

# Connectors Tactile Switches

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

**SELECTION GUIDE** 

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#### 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.



Evaluation example of plastic powder adhered on post contact surface





\*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)

Panasonic Corporation Electromechanical Control Business Division industrial.panasonic.com/ac/e/

# 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.



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





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.



\*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

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#### Narrow pitch connectors Selector chart

Terminal pitch		0.35mm pitch							
Types		For Board-to-FPC							
Product name	S	35	A35US						
Part No.	Socket: A Header: A	AXG1*** AXG2***	Socket: AXG7*** Header: AXG8***						
Shape			1						
Features	<ul> <li>Slim: width 1.7mm</li> <li>Low profile constructio 0.6mm/0.8mm</li> <li>"TDUGH CONTRET tough environments de profile.</li> <li>For 0.6mm mated heig proprietary "Fine fitting removability with a nice while being low profile.</li> </ul>	n: mated height " construction withstands espite being slim and low ht, thanks to our g" construction, high e click feel is maintained	<ul> <li>0.6mm mated height with 2.2mm width</li> <li>Proprietary "Fine Fitting Construction"</li> <li>A slim 2.2mm (width) design provides space- saving benefits.</li> <li>"TDUGH CONTRET" construction provides low profile and slim design resistant to various environmental conditions.</li> <li>Soldering terminals enhance mounting strength</li> </ul>						
Mated height	0.6mm	0.8mm	0.6mm						
Dimensions (short width) (Include terminal)	Socket Header	r: 1.7mm r: 1.5mm	Socket: 2.2mm Header: 1.8mm						
100									
90									
80									
70									
NO. OT PINS 60	50 54		50						
	40 44	44	 						
30	30 34	34	30 84						
20	20 24	24	20 24						
10	6 10 12 16	12	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 A	AC/DC	60V AC/DC						
Ambient temperature	_55 to	+85°C	–55 to +85°C						
Insertion and removal life	30ti	mes	30times						

Terminal pitch	0.35mr	n 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	<ul> <li>0.35mm terminal pitch, 2.5mm width and 0.8mm mated height</li> <li>Low profile type with up to 100 pins</li> <li>"TDUGH CONTRET" construction provides high resistance to various environmental.</li> <li>Simple lock structure provides tactile feedback to ensure excellent mating / unmating operation feel.</li> <li>Connectors for inspection available</li> </ul>	<ul> <li><i>"TDUGH CONTRET</i>" construction provides high resistance to various environmental.</li> <li>Pattern wiring is possible on PC board of the connector undersurface</li> </ul>
Mated height	0.8mm	1.5mm
Dimensions (short width) (Include terminal)	Socket: 2.5mm Header: 2.0mm	Socket: 3.6mm Header: 2.35mm
100	100	100
90		
80	80	80
70		70
No. of pins 60	60 64 60 64	60
50		50
40		
20	20 24	
10	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	–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	A	4S	F4S				
Part No.	Socket: A Header: A	\XE5*** \XE6***	Socket: AXT5*** Header: AXT6***				
Shape							
Features	<ul> <li>Simple lock structure p to ensure excellent ma feel.</li> <li>"<i>TDUGH CONTRET</i>" high resistance to vario</li> <li>Connectors for inspect</li> </ul>	rovides tactile feedback ting / unmating operation ' construction provides ous environmental. ion available	<ul> <li><i>"TDUGH CONTRET</i>" construction provides high resistance to various environmental.</li> <li>Simple lock structure provides tactile feedback to ensure excellent mating/unmating operation feel.</li> <li>Connectors for inspection available</li> </ul>				
Mated height	0.8mm	1.0mm	1.0mm				
Dimensions (short width) (Include terminal)	Socket Header	: 2.5mm :: 2.0mm	Socket: 3.6mm Header: 2.6mm				
100							
90							
80	80	80	80				
70		<u>70</u>					
NO. OF PINS 60	<u>60 64</u> 50 54	<b>60</b>	50 54				
40	40 44	40 44	40 42 48				
30	30 32 34 36	30 32	30 34				
20	20 22 24 26 28	20 24 26	20 24 26 28				
10	10 12 14 16 18	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 A	AC/DC	60V AC/DC				
Ambient temperature	–55 to	+85°C	–55 to +85°C				
Insertion and removal life	30ti	mes	50times				

Terminal p	oitch	0.4mm pitch							
Types			For Board-to-FPC/Board-to-Board						
Product na	me		P4						
Part No.				Socket: AXK7*** Header: AXK8***					
Shape									
Features	6	<ul> <li>Mated heights of 1.5, 2.0, 2.5, 3.0 and 3.5mm is available</li> <li>"TDUGH CONTRET" construction provides high resistance to various environmental.</li> <li>Pattern wiring is possible on PC board of the connector undersurface</li> </ul>							
Mated heig	ght	1.5mm	2.0mm	2.5mm	3.0mm	3.5mm			
Dimension (short widtl (Include term	ıs h) inal)			Socket: 5.1mm Header: 3.96mm					
	100	100							
	90								
	80	80	80	80	80				
	70	70	70	70					
No. of pins	60	60	60	60	60				
	50	50	50	50	50				
	40	40	40	40	40	40			
	30								
	∠U 10					20			
Rated ours		<b>V</b>		tact (Max, 54 at total)	nin contacts)				
			0.07/011.001						
Ambient	ye								
	re			–55 to +85°C					
removal lif	e	50times							

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Narrow pitch connectors

Terminal pitch	0.4mm pitch							
Types	For Board-to-FPC/Board-to-Board							
Product name	P4S			P4S shield type				
Part No.	Socke Heade	et: AXT3* er: AXT4*	*** **		Socket: AXT3*** Header: AXT4***			
Shape								
Features	<ul> <li>Mated heights of 1.5, 2.0, 2.5 and 3.0mm is available</li> <li>"TDUGH CONTRET" construction provides high resistance to various environmental.</li> <li>Pattern wiring is possible on PC board of the connector undersurface</li> <li>Connectors for inspection available</li> <li>Shield type is also available.</li> </ul>			m is ovides al. of the	<ul> <li>Radiation noise is reduced thanks to better grounding with multi-point ground construction and covering using a shield plate.</li> <li>"TDUGH CONTRET" construction provides high resistance to various environmental.</li> <li>Previous standard product (P4S) can also be used on the header side</li> <li>Freedom of design is increased, because it has the same foot pattern as the previous standard product (P4S).</li> </ul>			
Mated height	1.5mm	2.0mm	2.5mm	3.0mm	1.5mm			
Dimensions (short width) (Include terminal)	Soci Head	ket: 3.6mm der: 2.35m	n m	1	Socket: 3.8mm Header: 2.35mm			
100	100	100	100	100				
90	90	90						
80	80		80	80				
/U			60	60	<u>(4</u>			
NO. OI PINS 60	50 54				50			
40	40 44 46	40	40		<b>_</b>			
30	30 32 34 36 38	30	30	30	38			
20	20 22 24 26	20	20	20				
10				14				
Rated current	0.3A/pin contact (Ma	ax. 5A at to	otal pin co	ntacts)	0.3A/pin contact (Max. 5A at total pin contacts)			
Rated voltage	60	V AC/DC			60V AC/DC			
Ambient temperature	-55	to +85°C*	1		–55 to +85°C			
Insertion and removal life	5	50times			50times			

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

Terminal pit	tch	0.5mm pitch						
Types		For Board-t	o-FPC/Board-	-to-Board	For Board-to-Board			
Product nam	ıe		P5KF	P	5 <b>K</b>			
Part No.		So He	ocket: AXK5F*** ader: AXK6F***		Socket Header	:: AXK5*** :: AXK6***		
Shape		M		Constanting of the second seco				
Features		<ul> <li>Wide lineup for p</li> <li>"TOUGH CONT resistance to var</li> <li>Simple lock struct ensure excellent</li> <li>Effective mating</li> </ul>	in counts <b>FLT</b> " construction   ious environmental. cture provides tactile mating / unmating o length 0.55mm	<ul> <li>"TDUGH CONTRIC provides high resista environmental.</li> <li>The effective mating is enough space for</li> </ul>	<b>7</b> " construction ance to various length is long and there mating.			
Mated heigh	nt	1.5mm	2.0mm	2.5mm	3.0mm	3.5mm		
Dimensions (short width) (Include termin	al)		Socket: 5.8mm Header: 3.3mm		Socke Heade	t: 5.8mm r: 4.6mm		
1	00		100	100	100 120	100 120		
	90							
	80	80	80	80	80	80		
	70	70	70	70	70	70		
No. of pins	60	60	60	60	60	60		
	50	50	50	50	50	50		
	40	40	40	40	40	40		
	30				30	30 34		
	20				20 22	20 22		
	10							
Rated currer	nt	0.5A/pin contac	t (Max. 10A at total p	oin contacts)	0.5A/pin contact (Max.	10A at total pin contacts)		
Rated voltag	е		60V AC/DC		60V /	AC/DC		
Ambient temperature			–55 to +85°C		–55 to	o +85°C		
Insertion and removal life	ł		50times		50t	imes		

Termir	nal nitch	0.5mm nitch								
Ту	pes		For Board-to-Board							
Produ	ct name	P5KS								
Par	rt No.		Socket: AXK5S*** Header: AXK6S***							
Sh	nape									
Fea	atures	<ul> <li>Wide range of mated heights (4.0mm, 4.5mm, 5.0mm, 5.5mm, 6.0mm, 6.5mm, 7.0mm, 8.0mm, ar 9.0mm) is available</li> <li>"TOUGH CONTRET" construction provides high resistance to various environmental.</li> <li>The effective mating length is long and there is enough space for mating.</li> </ul>					nm, and			
Mateo	d height	4.0mm	4.5mm	5.0mm	5.5mm	6.0mm	6.5mm	7.0mm	8.0mm	9.0mm
Dime (shor (Include	ensions t width) e terminal)		1		S H	ocket: 5.4m eader: 5.0m	m m	I	1	1
	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
No. of	pins 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	Power terminal					—				
current	Signal terminal			0.5A/p	oin contact (	Max. 16A at	total pin co	ntacts)		
Rated	Rated voltage 60V AC/DC									
Am temp	ibient erature					55 to +85°C	*1			
Insert remo	tion and oval 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

Termir	nal pitch	0.35mm pitch						
Ту	rpes	Connector for	Connector for Board-to-FPC					
Product name		S35H	A35UH					
Part No.		Socket: AXF5B**12 Header: AXF6B**12	Socket: AXF5D**12 Header: AXF6D**12					
Shape		Land and Land	The second s					
Features		<ul> <li>Small size (0.6mm Mated Height with 1.7mm width)</li> <li>Increased robustness with metal shell construction on the flange</li> <li>Supports 5.4A power terminal for reduced number of power line pins</li> <li>"TDUGH CONTRET" construction provides high resistance to various environmental.</li> </ul>	<ul> <li>Supports 5A power terminals</li> <li>With power terminal, so number of pins can be reduced</li> <li>"TDUGH CONTRET" construction provides high resistance to various environmental.</li> </ul>					
Mateo	d height	0.6mm	0.6mm					
Dime (shor (Include	ensions t width) e terminal)	Socket: 1.7mm Header: 1.5mm	Socket: 2.2mm Header: 1.8mm					
	100							
	90							
	80							
	70		70					
No. of	60 pins	60	60					
	50	<b>59</b>	50 54					
	40							
	20	<b>y</b>	20 24					
20			10 12 16					
Rated	Power terminal	5.4A/pin contact	5A/pin contact					
current	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					
Arr	nbient erature	–55 to +85°C	–55 to +85°C					
Inser	tion and oval life	30times	30times					

Termi	nal pitch	0.35mm pitch	0.4mm pitch					
Ту	/pes	Connector for Board-to-FPC						
Produ	ict name	A35P	P4SP					
Pa	rt No.	Socket: AXF5A*** Header: AXF6A***	So He	ocket: AXF5G* eader: AXF6G*	*12 *12			
Sł	nape		A THE REAL PROPERTY OF THE REA					
Fea	atures	<ul> <li>High current rating 5A (using 1.25A/pin × 8pins)</li> <li>By supporting high current rating, small number of pins design is available.</li> <li>Increased design flexibility (pin layout, high current multiple lines)</li> <li>Supports 5A power terminals</li> <li>With power terminal, so number of pins can be reduced</li> <li>"TDUGH CONTRET" construction provides high resistance to various environmental.</li> </ul>	<ul> <li>Capable of MAX. 5A for power</li> <li>Rated current 1A/pin (for power) 0.5A/pin (for signal), Total: Max. 12A</li> <li>Any terminal can be applied for power terminal</li> <li>Low contact resistance: Max. 40mΩ</li> <li>High speed transmission of 10Gbps is available</li> <li>Supports 5A power terminals</li> <li>With power terminal, so number of pins can be reduced</li> <li>"TDUGH CONTRET" construction provides high resistance to various environmental.</li> </ul>					
Mate	d height	0.8mm	1.5mm	2.5mm	3.0mm			
Dime (shor (Include	ensions rt width) e terminal)	Socket: 2.5mm Header: 2.0mm	Socket: 3.6mm Header: 2.35mm					
	100	100	100	100	100			
	90		90					
	80	80	80	80	80			
	70	70	70					
No. of	60	60 64	60	60	60			
INO. 01	50 pins	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					
	Power terminal	_		_				
Rated current	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 contac For signal contact (12A or less at tot	t: 1.0A/pin contact t: 0.3A/pin contact al pin contacts)	× 10pin contacts			
Rated	l voltage	30V AC/DC		30V AC/DC				
An temp	nbient berature	−55 to +85°C		–55 to +85°C				
Inser remo	tion and oval life	30times		50times				

Termir	nal pitch	0.8mm pitch							
Ту	pes	Connector for Board-to-FPC							
Product name		B01	<b>B02</b>						
Par	rt No.	Socket: AXF36*500 Header: AXF46*500	Socket: AXF38*700 Header: AXF48*700						
Sł	nape	Contraction of the second	and the second sec						
Features		<ul> <li>High current rating: 6A (3A/pin × 4pins)</li> <li>High removal force while miniature and low profile</li> </ul>	<ul> <li>High current rating: 10A (5A/pin × 4pins)</li> <li>4 signal pin type for wide range of control applications</li> <li>High removal force while miniature and low profile</li> </ul>						
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						
	100								
	90								
	80								
	70								
No. of	60 pins								
	50								
	40								
	30								
	20 10	6	ß						
	Power	2A/bin contact							
Rated	terminal	SAIpin contact							
current	Signal terminal	0.3A/pin contact	0.3A/pin contact						
Rated	voltage	30V AC/DC	30V AC/DC						
Arr temp	bient erature	–55 to +85°C	–55 to +85°C						
Inser remo	tion and oval 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	<ul> <li>Slim (width: 3.15mm) and low profile design</li> <li>Double top and bottom contacts construction</li> <li>Time and effort can be reduced by delivering with lever open.</li> <li>Wiring patterns can be placed under the connector</li> <li>Ni barrier with high resistance to solder creepage.</li> </ul>	<ul> <li>Low profile (0.6mm) and slim design</li> <li>Compatible with FPC 0.2mm thickness</li> <li>High durability assured with proprietary soldering terminals</li> <li>Time and effort can be reduced by delivering with lever open.</li> <li>Wiring patterns can be placed under the connector</li> <li>Ni barrier with high resistance to solder creepage.</li> </ul>
Lock structure	Back lock	Back lock
Compatibility with	FPC	FPC
Applicable FPC	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
70		
60	61	
50	51	51
40 No. of pips	41	45
30	31	31 39
20	23	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	n pitch				
Product name	Y3B	Y3BW				
Part No.	AYF33**35	AYF33**65				
Shape						
Features	<ul> <li>Double top and bottom contacts construction</li> <li>Wiring patterns can be placed under the connector</li> <li>Lock hold type with excellent holding force is available (Y3BW)</li> <li>1. With a structure that temporarily holds the FPC</li> <li>2. Higher FPC holding force</li> <li>Ni barrier with high resistance to solder creepage</li> </ul>					
Lock structure		Back lock				
Compatibility with FPC/FFC	FF	PC				
Applicable FPC thickness	0.2	mm				
Contact structure	Top and bottom	double contacts				
Terminal pitch	0.6	mm				
Mounting heigh	t 0.9	mm				
Dimensions (width)	3.15mm (Inc 2.95	luding lever) 5mm				
70	71					
60	61					
50	<b>61</b>	51				
4( No. of pins						
2(		25				
1(		<u> </u>				
2 to 9	789					
Rated current	0.2A/pin	contact				
Rated voltage	50V A	.C/DC				
Ambient temperature	-55 to	+85°C				
Insertion and removal life	20ti	mes				

Contact pitch	0.4mm pitch	0.5mm pitch
Product name	Y4BH	Y5BH
Part No.	AYF4***35	AYF56**35
Shape		
Features	<ul> <li>Differential impedance matching (100, 90 and 85Ω) compliant with various high-speed transmission standards</li> <li>0.4mm pitch, 1.0mm height and double top and bottom contact construction</li> <li>Supports USB 3.1 high-speed transmission standard (transmission speed: up to 10Gbps)*</li> <li>Time and effort can be reduced by delivering with lever open</li></ul>	<ul> <li>Differential impedance matching (90Ω, 85Ω) compliant with various high-speed transmission standards</li> <li>0.5mm pitch, 1.8mm height and double top and bottom contact construction</li> <li>Supports USB 3.1 high-speed transmission standard (transmission speed: up to 10Gbps)*</li> <li>Contributes to customer cost savings by using impedance matching FFC.</li> <li>*Compared to use of FPC and micro coaxial connector.</li> </ul>
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)	5.5mm (Including lever)
	0.21111	
60		
50	50	
40 No. of pins	40	40
30		
20		
10		
2 to 9	0.24/nin contact	0.4.V.nin contact
Ambient	50V AC/DC	50V AC/DC
temperature	_55 to +85°C	_55 to +85°C
removal life	20times	20times

Contact pitch	0.5mm pitch				
Product name	Y5B Y5BW				
Part No.	AYF53**35	AYF53**65T			
Shape					
Features	<ul> <li>Double top and bottom contacts construction</li> <li>Wiring patterns can be placed under the connector</li> <li>Lock hold type (Y5BW) with excellent holding force is available (Y5BW: support only FPC)</li> <li>1. With a structure that temporarily holds the FPC</li> <li>2. Higher FPC holding force</li> <li>*V-by-One®HS: An interface for the next-generation high-speed signals developed by THine Electronics, Inc.</li> <li>V-by-One® is a registered trademark of THine Electronics, Inc.</li> </ul>				
Lock structure		Back lock			
Compatibility with FPC/FFC	FPC/FFC	FPC			
Applicable FPC thickness	0.3	mm			
Contact structure	Top and bottom	double contacts			
Terminal pitch	0.5	mm			
Mounting height	1.01	mm			
Dimensions	3.7mm (Incl	uding lever)			
	5.2				
60					
50	50				
40 No of pips	40 42	40 48			
30	30 32 34	30 32 38			
20	24 28	22 26 28			
10	10 12 14 16				
2 to 9					
Rated current	0.5A/pin	contact			
Rated voltage	50V A	.C/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.

Туре	1 channel-Bi-direction	2 channel-Uni-direction		
Product name	Active optical co	nnectors V series		
Part No.	Integrated cable and plug: AYG4V1****M* Receptacle: AXK6S20447M*	Integrated cable and plug: AYG5V1****M* Receptacle: AXK6S20447M*		
Shape				
Features	<ul> <li>Plug is equipped with electrical / optical conversio</li> <li>Noise reduction of high speed signal and electrica</li> <li>High speed and wide data rate transmission possi</li> <li>Lineup includes 1 channel-Bi-direction and 2 char 1 channel-Bi-direction: 20 Mbps to Max. 6 Gbps 2 channel-Uni-direction: 20 Mbps to Max. 16 Gbps (20 Mbps to 8 Gbps/ch)</li> </ul>	n function. I isolation easily achieved. ble nnel-Uni-direction s		
Transmission rate	20Mbps to 6Gbps/ch	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			



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# Switch series introduction Tactile Detector Push Switches

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



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









Horizontal type

Push SW

Vehicle



Top push type

Side push type

Vertical type

Tactile SW





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

#### Feeling curve









#### Appliance

#### 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.





Complete waterproof structure by laser processing of cover film.





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.



ICT

Industry and O.A.

Wearable

#### Tactile switches Selector chart

		Tactile switches			
Тур	es	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	W×D	2.6 × 1.6	2.8 × 1.9	3.0 × 2.0	
(mm)	Н	0.5/0.53/0.55	0.53/0.57	0.6	
		0.7N·1.0N·1.6N	1.6N	1.6N	
		2.4N	2.25N	2.4N	
Operatin	g force			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	
Operati (cycles	ng life s 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	
Rati	ng	10μ A 2V DC to 20mA 15V DC (Resistive load)			
	Operating temperature		-40°C to +85°C		
Iemperature	Storage temperature (Taping)	–20°C to +60°C			
	Contact resistance		500m $\Omega$ max.		
Characteristics	Insulation resistance		$50M\Omega$ 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 profi le and small size			
Vehicle compatible		—	_	_	
Protective	structure	—	_	IP67	
External	W × D	3.0 × 2.6	3.0 × 2.6	3.4 × 2.9	
(mm)	Н	0.65/0.7	0.58	0.7	
Operating force		1.3N·1.6N 2.4N 3.4N	1.8N	1.6N 2.4N	
Travel	(mm)	0.15	0.13	0.15	
Operati (cycles	ng life s min)	1.3N, 1.6N, 3.4N: 100,000 1.6N (Low profile), 2.4N: 500,000	300,000	500,000	
Rati	ing	10μ A 2V DC to 20mA 15V DC (Resistive load)			
	Operating temperature		–40°C to +85°C		
remperature	Storage temperature (Taping)		–20°C to +60°C		
	Contact resistance		500m $\Omega$ max.		
Characteristics	Insulation resistance		50M $\Omega$ min. (at 100V DC)		
	Dielectric withstanding voltage		250V AC for 1 minute		
	Bouncing		10ms max. (ON, OFF)		
Environment		RoHS compliant, ELV compliant			

Turnee		Tactile switches			
тур	es	Top push type			
Product name		3.5mm × 2.9mm SMD 4.7mm × 3.5mm SMD		: 3.5mm ID	
Part	No.	EVPAA	EVQP2/EVQ	P9/EVQ3P2	
Shape					
Features		High operating force	High operating force, Short travel	High operating force, Middle travel	
Vehicle co	mpatible	•	•	•	
Protective	structure	_	_	_	
External	W × D	3.5 × 2.9	4.7 × 3.5	4.7 × 3.5	
dimensions (mm)	Н	1.7	2.1/2.5	2.5	
	1	1.0N·1.6N	1.0N·1.6N		
		2.4N	2.4N	2.5N	
Operatin	ig force	3.5N	3.5N	3.5N	
		5.0N	4.0N		
		7.0N	5.0N	5.0N	
Travel	(mm)	0.15	0.25	0.7	
Operati (cycles	ng life s 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	
Rati	ng	10μ A 2V DC to 20mA 15V DC (Resistive load)			
<b>T</b>	Operating temperature		–40°C to +85°C		
Temperature	Storage temperature (Taping)		–20°C to +60°C		
	Contact resistance		$100m\Omega$ max.		
Characteristics	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			

Times		Tactile switches			
тур	es	Top push type			
Product name		4mm Square SMD			
Part	No.	EVQP6	EVQ7P6/EVQ6P6/EVQ9P6	EVQP6	
Shape					
Featu	ures		Low profile, Wide variations		
Vehicle co	ompatible	_	_	_	
Protective	structure	_	_	_	
External	W × D	4.1 × 4.1	4.1 × 4.1	4.1 × 4.1	
dimensions (mm)	Н	0.35	0.43	0.58	
I		1.6N	1.0N·1.6N	1.6N	
		2.4N	2.4N	2.4N	
Operatin	ig force				
Travel	(mm)	0.2	1.0N: 0.15 1.6N, 2.4N: 0.2	0.2	
Operati (cycles	ng life s 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	
Rati	ing	10μ A 2V DC to 20mA 15V DC (Resistive load)			
	Operating temperature		–20°C to +70°C		
Iemperature	Storage temperature (Taping)	–20°C to +60°C			
	Contact resistance		500m $\Omega$ max.		
Characteristics	Insulation resistance		50MΩ min. (at 100V DC)		
	Dielectric withstanding voltage		100V AC for 1 minute		
	Bouncing	3	ms max. (ON) /10ms max. (OFF	· · · · · · · · · · · · · · · · · · ·	
Environment RoHS compliant, El		RoHS compliant, ELV compliant			

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		Tactile switches			
Тур	es	Top push type			
Product name		4.9mm × 4.0mm SMD	4.9mm Square SMD		
Part	No.	EVPBK	EVQPL/EVQ5PL	EVQPL/EVQPT/EVQ3PL	
Shape					
Featu	ures	Low profile	Low profile, Lor	ng operating life	
Vehicle co	ompatible		•	•	
Protective	structure	IP67	_	_	
External	W × D	4.9 × 4.0	4.9 × 4.9	4.9 × 4.9	
dimensions (mm)	Н	0.63	0.8	1.5	
Operating force		2.5N	1.6N 2.6N 3.5N	1.0N·1.6N 2.6N 3.5N	
Travel (mm)		0.23	0.25	0.25	
Operati (cycles	ng life s min)	1,000,000	1.0N, 1.6N: 500,000 2.6N, 3.5N: 200,000		
Rati	ng	10μ A 2V DC to 20mA 15V DC (Resistive load)			
Townswature	Operating temperature	−40°C to +85°C	−20°C t	o +70°C	
	Storage temperature (Taping)		−20°C to +60°C		
	Contact resistance	500mΩ max.	50mΩ	e max.	
Characteristics	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			

-		Tactile switches				
тур	es	Top push type				
Product name		6.0mm × 3.5mm SMD	m × 3.5mm 6mm Square Thin Type SMD SMD			
Part	No.	EVQPE1/EVQPN/EVQ5P	EVQQ2	EVQP0		
Shape		C		Core		
Featu	ures	SMD	Long operating life	Over travel		
Vehicle co	mpatible	_	_	_		
Protective	structure	_	_	_		
External	W × D	6.0 × 3.5	6.5 × 6.0	6.5 × 6.0		
dimensions (mm)	Н	4.3/5.0	2.0/2.5/3.1	2.5		
Operating force		1.0N·1.6N 2.4N	0.5N 0.8N·1.0N·1.3N·1.6N 2.6N 3.5N	0.6N 1.0N		
Travel	(mm)	0.25	0.5N, 0.8N, 1.0N: 0.20 1.3N, 1.6N, 2.6N, 3.5N: 0.25	0.3		
Operati (cycles	ng life s 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		
Rati	ing	10μ A 2V DC to 50mA 12V DC (Resistive load)	10µ A 2V DC to 20mA 15	5V DC (Resistive load)		
Tomporatura	Operating temperature	−30°C to +85°C	−40°C to	+85°C		
	Storage temperature (Taping)		-20°C to +60°C			
	Contact resistance		100mΩ max.			
Characteristics	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				

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Times		Tactile switches			
тур	es	Top push type			
Product	t 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					
Featu	ures	Long operating life	Middle travel	Long travel	
Vehicle co	ompatible	_	•	•	
Protective	structure	_	_	_	
External	W × D	6.0 × 6.0	6.0 × 6.0	6.1 × 6.0	
(mm)	Н	3.5	4.0	5.0	
				1.6N	
		2.0N		2.0N·2.2N·2.5N	
Operatir	ng force	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	
Rati	ing	10μ A 2V DC to 20mA 15V DC (Resistive load)		10μ A 2V DC to 50mA 12V DC (Resistive load)	
Tomporaturo	Operating temperature	−40°C to +85°C	−40°C to +90°C	−40°C to +85°C	
Temperature	Storage temperature (Taping)		-20°C to +60°C		
	Contact resistance	500m!	Ω max.	100mΩ max.	
Characteristics	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			

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Turnee		Tactile switches			
тур	es	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				E.	
Featu	ures	Long travel	Long travel High operating force	Center space structure, Long travel, High operating force	
Vehicle co	ompatible	•	•	•	
Protective	structure	—	—	—	
External dimensions (mm)	W × D	6.1 × 6.0	8.5 × 8.5	9.8 × 9.8	
	Н	5.0	6.5	4.7	
		1.6N			
		2.0N·2.2N·2.5N			
Operatin	ig force	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		
Operati (cycles	ng life s min)	1.6N, 2.0N, 2.2N, 2.5N: 100,000 3.0N: 200,000 3.5N: 100,000 Operating force narrow tolerence 3.0N, 3.6N: 300,000	100,000		
Rati	ing	10µ A 2 V DC to 50mA 12V DC (Resistive load)			
Tomporatura	Operating temperature	−40°C to +90°C	−40°C t	o +85°C	
	Storage temperature (Taping)		-20°C to +60°C		
	Contact resistance		100mΩ max.		
Characteristics	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			

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Times		Tactile switches			
Тур	es	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		Ś		AT A	
Feat	ures		Low profile	·	
Vehicle co	mpatible		_		
Protective	structure		IP67		
External	W × D	2.8 × 2.3	3.4 × 1.73	3.5 × 2.9	
dimensions (mm)	Н	1.95	1.65	1.35	
	<u> </u>	1.6N	1.0N·1.6N	1.6N	
			2.4N	2.2N	
Operatin	ig force				
Travel	(mm)	0.13	0.11	0.2	
Operating life (cycles min) 300,000 500,0		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)	
Tomporaturo	Operating temperature	−40°C t	o +85°C	−20°C to +70°C	
Temperature	Storage temperature (Taping)	−20°C t	o +60°C	−20°C to +60°C	
	Contact resistance		500m $\Omega$ max.		
Characteristics	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.	EVPAN	EVPAK	EVPAE
Sha	pe	a since		
Featu	ures	Low profile, Half Dive	High soldering strength against operating force	Edge Mount, High soldering strength against operating force
Vehicle co	ompatible	_	_	•
Protective	structure	_	IP67	_
External	W × D	3.5 × 2.9	3.9 × 2.05	4.5 × 2.25
dimensions (mm)	Н	1.2	1.6	2.9
I		1.6N	1.6N	1.6N
		2.2N		2.4N
Operatin	ig force			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
Rati	ing	10µ A 2 V DC to 50mA 12V DC (Resistive load)	10µ A 2 V DC to 20mA 15V DC (F	Resistive load)
Tomporaturo	Operating temperature	−20°C to +70°C	−40°C t	o +85°C
Storage temperature (Taping)				
	Contact resistance	500mΩ max.	$100m\Omega$ max.	1,000mΩ max.
Characteristics	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		

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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	EVO	QP4
Sha	Shape Shape			
Featu	ures	Low profile	Edge Mount, High soldering strength against operating force	Middle travel, Edge Mount, High soldering strength against operating force
Vehicle co	mpatible	_	•	•
Protective	structure	_	—	_
External	W × D	4.7 × 3.5	6.2 × 2.55	6.2 × 2.55
(mm)	Н	1.65	3.5	3.5
	<u> </u>	1.6N	1.0N·1.6N	
		2.2N	2.4N	2.5N
Operatin	ig force		3.5N	3.5N
				5.0N
Travel	(mm)	0.3	0.25	0.7
Operati (cycles	ng life s 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
Rati	ing	10μ A 2 V DC to 50mA 12V DC (Resistive load)	10µ A 2V DC to 20mA	15V DC (Resistive load)
Tomporaturo	Operating temperature	−20°C to +70°C	-40°C to +85°C	
Temperature	Storage temperature (Taping)		−20°C to +60°C	
	Contact resistance	500mΩ max.	100ms	ם max.
	Insulation resistance		100M $\Omega$ min. (at 100V DC)	
Characteristics	Dielectric withstanding voltage		250V AC for 1 minute	
	Bouncing		10ms max. (ON, OFF)	
Environment		RoHS compliant, ELV compliant		

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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					
Featu	ures	Double-action	High mountability, Section terminals	Main body prevents the escape of flux.	
Vehicle co	mpatible	_	•	_	
Protective	structure	_	_	_	
External	W×D	3.0 × 2.6	6.0 × 6.1	6.0 × 3.5	
dimensions (mm)	Н	0.7	5.0	4.3/5.0	
		1st action: 0.7N	1.6N	1.0·1.6N	
		2nd action: 2.0N	2.0N·2.2N·2.5N	2.4N	
Operatin	g force		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		
Operati (cycles	ng life s 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	
Rati	ng	10μ A 2V DC to 20mA 15V DC (Resistive load)	10µ A 2V DC to 50mA 1	2V DC (Resistive load)	
Tomporaturo	Operating temperature	−20°C to +70°C	−30°C to +85°C		
Temperature	Storage temperature (Taping)	−20°C to +60°C	−20°C to +40°C	−40°C to +85°C	
	Contact resistance	500mΩ max.	100mC	2 max.	
	Insulation resistance		100MΩ min. (at 100V DC)		
GHARACLERISLICS	Dielectric withstanding voltage		250V AC for 1 minute		
	Bouncing	3ms max. (ON) / 20ms max. (OFF)	10ms max.	(ON, OFF)	
Environment		RoHS compliant, ELV compliant			

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

#### Rotary potentiometers Selector chart

Types		R	Rotary potentiometer	S
Product name		18mm Square	39/20mm Center Space	44/25mm Center Space
Pa	rt No.	EVCX	EWVY-E/K/M/N	EWVY-G/H/J/L/P
Shape				
Features		Output accuracy (±3%)	Able to put LED inside	
Vehicle of	compatible	•	•	•
External	W	18.0	39.3	45.5
dimensions	D	18.0	40.3	45.2
(mm)	Н	8 (Excluding shaft)	8 (Excluding rotating parts)	8 (Excluding rotating parts)
Rotatio	on angle	280° max. ±5°	300° m	ax. ±5°
Rotatio	on torque	20mN ·m to 100mN ·m	15mN ⋅ m to 50mN ⋅ m	15mN ⋅ m to 60mN ⋅ m
Nominal total resistance		5kΩ to 100kΩ (Tolerence ±20%)	10kΩ (Tolerence ±20%)	
Power rating		0.05W	0.1	1W
Operating temperature		-40°C to +85°C		
storage temperature		−40°C to +85°C		
Nois	e level	100mV max.	47mV	′ max.
Operating lif	e (cycles min.)	15,000	30,	000
Environment		RoHS compliant, ELV compliant		

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#### **Position Sensors Selector chart**

Types		Position Sensors		
Product name		10mm GS	Linear Position	
Pa	rt No.	EVWAE/EVWAD	EVA	W7
Shape				
Features		Low profile, Long life sensor, Suitable for detecting the angles of rotating axes	A wide variety of operation travels	
Vehicle	compatible	•	•	•
External	W	10.60	9.0	10.0
dimensions	D	12.65	15.8	3.0 (Excluding lever)
(mm)	Н	2.20	3.8 (Excluding lever)	15.0
Termir	nal (mm)	_	9.0 ±0.5	8.0 ±0.5
Operat	ting force	3mN·m max.	2N max.	1N max.
Ra	ating		0.05W	
Temperature	Operating temperature	−40°C to +85°C	-40°C to +105°C	
Temperature	Storage temperature	−40°C to +85°C	−40°C to	+105°C
Total r	esistance	5kΩ ±30%, 10kΩ ±30%	10kΩ ±30%	4.7kΩ ±30%
Lin	earity	±2% max.	±2%	±1%
Opera (cycl	ating life es min)	1,000,000 (Operation angle ±30°)	10,0	000
Environment		RoHS compliant, ELV compliant		

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Types			Encoders	
Product name		7mm Square	10mm Square GS	10mm Square SMD
Pa	rt 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	W	7.7	9.7	10.6
dimensions	D	5.1	6.8	12.65
(mm)	Н	7 (10)	7 (11.1) /9 (13.1) /11 (15.1)	2.2 (3.4)
Rotatio	on angle	360° (Endless)		
Rotatio	on torque	5mN · m	5mN∙m	2mN · m max.
Resolutio	on/Detents	12pulses/24points	12pulses/24points 12pulses/12points	3pulses/None
Rating		1mA 10V DC		
Temperature	Operating temperature	−40°C to +85°C		
Iemperature	Storage temperature	-40°C to +85°C -40°C to +85°C		-40°C to +85°C
Output signals			Incremental	
Rotation life	e (cycles min)	100,000	200,000	70,000
Βοι	incing	15ms max. (at rotational speed 30r/min.)	5ms	max.
Environment		RoHS compliant, ELV compliant		

Types		Encoders		
Product name		11mm Square GS	11mm Square GS Encorders G2	
Pa	rt No.	EVER/EVEU/EVEV/EVEY	EVED/EVEE	
Shape				
Features		Low profile, High reliability, Wide variations		
Vehicle of	compatible	•	•	
	W	12.0	12.0	
External dimensions	D	11.6	12.0	
(mm)	н	3.5 (SMD) Excluding shaft 4.0 (THD) Excluding shaft	4.5 (Excluding shaft)	
Rotatio	on angle	360° (Endless)		
Rotatio	on torque	8mN⋅m, 12mN⋅m 10mN⋅m, 14mN⋅m	8mN · m, 12mN · m 14mN · m	
Resolutio	on/Detents	8pulses/16points, 12pulses/24points 15pulses/30points, 16pulses/32points	8pulses/16points 15pulses/30points	
Rating		1mA 10V DC		
Temporatura	Operating temperature	-40°C to +85°C		
remperature	Storage temperature	−40°C t	o +85°C	
Output signals		Increr	nental	
Rotation life	e (cycles min)	30,	000	
Bou	incing	5ms	max.	
Environment		RoHS compliant, ELV compliant		

Types			Encoders	
Produ	ict name	18mm Square (High Rotational Torque)	18mm Square (Waterproof type)	20/12mm Center Space
Pa	rt No.	EVQW	EVQV9	EVQV6
Shape				
Fea	atures	Absolute 5 bit available	Water resistant	Center space
Vehicle	compatible	•	_	•
External	W	18.0	18.8	20.0
dimensions	D	18.0	20.0	20.6
(mm)	Н	8.0 (Excluding shaft)	9.22 (Excluding shaft)	5.0 (Excluding shaft)
Rotati	on angle	360° (Endless)		
Rotatio	on 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
Ra	ating	5mA 10V DC	1mA 1	0V DC
Temporatura	Operating temperature	-40°C to +85°C	−20°C to +60°C	−40°C to +85°C
remperature	Storage temperature	−40°C to +85°C	−40°C to +70°C	−40°C to +85°C
Output signals		Abs	olute	Phase A and B
Rotation life	e (cycles min)	15,000	30,	000
Bouncing			5ms max.	
Envir	onment	RoHS compliant, ELV compliant		

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Types		Encoders		
Product name		27/17mm Center Space	27/18mm Center Space	38/25mm Center Dpace
Pai	rt No.	EVQWF/EVQVP	EVQV5/EVQVT	EVQVN
Shape				
Fea	atures	Center space		
Vehicle of	compatible	•	•	•
External	W	28.0	28.0	38.4
dimensions	D	29.0	29.0	38.9
(mm)	Н	6.0 (Excluding rotating parts)	6.0 (Excluding rotating parts)	7.5 (Excluding rotating parts)
Rotatio	on angle	360° (Endless)		
Rotatio	on torque	8mN · m, 12mN · m 20mN · m	9mN · m, 13.5mN · m 18mN · m	12mN · m 20mN · m
Resolutio	on/Detents	9pulses/18points 15pulses/30points 15pu		15pulses/30points
Ra	ating	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	
Bou	incing	5ms max.		
Envir	onment	RoHS compliant, ELV compliant		

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Types		Encoders
Product name		60/40mm Center Space
Pa	rt No.	EVQV0
Shape		
Fea	atures	Center space
Vehicle	compatible	•
External	W	63.8
dimensions	D	64.3
(mm)	Н	11.5 (Excluding rotating parts)
Rotati	on angle	360° (Endless)
Rotatio	on torque	35mN · m
Resolutio	on/Detents	15pulses/30points
Ra	ating	1mA 10V DC
Temperature	Operating temperature	−40°C to +85°C
Temperature	Storage temperature	-40°C to +85°C
Output signals		Phase A and B
Rotation life	e (cycles min)	30,000
Βοι	incing	5ms max.
Envir	onment	RoHS compliant, ELV compliant

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	W × D	9.85 × 8.6	10.9 × 10.0	7.8 × 7.9	
dimensions	Н	12.5	20.5	17.5/12.5	
(mm)	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 a	nd throws	2 poles 2 throws		1 pole 1 throw	
Rating		50 μA 3 V DC to         0.01A 5 V DC           0.2A 14V DC (Resistive load)         0.1A 14V DC (Resistive load)		0.01A 5V 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 $\Omega$ min. (500V DC)			
	Dielectric withstanding voltage	Terminal to terminal and terminal to frame: 500V AC for 1 minute			
Environment		RoHS compliant, ELV compliant			

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Types		Detector switches			
Product name		ESE58	ESE16	ESE13	
Part No.		ESE58	ESE16	ESE13	
Shape		and?			
Features		Low profile	Small size	Low profile, Long stroke	
Vehicle compatible		—	•	•	
Protective structure		_	_	_	
External	W × D	3.5 × 3.0	2.2 × 3.35	4.2 × 3.6	
(mm)	Н	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)			
	Operating temperature	−10°C to +60°C (for standard use)	−10°C to +60°C ( −40°C to +85°C (	−10°C to +60°C (for standard use) , −40°C to +85°C (for vehicle)	
	Heat resistance	+70°C 96 hours			
Temperature	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 co	ompatible	•	•	•	
Protective	structure	_	_	_	
External	W×D	4.0 × 4.4	5.9 × 5.4	ESE22MH type: 5.7 × 5.0	
dimensions (mm)	Н	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			
Rati	ing	50µ A 3 V DC to 10mA 5 V DC (Resistive load)			
	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	
Temperature	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 co	ompatible	•	•	•
Protective	structure	—	_	_
External	W×D	ES11SV type: 5.2 × 3.0	5.0 × 4.4	ESE24SV type: 7.5 × 3.0
(mm)	Н	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	<ul> <li>−10°C to +70°C (for standard use)</li> <li>−40°C to +85°C (for vehicle)</li> </ul>	-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**

- $\cdot$  Next generation smart equipment
- $\cdot$  ICT / Social infrastructure equipment
- · Measuring / Industrial equipment



#### Al speaker

#### Tactile switches

For power on and operation / Volume UP•DOWN 3020 SMD 3529 SMD 4735 SMD EVPAW EVPAA EVQP2 **Board** For FPC/FFC Y3B Y5B **Board** Board-to-FPC Board-to-Board Board-to-Board P5KS P4S Board-to-FPC Board-to-Boar P5KF





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#### Hearable devices

#### **Tactile switches**



#### Heated tobacco



Smart toy







Tablet



#### Laptop commputer



#### Security camera



#### Smart glasses



**Flash module** 

# Digital still camera



#### Drive recorder



#### Drone



#### Smart meter



### Measuring devices



#### Pressure sensor

#### **Tactile switches**





### Blood glucose meter



#### Handheld terminial



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Please contact .....

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