

Connectors Tactile Switches

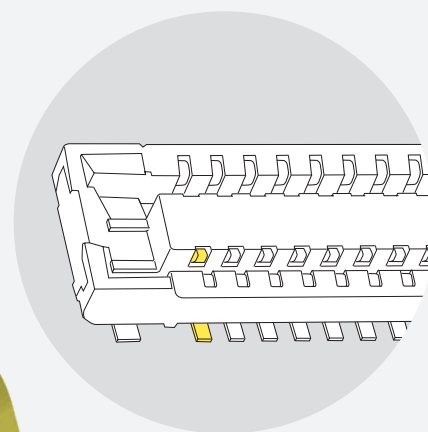
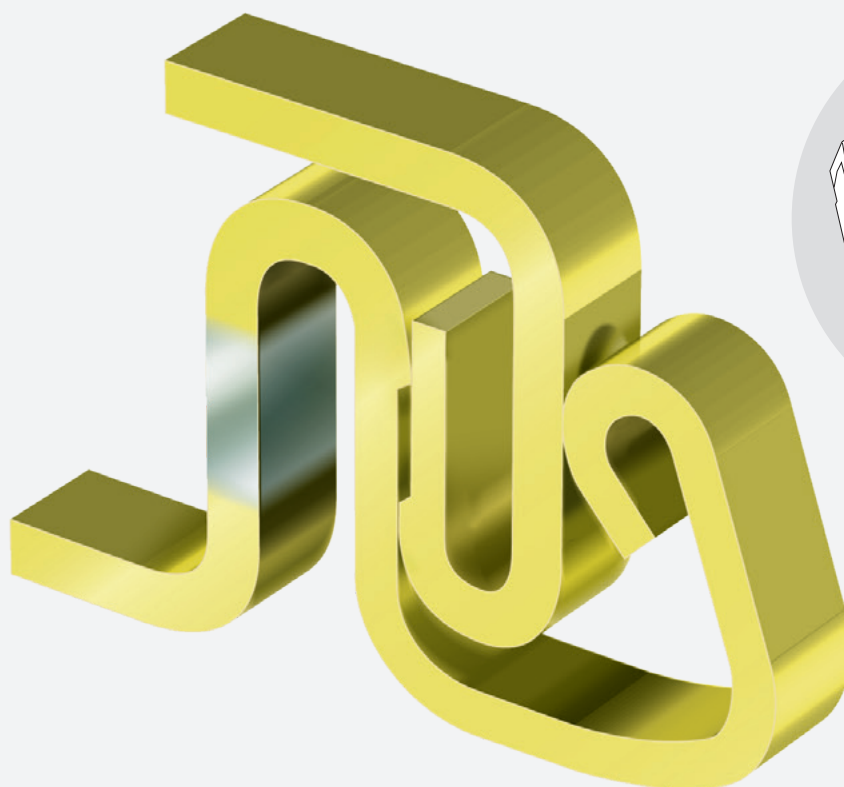
Rotary Potentiometers/Position Sensors/Encoders/
Push Switches/Detector Switches

◆◆◆ SELECTION GUIDE ◆◆◆



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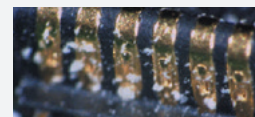
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Contact image of A4S



Evaluation example of plastic powder adhered on post contact surface

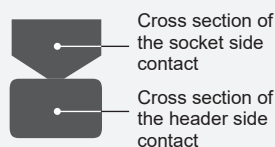


Tough against exposure to foreign particles and solder flux! V notch contact construction

The amount of contact pressure (per unit area) was dramatically increased by taking into consideration the contact edge design. This further improves the overall ability to resist foreign particles from entering inside the contact area.

Improved with 2-point contacting and edge contact

Product without notch



V notched product



Improved with use of double contact



Same effect as V notch attained by double contact.

A4S Contact construction view

<The combination of these effects greatly improves contact reliability (resistance to entry of foreign matter)>

*Japan: Registration of patent (Patent No. 3726836) Korea: Registration of patent (Patent No. 531938) Taiwan: Registration of patent (Patent No. 1225323)
China: Registration of patent (Patent No. 1314171) North America: Registration of patent (Patent No. 7278861)

High reliability contact that can stand up to various environmental conditions

Our unique technology

For Board-to-board/Board-to-FPC

Narrow pitch connector series/High current connector series

Tough against shock impact! Bellows contact construction

The high precision design curved molding provides the right amount of spring action from the contacts which is made possible by means of high precision-metal-processing, one of Panasonic's core technologies. This spring-like feature is key in many mobile devices.



Simulation Analysis

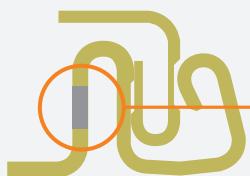
Through extensive analysis, the contacts are optimally designed to bring the best spring action. Once this is set, the contacts are then precision molded.

Tough against solder rise! Ni Barrier construction

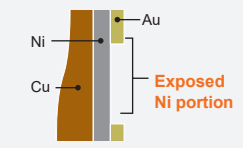
Exposed nickel is placed on mid part of socket contacts. This contact, while being ultra low in profile, prevents solder rise.

Exposing Ni plated area prevents solder rise

Exposed Ni barrier portion



Cross section of the socket side contact



Solder remains in the terminals and stable fillet mold is possible.

Solder rise after reflow^{*1}

Example without Ni barrier



Solder rises horizontal area

Example with Ni barrier

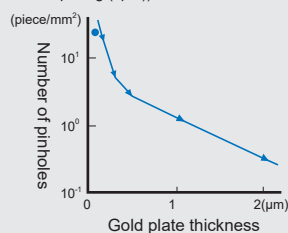


Ni exposure part
Limit of solder rise.

Tough against corrosive gases! Porosity Treatment

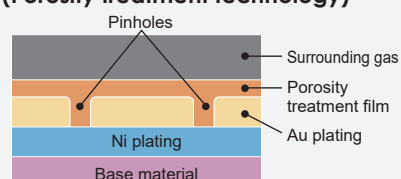
This treatment consists of coating surface with a very thin film to seal pinholes in the gold plating. We have developed this porosity treatment technology, which ensures the same contact reliability for thin gold plating as that of thick gold plating.

Relationship between gold plate thickness and number of pinholes
(on the nickel plating (1μm))



Improvement in resistance to corrosion, insertion/removal durability and contact reliability for digital signals

Plating technology
(Porosity treatment technology)

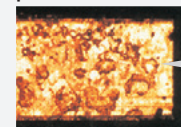


Status of the post's contact after the sulfur dioxide test^{*2}

Porosity-treated product



Conventional product



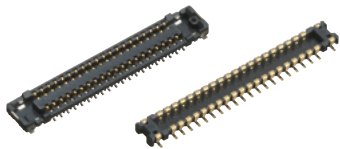
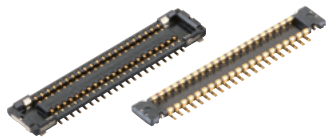
Corroded mainly at the pinholes.

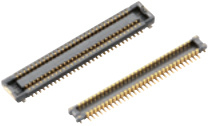
^{*1} Solder paste coating conditions: Metal screen thickness; 120 μm; Open ratio 90% (solder amount 136% of recommended value)

Reflow conditions: (lead-free solder conditions) temperature profile; 260C peak temperature, atmosphere; N2 reflow (oxygen concentration 1,000 ppm)

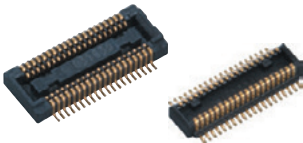
^{*2} Test conditions SO2 concentration: 103 ppm, Humidity: 90 to 95% RH, Temperature: 402C Time: 145 hours

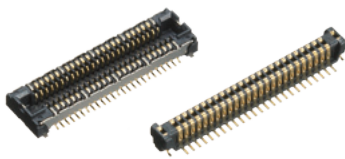
Narrow pitch connectors Selector chart

Terminal pitch	0.35mm pitch		
Types	For Board-to-FPC		
Product name	S35		A35US
Part No.	Socket: AXG1*** Header: AXG2***		Socket: AXG7*** Header: AXG8***
Shape			
Features	● Slim: width 1.7mm ● Low profile construction: mated height 0.6mm/0.8mm ● "TOUGH CONTACT" construction withstands tough environments despite being slim and low profile. ● For 0.6mm mated height, thanks to our proprietary "Fine fitting" construction, high removability with a nice click feel is maintained while being low profile.		● 0.6mm mated height with 2.2mm width ● Proprietary "Fine Fitting Construction" ● A slim 2.2mm (width) design provides space-saving benefits. ● "TOUGH CONTACT" construction provides low profile and slim design resistant to various environmental conditions. ● Soldering terminals enhance mounting strength
Mated height	0.6mm	0.8mm	0.6mm
Dimensions (short width) (Include terminal)	Socket: 1.7mm Header: 1.5mm		Socket: 2.2mm Header: 1.8mm
No. of pins	100		
	90		
	80		
	70		
	60	60	60
	50	50 54	50
	40	40 44	40 44
	30	30 34	30 34
	20	20 24	20 24
	10	6 10 12 16	10 12 16
Rated current	0.3A/pin contact (Max. 5A at total pin contacts)		0.3A/pin contact (Max. 5A at total pin contacts)
Rated voltage	60V AC/DC		60V AC/DC
Ambient temperature	-55 to +85°C		-55 to +85°C
Insertion and removal life	30times		30times

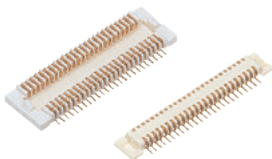
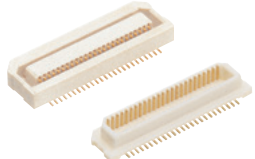
Terminal pitch	0.35mm pitch	
Types	For Board-to-FPC	For Board-to-FPC/Board-to-Board
Product name	A35S	P35S
Part No.	Socket: AXE7*** Header: AXE8***	Socket: AXT1*** Header: AXT2***
Shape		
Features	● 0.35mm terminal pitch, 2.5mm width and 0.8mm mated height ● Low profile type with up to 100 pins ● “TOUGH CONTACT” construction provides high resistance to various environmental. ● Simple lock structure provides tactile feedback to ensure excellent mating / unmating operation feel. ● Connectors for inspection available	● “TOUGH CONTACT” construction provides high resistance to various environmental. ● Pattern wiring is possible on PC board of the connector undersurface
Mated height	0.8mm	1.5mm
Dimensions (short width) (Include terminal)	Socket: 2.5mm Header: 2.0mm	Socket: 3.6mm Header: 2.35mm
No. of pins	100	100
	90	
	80	80
	70	70
	60 64	60
	50 54	50
	40 44	40
	30 34	
	20 24	
	10 12 16	
Rated current	0.25A/pin contact (Max. 4A at total pin contacts)	0.25A/pin contact (Max. 4A at total pin contacts)
Rated voltage	60V AC/DC	60V AC/DC
Ambient temperature	−55 to +85°C	−55 to +85°C
Insertion and removal life	30times	50times

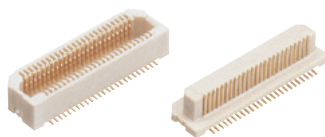
Terminal pitch	0.4mm pitch		
Types	For Board-to-FPC		
Product name	A4S		F4S
Part No.	Socket: AXE5*** Header: AXE6***		Socket: AXT5*** Header: AXT6***
Shape			
Features	● Simple lock structure provides tactile feedback to ensure excellent mating / unmating operation feel. ● “TOUGH CONTACT” construction provides high resistance to various environmental. ● Connectors for inspection available		● “TOUGH CONTACT” construction provides high resistance to various environmental. ● Simple lock structure provides tactile feedback to ensure excellent mating/unmating operation feel. ● Connectors for inspection available
Mated height	0.8mm	1.0mm	1.0mm
Dimensions (short width) (Include terminal)	Socket: 2.5mm Header: 2.0mm		Socket: 3.6mm Header: 2.6mm
No. of pins	100		
	90		
	80	80	80
	70	70	70
	60	60	60
	50	50 54	50 54
	40	40 44	40 42 48
	30	30 32	30 34
	20	20 24 26	20 24 26 28
	10	10 12 14	10 12 14 16
Rated current	0.3A/pin contact (Max. 5A at total pin contacts)		0.3A/pin contact (Max. 5A at total pin contacts)
Rated voltage	60V AC/DC		60V AC/DC
Ambient temperature	-55 to +85°C		-55 to +85°C
Insertion and removal life	30times		50times

Terminal pitch	0.4mm pitch				
Types	For Board-to-FPC/Board-to-Board				
Product name	P4				
Part No.	Socket: AXK7*** Header: AXK8***				
Shape					
Features	● Mated heights of 1.5, 2.0, 2.5, 3.0 and 3.5mm is available ● “TOUGH CONTACT” construction provides high resistance to various environmental. ● Pattern wiring is possible on PC board of the connector undersurface				
Mated height	1.5mm	2.0mm	2.5mm	3.0mm	3.5mm
Dimensions (short width) (Include terminal)	Socket: 5.1mm Header: 3.96mm				
No. of pins	100	100			
	90				
	80	80	80	80	
	70	70	70		
	60	60	60	60	
	50	50	50	50	
	40	40	40	40	40
	30	30	30	30	30
	20	20 24 26	20 24	20 24	20
	10	14	14		
Rated current	0.3A/pin contact (Max. 5A at total pin contacts)				
Rated voltage	60V AC/DC				
Ambient temperature	-55 to +85°C				
Insertion and removal life	50times				

Terminal pitch	0.4mm pitch				
Types	For Board-to-FPC/Board-to-Board				
Product name	P4S			P4S shield type	
Part No.	Socket: AXT3*** Header: AXT4***			Socket: AXT3*** Header: AXT4***	
Shape					
Features	● Mated heights of 1.5, 2.0, 2.5 and 3.0mm is available ● “TOUGH CONTACT” construction provides high resistance to various environmental. ● Pattern wiring is possible on PC board of the connector undersurface ● Connectors for inspection available ● Shield type is also available.			● Radiation noise is reduced thanks to better grounding with multi-point ground construction and covering using a shield plate. ● “TOUGH CONTACT” construction provides high resistance to various environmental. ● Previous standard product (P4S) can also be used on the header side ● Freedom of design is increased, because it has the same foot pattern as the previous standard product (P4S).	
Mated height	1.5mm	2.0mm	2.5mm	3.0mm	1.5mm
Dimensions (short width) (Include terminal)	Socket: 3.6mm Header: 2.35mm				Socket: 3.8mm Header: 2.35mm
No. of pins	100	100	100	100	
	90	90			
	80		80	80	
	70				74
	60	60 64		60	60
	50	50 54			50
	40	40 44 46	40	40	
	30	30 32 34 36 38	30	30	30
	20	20 22 24 26	20	20	20
	10	10 16			14
Rated current	0.3A/pin contact (Max. 5A at total pin contacts)				0.3A/pin contact (Max. 5A at total pin contacts)
Rated voltage	60V AC/DC				60V AC/DC
Ambient temperature	-55 to +85°C*1				-55 to +85°C
Insertion and removal life	50times				50times

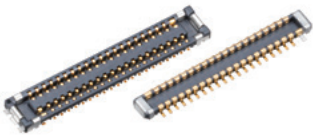
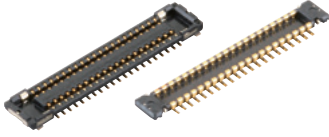
*1 Products available that can handle ambient temperatures of -55 to +105°C. For details, please contact our sales office.

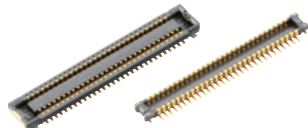
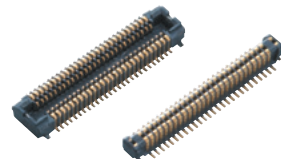
Terminal pitch	0.5mm pitch				
Types	For Board-to-FPC/Board-to-Board			For Board-to-Board	
Product name	P5KF			P5K	
Part No.	Socket: AXK5F*** Header: AXK6F***			Socket: AXK5*** Header: AXK6***	
Shape					
Features	● Wide lineup for pin counts ● “TOUGH CONTACT” construction provides high resistance to various environmental. ● Simple lock structure provides tactile feedback to ensure excellent mating / unmating operation feel. ● Effective mating length 0.55mm			● “TOUGH CONTACT” construction provides high resistance to various environmental. ● The effective mating length is long and there is enough space for mating.	
Mated height	1.5mm	2.0mm	2.5mm	3.0mm	3.5mm
Dimensions (short width) (Include terminal)	Socket: 5.8mm Header: 3.3mm			Socket: 5.8mm Header: 4.6mm	
No. of pins	100	100	100	100 120	100 120
	90				
	80	80	80	80	80
	70	70	70	70	70
	60	60	60	60	60
	50	50	50	50	50
	40	40	40	40	40
	30	30 34	30 34	30	30 34
	20	20 22 24 26	20 22 24	20 22	20 22
	10	10 12 14 16 18	10 12 14 16		
Rated current	0.5A/pin contact (Max. 10A at total pin contacts)			0.5A/pin contact (Max. 10A at total pin contacts)	
Rated voltage	60V AC/DC			60V AC/DC	
Ambient temperature	-55 to +85°C			-55 to +85°C	
Insertion and removal life	50times			50times	

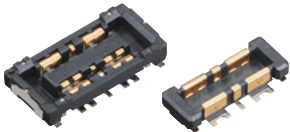
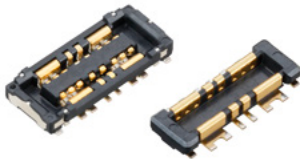
Terminal pitch		0.5mm pitch								
Types		For Board-to-Board								
Product name		P5KS								
Part No.		Socket: AXK5S*** Header: AXK6S***								
Shape										
Features		● Wide range of mated heights (4.0mm, 4.5mm, 5.0mm, 5.5mm, 6.0mm, 6.5mm, 7.0mm, 8.0mm, and 9.0mm) is available ● "TOUGH CONTACT" construction provides high resistance to various environmental. ● The effective mating length is long and there is enough space for mating.								
Mated height		4.0mm	4.5mm	5.0mm	5.5mm	6.0mm	6.5mm	7.0mm	8.0mm	9.0mm
Dimensions (short width) (Include terminal)		Socket: 5.4mm Header: 5.0mm								
No. of pins	100	100	100	100	100	100	100	100	100	100
	90									
	80	80	80	80	80	80	80	80	80	80
	70	70	70	70	70	70	70	70	70	70
	60	60	60	60	60	60	60	60	60	60
	50	50	50	50	50	50	50	50	50	50
	40	40	40	40	40	40	40	40	40	40
	30	30 34	30 34	30 34	30 34	30	30	30	30	30
	20	20 24	20 24	20 24	20 24	20	20	20	20	20
10										
Rated current	Power terminal	—								
	Signal terminal	0.5A/pin contact (Max. 16A at total pin contacts)								
Rated voltage		60V AC/DC								
Ambient temperature		-55 to +85°C*1								
Insertion and removal life		50times								

*1 Products available that can handle ambient temperatures of -55 to +105°C. For details, please contact our sales office.

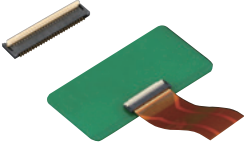
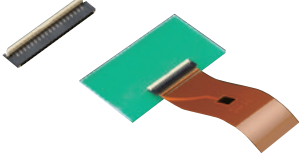
High current connectors Selector chart

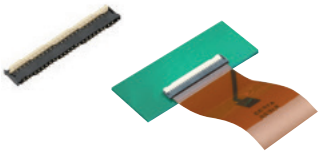
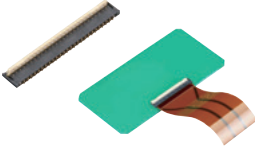
Terminal pitch		0.35mm pitch	
Types		Connector for Board-to-FPC	
Product name		S35H	A35UH
Part No.		Socket: AXF5B**12 Header: AXF6B**12	Socket: AXF5D**12 Header: AXF6D**12
Shape			
Features		● Small size (0.6mm Mated Height with 1.7mm width) ● Increased robustness with metal shell construction on the flange ● Supports 5.4A power terminal for reduced number of power line pins ● "TOUGH CONTACT" construction provides high resistance to various environmental.	● Supports 5A power terminals ● With power terminal, so number of pins can be reduced ● "TOUGH CONTACT" construction provides high resistance to various environmental.
Mated height		0.6mm	0.6mm
Dimensions (short width) (Include terminal)		Socket: 1.7mm Header: 1.5mm	Socket: 2.2mm Header: 1.8mm
No. of pins	100		
	90		
	80		
	70		70
	60	60	60
	50	50	50 54
	40	40	40 44
	30	34	30 34
	20		20 24
	10		10 12 16
Rated current	Power terminal	5.4A/pin contact	5A/pin contact
	Signal terminal	0.3A/pin contact (Max. 2A at total pin contacts)	0.3A/pin contact (Max. 5A at total pin contacts)
Rated voltage		30V AC/DC	30V AC/DC
Ambient temperature		−55 to +85°C	−55 to +85°C
Insertion and removal life		30times	30times

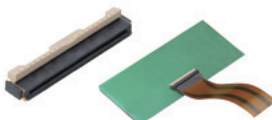
Terminal pitch		0.35mm pitch		0.4mm pitch		
Types		Connector for Board-to-FPC				
Product name		A35P		P4SP		
Part No.		Socket: AXF5A*** Header: AXF6A***		Socket: AXF5G**12 Header: AXF6G**12		
Shape						
Features		● High current rating 5A (using 1.25A/pin × 8pins) ● By supporting high current rating, small number of pins design is available. ● Increased design flexibility (pin layout, high current multiple lines) ● Supports 5A power terminals ● With power terminal, so number of pins can be reduced ● “TOUGH CONTACT” construction provides high resistance to various environmental.		● Capable of MAX. 5A for power ● Rated current 1A/pin (for power) 0.5A/pin (for signal), Total: Max. 12A ● Any terminal can be applied for power terminal ● Low contact resistance: Max. 40mΩ ● High speed transmission of 10Gbps is available ● Supports 5A power terminals ● With power terminal, so number of pins can be reduced ● “TOUGH CONTACT” construction provides high resistance to various environmental.		
Mated height		0.8mm		1.5mm	2.5mm	3.0mm
Dimensions (short width) (Include terminal)		Socket: 2.5mm Header: 2.0mm		Socket: 3.6mm Header: 2.35mm		
No. of pins		100	100	100	100	100
		90		90		
		80	80	80	80	80
		70	70	70		
		60	60 64	60	60	60
		50	50 54	50		
		40	40 44	40 46	40	
		30	30 34	30 34 36 38	30 38	30 38
		20	20 24	20 24 26	20	20
		10	10 12 16	10 16		
Rated current	Power terminal	—		—		
	Signal terminal	For power contact: 1.5A/pin contact × 4pin contacts or 1.25A/pin contact × 8pin contacts For signal contact: 0.5A/pin contact (12A or less at total pin contacts)		For power contact: 1.0A/pin contact × 10pin contacts For signal contact: 0.3A/pin contact (12A or less at total pin contacts)		
Rated voltage		30V AC/DC		30V AC/DC		
Ambient temperature		−55 to +85℃		−55 to +85℃		
Insertion and removal life		30times		50times		

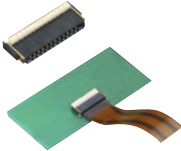
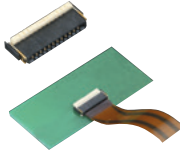
Terminal pitch		0.8mm pitch	
Types		Connector for Board-to-FPC	
Product name		B01	B02
Part No.		Socket: AXF36*500 Header: AXF46*500	Socket: AXF38*700 Header: AXF48*700
Shape			
Features		● High current rating: 6A (3A/pin × 4pins) ● High removal force while miniature and low profile	● High current rating: 10A (5A/pin × 4pins) ● 4 signal pin type for wide range of control applications ● High removal force while miniature and low profile
Mated height		0.6mm/0.8mm	0.7mm
Dimensions (short width) (Include terminal)		Socket: 2.4mm Header: 1.8mm	Socket: 2.2mm Header: 1.8mm
No. of pins	100		
	90		
	80		
	70		
	60		
	50		
	40		
	30		
	20		
	10	6	8
Rated current	Power terminal	3A/pin contact	5A/pin contact
	Signal terminal	0.3A/pin contact	0.3A/pin contact
Rated voltage		30V AC/DC	30V AC/DC
Ambient temperature		−55 to +85°C	−55 to +85°C
Insertion and removal life		30times	30times

FPC/FFC connectors Selector chart

Contact pitch	0.2mm pitch	0.3mm pitch
Product name	Y2B	Y3BL
Part No.	AYF21**35	AYF35**25
Shape		
Features	● Slim (width: 3.15mm) and low profile design ● Double top and bottom contacts construction ● Time and effort can be reduced by delivering with lever open. ● Wiring patterns can be placed under the connector ● Ni barrier with high resistance to solder creepage.	● Low profile (0.6mm) and slim design ● Compatible with FPC 0.2mm thickness ● High durability assured with proprietary soldering terminals ● Time and effort can be reduced by delivering with lever open. ● Wiring patterns can be placed under the connector ● Ni barrier with high resistance to solder creepage.
Lock structure	 Back lock	 Back lock
Compatibility with FPC/FFC	FPC	FPC
Applicable FPC thickness	0.2mm	0.2mm
Contact structure	Top and bottom double contacts	Top contact
Terminal pitch	0.4mm	0.6mm
Mounting height	0.9mm	0.6mm
Dimensions (width)	3.15mm (Including lever) 2.95mm	3.35mm (Including lever) 2.95mm
No. of pins	70	
	60	61
	50	51
	40	41
	30	31
	20	23 25 27
	10	11 15
2 to 9		7
Rated current	0.2A/pin contact (Max. 5A at total pin contacts)	0.2A/pin contact
Rated voltage	50V AC/DC	50V AC/DC
Ambient temperature	-55 to +85°C	-55 to +85°C
Insertion and removal life	20times	20times

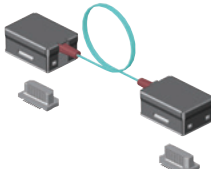
Contact pitch	0.3mm pitch	
Product name	Y3B	Y3BW
Part No.	AYF33**35	AYF33**65
Shape		
Features	● Double top and bottom contacts construction ● Wiring patterns can be placed under the connector ● Lock hold type with excellent holding force is available (Y3BW) 1. With a structure that temporarily holds the FPC 2. Higher FPC holding force ● Ni barrier with high resistance to solder creepage	
Lock structure		
Compatibility with FPC/FFC	FPC	
Applicable FPC thickness	0.2mm	
Contact structure	Top and bottom double contacts	
Terminal pitch	0.6mm	
Mounting height	0.9mm	
Dimensions (width)	3.15mm (Including lever) 2.95mm	
No. of pins	70	71
	60	61
	50	51
	40	41 45
	30	31 33 35 37 39
	20	21 23 25 27
	10	11 13 15 17
2 to 9		7 8 9
Rated current	0.2A/pin contact	
Rated voltage	50V AC/DC	
Ambient temperature	-55 to +85°C	
Insertion and removal life	20times	

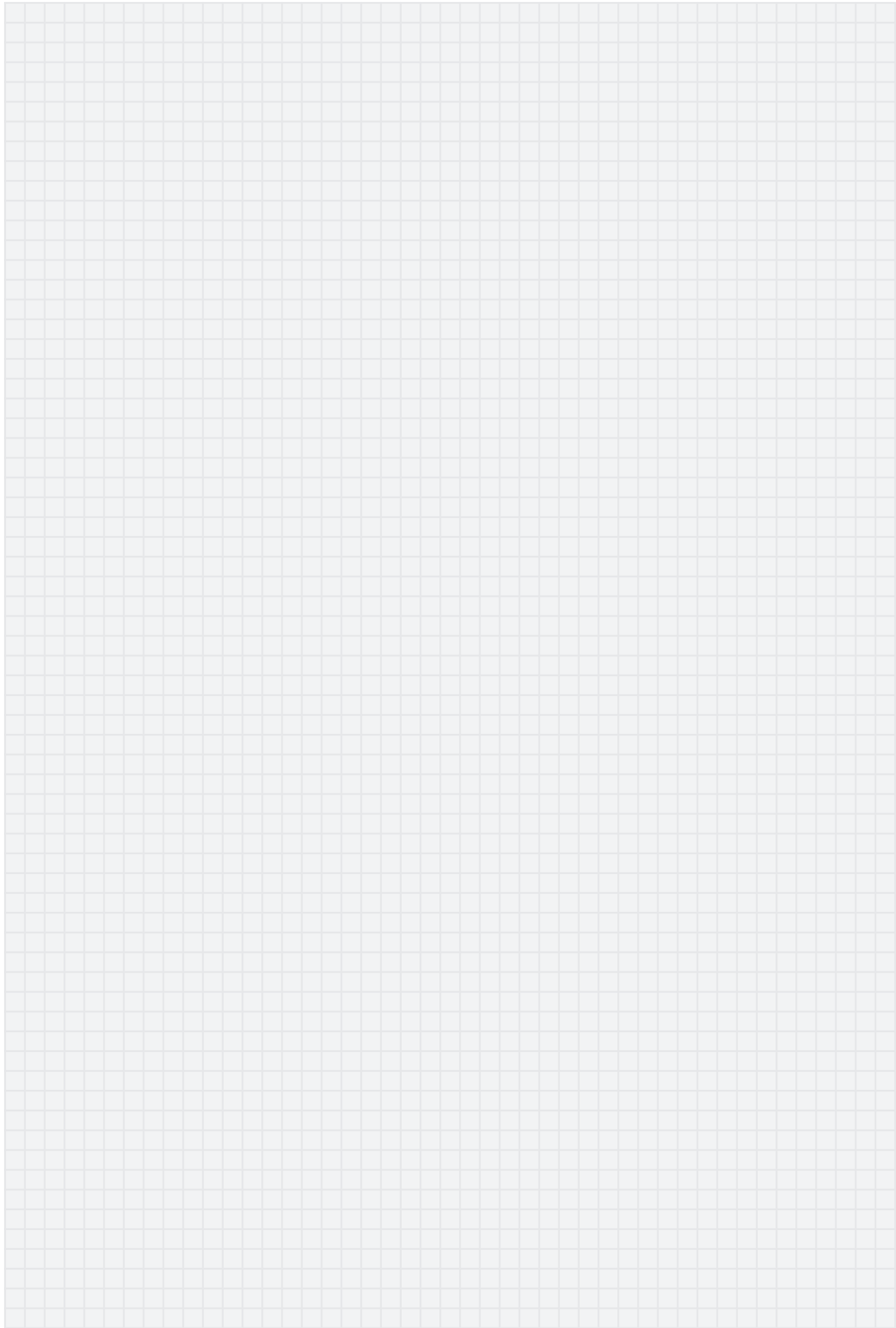
Contact pitch	0.4mm pitch	0.5mm pitch
Product name	Y4BH	Y5BH
Part No.	AYF4***35	AYF56**35
Shape		
Features	● Differential impedance matching (100, 90 and 85Ω) compliant with various high-speed transmission standards ● 0.4mm pitch, 1.0mm height and double top and bottom contact construction ● Supports USB 3.1 high-speed transmission standard (transmission speed: up to 10Gbps)* ● Time and effort can be reduced by delivering with lever open *Compared to use of FPC and micro coaxial connector.	● Differential impedance matching (90Ω, 85Ω) compliant with various high-speed transmission standards ● 0.5mm pitch, 1.8mm height and double top and bottom contact construction ● Supports USB 3.1 high-speed transmission standard (transmission speed: up to 10Gbps)* ● Contributes to customer cost savings by using impedance matching FFC. *Compared to use of FPC and micro coaxial connector.
Lock structure	 Back lock	 Back lock
Compatibility with FPC/FFC	FPC/FFC	FPC/FFC
Applicable FPC thickness	0.3mm	0.3mm
Contact structure	Top and bottom double contacts	Top and bottom double contacts
Terminal pitch	0.4mm	0.5mm
Mounting height	1.0mm	1.8mm
Dimensions (width)	3.7mm (Including lever) 3.2mm	5.5mm (Including lever) 3.9mm
No. of pins	70	
	60	
	50	
	40	
	30	
	20	
	10	
	2 to 9	
Rated current	0.3A/pin contact	0.4A/pin contact
Rated voltage	50V AC/DC	50V AC/DC
Ambient temperature	−55 to +85°C	−55 to +85°C
Insertion and removal life	20times	20times

Contact pitch	0.5mm pitch	
Product name	Y5B	Y5BW
Part No.	AYF53**35	AYF53**65T
Shape		
Features	● Double top and bottom contacts construction ● Wiring patterns can be placed under the connector ● Lock hold type (Y5BW) with excellent holding force is available (Y5BW: support only FPC) 1. With a structure that temporarily holds the FPC 2. Higher FPC holding force *V-by-One®HS: An interface for the next-generation high-speed signals developed by THine Electronics, Inc. V-by-One® is a registered trademark of THine Electronics, Inc.	
Lock structure	 Back lock	
Compatibility with FPC/FFC	FPC/FFC	FPC
Applicable FPC thickness	0.3mm	
Contact structure	Top and bottom double contacts	
Terminal pitch	0.5mm	
Mounting height	1.0mm	
Dimensions (width)	3.7mm (Including lever) 3.2mm	
No. of pins	70	
	60	
	50	
	40	40 48
	30	30 32 38
	20	22 26 28
	10	10 12 14
	2 to 9	2 3 4 6 8
Rated current	0.5A/pin contact	
Rated voltage	50V AC/DC	
Ambient temperature	-55 to +85°C*1	
Insertion and removal life	20times	

*1 Products available that can handle ambient temperatures of -55 to +105°C. For details, please contact our sales office.

Active optical connectors Selector chart

Type	1 channel-Bi-direction	2 channel-Uni-direction
Product name	Active optical connectors V series	
Part No.	Integrated cable and plug: AYG4V1****M* Receptacle: AXK6S20447M*	Integrated cable and plug: AYG5V1****M* Receptacle: AXK6S20447M*
Shape		
Features	● Plug is equipped with electrical / optical conversion function. ● Noise reduction of high speed signal and electrical isolation easily achieved. ● High speed and wide data rate transmission possible ● Lineup includes 1 channel-Bi-direction and 2 channel-Uni-direction 1 channel-Bi-direction: 20 Mbps to Max. 8 Gbps 2 channel-Uni-direction: 20 Mbps to Max. 16 Gbps (20 Mbps to 8 Gbps/ch)	
Transmission rate	20Mbps to 8Gbps/ch	
Power consumption	Max. 230mW 3.3V DC±0.1	
Operating ambient temperature	0 to +70°C	
Insertion and removal life	50times	



Switch series introduction

Tactile·Detector·Push Switches

*Light touch switch is our unique name of tactile switch.

Variations

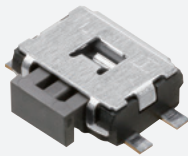
Tactile SW

Detector SW

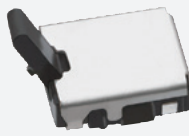
To satisfy different design needs, many variations are offered such as top push operation, side push operation and vertical and horizontal direction detection.



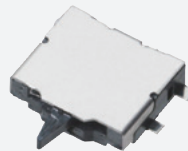
Top push type



Side push type



Vertical type



Horizontal type

Vehicle



Health care
Medical



Appliance

Operation feeling

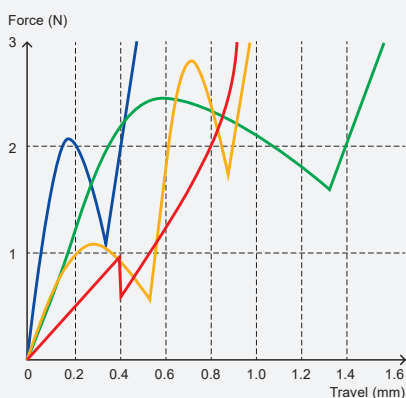
Tactile SW

Push SW

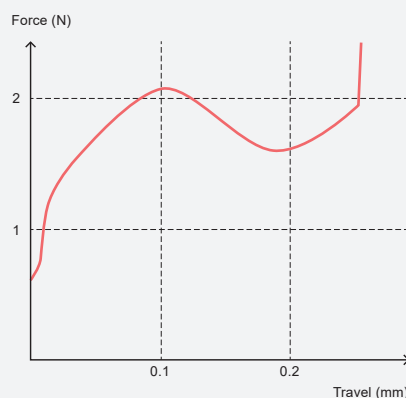
Operation feeling is one of the key feature of switches. Our large selection of operation feeling and travel meet customer requests.

Feeling curve

Tactile switch



Push switch



Meeting customer needs with our extensive features.

Offering suitable switch features such as operation feeling and reliability for our customer. Panasonic switch products have been adopted into various field applications.

Reliability

Tactile SW

Detector SW

Push SW

In order to raise reliability of customer's product, our switches make progress on operating life, water-proof and dust-proof property (IP67), anti-flux characteristics, contact reliability and shock resistance.

*IP67; Protected from dust and capable of withstanding water immersion between 15 cm and 1 meter for 30 minutes (LTSW meets IP67).

ICT



Wearable



Industry and O.A.

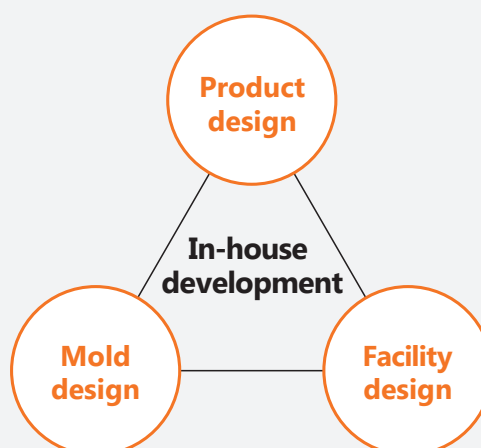


Complete waterproof structure by laser processing of cover film.

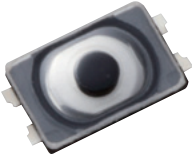
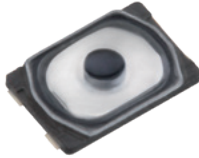
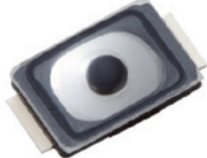
Customization

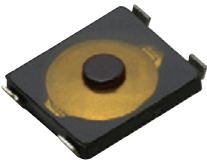
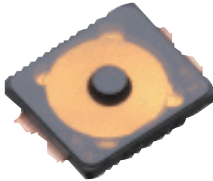
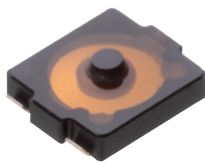
Tactile SW

All Tactile SW parts are designed and produced by our own factory so that able to offer customization of click feeling and provide quick customer services.

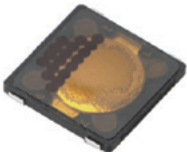
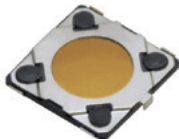


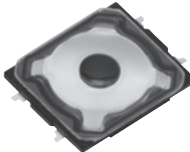
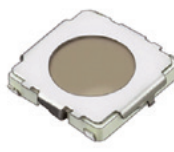
Tactile switches Selector chart

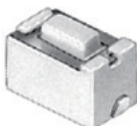
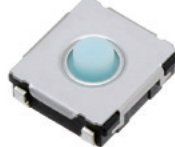
Types		Tactile switches		
		Top push type		
Product name		2.6mm × 1.6mm SMD	2.8mm × 1.9mm SMD	3.0mm × 2.0mm SMD
Part No.		EVPBB	EVPBL	EVPAW
Shape				
Features		Low profile and small size		
Vehicle compatible		—	—	—
Protective structure		IP67	IP67	IP67
External dimensions (mm)	W × D	2.6 × 1.6	2.8 × 1.9	3.0 × 2.0
	H	0.5/0.53/0.55	0.53/0.57	0.6
Operating force		0.7N·1.0N·1.6N	1.6N	1.6N
		2.4N	2.25N	2.4N
				3.3N
Travel (mm)		0.7N, 1.0N: 0.08 1.6N, 2.4N: 0.11	0.15	1.6N, 2.4N: 0.13 3.3N: 0.15
Operating life (cycles min)		0.7N: 200,000 1.0N, 1.6N, 2.4N: 500,000	300,000	1.6N, 2.4N: 500,000 3.3N: 300,000
Rating		10μ A 2V DC to 20mA 15V DC (Resistive load)		
Temperature	Operating temperature	−40°C to +85°C		
	Storage temperature (Taping)	−20°C to +60°C		
Characteristics	Contact resistance	500mΩ max.		
	Insulation resistance	50MΩ min. (at 100V DC)		
	Dielectric withstanding voltage	250V AC for 1 minute		
	Bouncing	10ms max. (ON, OFF)		
Environment		RoHS compliant, ELV compliant		

Types		Tactile switches		
		Top push type		
Product name		3.0mm × 2.6mm SMD	3.0mm × 2.6mm 2 terminals SMD	3.4mm × 2.9mm SMD
Part No.		EVPAF/EVP0A	EVPBA	EVPAY
Shape				
Features		Low profile and small size		
Vehicle compatible		—	—	—
Protective structure		—	—	IP67
External dimensions (mm)	W × D	3.0 × 2.6	3.0 × 2.6	3.4 × 2.9
	H	0.65/0.7	0.58	0.7
Operating force		1.3N·1.6N	1.8N	1.6N
		2.4N		2.4N
		3.4N		
Travel (mm)		0.15	0.13	0.15
Operating life (cycles min)		1.3N, 1.6N, 3.4N: 100,000 1.6N (Low profile), 2.4N: 500,000	300,000	500,000
Rating		10μ A 2V DC to 20mA 15V DC (Resistive load)		
Temperature	Operating temperature	−40°C to +85°C		
	Storage temperature (Taping)	−20°C to +60°C		
Characteristics	Contact resistance	500mΩ max.		
	Insulation resistance	50MΩ min. (at 100V DC)		
	Dielectric withstanding voltage	250V AC for 1 minute		
	Bouncing	10ms max. (ON, OFF)		
Environment		RoHS compliant, ELV compliant		

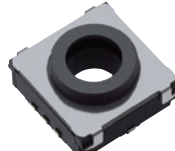
Types		Tactile switches		
		Top push type		
Product name		3.5mm × 2.9mm SMD	4.7mm × 3.5mm SMD	
Part No.		EVPA A	EVQP2/EVQP9/EVQ3P2	
Shape				
Features		High operating force	High operating force, Short travel	High operating force, Middle travel
Vehicle compatible		•	•	•
Protective structure		—	—	—
External dimensions (mm)	W × D	3.5 × 2.9	4.7 × 3.5	4.7 × 3.5
	H	1.7	2.1/2.5	2.5
Operating force		1.0N·1.6N	1.0N·1.6N	
		2.4N	2.4N	2.5N
		3.5N	3.5N	3.5N
		5.0N	4.0N	
		7.0N	5.0N	5.0N
Travel (mm)		0.15	0.25	0.7
Operating life (cycles min)		1.0N: 1,000,000 3.5N: 500,000 1.6N, 2.4N, 3.5N, 5.0N: 200,000 5.0N, 7.0N: 100,000	1.0N, 1.6N: 1,000,000 2.4N: 500,000 3.5N, 4.0N, 5.0N: 200,000	2.5N: 1,000,000 3.5N: 500,000 5.0N: 200,000
Rating		10μ A 2V DC to 20mA 15V DC (Resistive load)		
Temperature	Operating temperature	−40°C to +85°C		
	Storage temperature (Taping)	−20°C to +60°C		
Characteristics	Contact resistance	100mΩ max.		
	Insulation resistance	100MΩ min. (at 100V DC)		
	Dielectric withstanding voltage	250V AC for 1 minute		
	Bouncing	10ms max. (ON, OFF)		
Environment		RoHS compliant, ELV compliant		

Types		Tactile switches		
		Top push type		
Product name		4mm Square SMD		
Part No.		EVQP6	EVQ7P6/EVQ6P6/EVQ9P6	EVQP6
Shape				
Features		Low profile, Wide variations		
Vehicle compatible		—	—	—
Protective structure		—	—	—
External dimensions (mm)	W × D	4.1 × 4.1	4.1 × 4.1	4.1 × 4.1
	H	0.35	0.43	0.58
Operating force		1.6N	1.0N·1.6N	1.6N
		2.4N	2.4N	2.4N
Travel (mm)		0.2	1.0N: 0.15 1.6N, 2.4N: 0.2	0.2
Operating life (cycles min)		1.6N: 1,000,000 2.4N: 500,000	1.0, 1.6N: 1,000,000 2.4N: 500,000	1.6N: 1,000,000 2.4N: 500,000
Rating		10μ A 2V DC to 20mA 15V DC (Resistive load)		
Temperature	Operating temperature	−20°C to +70°C		
	Storage temperature (Taping)	−20°C to +60°C		
Characteristics	Contact resistance	500mΩ max.		
	Insulation resistance	50MΩ min. (at 100V DC)		
	Dielectric withstanding voltage	100V AC for 1 minute		
	Bouncing	3ms max. (ON) /10ms max. (OFF)		
Environment		RoHS compliant, ELV compliant		

Types		Tactile switches		
		Top push type		
Product name		4.9mm × 4.0mm SMD	4.9mm Square SMD	
Part No.		EVPBK	EVQPL/EVQ5PL	EVQPL/EVQPT/EVQ3PL
Shape				
Features		Low profile	Low profile, Long operating life	
Vehicle compatible		—	•	•
Protective structure		IP67	—	—
External dimensions (mm)	W × D	4.9 × 4.0	4.9 × 4.9	4.9 × 4.9
	H	0.63	0.8	1.5
Operating force			1.6N	1.0N·1.6N
		2.5N	2.6N	2.6N
			3.5N	3.5N
Travel (mm)		0.23	0.25	0.25
Operating life (cycles min)		1,000,000	1.0N, 1.6N: 500,000 2.6N, 3.5N: 200,000	
Rating		10μ A 2V DC to 20mA 15V DC (Resistive load)		
Temperature	Operating temperature	−40°C to +85°C	−20°C to +70°C	
	Storage temperature (Taping)	−20°C to +60°C		
Characteristics	Contact resistance	500mΩ max.	50mΩ max.	
	Insulation resistance	50MΩ min. (at 100V DC)		
	Dielectric withstanding voltage	250V AC for 1 minute		
	Bouncing	10ms max. (ON, OFF)	3ms max. (ON) /8ms max. (OFF)	
Environment		RoHS compliant, ELV compliant		

Types		Tactile switches		
		Top push type		
Product name		6.0mm × 3.5mm SMD	6mm Square Thin Type SMD	
Part No.		EVQPE1/EVQPN/EVQ5P	EVQQ2	EVQP0
Shape				
Features		SMD	Long operating life	Over travel
Vehicle compatible		—	—	—
Protective structure		—	—	—
External dimensions (mm)	W × D	6.0 × 3.5	6.5 × 6.0	6.5 × 6.0
	H	4.3/5.0	2.0/2.5/3.1	2.5
Operating force		1.0N·1.6N	0.5N	0.6N
		2.4N	0.8N·1.0N·1.3N·1.6N	1.0N
			2.6N	
			3.5N	
Travel (mm)		0.25	0.5N, 0.8N, 1.0N: 0.20 1.3N, 1.6N, 2.6N, 3.5N: 0.25	0.3
Operating life (cycles min)		1.0N, 1.6N: 50,000 2.4N: 30,000	0.5N, 0.8N: 2,000,000 1.0N, 1.3N, 1.6N: 1,000,000 2.6N: 200,000 3.5N: 100,000	0.6N: 2,000,000 1.0N: 1,000,000
Rating		10μ A 2V DC to 50mA 12V DC (Resistive load)	10μ A 2V DC to 20mA 15V DC (Resistive load)	
Temperature	Operating temperature	−30°C to +85°C	−40°C to +85°C	
	Storage temperature (Taping)	−20°C to +60°C		
Characteristics	Contact resistance	100mΩ max.		
	Insulation resistance	100MΩ min.(at 100V DC)		
	Dielectric withstanding voltage	250V AC for 1 minute		
	Bouncing	10ms max. (ON, OFF)		
Environment		RoHS compliant, ELV compliant		

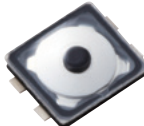
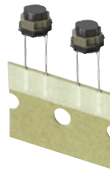
Types		Tactile switches		
		Top push type		
Product name		6mm Square Middle Travel SMD	6mm Square Middle Travel 2 terminals SMD	6mm Square Long Travel SMD
Part No.		EVPBF	EVPBD	EVQP0/EVQP1/EVQ9P
Shape				
Features		Long operating life	Middle travel	Long travel
Vehicle compatible		—	•	•
Protective structure		—	—	—
External dimensions (mm)	W × D	6.0 × 6.0	6.0 × 6.0	6.1 × 6.0
	H	3.5	4.0	5.0
Operating force				1.6N
		2.0N		2.0N·2.2N·2.5N
		3.5N	3.5N	3.0N·3.5N
Travel (mm)		0.25	0.75	2.2N, 2.5N: 1.0 1.6N, 2.0N, 2.5N, 3.0N, 3.5N: 1.3
Operating life (cycles min)		2.0N: 1000000 3.5N: 100,000	100,000	1.6N, 2.0N, 2.2N, 2.5N, 3.0N: 100,000 3.5N: 30,000
Rating		10μ A 2V DC to 20mA 15V DC (Resistive load)		10μ A 2V DC to 50mA 12V DC (Resistive load)
Temperature	Operating temperature	−40°C to +85°C	−40°C to +90°C	−40°C to +85°C
	Storage temperature (Taping)	−20°C to +60°C		
Characteristics	Contact resistance	500mΩ max.		100mΩ max.
	Insulation resistance	100MΩ min. (at 100V DC)		
	Dielectric withstanding voltage	250V AC for 1 minute		
	Bouncing	10ms max. (ON, OFF)		
Environment		RoHS compliant, ELV compliant		

Types		Tactile switches		
		Top push type		
Product name		6mm Square Long Travel 2 terminals SMD	8mm Square Long Travel SMD	10mm Square Center Space Long Travel SMD
Part No.		EVPAS	EVQQ1	EVPAD
Shape				
Features		Long travel	Long travel High operating force	Center space structure, Long travel, High operating force
Vehicle compatible		•	•	•
Protective structure		—	—	—
External dimensions (mm)	W × D	6.1 × 6.0	8.5 × 8.5	9.8 × 9.8
	H	5.0	6.5	4.7
Operating force		1.6N		
		2.0N·2.2N·2.5N		
		3.0N·3.5N·3.6N		
			4.0N	4.0N
			5.0N	
Travel (mm)		2.2N, 2.5N, 3.0N, 3.6N: 1.0 1.6N, 2.0N, 2.5N, 3.0N, 3.5N: 1.3	1.0	
Operating life (cycles min)		1.6N, 2.0N, 2.2N, 2.5N: 100,000 3.0N: 200,000 3.5N: 100,000 Operating force narrow tolerance 3.0N, 3.6N: 300,000	100,000	
Rating		10μ A 2 V DC to 50mA 12V DC (Resistive load)		
Temperature	Operating temperature	−40°C to +90°C	−40°C to +85°C	
	Storage temperature (Taping)	−20°C to +60°C		
Characteristics	Contact resistance	100mΩ max.		
	Insulation resistance	100MΩ min. (at 100V DC)		
	Dielectric withstanding voltage	250V AC for 1 minute		
	Bouncing	10ms max. (ON, OFF)		
Environment		RoHS compliant, ELV compliant		

Types		Tactile switches		
		Side push type		
Product name		2.8mm × 2.3mm Side-operational Edge Mount SMD	3.4mm × 1.7mm Side-operational Edge Mount SMD	3.5mm × 2.9mm Side-operational SMD
Part No.		EVPAV	EVPAT	EVQP7/EVQP3/EVQ9P7
Shape				
Features		Low profile		
Vehicle compatible		—	—	—
Protective structure		—	IP67	—
External dimensions (mm)	W × D	2.8 × 2.3	3.4 × 1.73	3.5 × 2.9
	H	1.95	1.65	1.35
Operating force		1.6N	1.0N·1.6N	1.6N
			2.4N	2.2N
Travel (mm)		0.13	0.11	0.2
Operating life (cycles min)		300,000	500,000	100,000
Rating		10μ A 2 V DC to 20mA 15V DC (Resistive load)		10μ A 2 V DC to 50mA 12V DC (Resistive load)
Temperature	Operating temperature	-40°C to +85°C		-20°C to +70°C
	Storage temperature (Taping)	-20°C to +60°C		-20°C to +60°C
Characteristics	Contact resistance	500mΩ max.		
	Insulation resistance	50MΩ min. (at 100V DC)		100MΩ min. (at 100V DC)
	Dielectric withstanding voltage	250V AC for 1 minute		
	Bouncing	10ms max. (ON, OFF)		
Environment		RoHS compliant, ELV compliant		

Types		Tactile switches		
		Side push type		
Product name		3.5mm × 2.9mm Side-operational Half Dive SMD	3.8mm × 1.9mm Side-operational SMD	4.5mm × 2.2mm Side-operational Edge Mount SMD
Part No.		EV PAN	EV PAK	EV PAE
Shape				
Features		Low profile, Half Dive	High soldering strength against operating force	Edge Mount, High soldering strength against operating force
Vehicle compatible		—	—	●
Protective structure		—	IP67	—
External dimensions (mm)	W × D	3.5 × 2.9	3.9 × 2.05	4.5 × 2.25
	H	1.2	1.6	2.9
Operating force		1.6N	1.6N	1.6N
		2.2N		2.4N
				3.0N-3.5N
Travel (mm)		0.2	0.12	1.6N (with L-shape terminals) : 0.13 1.6N, 2.4N, 3.0N, 3.5N: 0.15
Operating life (cycles min)		100,000	500,000	200,000
Rating		10μ A 2 V DC to 50mA 12V DC (Resistive load)	10μ A 2 V DC to 20mA 15V DC (Resistive load)	
Temperature	Operating temperature	−20°C to +70°C	−40°C to +85°C	
	Storage temperature (Taping)	−20°C to +60°C		
Characteristics	Contact resistance	500mΩ max.	100mΩ max.	1,000mΩ max.
	Insulation resistance	100MΩ min. (at 100V DC)		
	Dielectric withstanding voltage	250V AC for 1 minute		
	Bouncing	10ms max. (ON, OFF)		
Environment		RoHS compliant, ELV compliant		

Types		Tactile switches		
		Side push type		
Product name		Small-sized Side-operational SMD	6.2mm × 2.5mm Side-operational Edge Mount SMD	
Part No.		EVQPU	EVQP4	
Shape				
Features		Low profile	Edge Mount, High soldering strength against operating force	Middle travel, Edge Mount, High soldering strength against operating force
Vehicle compatible		—	•	•
Protective structure		—	—	—
External dimensions (mm)	W × D	4.7 × 3.5	6.2 × 2.55	6.2 × 2.55
	H	1.65	3.5	3.5
Operating force		1.6N	1.0N·1.6N	
		2.2N	2.4N	2.5N
			3.5N	3.5N
				5.0N
Travel (mm)		0.3	0.25	0.7
Operating life (cycles min)		100,000	1.0N, 1.6N: 1,000,000 2.4N: 500,000 3.5N: 200,000	2.5N: 1,000,000 3.5N: 500,000 5.0N: 200,000
Rating		10μ A 2 V DC to 50mA 12V DC (Resistive load)	10μ A 2V DC to 20mA 15V DC (Resistive load)	
Temperature	Operating temperature	−20°C to +70°C	−40°C to +85°C	
	Storage temperature (Taping)	−20°C to +60°C		
Characteristics	Contact resistance	500mΩ max.	100mΩ max.	
	Insulation resistance	100MΩ min. (at 100V DC)		
	Dielectric withstanding voltage	250V AC for 1 minute		
	Bouncing	10ms max. (ON, OFF)		
Environment		RoHS compliant, ELV compliant		

Types		Tactile switches		
		Double-action	Radial	Bulk
Product name		3.0mm × 2.6mm Double-action SMD	6mm Square Long Travel 2R	6.0mm × 3.5mm
Part No.		EVPAX	EVQPV	EVQPE
Shape				
Features		Double-action	High mountability, Section terminals	Main body prevents the escape of flux.
Vehicle compatible		—	●	—
Protective structure		—	—	—
External dimensions (mm)	W × D	3.0 × 2.6	6.0 × 6.1	6.0 × 3.5
	H	0.7	5.0	4.3/5.0
Operating force		1st action: 0.7N	1.6N	1.0·1.6N
		2nd action: 2.0N	2.0N·2.2N·2.5N	2.4N
			3.5N	
Travel (mm)		1st action: 0.07 2nd action: 0.16	2.2N: 1.0 1.6N, 2.0N, 2.5N, 3.5N: 1.3	0.25
Operating life (cycles min)		100,000	1.6N, 2.0N, 2.2N, 2.5N: 100,000 3.5N: 30,000	1.0N, 1.6N: 50,000 2.4N: 30,000
Rating		10μ A 2V DC to 20mA 15V DC (Resistive load)	10μ A 2V DC to 50mA 12V DC (Resistive load)	
Temperature	Operating temperature	−20°C to +70°C	−30°C to +85°C	
	Storage temperature (Taping)	−20°C to +60°C	−20°C to +40°C	−40°C to +85°C
Characteristics	Contact resistance	500mΩ max.	100mΩ max.	
	Insulation resistance	100MΩ min. (at 100V DC)		
	Dielectric withstanding voltage	250V AC for 1 minute		
	Bouncing	3ms max. (ON) / 20ms max. (OFF)	10ms max. (ON, OFF)	
Environment		RoHS compliant, ELV compliant		

Types		Tactile switches	
		Bulk	
Product name		Over Travel	
Part No.		EVQP0	
Shape			
Features		Over travel	
Vehicle compatible		—	
Protective structure		—	
External dimensions (mm)	W × D	6.2 × 6.2	
	H	7.45	
Operating force		0.74N·1.3N	
Travel (mm)		0.2	
Operating life (cycles min)		0.74N: 5,000,000 1.3 N: 1,000,000	
Rating		10μ A 2V DC to 50mA 30V DC (Resistive load)	
Temperature	Operating temperature	−20°C to +70°C	
	Storage temperature (Taping)	−40°C to +85°C	
Characteristics	Contact resistance	100mΩ max. (1Ω max. after life test)	
	Insulation resistance	100MΩ min.(at 100V DC)	
	Dielectric withstanding voltage	600V AC for 1 minute	
	Bouncing	3ms max. (ON) /8ms max. (OFF)	
Environment		RoHS compliant, ELV compliant	

Rotary potentiometers Selector chart

Types		Rotary potentiometers		
Product name		18mm Square	39/20mm Center Space	44/25mm Center Space
Part No.		EVCX	EWVY-E/K/M/N	EWVY-G/H/J/L/P
Shape				
Features		Output accuracy (±3%)	Able to put LED inside	
Vehicle compatible		●	●	●
External dimensions (mm)	W	18.0	39.3	45.5
	D	18.0	40.3	45.2
	H	8 (Excluding shaft)	8 (Excluding rotating parts)	8 (Excluding rotating parts)
Rotation angle		280° max. ±5°	300° max. ±5°	
Rotation torque		20mN·m to 100mN·m	15mN·m to 50mN·m	15mN·m to 60mN·m
Nominal total resistance		5kΩ to 100kΩ (Tolerance ±20%)	10kΩ (Tolerance ±20%)	
Power rating		0.05W	0.1W	
Temperature	Operating temperature	-40°C to +85°C		
	Storage temperature	-40°C to +85°C		
Noise level		100mV max.	47mV max.	
Operating life (cycles min.)		15,000	30,000	
Environment		RoHS compliant, ELV compliant		

Position Sensors Selector chart

Types		Position Sensors		
Product name		10mm GS	Linear Position	
Part No.		EVWAE/EVWAD	EVAW7	
Shape				
Features		Low profile, Long life sensor, Suitable for detecting the angles of rotating axes	A wide variety of operation travels	
Vehicle compatible		●	●	●
External dimensions (mm)	W	10.60	9.0	10.0
	D	12.65	15.8	3.0 (Excluding lever)
	H	2.20	3.8 (Excluding lever)	15.0
Terminal (mm)		—	9.0 ±0.5	8.0 ±0.5
Operating force		3mN·m max.	2N max.	1N max.
Rating		0.05W		
Temperature	Operating temperature	−40°C to +85°C	−40°C to +105°C	
	Storage temperature	−40°C to +85°C	−40°C to +105°C	
Total resistance		5kΩ ±30%, 10kΩ ±30%	10kΩ ±30%	4.7kΩ ±30%
Linearity		±2% max.	±2%	±1%
Operating life (cycles min)		1,000,000 (Operation angle ±30°)	10,000	
Environment		RoHS compliant, ELV compliant		

Encoders Selector chart

Types		Encoders		
Product name		7mm Square	10mm Square GS	10mm Square SMD
Part No.		EVQVU	EVQVX	EVQVV
Shape				
Features		Small and low profile	Compact and thin design	Low profile, Shaft hole dimeters of up to 4mm
Vehicle compatible		—	—	●
External dimensions (mm)	W	7.7	9.7	10.6
	D	5.1	6.8	12.65
	H	7 (10)	7 (11.1) /9 (13.1) /11 (15.1)	2.2 (3.4)
Rotation angle		360° (Endless)		
Rotation torque		5mN·m	5mN·m	2mN·m max.
Resolution/Detents		12pulses/24points	12pulses/24points 12pulses/12points	3pulses/None
Rating		1mA 10V DC		
Temperature	Operating temperature	−40°C to +85°C		
	Storage temperature	−40°C to +85°C		−40°C to +85°C
Output signals		Incremental		
Rotation life (cycles min)		100,000	200,000	70,000
Bouncing		15ms max. (at rotational speed 30r/min.)	5ms max.	
Environment		RoHS compliant, ELV compliant		

Types		Encoders	
Product name		11mm Square GS	11mm Square GS Encoders G2
Part No.		EVER/EVEU/EVEV/EVEY	EVED/EVEE
Shape			
Features		Low profile, High reliability, Wide variations	
Vehicle compatible		•	•
External dimensions (mm)	W	12.0	12.0
	D	11.6	12.0
	H	3.5 (SMD) Excluding shaft 4.0 (THD) Excluding shaft	4.5 (Excluding shaft)
Rotation angle		360° (Endless)	
Rotation torque		8mN·m, 12mN·m 10mN·m, 14mN·m	8mN·m, 12mN·m 14mN·m
Resolution/Detents		8pulses/16points, 12pulses/24points 15pulses/30points, 16pulses/32points	8pulses/16points 15pulses/30points
Rating		1mA 10V DC	
Temperature	Operating temperature	-40°C to +85°C	
	Storage temperature	-40°C to +85°C	
Output signals		Incremental	
Rotation life (cycles min)		30,000	
Bouncing		5ms max.	
Environment		RoHS compliant, ELV compliant	

Types		Encoders		
Product name		18mm Square (High Rotational Torque)	18mm Square (Waterproof type)	20/12mm Center Space
Part No.		EVQW	EVQV9	EVQV6
Shape				
Features		Absolute 5 bit available	Water resistant	Center space
Vehicle compatible		●	—	●
External dimensions (mm)	W	18.0	18.8	20.0
	D	18.0	20.0	20.6
	H	8.0 (Excluding shaft)	9.22 (Excluding shaft)	5.0 (Excluding shaft)
Rotation angle		360° (Endless)		
Rotation torque		20mN・m to 100mN・m	50mN・m	7mN・m, 11mN・m 18mN・m
Resolution/Detents		5bit/(Pitch: 10° to 30°)	3bit/ 8positions 4bit/16positions	9pulses/18points 15pulses/30points
Rating		5mA 10V DC	1mA 10V DC	
Temperature	Operating temperature	−40°C to +85°C	−20°C to +60°C	−40°C to +85°C
	Storage temperature	−40°C to +85°C	−40°C to +70°C	−40°C to +85°C
Output signals		Absolute		Phase A and B
Rotation life (cycles min)		15,000	30,000	
Bouncing		5ms max.		
Environment		RoHS compliant, ELV compliant		

Types		Encoders		
Product name		27/17mm Center Space	27/18mm Center Space	38/25mm Center Dpace
Part No.		EVQWF/EVQVP	EVQV5/EVQVT	EVQVN
Shape				
Features		Center space		
Vehicle compatible		•	•	•
External dimensions (mm)	W	28.0	28.0	38.4
	D	29.0	29.0	38.9
	H	6.0 (Excluding rotating parts)	6.0 (Excluding rotating parts)	7.5 (Excluding rotating parts)
Rotation angle		360° (Endless)		
Rotation torque		8mN·m, 12mN·m 20mN·m	9mN·m, 13.5mN·m 18mN·m	12mN·m 20mN·m
Resolution/Detents		9pulses/18points 15pulses/30points		15pulses/30points
Rating		1mA 10V DC		
Temperature	Operating temperature	-40°C to +85°C		
	Storage temperature	-40°C to +85°C		
Output signals		Phase A and B		
Rotation life (cycles min)		30,000		
Bouncing		5ms max.		
Environment		RoHS compliant, ELV compliant		

Types		Encoders
Product name		60/40mm Center Space
Part No.		EVQV0
Shape		
Features		Center space
Vehicle compatible		•
External dimensions (mm)	W	63.8
	D	64.3
	H	11.5 (Excluding rotating parts)
Rotation angle		360° (Endless)
Rotation torque		35mN·m
Resolution/Detents		15pulses/30points
Rating		1mA 10V DC
Temperature	Operating temperature	-40°C to +85°C
	Storage temperature	-40°C to +85°C
Output signals		Phase A and B
Rotation life (cycles min)		30,000
Bouncing		5ms max.
Environment		RoHS compliant, ELV compliant

Push Switches selector chart

Types		Push switches		
Product name		ESB33	ESB30	ESE20
Part No.		ESB33	ESB30	ESE20C/ESE20D
Shape				
Features		Low profile, SMD	Long travel	User friendly tactile feedback
Vehicle compatible		•	•	•
Protective structure		—	—	—
External dimensions (mm)	W × D	9.85 × 8.6	10.9 × 10.0	7.8 × 7.9
	H	12.5	20.5	17.5/12.5
	Mounting height (mm)	6.0	12.5	8.9
Operating force		3.0N	2.0N 3.5N	2.0N 4.0N
Travel (mm)		Lock travel: 1.5 Full travel: 2.3	Lock travel: 2.5 Full travel: 3.5	Full travel: 2.5
Operating Life (cycles min)		10,000 (for standard use) 30,000 (for vehicle)		
Poles and throws		2 poles 2 throws		1 pole 1 throw
Rating		50 μ A 3 V DC to 0.2A 14V DC (Resistive load)		0.01A 5 V DC to 0.1A 14V DC (Resistive load)
Temperature	Operating Temperature	−10 to +70°C, (for standard use) , −40°C to +85°C (for vehicle)		
	Heat resistance	+70°C 96 hours		
	Low temperature resistance	−10°C 96 hours		
	Humidity resistance	+40°C, 90% to 95% RH 96 hours		
Electrical Characteristics	Insulation resistance	Terminal to terminal and terminal to frame: 100M Ω min. (500V DC)		
	Dielectric withstanding voltage	Terminal to terminal and terminal to frame: 500V AC for 1 minute		
Environment		RoHS compliant, ELV compliant		

Detector switches Selector chart

Types		Detector switches		
Product name		ESE58	ESE16	ESE13
Part No.		ESE58	ESE16	ESE13
Shape				
Features		Low profile	Small size	Low profile, Long stroke
Vehicle compatible		—	●	●
Protective structure		—	—	—
External dimensions (mm)	W × D	3.5 × 3.0	2.2 × 3.35	4.2 × 3.6
	H	0.9	1.5	1.2
Operating force		350mN max.	250mN max.	300mN max.
Poles and throws		1 pole 1 throw		
Full travel (pushing distance) (mm)		With boss: 1.5 (1.4) Without boss: 1.25 (1.4)	1.5 (1.0)	ESE13V type: 0.95 (2.1) ESE13H type: 3.05 (2.1)
Operating life (cycles min)		50,000		
Rating		50μ A 3 V DC to 10mA 5 V DC (Resistive load)		
Temperature	Operating temperature	−10°C to +60°C (for standard use)	−10°C to +60°C (for standard use) , −40°C to +85°C (for vehicle)	
	Heat resistance	+70°C 96 hours		
	Low temperature resistance	−25°C 96 hours		
	Humidity resistance	+40°C 90% to 95% RH 96 hours		
Electrical Characteristics	Operating temperature	500MΩ max.		
	Insulation resistance	100MΩ min. (100V DC for 1 minute)		
	Dielectric withstanding voltage	100V AC (50Hz to 60Hz for 1 minute)		
Environment		RoHS compliant, ELV compliant		

Types		Detector switches		
Product name		ESE18	ESE31	ESE22
Part No.		ESE18	ESE31	ESE22
Shape				
Features		Low profile, NO/NC are available	Improved mounting strength	Multi direction detection (horizontal and vertical direction)
Vehicle compatible		•	•	•
Protective structure		—	—	—
External dimensions (mm)	W × D	4.0 × 4.4	5.9 × 5.4	ESE22MH type: 5.7 × 5.0
	H	1.2	1.7	ESE22MH type: 2.1
Operating force		300mN max.	390mN max.	290mN max.
Poles and throws		1 pole 1 throw		
Full travel (pushing distance) (mm)		- Standard travel type with boss: 1.4 (1.5) - without boss: 2.1 (1.5) - Long travel type with boss: 1.4 (2.15) - without boss: 2.1 (2.15)	3.2 (2.15)	ESE22MV type: 4.25 (2.05) ESE22MH type: 1.2 (2.0) ESE22MH5 type: 0.6 (2.0)
Operating life (cycles min)		50,000		
Rating		50μ A 3 V DC to 10mA 5 V DC (Resistive load)		
Temperature	Operating temperature	−10°C to +60°C (for standard use), −40°C to +85°C (for vehicle)		
	Heat resistance	+70°C 96 hours	+85°C 96 hours	+80°C 96 hours
	Low temperature resistance	−25°C 96 hours	−40°C 96 hours	−25°C 96 hours
	Humidity resistance	+40°C 90% to 95% RH 96 hours	+60°C 90% to 95% RH 96 hours	+40°C 90% to 95% RH 96 hours
Electrical Characteristics	Operating temperature	500MΩ max.		
	Insulation resistance	100MΩ min. (100V DC for 1 minute)		
	Dielectric withstanding voltage	100V AC (50Hz to 60Hz 1 minute)		
Environment		RoHS compliant, ELV compliant		

Types		Detector switches		
Product name		ESE11	ESE23	ESE24
Part No.		ESE11	ESE23	ESE24
Shape				
Features		Large selection of mounting types and mounting directions	Bidirectional operation, Midpoint auto-return type	
Vehicle compatible		•	•	•
Protective structure		—	—	—
External dimensions (mm)	W × D	ES11SV type: 5.2 × 3.0	5.0 × 4.4	ESE24SV type: 7.5 × 3.0
	H	ESE11SV type: 4.9	1.5	ESE24SV type: 5.6
Operating force		350mN max.	300mN max.	350mN max.
Poles and throws		1 pole 1 throw	1 pole 2 throws	
Full travel (pushing distance) (mm)		ESE11SV type: 6.1 (2.4) ESE11MV type: 6.1 (2.4) ESE11SH type: 3.0 (2.4) ESE11MH type: 1.7 (2.4) ESE11HS type: 6.3 (2.4)	with boss: 1.0 (1.5) without: 2.2 (1.5)	ESE24SV type: 6.1 (2.45) ESE24SH type: 2.6 (2.45) ESE24MV type: 6.1 (2.45) ESE24MH type: 1.4 (2.45)
Operating life (cycles min)		50,000		
Rating		50μ A 3 V DC to 10mA 5 V DC (Resistive load)		
Temperature	Operating temperature	−10°C to +70°C (for standard use) −40°C to +85°C (for vehicle)	−10°C to +60°C (for standard use) −40°C to +85°C (for vehicle)	−10°C to +70°C (for standard use) −40°C to +85°C (for vehicle)
	Heat resistance	+80°C 96 hours	+70°C 96 hours	+80°C 96 hours
	Low temperature resistance	−25°C 96 hours		
	Humidity resistance	+40°C 90% to 95% RH 96 hours		
Electrical Characteristics	Operating temperature	500MΩ max.		
	Insulation resistance	100MΩ min. (100V DC for 1 minute)		
	Dielectric withstanding voltage	100V AC (50Hz to 60Hz for 1 minute)		
Environment		RoHS compliant, ELV compliant		

■ Application ■

Connectors / Tactile switches

- Next generation smart equipment
- ICT / Social infrastructure equipment
- Measuring / Industrial equipment

AI speaker

Tactile switches

For power on and operation / Volume UP•DOWN

3020
SMD

EVPAW



3529
SMD

EVPAW



4735
SMD

EVQP2



Board

For FPC

Y3B



For FPC/FFC

Y5B



Board

Board-to-FPC
Board-to-Board

P4S



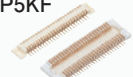
Board-to-Board

P5KS

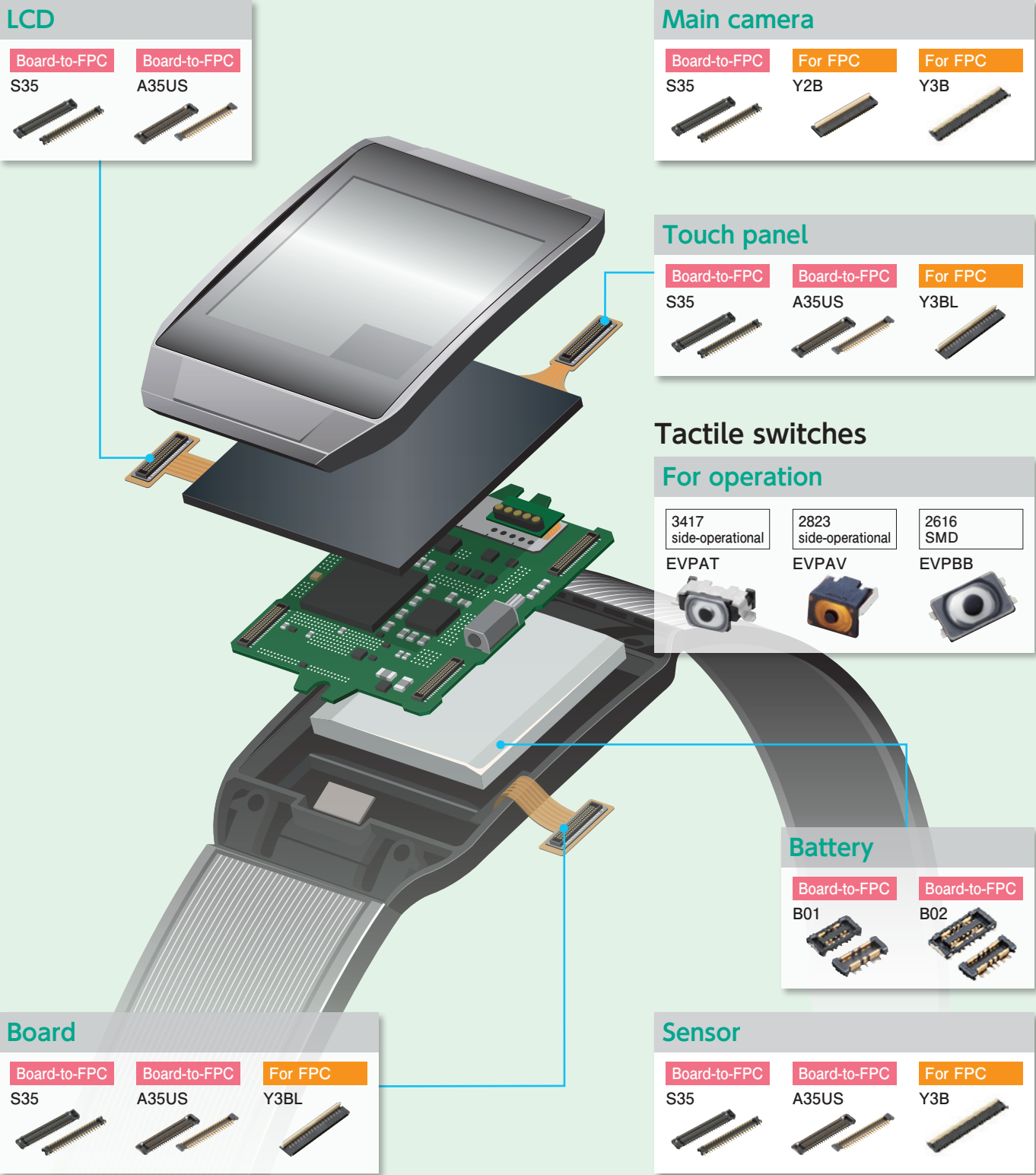


Board-to-FPC
Board-to-Board

P5KF



Wearable watch



Hearable devices

Tactile switches

For Power on and operation

2616
SMD

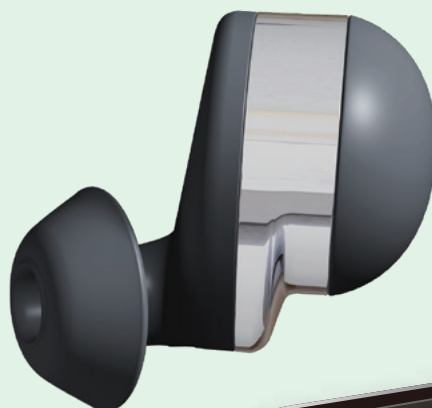
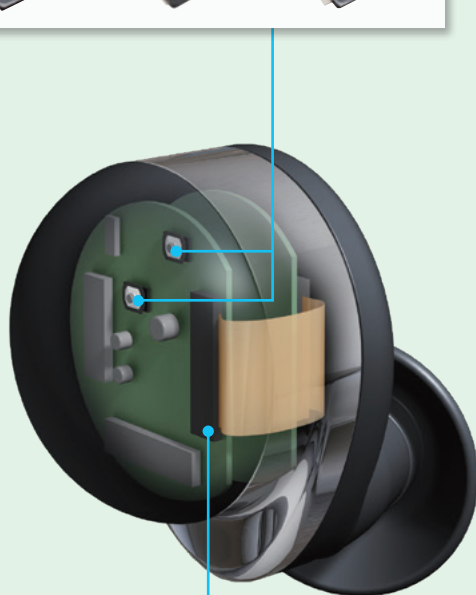
EVPBB

2819
SMD

EVPBL

3020
SMD

EVPAW



Board

Board-to-FPC
S35For FPC
Y2BFor FPC
Y3BFor FPC
Y3BL

Detector switches

Battery cover open-close detection

ESE
16 type

ESE16

ESE
13 type

ESE13



Heated tobacco

Board

Board-to-FPC
A35P

Board-to-FPC
A35UH

Tactile switches

For power on

3529
SMD
EVPAA

4735
SMD
EVQP2

Tactile switches

For operation

3020
SMD
EVPAW

Battery

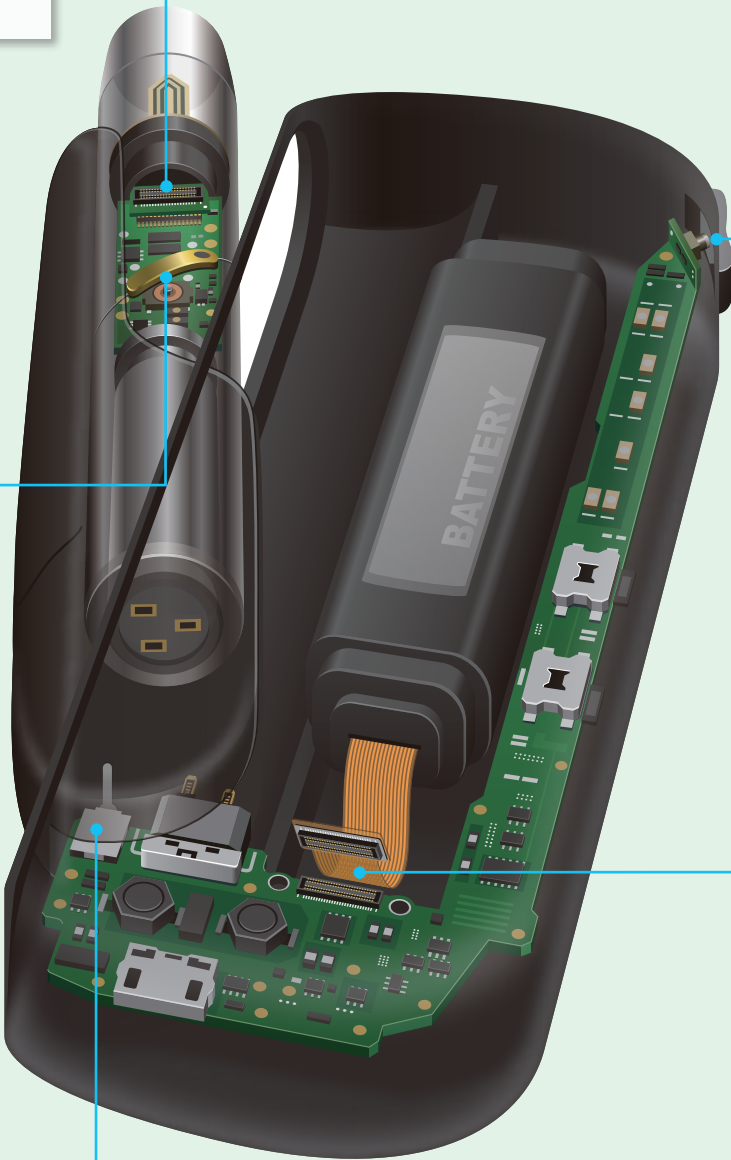
Board-to-FPC
B01

Board-to-FPC
B02

Detector switches

Insertion and open-close detection

ESE
18 type
ESE18



Smart toy

Board

For FPC

Y2B



For FPC

Y3BL



For FPC

Y3B



Battery

Board-to-FPC

B01



Board-to-FPC

B02



Main camera

Board-to-FPC

S35



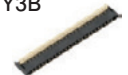
For FPC

Y2B



For FPC

Y3B



Position sensors

Angle detection

10 mm
GS

EVWAE



Tactile switches

For operation

3529
SMD

EVPAA

4735
SMD

EVQP2

6 mm thin type
SMD

EVQQ2



Smartphone

Touch panel

Board-to-FPC
A35US

For FPC
Y3BL

Switch

Board-to-FPC
A35S

For FPC
Y3BL

LCD

For FPC
Y2B

For FPC
Y3BL

Board-to-FPC
S35

Board-to-FPC
A35S

Board-to-FPC
A4S

Tactile switches

For power on and operation / Volume UP•DOWN

2616
SMD
EVPBB

3020
SMD
EVPBW

3417
side-operational
EVPAT

Inductive proximity
sensor package
(light projection side)

AAM11 Series

In-camera / Main camera

Board-to-FPC
A35S

Board-to-FPC
A4S

Board-to-FPC
A35UH

Side switch / Board

Board-to-FPC
S35

Board-to-FPC
A35S

For FPC
Y3B

For FPC
Y3BL

Battery

Board-to-FPC
A35UH

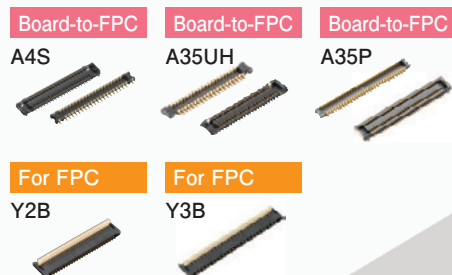
Board-to-FPC
A35P

Board-to-FPC
B01

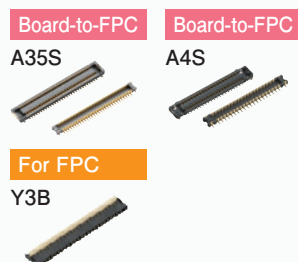
Board-to-FPC
B02

Tablet

Main camera



LCD / Sub camera



Board



Tactile switches

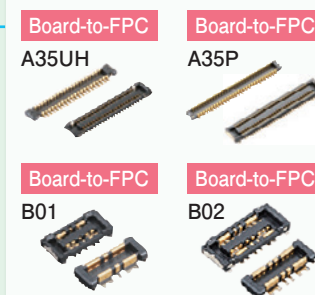
For power on and operation / Volume UP•DOWN



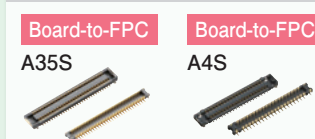
Touch panel / Switch



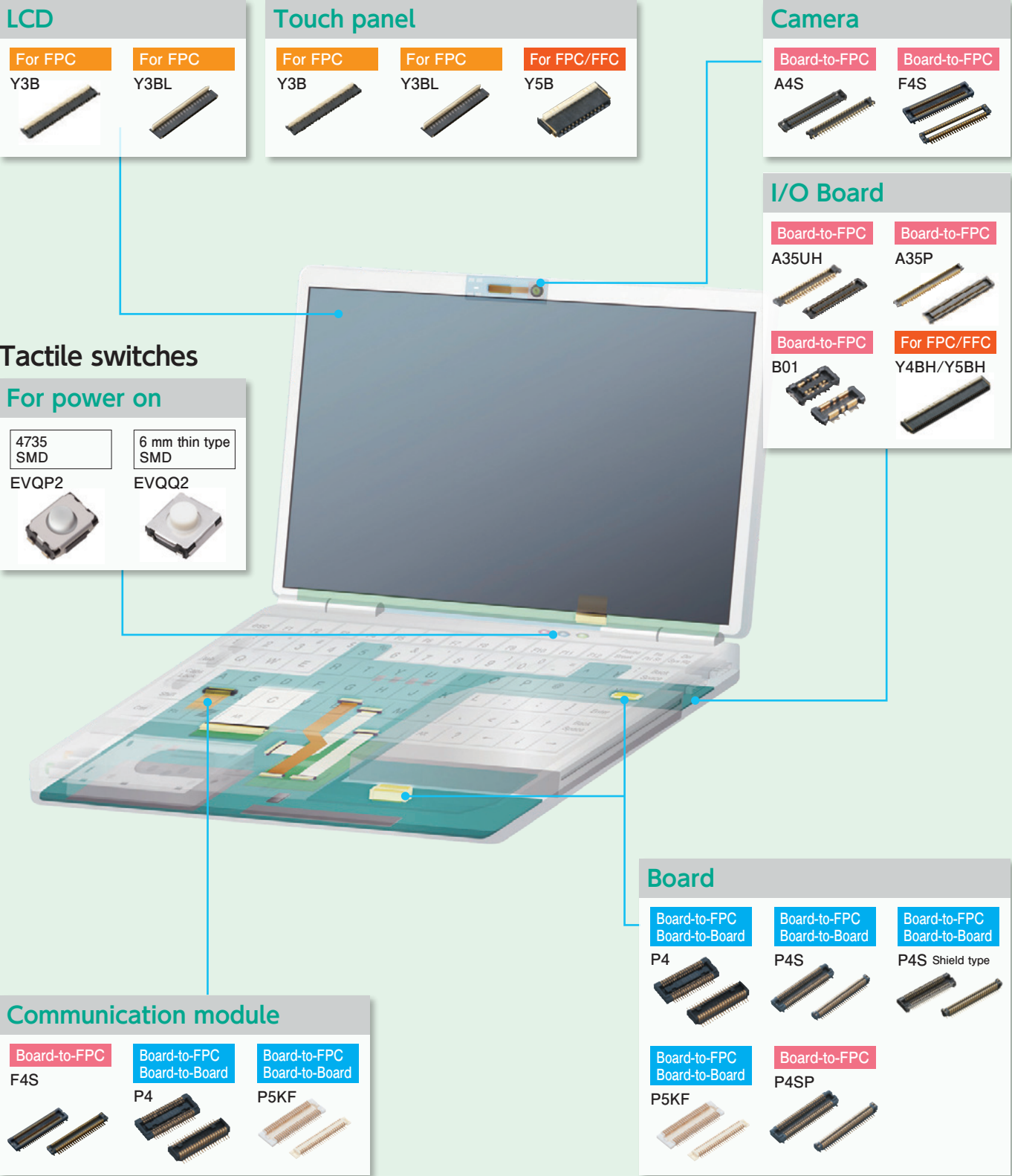
Battery



Communication module



Laptop computer



Touch panel

For FPC

Y3B

For FPC

Y3BL

For FPC/FFC

Y5B

Camera

Board-to-FPC

A4S

Board-to-FPC

F4S

I/O Board

Board-to-FPC

A35UH

Board-to-FPC

A35P

Board-to-FPC

B01

For FPC/FFC

Y4BH/Y5BH

Tactile switches

For power on

4735 SMD

EVQP2

6 mm thin type SMD

EVQQ2

Communication module

Board-to-FPC

F4S

Board-to-FPC Board-to-Board

P4

Board-to-FPC Board-to-Board

P5KF

Board

Board-to-FPC Board-to-Board

P4

Board-to-FPC Board-to-Board

P4S

Board-to-FPC Board-to-Board

P4S Shield type

Board-to-FPC Board-to-Board

P5KF

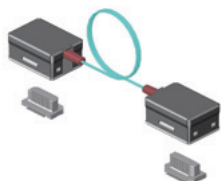
Board-to-FPC

P4SP

Security camera

Board

Active optical connectors



Tactile switches

For power on

4735
SMD

EVQP2


4522
EM

EVPAE


6225
EM

EVQP4



Camera / Board

Board-to-FPC
Board-to-Board

P4


Board-to-FPC
Board-to-Board

P4S


Board-to-FPC
Board-to-Board

P5KF



Camera / Board

For FPC

Y3BW



For FPC

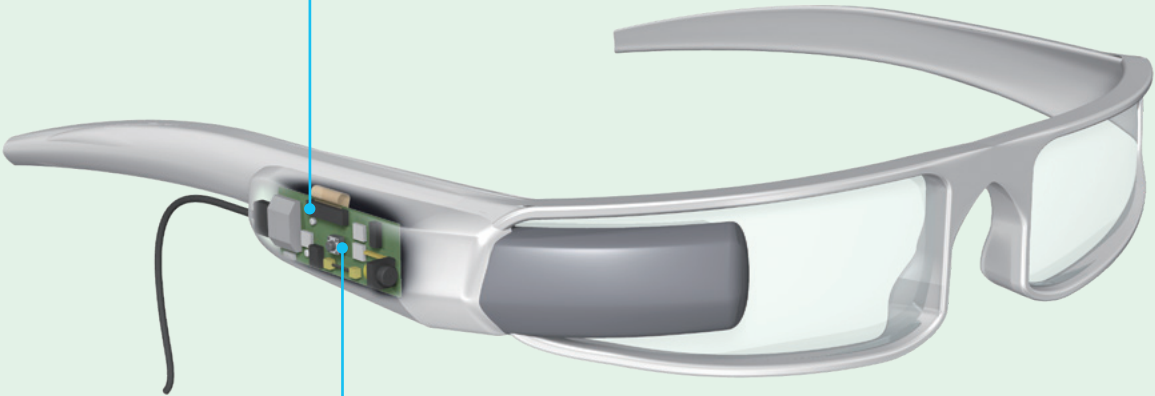
Y5BW



Smart glasses

Board

Board-to-FPC	For FPC	For FPC
S35	Y3B	Y3BW

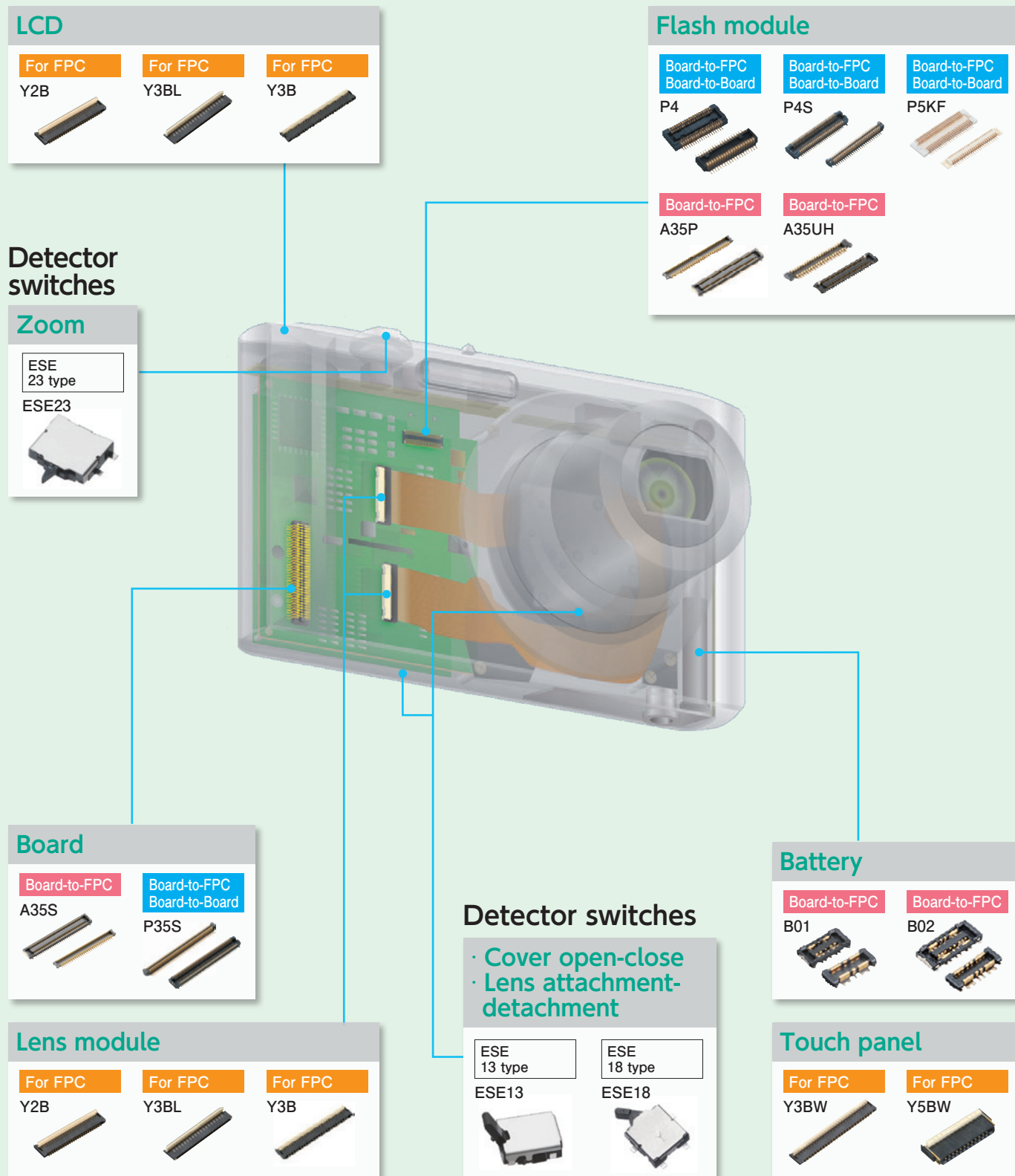


Tactile switches

For power on / For operation

2616 SMD	3020 SMD	3417 side-operational
EVPBB	EVPAW	EVPAT

Digital still camera



Drive recorder

Board

Board-to-FPC
Board-to-Board

P4S



Board-to-Board

P5KS



Board-to-FPC
Board-to-Board

P5KF



Board-to-FPC
Board-to-Board

P4SP



Tactile switches

For operation

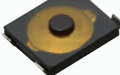
3529
SMD

EVPAA



3026
SMD

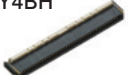
EVPAF



LCD

For FPC

Y4BH



For FPC/FFC

Y5B



For FPC

Y5BW



Modules – Main Board

Board-to-FPC
Board-to-Board

P4S



Board-to-FPC
Board-to-Board

P4S Shield type



Board-to-Board

P5KS



Board-to-FPC
Board-to-Board

P5KF



Board-to-FPC

P4SP



For FPC/FFC

Y4BH/Y5BH



Drone

Board

Board-to-FPC
Board-to-Board

P4S



Board-to-Board

P5KS



Board-to-FPC
Board-to-Board

P5KF



Board-to-FPC

A35UH



Board-to-FPC

A35P



Board-to-FPC
Board-to-Board

P4SP



For FPC/FFC

Y5B



For FPC

Y5BW



Tactile switches

For power on

6 mm Middle travel
SMD

EVPBF



6 mm thin type
SMD

EVQQ2



Detector switches

Battery position detection

ESE
58 type

ESE58



ESE
16 type

ESE16



Battery

Board-to-FPC

A35UH



Board-to-FPC

A35P



For FPC/FFC

Y5B



For FPC

Y5BW



Smart meter

LCD

For FPC

Y3B



For FPC/FFC

Y5B



For FPC

Y5BW



Board

Board-to-FPC
Board-to-Board

P4S



Board-to-Board

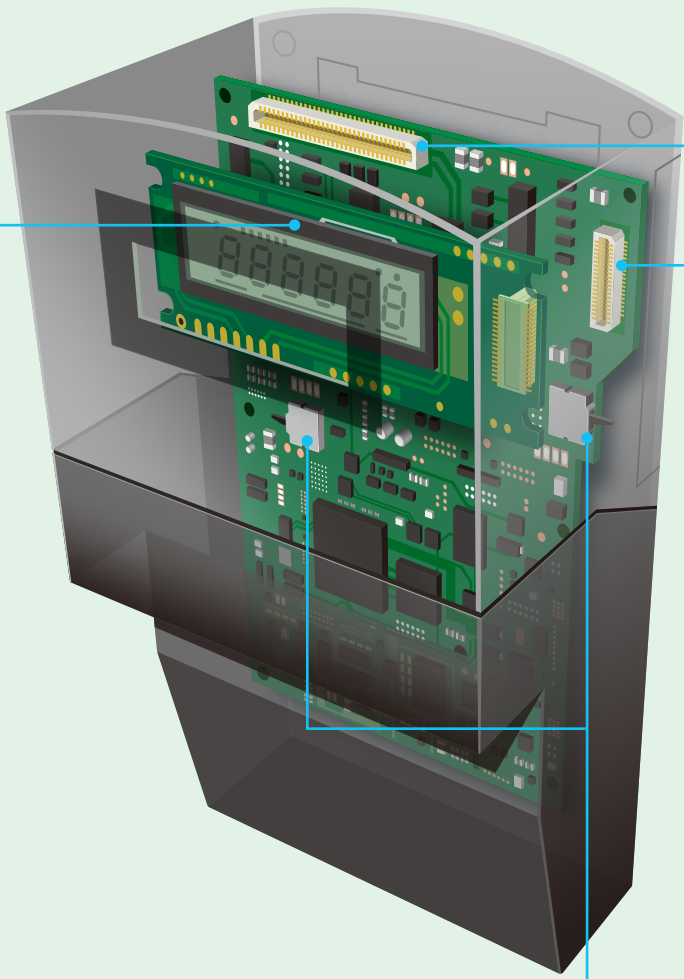
P5KS



Board-to-FPC
Board-to-Board

P5KF





Detector switches

- Cover open-close
- Power shutoff position

ESE
23 type

ESE23



ESE
13 type

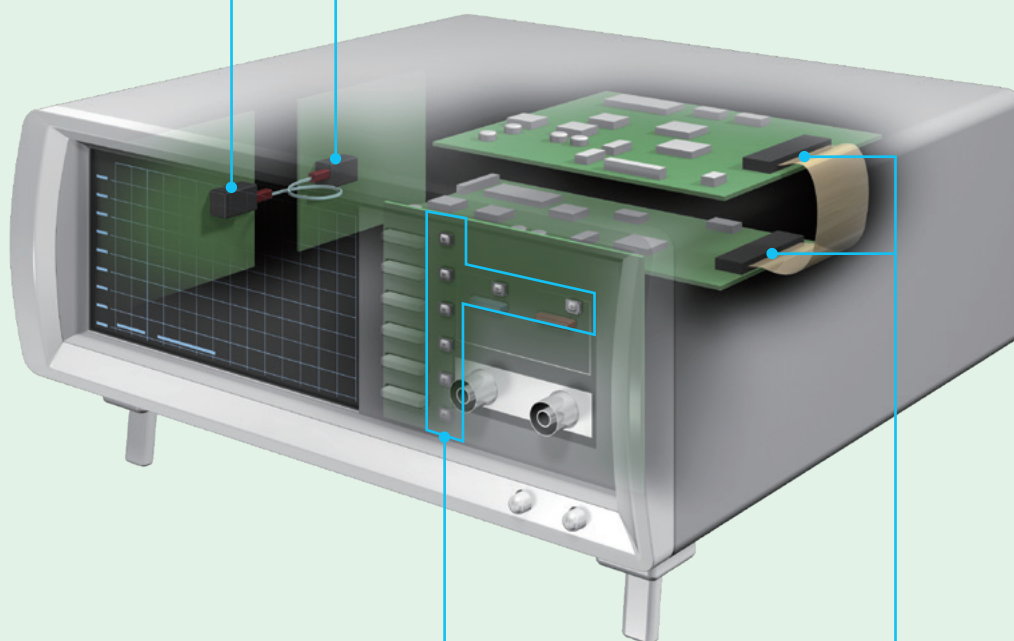
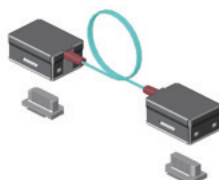
ESE13



Measuring devices

Board

Active optical connectors



Tactile switches

Menu operation

3529
SMD

EVPA4



4735
SMD

EVQP2



6 mm thin type
SMD

EVQQ2



Board

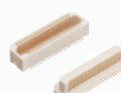
Board-to-FPC
Board-to-Board

P4S



Board-to-Board

P5KS



Board-to-FPC
Board-to-Board

P5KF



Board-to-FPC
Board-to-Board

P4SP



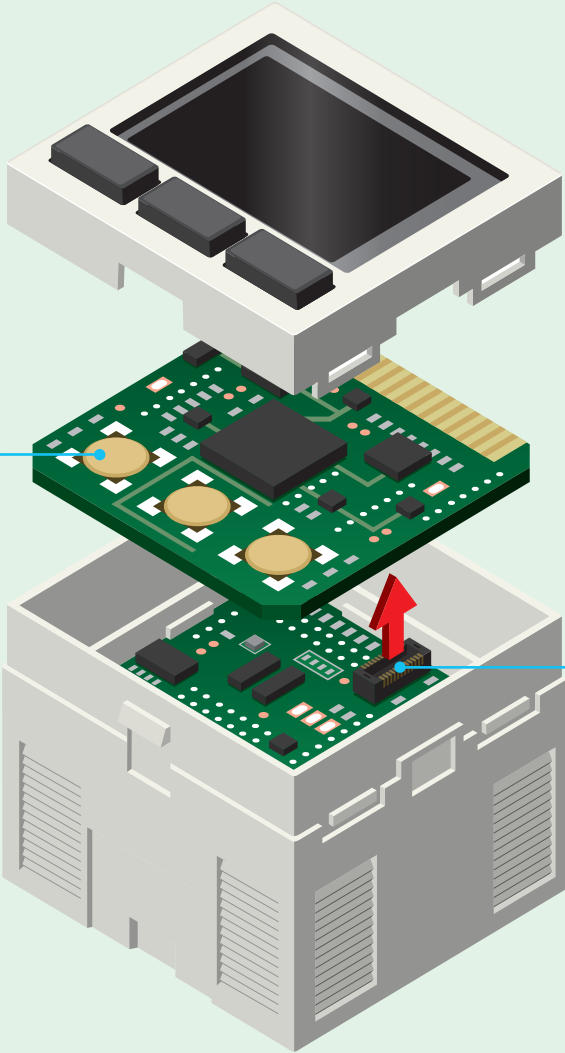
Pressure sensor

Tactile switches

For operation

4 mm
SMD
EVQP6

4.9 mm
SMD
EVQPL



Board

Board-to-FPC Board-to-Board	Board-to-FPC Board-to-Board	Board-to-Board	Board-to-FPC Board-to-Board	Board-to-FPC Board-to-Board
P4	P4S	P5KS	P5KF	P4SP

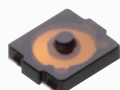
Blood glucose meter

Tactile switches

For operation

3429
SMD

EVPAY

3529
SMD

EVPAA

4735
SMD

EVQP2

4.9mm
SMD

EVQPL



LCD

For FPC

Y3B



For FPC

Y3BW



For FPC/FFC

Y5B



For FPC

Y5BW



Board

Board-to-FPC

F4S

Board-to-FPC
Board-to-Board

P4S

Board-to-FPC
Board-to-Board

P4SP



For FPC

Y3B



For FPC

Y3BW



Handheld terminal

Board

Board-to-FPC F4S	Board-to-FPC Board-to-Board P4S	Board-to-Board P5KS	Board-to-FPC Board-to-Board P5KF	Board-to-FPC Board-to-Board P4SP
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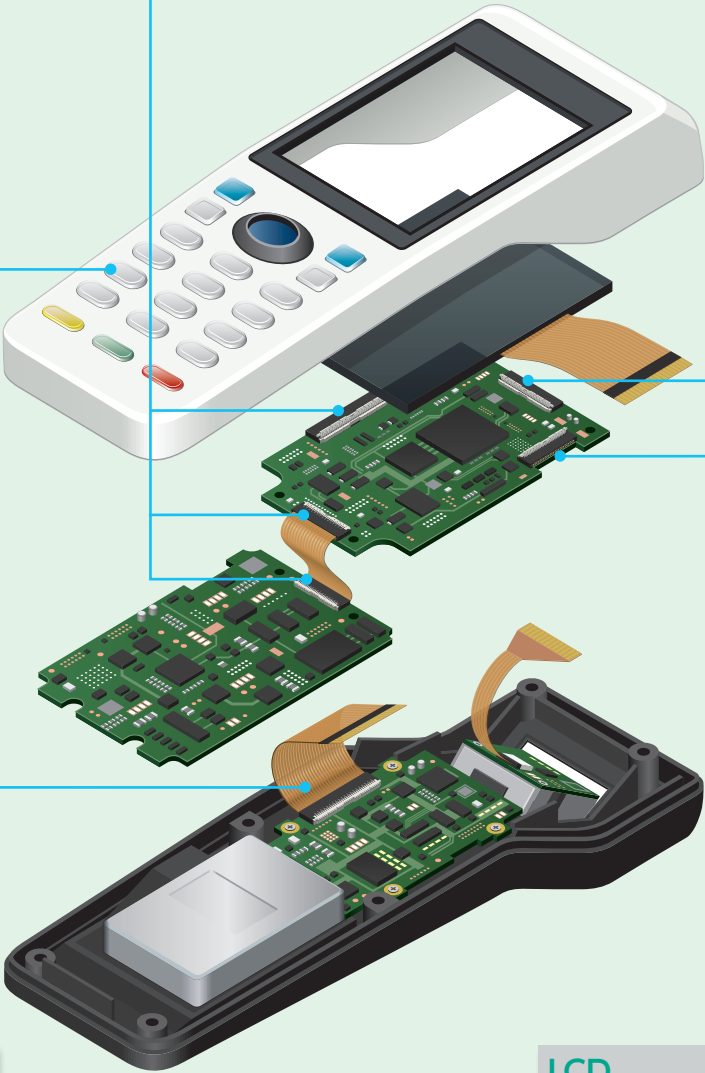
LCD

Board-to-FPC A35P	For FPC/FFC Y5B	For FPC Y5BW
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Tactile sheets

For operation

ESP



Board

For FPC/FFC Y5B	For FPC Y5BW
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LCD

For FPC Y3B	For FPC/FFC Y5B	For FPC Y5BW
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Please contact

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