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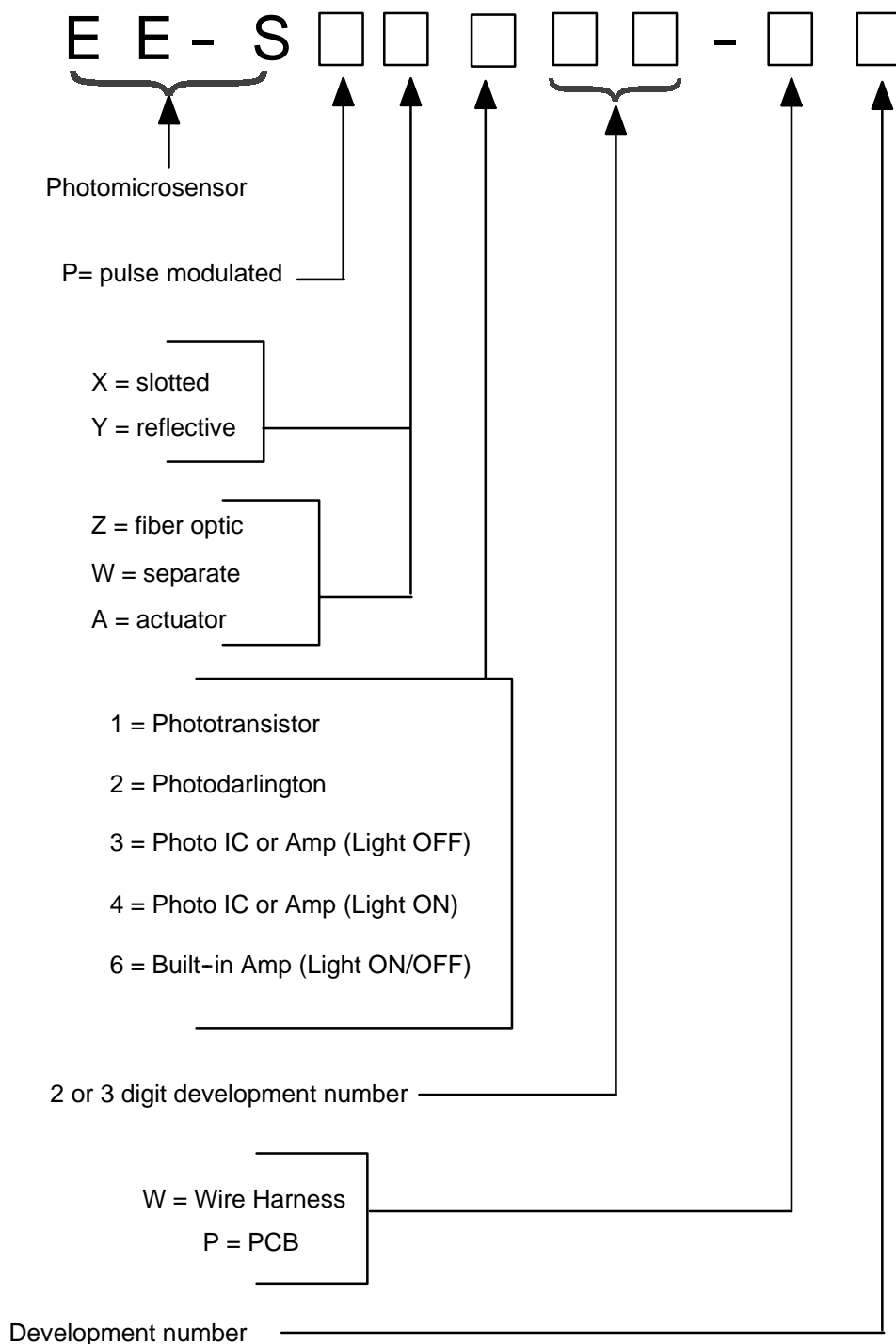
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SELECTION GUIDE

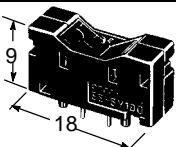
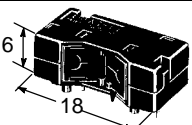
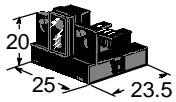
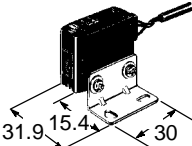
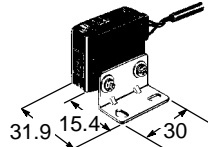
Introduction

The tables on the following pages provide information to assist in your selection of the Omron photomicrosensor that best meets your requirements. The part number key on this page provides a breakdown of component information included in the part number itself. For example, if your requirements call for a photomicrosensor that is pulse-modulated and slotted, you would limit your search to the EE-SPX numbers, and use the tables to find specific information about slot width, dimensions, and modulation types.



Microphotonic Photomicrosensors

■ DIFFUSE OR REGULAR REFLECTIVE

Sensing Distance	Sensing Method	Appearance and dimensions (mm)	Model	Output	Optical modulation	Features
4.5 mm	Diffuse or regular reflective		EE-SY190	Phototransistor output	Non-modulated	Highly focused detection range makes this sensor useful for sensing paper without picking up background surfaces.
4.5 mm	Diffuse or regular reflective		EE-SY191	Phototransistor output		Horizontal sensing
6.5 mm	Diffuse reflective type		Z4D-A01	Analog voltage output - 2 signals (Used as input to microprocessor, which outputs a single digital voltage)		Used to detect changes as small as 10 μm. Used for applications such as money changers and copiers.
4 mm	Reflective		Z4D-F04A	Analog output		Resolution down to 5 μm.
4 mm	Reflective		Z4D-F04D	ON/OFF output		Resolution down to 5 μm.

SELECTION GUIDE

Amplified Photomicrosensors



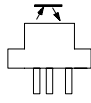
Slot width	Appearance and dimensions (mm)	Model	Output	Optical modulation	Aperture width (mm) and orientation
3.6 mm		EE-SPX301	Dark-ON	Modulated	
		EE-SPX401	Light-ON		
		EE-SPX302-W2A	Dark-ON		
		EE-SPX402-W2A	Light-ON		
		EE-SPX304-W2A	Dark-ON		
		EE-SPX404-W2A	Light-ON		
5.0 mm		EE-SPX305-W2A	Dark-ON	Modulated	
		EE-SPX405-W2A	Light-ON		
3.6 mm		EE-SPX306-W2A	Dark-ON	Modulated	
		EE-SPX406-W2A	Light-ON		
5.0 mm		EE-SX670	Light-ON/Dark-ON	Non-modulated	
		EE-SX670A			
		EE-SX470	Light-ON		
		EE-SX671	Light-ON/Dark-ON		
		EE-SX671A			
		EE-SX471	Light-ON		
		EE-SX672	Light-ON/Dark-ON		
		EE-SX672A			
		EE-SX472	Light-ON		
		EE-SX673	Light-ON/Dark-ON		
		EE-SX673A			
		EE-SX473	Light-ON		
	EE-SX674	Light-OFF/ON			
	EE-SX674A				
	EE-SX474	Light-ON			

SELECTION GUIDE

Slot width	Appearance and dimensions (mm)	Model	Output	Optical modulation	Aperture width (mm) and orientation
5.0 mm		EE-SX770	Dark-ON	Non-modulated	
		EE-SX770A			
		EE-SX870	Light-ON		
		EE-SX870A			
		EE-SX771	Dark-ON		
		EE-SX771A			
		EE-SX871	Light-ON		
		EE-SX871A			
		EE-SX772	Dark-ON		
		EE-SX772A			
		EE-SX872	Light-ON		
		EE-SX872A			
13.0 mm		EE-SX303	Dark-ON	Modulated	
		EE-SX303-1			
		EE-SX403	Light-ON		
	EE-SPX613	Light-ON/Dark-ON			

SELECTION GUIDE

REFLECTIVE

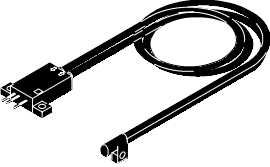

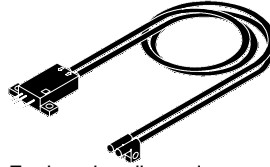
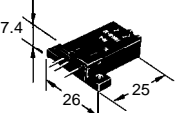


Sensing distance	Sensing method	Appearance and dimensions (mm)	Model	Output	Optical modulation	Features
5.0 mm	Diffuse reflective	Horizontal model EE-SPY301	Dark-ON	Modulated	Wide operating voltage range (5 to 24 VDC) Built-in LED indicator Control output: 80 mA	
		Horizontal model EE-SPY401	Light-ON			
		Vertical model EE-SPY302	Dark-ON			
		Vertical model EE-SPY402	Light-ON			
1 to 5 mm	Diffuse reflective	Horizontal model EE-SY671	Light-ON/Dark-ON	Non-modulated	Built-in sensitivity adjuster Wide operating voltage range (5 to 24 VDC) Output mode selectable	
		Vertical model EE-SY672	Light-ON/Dark-ON			
		EE-SB5M EE-SB5MC EE-SB5V EE-SB5VC EE-SB5V-E	Light-ON			
			Dark-ON			
			Light-ON			
			Dark-ON			
			Light-ON			
19 mm (3/4")					Incorporated filter cuts off visible light Sensitivity adjustment terminals incorporated	
2 to 6 mm (approx. 1/4")	Convergent reflective	Horizontal model EE-SPY311	Dark-ON	Modulated	Detects objects against mirror-like surfaces at a distance of 20 mm or more. Detects minute or black objects.	
		Horizontal model EE-SPY411	Light-ON			
		Vertical model EE-SPY312	Dark-ON			
		Vertical model EE-SPY412	Light-ON			
200 mm	Diffuse reflective	EE-SPZ301-A EE-SPZ401-A	Dark-ON		Long-distance detection with the E39-R1 Reflector	
			Light-ON			

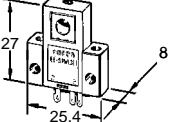
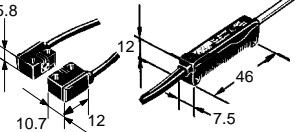
Note: The maximum detectable distance of each reflective photomicrosensor is based on detecting a piece of white paper with a reflection factor of 90%.

SELECTION GUIDE

■ FIBER-OPTIC

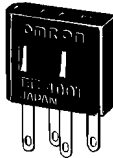

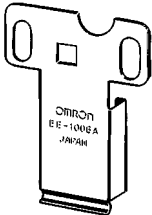


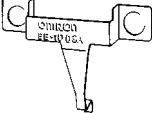
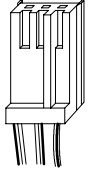
Sensing distance	Sensing method	Appearance and dimensions (mm)	Model	Output	Optical modulation	Features
1 to 3 mm	Reflective	 For housing dimensions, see EE-SPZ301/SPZ401 below.	EE-SPZ301Y-01	Dark-ON	Modulated	Wide operating voltage range (5 to 24 VDC) Built-in LED indicator Control output: 80 mA
			EE-SPZ401Y-01	Light-ON		
5.0 mm	Transmissive	 For housing dimensions, see EE-SPZ301/SPZ401 below.	EE-SPZ301W-02	Dark-ON	Modulated	
			EE-SPZ401W-02	Light-ON		
30.0 mm	Transmissive	 For housing dimensions, see EE-SPZ301/SPZ401 below.	EE-SPZ301W-01	Dark-ON	Modulated	
			EE-SPZ401W-01	Light-ON		
Transmissive: 150 mm Reflective: 1 to 6 mm	Standard fiber connection		EE-SPZ301	Dark-ON	Modulated	Standard fiber (with length adjustable) can be connected.
			EE-SPZ401	Light-ON		

■ SEPARATE

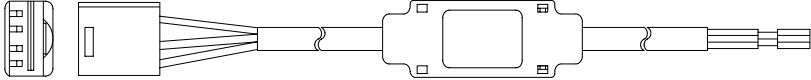

Sensing distance	Appearance and dimensions (mm)	Model	Output	Optical modulation	Detectable object (mm)
1 m		EE-SPW311	Dark-ON	Modulated	Opaque: 5 dia. min.
		EE-SPW411	Light-ON		
30 cm		EE-SPW321(-A)	Dark-ON	Modulated	Opaque: 2 dia. min.
		EE-SPW421(-A)	Light-ON		

SELECTION GUIDE

CONNECTORS

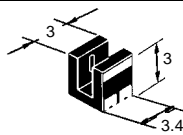

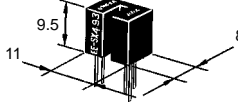
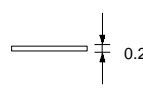
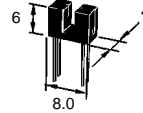
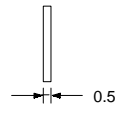
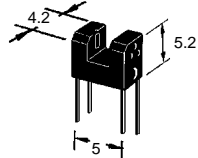
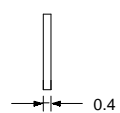
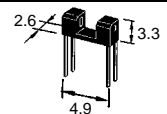
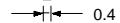
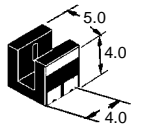
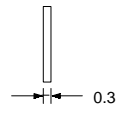
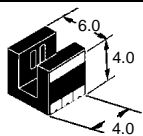
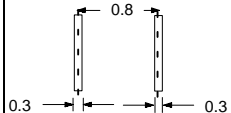
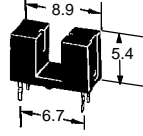
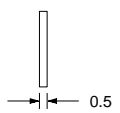
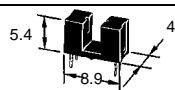
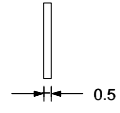
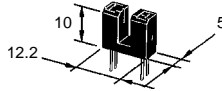
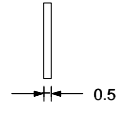
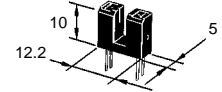
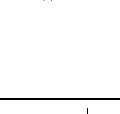
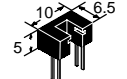
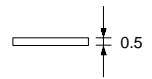
Model	Appearance	Applicable sensors
EE-1001		EE-SX470/470P/670/670P EE-SX471/471P/671/671P EE-SX472/472P/672/672P EE-SX473/473P/673/673P EE-SX474/474P/674/674P EE-SX670A/670R EE-SX671A/671R EE-SX672A/672R EE-SX673A/673R EE-SX674A/674R
EE-1006	 The connector incorporates a 2-m wire harness.	EE-SPX303/303-1/403 EE-SY671/672 EE-SB5M(C)/SB5V(C) EE-SB5V-E EE-SPY311/411/312/412 EE-SPW311/411
EE-1006A Connector Holder		When using the EE-1006 connector
EE-1002		EE-SPX301/-SPX401, EE-SPY301/-SPY401, EE-SPY302/-SPY402, EE-SPZ301-A/-SPZ401-A, EE-SPZ301Y-01/-SPZ401Y-01, EE-SPZ301W-01/-SPZ401W-01, EE-SPZ301W-02/-SPZ401W-02, EE-SPZ301/-SPZ401
EE-1003	 The connector incorporates a 1-m wire harness.	
EE-1003A Connector Holder		
EE-1005		EE-SX460-P1/SX461-P11, EE-SA401-P2

NPN-PNP OUTPUT CONVERTER

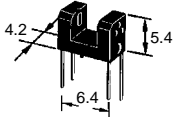

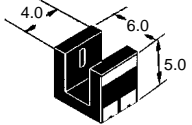
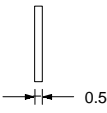
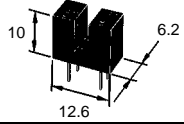
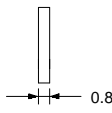
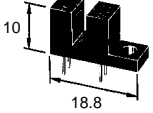
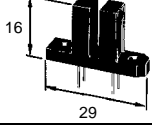
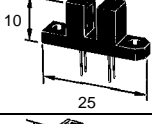
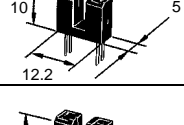
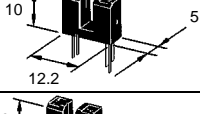
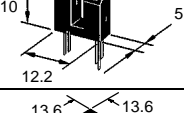
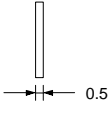
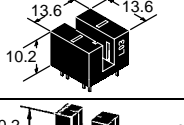
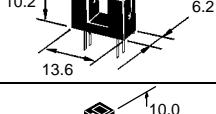
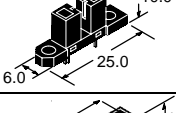
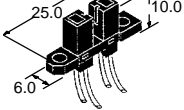
Model	Appearance
EE-2001	
EE-2002	

Non-amplified Photomicrosensors

■ TRANSMISSIVE 

Slot width	Appearance and dimensions (mm)	Model	Output	Aperture width (mm) and orientation	Terminals
1.0 mm		EE-SX1107	Phototransistor		Surface Mount
2.0 mm		EE-SX493	Photo IC (Light-ON)		PCB
		EE-SX1018	Phototransistor		
		EE-SX1103			
		EE-SX1105			
		EE-SX1108			Surface Mount
		EE-SX1131			
2.8 mm		EE-SX1055			PCB
		EE-SX1025			
3.0 mm		EE-SX198			
		EE-SX199			
		EE-SX1046			

SELECTION GUIDE

Slot width	Appearance and dimensions (mm)	Model	Output	Aperture width (mm) and orientation	Terminals	
3.0 mm		EE-SX1106	Phototransistor		PCB	
		EE-SX1109			Surface Mount	
		EE-SJ3W-B	Photodarlington transistor		PCB	
		EE-SK3W-B				
		EE-SM3				
		EE-SM3B				
		EE-SX298				
		EE-SX398				Photo IC (Dark-ON)
		EE-SX498				Photo IC (Light-ON)
						
3.4 mm		EE-SX1031				Phototransistor (dual channel)
		EE-SX1071	Phototransistor			
		EE-SX1088				
		EE-SX1088(-W1)				

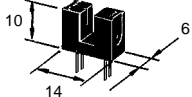
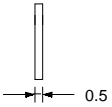
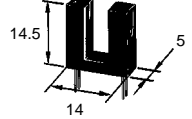
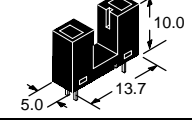
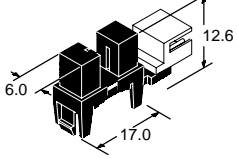
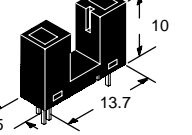
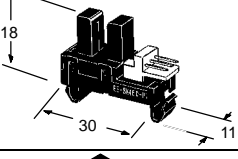
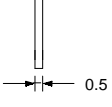
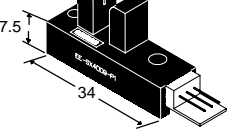
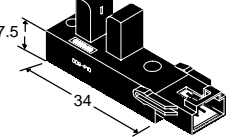
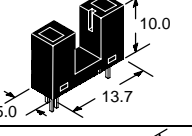
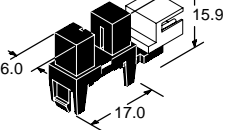
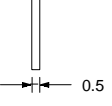
SELECTION GUIDE

Slot width	Appearance and dimensions (mm)	Model	Output	Aperture width (mm) and orientation	Terminals
3.4 mm		EE-SX1096	Phototransistor		PCB
		EE-SX1096(-W1)			PCB
		EE-SH3	Soldering		PCB
		EE-SH3-B			PCB
		EE-SH3-CS			Soldering
		EE-SH3-C			PCB
		EE-SH3-DS			Soldering
		EE-SH3-D			PCB
		EE-SH3-GS			Soldering
		EE-SH3-G			PCB
					EE-SJ3-C
	EE-SJ3-D		PCB		
	EE-SJ3-G		PCB		
		EE-SV3	Soldering		PCB
		EE-SV3-B			PCB
		EE-SV3-CS			Soldering
		EE-SV3-C			PCB
		EE-SV3-DS			Soldering
		EE-SV3-D			PCB
		EE-SV3-GS			Soldering
		EE-SV3-G			PCB
					EE-SX2088
	EE-SX2088(-W1)		Same as EE-SX2088 with wire harness.		

SELECTION GUIDE

Slot width	Appearance and dimensions (mm)	Model	Output	Aperture width (mm) and orientation	Terminals
3.4 mm		EE-SX301	Photo IC (Dark-ON)		PCB
		EE-SX401	Photo IC (Light-ON)		
		EE-SX305	Photo IC (Dark-ON)		
		EE-SX405	Photo IC (Light-ON)		
		EE-SX3088	Photo IC (Dark-ON)		
		EE-SX3088(-W1)	Same as EE-SX3088 with wire harness.		
		EE-SX4088	Photo IC (Light-ON)		
	EE-SX4088(-W1)	Same as EE-SX4088 with wire harness.			
3.5 mm		EE-SX384	Photo IC (Dark-ON)		PCB
		EE-SX484	Photo IC (Light-ON)		
3.6 mm		EE-SG3	Phototransistor		Soldering
		EE-SG3-B			PCB
4.6 mm		EE-SX1061			

SELECTION GUIDE

Slot width	Appearance and dimensions (mm)	Model	Output	Aperture width (mm) and orientation	Terminals	
5.0 mm		EE-SX1041	Phototransistor		PCB	
		EE-SX1042				
		EE-SX1081				
		EE-SX1235A-P2	Connector			
		EE-SX3081	Photo IC (Dark-ON)		PCB	
		EE-SX460-P1	Photo IC (Light-ON)			Connector
		EE-SX4009-P1				
		EE-SX4009-P10	Connector			
		EE-SX4081	PCB			
		EE-SX4235A-P2	Connector			

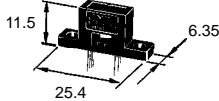
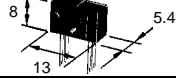
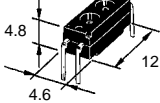
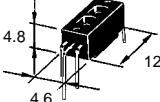

SELECTION GUIDE

Slot width	Appearance and dimensions (mm)	Model	Output	Aperture width (mm) and orientation	Terminals
5.2 mm		EE-SX1035	Phototransistor		PCB
8.0 mm		EE-SX1070			
		EE-SX3070		Photo IC (Dark-ON)	
		EE-SX4070	Photo IC (Light-ON)		
15.0 mm		EE-SX461-P11			Connector

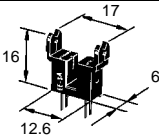
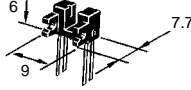
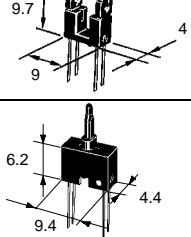
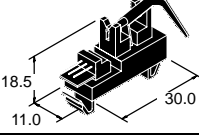
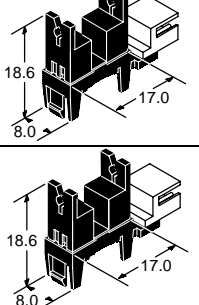
■ REFLECTIVE

Sensing distance	Appearance and dimensions (mm)	Model	Output	Terminals
1.0 mm		EE-SMR1-1	Phototransistor	PCB
		EE-SY124		
		EE-SY125		Surface mount
3.5 mm		EE-SY171	Photodarlington transistor	PCB
4.0 mm		EE-SY169		
		EE-SY169A		
		EE-SY201		
4.4 mm		EE-SY113		
		EE-SY313	Photo IC (Dark-ON)	
		EE-SY413	Photo IC (Light-ON)	

SELECTION GUIDE

Sensing distance	Appearance and dimensions (mm)	Model	Output	Terminals	
5.0 mm		EE-SB5	Phototransistor	Soldering	
		EE-SB5-B		PCB	
		EE-SF5		Soldering	
		EE-SF5-B		PCB	
		EE-SY110			
				EE-SY310	Photo IC (Dark-ON)
EE-SY410	Photo IC (Light-ON)				
11.0 mm		EE-SPY415	Photo IC (Light-ON)		

■ ACTUATOR

Appearance and dimensions (mm)	Model	Output	Terminals	
	EE-SA102	Phototransistor	PCB	
				EE-SA103
				EE-SA104
				EE-SA105
	EE-SA401-P2	Photo IC (Light-ON)	Connector	
	EE-SA407-P2			
	EE-SA107-P2	Phototransistor		

SELECTION GUIDE

NOTE: DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters to inches divide by 25.4.

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