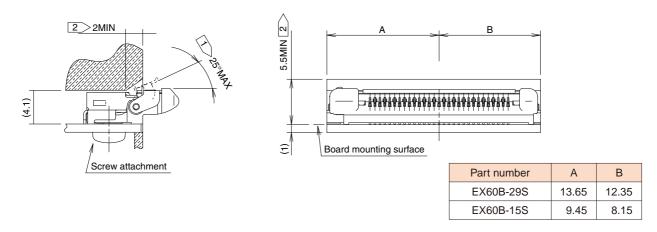
Part number	Number of contacts	HRS No.	Α	В	С	D	Е	F	G	Н	I	J	K	L	М	RoHS
EX60B-29S	29	CL232-0613-0	(16.0)	(15.6)	13.6	13.2	11.15	10.75	16.8	13.3	12.0	11.85	11.45	15.85	15.45	YES
EX60B-15S	15	CL232-0622-1	(11.8)	(11.4)	9.4	9.0	6.95	6.55	8.4	9.1	7.8	7.65	7.25	11.65	11.25	150

■Recommended PCB mounting pattern



Part number	А	В	С	D	E	F	G
EX60B-29S	15.85	15.45	13.6	13.2	11.85	11.45	16.8
EX60B-15S	11.65	11.25	9.4	9.0	7.65	7.25	8.4

■Cradle case mounting recommendations - Plug



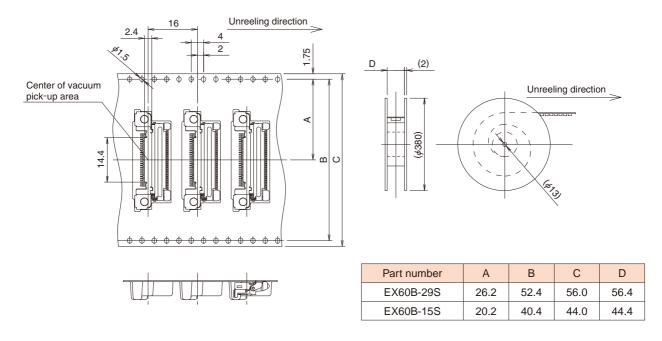
Notes The maximum opening angle of the rotating mating/unmating guide is 25°. Do not exceed this angle.

Notes 2 Device's case must have the recommended cutout dimensions.

Assure that there is no interference with the free movement and operation of the mating/unmating guide.

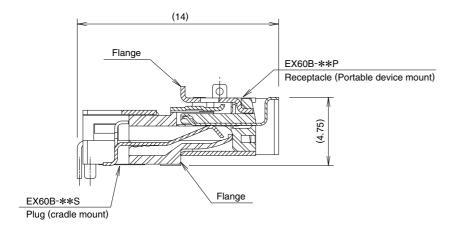
Notes 3 Use screw (not supplied) to attach the receptacle to the case.

■Packaging Specifications (Plug, EX60B-29S)

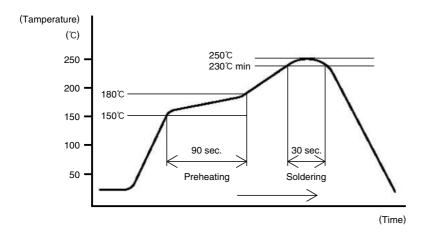


Note: 800 pieces per reel.

■Mating cross-section



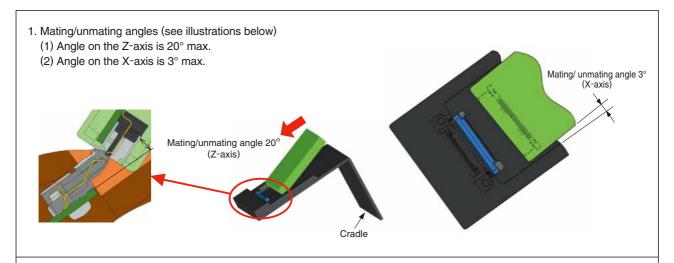
■Recommended Temperature Profile



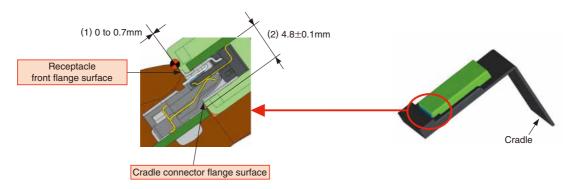
Note 1: Up to 2 cycles of Reflow soldering are possible under the same conditions, provided that there is a return to normal temperature between the first and second cycle.

Note 2: The temperature profile indicates the board surface temperature at the point of contacts with the connector terminals.

■Portable device case and cradle design requirements

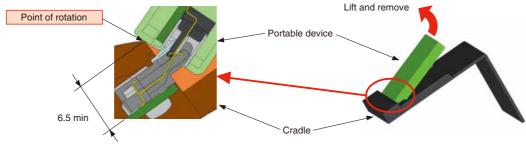


- 2.Dimensional requirements
 - (1) Distance between the flanges of the receptacle and plug: 0 to 0.7 mm.
 - (2) Distance between the PCB mounting surface of the plug (cradle) and the PCB surface of the receptacle (portable device): 4.8±0.1 mm.



3.Portable device removal

The point of the rotation of the portable device during it's removal from the cradle should be at the distance of 6.5 mm min. as illustrated below.





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