

Discontinuation Notice of Photomicro Sensors EE series(partially).

Product Discontinuation

Photomicro sensor

Model EE-□109
Model EE-SA□07-P2
Model EE-SB5-B
Model EE-SG3-B
Model EE-SH3(-□)



Recommended Replacement

Photomicro sensor

No recommended replacement
No recommended replacement
Model EE-SB5
Model EE-SX1088
Model EE-SX1088 or
Model EE-SX1096

Light Convergent Reflective Sensor

Model B5W-LB2112-1

Photomicro sensor

Model EE-SPY415

Model EE-SX1023-W1
Model EE-SX1057
Model EE-SX1115
Model EE-SX1235A-P2
Model EE-SX□01
Model EE-SX□239-P2
Model EE-SX4235A-P2(-5)
Model EE-SY□13

Model EE-SX1088-W11
Model EE-SX1071
Model EE-SX1042
No recommended replacement
Model EE-SX□98
No recommended replacement
No recommended replacement
Model EE-SY□10

[Final order entry date]

The end of March, 2021

[Date of The Last Shipping]

The end of June, 2021

[Caution on recommended replacement]

Dimensions and specifications differ except for the body color. Therefore, it is not a complete compatible products. Please refer to the catalog or specifications for accurate content.

[Difference from discontinued product]

Recommended replacement Model	Body Color	Dimensions	Wire connection	Mounting Dimensions	Characteristics	Operation ratings	Operation methods
EE-SB5	**	**	**	*	**	-	-
EE-SX1088	**	--	**	--	*	-	-
EE-SX1096	**	--	**	--	*	-	-
B5W-LB2112-1	**	--	*	--	--	-	-
EE-SX1088-W11	**	--	**	--	*	-	-
EE-SX1071	**	--	**	*	*	-	-
EE-SX1042	**	*	**	**	*	-	-
EE-SX398	**	--	**	*	*	-	-
EE-SX498	**	--	**	*	*	-	-
EE-SY310	**	*	**	**	*	-	-
EE-SY410	**	*	**	**	*	-	-

** : Compatible

* : The change is a little/Almost compatible

-- : Not compatible


- : No corresponding specification



[Product Discontinuation and recommended replacement]

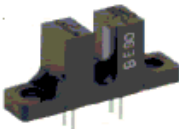

Product discontinuation	Recommended replacement
EE-L109	No recommended replacement
EE-SA107-P2	No recommended replacement
EE-SA407-P2	No recommended replacement
EE-SB5-B	EE-SB5
EE-SG3-B	EE-SX1088
EE-SH3	EE-SX1088
EE-SH3-B	EE-SX1088
EE-SH3-C	EE-SX1088
EE-SH3-CS	EE-SX1088
EE-SH3-D	EE-SX1088
EE-SH3-DS	EE-SX1096
EE-SH3-G	EE-SX1096
EE-SH3-GS	EE-SX1096
EE-SPY415	B5W-LB2112-1
EE-SX1023-W1	EE-SX1088-W11
EE-SX1057	EE-SX1071
EE-SX1115	EE-SX1042
EE-SX1235A-P2	No recommended replacement
EE-SX301	EE-SX398
EE-SX3239-P2	No recommended replacement
EE-SX401	EE-SX498
EE-SX4235A-P2	No recommended replacement
EE-SX4235A-P2-5	No recommended replacement
EE-SX4239-P2	No recommended replacement
EE-SY313	EE-SY310
EE-SY413	EE-SY410
EE-TP109	No recommended replacement

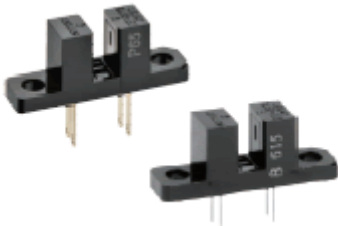


[Body color]

Product discontinuation Model EE-□109	Recommendable replacement
Model EE-L109 Clear Model EE-TP109 Red No Photo	No recommended replacement






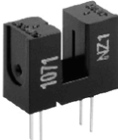

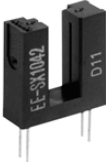
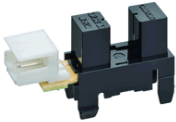


Product discontinuation Model EE-SA□07	Recommendable replacement
Black 	No recommended replacement

Product discontinuation Model EE-SB5-B	Recommendable replacement Model EE-SB5
Black 	Black 

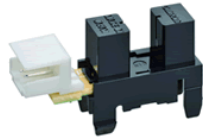
Product discontinuation Model EE-SG3-B	Recommendable replacement Model EE-SX1088
Black 	Black 


Product discontinuation Model EE-SH3(-□)	Recommendable replacement Model EE-SX1088
Black 	Black Model EE-SX1088 Model EE-SX1096  

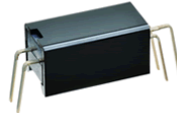

[Body color]

<p>Product discontinuation Model EE-SPY415</p>	<p>Recommendable replacement Model B5W-LB2112-1</p>
<p>Black</p> 	<p>Black</p> 
<p>Product discontinuation Model EE-SX1023-W1</p>	<p>Recommendable replacement Model EE-SX1088-W11</p>
<p>Black</p> 	<p>Black</p> 
<p>Product discontinuation Model EE-SX1057</p>	<p>Recommendable replacement Model EE-SX1071</p>
<p>Black</p> 	<p>Black</p> 
<p>Product discontinuation Model EE-SX1115</p>	<p>Recommendable replacement Model EE-SX1042</p>
<p>Black</p> 	<p>Black</p> 
<p>Product discontinuation Model EE-SX1235A-P2</p>	<p>Recommendable replacement</p>
<p>Black</p> 	<p>No recommended replacement</p>
<p>Product discontinuation Model EE-SX□01</p>	<p>Recommendable replacement Model EE-SX□98</p>
<p>Black</p> 	<p>Black</p> 

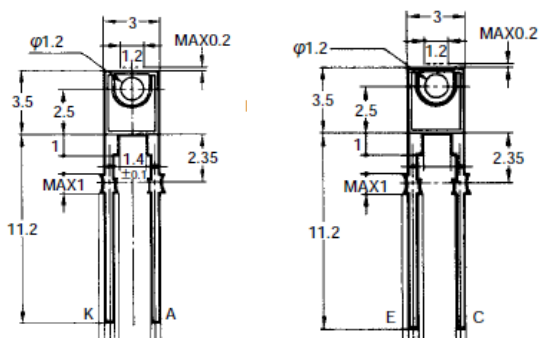
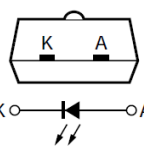
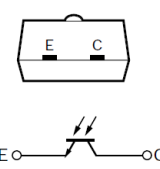
[Body color]

Product discontinuation Model EE-SX□239-P2	Recommendable replacement
Black 	No recommended replacement

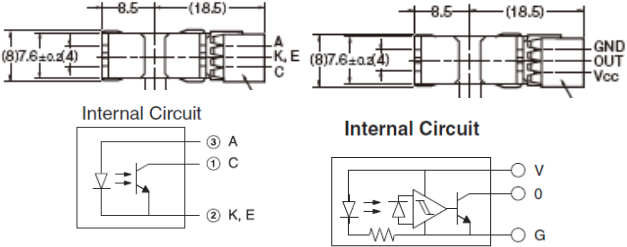
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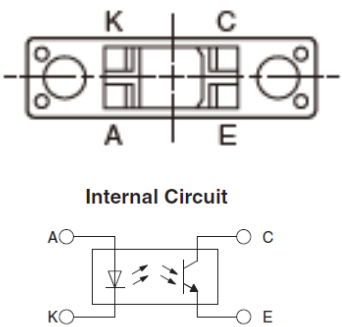
Product discontinuation Model E E-SY□13	Recommendable replacement Model EE-S Y□10
Black 	Black 

[Wire connection]

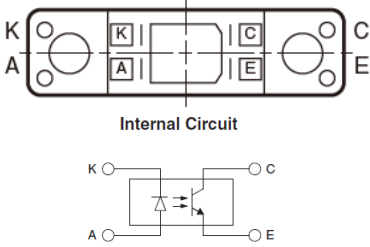
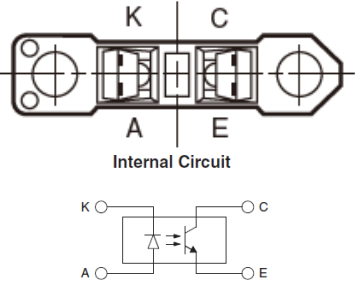
Product discontinuation Model EE-□109	Recommendable replacement												
Wire connection Model EE-L109 Model EE-TP109  <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Internal Circuit</p>  <table border="1"> <thead> <tr> <th>Terminal No.</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Anode</td> </tr> <tr> <td>K</td> <td>Cathode</td> </tr> </tbody> </table> </div> <div style="text-align: center;"> <p>Internal Circuit</p>  <table border="1"> <thead> <tr> <th>Terminal No.</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>C</td> <td>Collector</td> </tr> <tr> <td>E</td> <td>Emitter</td> </tr> </tbody> </table> </div> </div>	Terminal No.	Name	A	Anode	K	Cathode	Terminal No.	Name	C	Collector	E	Emitter	No recommended replacement
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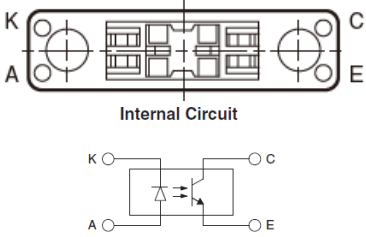
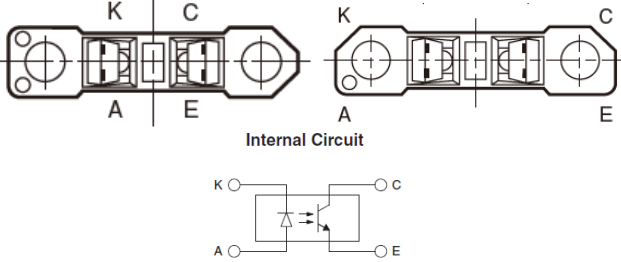
[Wire connection]

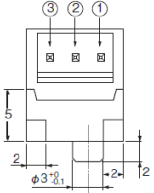
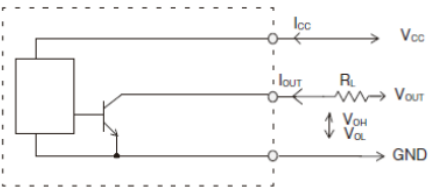
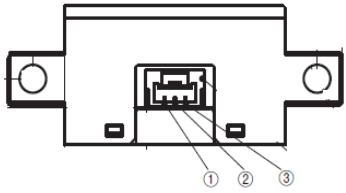
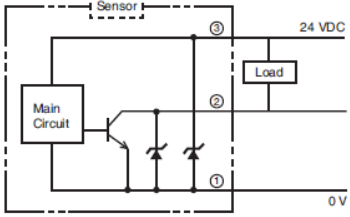
Product discontinuation Model EE-SA□07-P2	Recommendable replacement																		
<p>Wire connection Model EE-SA107-P2 Model EE-SA407-P2</p>  <table border="1" data-bbox="194 638 422 779"> <thead> <tr> <th>Terminal No.</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Anode</td> </tr> <tr> <td>K</td> <td>Cathode</td> </tr> <tr> <td>C</td> <td>Collector</td> </tr> <tr> <td>E</td> <td>Emitter</td> </tr> </tbody> </table> <table border="1" data-bbox="459 638 751 779"> <thead> <tr> <th>Terminal No.</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>V</td> <td>Power supply (Vcc)</td> </tr> <tr> <td>O</td> <td>Output (OUT)</td> </tr> <tr> <td>G</td> <td>Ground (GND)</td> </tr> </tbody> </table>	Terminal No.	Name	A	Anode	K	Cathode	C	Collector	E	Emitter	Terminal No.	Name	V	Power supply (Vcc)	O	Output (OUT)	G	Ground (GND)	<p>No recommended replacement</p>
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Product discontinuation Model EE-SB5-B	Recommendable replacement Model EE-SB5										
<p>Wire connection</p>  <table border="1" data-bbox="687 1339 938 1496"> <thead> <tr> <th>Terminal No.</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Anode</td> </tr> <tr> <td>K</td> <td>Cathode</td> </tr> <tr> <td>C</td> <td>Collector</td> </tr> <tr> <td>E</td> <td>Emitter</td> </tr> </tbody> </table>		Terminal No.	Name	A	Anode	K	Cathode	C	Collector	E	Emitter
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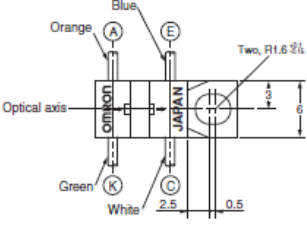
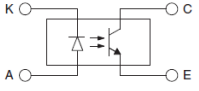
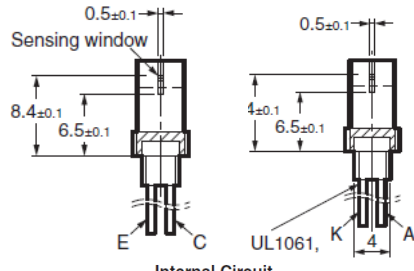
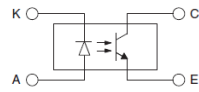
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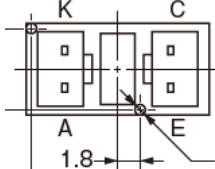
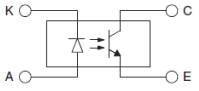
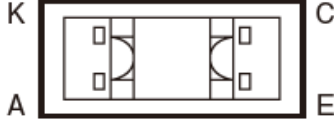
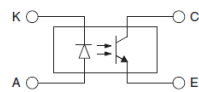
Product discontinuation Model EE-SG3-B	Recommendable replacement Model EE-SX1088																				
<p>Wire connection</p>  <table border="1" data-bbox="363 674 571 801"> <thead> <tr> <th>Terminal No.</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Anode</td> </tr> <tr> <td>K</td> <td>Cathode</td> </tr> <tr> <td>C</td> <td>Collector</td> </tr> <tr> <td>E</td> <td>Emitter</td> </tr> </tbody> </table>	Terminal No.	Name	A	Anode	K	Cathode	C	Collector	E	Emitter	<p>Wire connection</p>  <table border="1" data-bbox="1050 680 1257 808"> <thead> <tr> <th>Terminal No.</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Anode</td> </tr> <tr> <td>K</td> <td>Cathode</td> </tr> <tr> <td>C</td> <td>Collector</td> </tr> <tr> <td>E</td> <td>Emitter</td> </tr> </tbody> </table>	Terminal No.	Name	A	Anode	K	Cathode	C	Collector	E	Emitter
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Product discontinuation Model EE-SH3 (-□)	Recommendable replacement Model EE-SX1088 / EE-SX1096																				
<p>Wire connection</p>  <table border="1" data-bbox="363 1294 571 1422"> <thead> <tr> <th>Terminal No.</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Anode</td> </tr> <tr> <td>K</td> <td>Cathode</td> </tr> <tr> <td>C</td> <td>Collector</td> </tr> <tr> <td>E</td> <td>Emitter</td> </tr> </tbody> </table>	Terminal No.	Name	A	Anode	K	Cathode	C	Collector	E	Emitter	<p>Wire connection</p> <p>Model EE-SX1088 Model EE-SX1096</p>  <table border="1" data-bbox="1050 1330 1257 1458"> <thead> <tr> <th>Terminal No.</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Anode</td> </tr> <tr> <td>K</td> <td>Cathode</td> </tr> <tr> <td>C</td> <td>Collector</td> </tr> <tr> <td>E</td> <td>Emitter</td> </tr> </tbody> </table>	Terminal No.	Name	A	Anode	K	Cathode	C	Collector	E	Emitter
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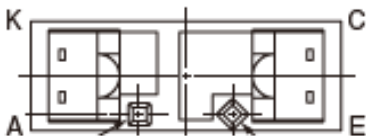
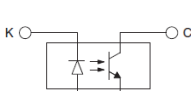
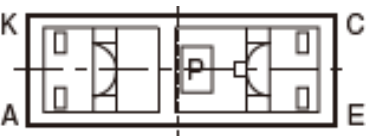
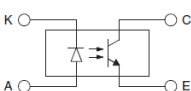
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3	V _{cc}								

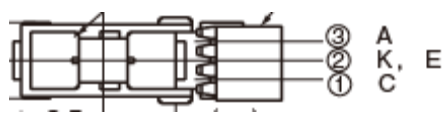
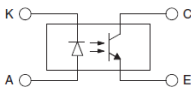
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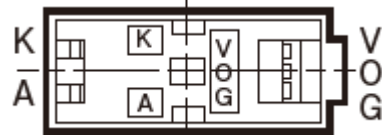
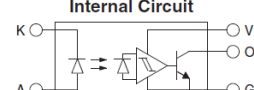
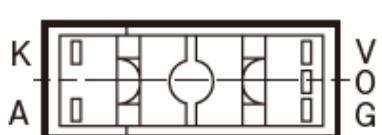
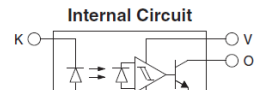
<p align="center">Product discontinuation Model EE-SX1023-W1</p>	<p align="center">Recommendable replacement Model EE-SX1088-W11</p>																				
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E	Emitter																				

<p align="center">Product discontinuation Model EE-SX1057</p>	<p align="center">Recommendable replacement Model EE-SX1071</p>																				
<p>Wire connection</p>  <p align="center">Internal Circuit</p>  <table border="1" data-bbox="367 1456 566 1579"> <thead> <tr> <th>Terminal No.</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Anode</td> </tr> <tr> <td>K</td> <td>Cathode</td> </tr> <tr> <td>C</td> <td>Collector</td> </tr> <tr> <td>E</td> <td>Emitter</td> </tr> </tbody> </table>	Terminal No.	Name	A	Anode	K	Cathode	C	Collector	E	Emitter	<p>Wire connection</p>  <p align="center">Internal Circuit</p>  <table border="1" data-bbox="1045 1444 1244 1568"> <thead> <tr> <th>Terminal No.</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Anode</td> </tr> <tr> <td>K</td> <td>Cathode</td> </tr> <tr> <td>C</td> <td>Collector</td> </tr> <tr> <td>E</td> <td>Emitter</td> </tr> </tbody> </table>	Terminal No.	Name	A	Anode	K	Cathode	C	Collector	E	Emitter
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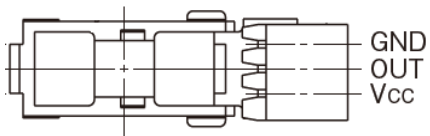
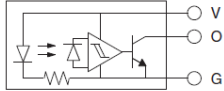
[Wire connection]

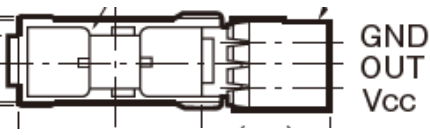
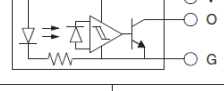
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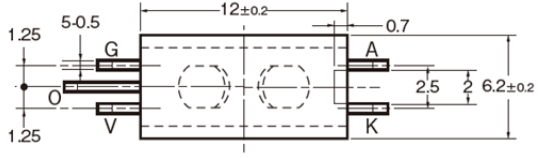
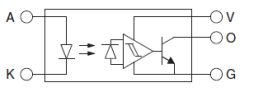
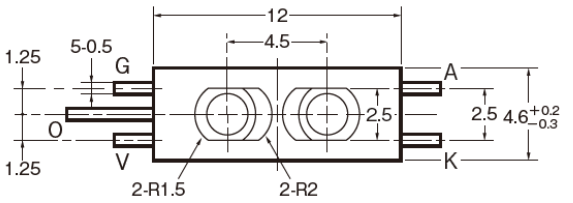
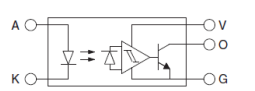
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C	Collector										
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Product discontinuation Model EE-SX□01	Recommendable replacement Model EE-SX□98																								
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[Wire connection]

Product discontinuation Model EE-SX□239-P2	Recommendable replacement								
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Terminal No.	Name								
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Product discontinuation Model EE-SX4235A-P2(-5)	Recommendable replacement								
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Product discontinuation Model EE-SY□13	Recommendable replacement Model EE-SY□10																								
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G	Ground (GND)																								

[Dimensions]

<p align="center">Product discontinuation Model EE-□109</p>	<p align="center">Recommendable replacement</p>
<p>Dimensions W×L×H: 2mm×3mm×14.7mm</p>	<p>No recommended replacement</p>

<p align="center">Product discontinuation Model EE-SA□07-P2</p>	<p align="center">Recommendable replacement</p>
<p>Dimensions W×L×H: 8mm×27mm×21.9mm Slot width: 3.6mm</p>	<p>No recommended replacement</p>

[Dimensions]

<p align="center">Product discontinuation Model EE-SB5-B</p>	<p align="center">Recommendable replacement Model EE-SB5</p>
<p>Dimensions W×L×H: 6.35mm×25.4mm×11.5mm</p>	<p>Dimensions W×L×H: 6.35mm×25.4mm×11.5mm</p>

<p align="center">Product discontinuation Model EE-SG3-B</p>	<p align="center">Recommendable replacement Model EE-SX1088</p>
<p>Dimensions W×L×H: 6.35mm×25.4mm×11.5mm Slot width: 3.6mm</p>	<p>Dimensions W×L×H: 6mm×25mm×10mm Slot width: 3.4mm</p>

[Dimensions]

Product discontinuation
Model EE-S H3 (-□)

Dimensions
W×L×H: 6.2mm×25.4mm×10.4mm
Slot width: 3.4mm

Cross section AA Cross section AA

Model	Aperture (a × b)	Model	Aperture (a × b)
EE-SH3	2.1 × 0.5	EE-SH3-B	2.1 × 0.5
EE-SH3-CS	2.1 × 1.0	EE-SH3-C	2.1 × 1.0
EE-SH3-DS	2.1 × 0.2	EE-SH3-D	2.1 × 0.2
EE-SH3-GS	0.5 × 2.1	EE-SH3-G	0.5 × 2.1

Recommendable replacement
Model EE-SX1088 / EE-SX1096

Dimensions
Model EE-SX1088
W×L×H: 6mm×25mm×10mm
Slot width: 3.4mm

Cross section BB Cross section AA

Model EE-SX1096
W×L×H: 6mm×25mm×10mm
Slot width: 3.4mm

Cross section BB Cross section AA

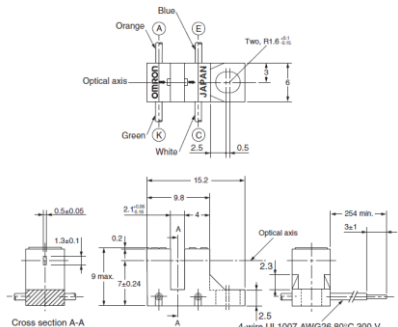
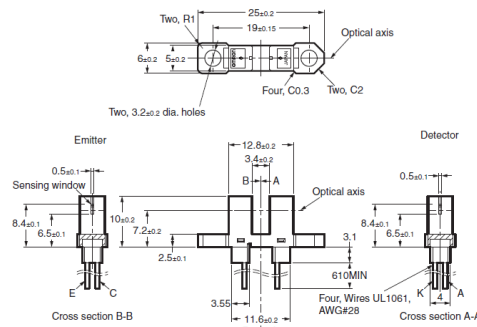
Product discontinuation
Model EE-SPY415

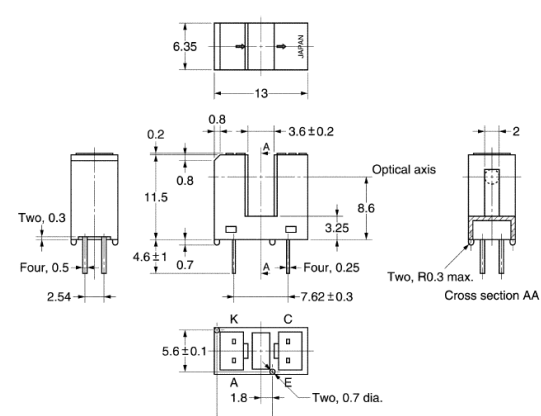
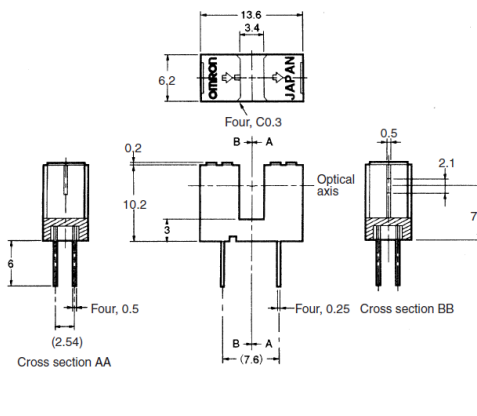
Dimensions
W×L×H: 9.6mm×45mm×11mm

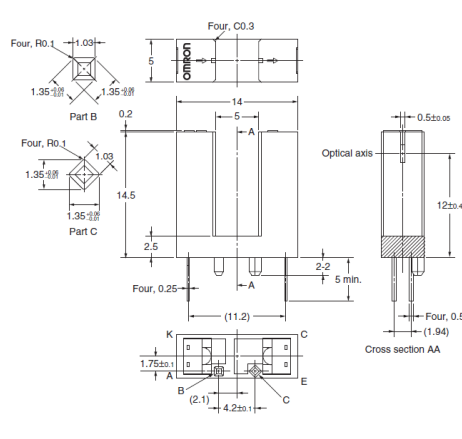
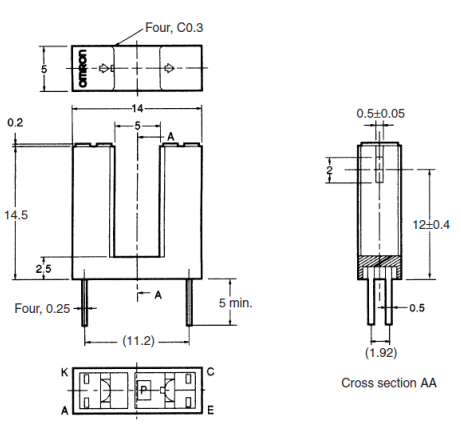
Recommendable replacement
Model B5W-LB2112-1

Dimensions
W×L×H: 8.4mm×40mm×15.9mm

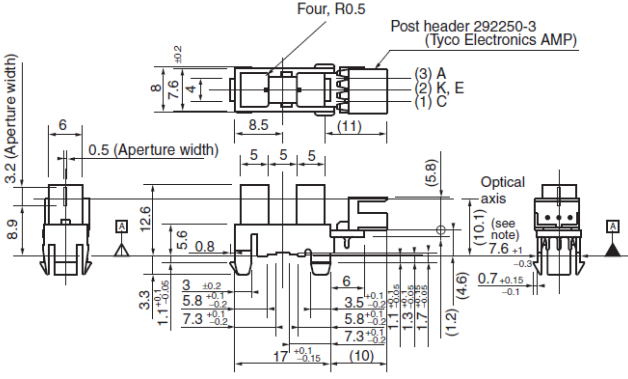
[Dimensions]

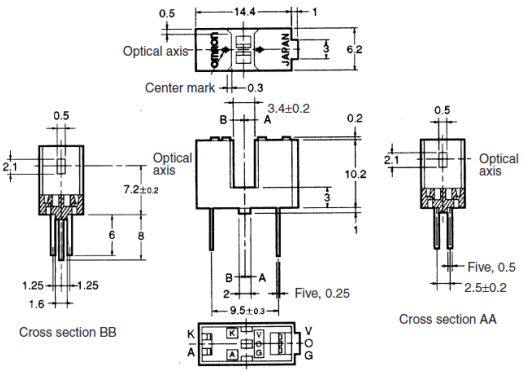
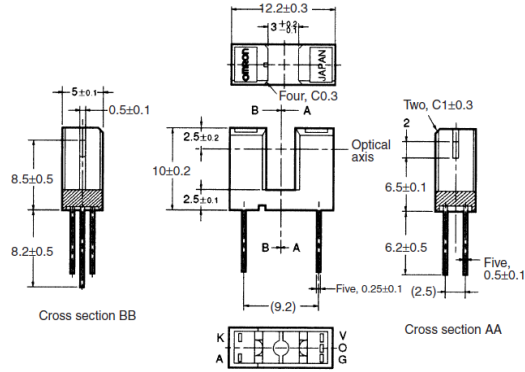
<p>Product discontinuation Model EE-SX1023-W1</p>	<p>Recommendable replacement Model EE-SX1088-W11</p>
<p>Dimensions W×L×H: 6mm×15.2mm×9.2mm Slot width: 2.1mm</p> 	<p>Dimensions W×L×H: 6mm×25mm×13.1mm Slot width: 3.4mm</p> 

<p>Product discontinuation Model EE-SX1057</p>	<p>Recommendable replacement Model EE-SX1071</p>
<p>Dimensions W×L×H: 6.35mm×13mm×11.7mm Slot width: 3.6mm</p> 	<p>Dimensions W×L×H: 6.2mm×13.6mm×10.4mm Slot width: 3.4mm</p> 

<p>Product discontinuation Model EE-SX1115</p>	<p>Recommendable replacement Model EE-SX1042</p>
<p>Dimensions W×L×H: 5mm×14mm×14.7mm Slot width: 5mm</p> 	<p>Dimensions W×L×H: 5mm×14mm×14.7mm Slot width: 5mm</p> 

[Dimensions]

<p align="center">Product discontinuation Model EE-SX1235A-P2</p>	<p align="center">Recommendable replacement</p>
<p>Dimensions $W \times L \times H: 8\text{mm} \times 27\text{mm} \times 15.9\text{mm}$ Slot width: 5mm</p>  <p>Technical drawing of Model EE-SX1235A-P2 showing dimensions and components. Key features include: Four, R0.5; Post header 292250-3 (Tyco Electronics AMP); Dimensions: 8mm, 7.6mm, 4mm, 8.5mm, 11mm, 3.2mm (Aperture width), 0.5mm (Aperture width), 5mm, 5mm, 5mm, 12.6mm, 8.9mm, 3.3mm, 1.1mm, 5.6mm, 0.8mm, 6mm, 3.5mm, 5.8mm, 7.3mm, 17mm, 10mm, 1.3mm, 1.7mm, 1.2mm, 4.6mm, 10.1mm, 7.6mm, 0.7mm, 0.3mm, 0.1mm. Pin labels: (3) A, (2) C, (1) E.</p>	<p>No recommended replacement</p>

<p align="center">Product discontinuation Model EE-SX□01</p>	<p align="center">Recommendable replacement Model EE-SX□98</p>
<p>Dimensions $W \times L \times H: 6.2\text{mm} \times 15.4\text{mm} \times 10.4\text{mm}$ Slot width: 3.4mm</p>  <p>Technical drawing of Model EE-SX□01 showing dimensions and cross-sections. Key features include: Optical axis; Dimensions: 0.5mm, 14.4mm, 1mm, 6.2mm, 0.3mm, 3.4±0.2mm, 0.2mm, 10.2mm, 1mm, 0.5mm, 2.1mm, 7.2±0.2mm, 6mm, 8mm, 1.25mm, 1.25mm, 1.6mm, 9.5±0.3mm, 2mm, 5mm, 0.25mm, 2.5±0.2mm, 0.5mm. Cross sections: BB, AA. Pin labels: K, A, V, O, G.</p>	<p>Dimensions $W \times L \times H: 5\text{mm} \times 12.2\text{mm} \times 10\text{mm}$ Slot width: 3mm</p>  <p>Technical drawing of Model EE-SX□98 showing dimensions and cross-sections. Key features include: Optical axis; Dimensions: 5mm, 0.5±0.1mm, 8.5±0.5mm, 8.2±0.5mm, 12.2±0.3mm, 3±0.1mm, 10±0.2mm, 2.5±0.2mm, 2.5±0.1mm, 9.2mm, 6.5±0.1mm, 6.2±0.5mm, 2mm, 5mm, 0.25±0.1mm, 2.5mm, 0.5±0.1mm. Cross sections: BB, AA. Pin labels: K, A, V, O, G.</p>

[Characteristics]

Item	Product discontinuation Model EE-L109	Recommendable replacement
Forward current	Maximum Ratings 50 mA	No recommended replacement
Reverse voltage	Maximum Ratings 4 V	
Operating temperature	-20°C ~ 85°C	
Storage temperature	-40°C ~ 85°C	
Forward voltage	TYP:1.2 V MAX:1.5 V (Conditions IF=30mA)	
Reverse current	MAX:10 uA (Conditions VR=4V)	
Peak emission wavelength	TYP: 940nm (Conditions IF=30mA)	
Light current	MIN:2 mA TYP:10 mA (Conditions IF=20mA)	

Item	Product discontinuation Model EE-TP109	Recommendable replacement
Collector–Emitter voltage	Maximum Ratings 30 V	No recommended replacement
Collector current	Maximum Ratings 20mA	
Collector dissipation	Maximum Ratings 100 mW	
Operating temperature	-25°C ~ 85°C	
Storage temperature	-40°C ~ 85°C	
Light current	MIN:0.5 mA (Conditions IF=20mA, VCE=10V)	
Dark current	MAX: 200 nA (VCE=10V, 0 lx)	
Collector–Emitter saturated voltage	MAX: 0.4 V (Conditions IF=20mA, IL=1mA)	
Peak spectral sensitivity wavelength	TYP:850 nm (Conditions VCE=10V)	
DC current amplification factor	TYP:800 (Conditions VCE=10V, IL=2mA)	

[Characteristics]

Item	Product discontinuation Model EE-SA107-P2	Recommendable replacement
Emitter Forward current	Maximum Ratings 50 mA	No recommended replacement
Emitter Reverse voltage	Maximum Ratings 4 V	
Detector Collector–Emitter voltage	Maximum Ratings 30 V	
Detector Emitter-Collector voltage	Maximum Ratings 5 V	
Detector Collector current	Maximum Ratings 20mA	
Detector Collector dissipation	Maximum Ratings 100 mW	
Operating temperature	-25°C ~ 85°C	
Storage temperature	-40°C ~ 85°C	
Emitter Forward voltage	TYP:1.2 V MAX:1.5 V (Conditions $I_F=30\text{mA}$)	
Emitter reverse current	TYP:0.01 μA MAX:10 μA (Conditions $V_R=4\text{V}$)	
Emitter Peak emission wavelength	TYP: 940nm (Conditions $I_F=30\text{mA}$)	
Detector Light current	MIN:0.5 mA MAX:14 mA (Conditions $I_F=20\text{mA}$, $V_{CE}=5\text{V}$)	
Detector Dark current	MAX: 200 nA ($V_{CE}=10\text{V}$, 0 lx)	
Detector Collector–Emitter saturated voltage	TYP:0.1 V MAX: 0.4 V (Conditions $I_F=20\text{mA}$, $I_L=0.3\text{mA}$)	
Detector Peak spectral sensitivity wavelength	TYP:850 nm (Conditions $V_{CE}=5\text{V}$)	
Rising time	TYP:8 μs (Conditions $V_{CC}=5\text{V}$, $R_L=100\ \Omega$, 1mA)	
Falling time	TYP:8 μs (Conditions $V_{CC}=5\text{V}$, $R_L=100\ \Omega$, 1mA)	

Item	Product discontinuation Model EE-SA407-P2	Recommendable replacement
Power supply voltage	Maximum Ratings 7 V	No recommended replacement
Output voltage	Maximum Ratings 28 V	
Output current	Maximum Ratings 16 mA	
Permissible output dissipation	Maximum Ratings 250 mW	
Operating temperature	-25°C ~ 75°C	
Storage temperature	-40°C ~ 85°C	
Current consumption	MAX:30 mA (Conditions $V_{CC}=5\text{V}$, With and without incident)	
Low-level output voltage	MAX:0.35 V (Conditions $V_{CC}=5\text{V}$, $I_{OUT}=16\ \text{mA}$)	
High-level output voltage	(MIN: $V_{CC} \times 0.9\text{V}$) (Conditions $V_{CC}=V_{OUT}=5\text{V}$, $R_L=47\text{k}\ \Omega$)	
Response frequency	MIN:3 kHz (Conditions $V_{CC}=V_{OUT}=5\text{V}$, $R_L=47\text{k}\ \Omega$)	

[Characteristics]

Item	Product discontinuation Model EE-SB5-B	Recommendable replacement Model EE-SB5
Emitter Forward current	Maximum Ratings 50 mA	
Emitter Reverse voltage	Maximum Ratings 4 V	
Detector Collector–Emitter voltage	Maximum Ratings 30 V	
Detector Collector current	Maximum Ratings 20mA	
Detector Collector dissipation	Maximum Ratings 100 mW	
Operating temperature	-25°C ~ 80°C	
Storage temperature	-30°C ~ 80°C	
Emitter Forward voltage	TYP:1.2 V MAX:1.5 V (Conditions IF=30mA)	
Emitter Reverse current	TYP:0.01 uA MAX:10 uA (Conditions VR=4V)	
Emitter Peak emission wavelength	TYP: 940nm (Conditions IF=20mA)	
Detector Light current	MIN:200 uA MAX:2000 uA (Conditions IF=20mA, VCE=10V)	
Detector Dark current	TYP:2 nA MAX: 200 nA (VCE=10V, 0 lx)	
Detector Peak spectral sensitivity wavelength	TYP:850 nm (Conditions VCE=10V)	
Rising time	TYP:30 us (Conditions VCC=5V, RL=1kΩ, IL=1mA)	
Falling time	TYP:30 us (Conditions VCC=5V, RL=1kΩ, IL=1mA)	

[Characteristics]

Item	Product discontinuation Model EE-SG3-B	Recommendable replacement Model EE-SX1088
Emitter Forward current	Maximum Ratings 50 mA	
Emitter Reverse voltage	Maximum Ratings 4 V	
Detector Collector–Emitter voltage	Maximum Ratings 30 V	
Detector Collector current	Maximum Ratings 20mA	
Detector Collector dissipation	Maximum Ratings 100 mW	
Operating temperature	-25°C ~ 85°C	
Storage temperature	-40°C ~ 85°C	-30°C ~ 100°C
Emitter Forward voltage	TYP:1.2 V MAX:1.5 V (Conditions IF=30mA)	
Emitter Reverse current	TYP:0.01 uA MAX:10 uA (Conditions VR=4V)	
Emitter Peak emission wavelength	TYP: 940nm (Conditions IF=30mA)	TYP: 940nm (Conditions IF=20mA)
Detector Light current	MIN:2 mA MAX:40 mA (Conditions IF=15mA, VCE=10V)	MIN:0.5 mA MAX:14 mA (Conditions IF=20mA, VCE=10V)
Detector Dark current	TYP:2 nA MAX: 200 nA (VCE=10V, 0 lx)	TYP:2 nA MAX: 200 nA (VCE=10V, 0 lx)
Detector Collector–Emitter saturated voltage	TYP:0.1 V MAX: 0.4 V (Conditions IF=20mA, IL=0.3mA)	TYP:0.15 V MAX: 0.4 V (Conditions IF=20mA, IL=0.1mA)
Detector Peak spectral sensitivity wavelength	TYP:850 nm (Conditions VCE=10V)	
Rising time	TYP:4 us (Conditions VCC=5V, RL=100Ω, IL=5mA)	
Falling time	TYP:4 us (Conditions VCC=5V, RL=100Ω, IL=5mA)	

[Characteristics]

Item	Product discontinuation Model EE-SH3(-□)	Recommendable replacement Model EE-SX1088 / EE-SX1096
Emitter Forward current	Maximum Ratings 50 mA	
Emitter Reverse voltage	Maximum Ratings 4 V	
Detector Collector–Emitter voltage	Maximum Ratings 30 V	
Detector Collector current	Maximum Ratings 20mA	
Detector Collector dissipation	Maximum Ratings 100 mW	
Operating temperature	-25°C ~ 85°C	
Storage temperature	-30°C ~ 100°C	
Emitter Forward voltage	TYP:1.2 V MAX:1.5 V (Conditions IF=30mA)	
Emitter Reverse current	TYP:0.01 uA MAX:10 uA (Conditions VR=4V)	
Emitter Peak emission wavelength	TYP: 940nm (Conditions IF=20mA)	
Detector Light current	EE-SH3/EE-SH3-B MIN:0.5 mA MAX:14 mA EE-SH3-C/EE-SH3-CS MIN:1 mA MAX:28 mA EE-SH3-D/EE-SH3-DS MIN:0.1 mA EE-SH3-G/EE-SH3-GS MIN:0.5 mA MAX:14 mA (Conditions IF=20mA, VCE=10V)	MIN:0.5 mA MAX:14 mA (Conditions IF=20mA, VCE=10V)
Detector Dark current	TYP:2 nA MAX: 200 nA (VCE=10V, 0 lx)	
Detector Collector–Emitter saturated voltage	EE-SH3/EE-SH3-B/EE-SH3-C/ EE-SH3-CS TYP:0.1 V MAX: 0.4 V EE-SH3-D/EE-SH3-DS TYP: - MAX: - EE-SH3-G/EE-SH3-GS TYP:0.1 V MAX: 0.4 V (Conditions IF=20mA, IL=0.1mA)	EE-SX1088 TYP:0.15 V MAX: 0.4 V EE-SX1096 TYP:0.15 V MAX: 0.4 V (Conditions IF=20mA, IL=0.1mA)
Detector Peak spectral sensitivity wavelength	TYP:850 nm (Conditions VCE=5V)	
Rising time	TYP:4 us (Conditions VCC=5V, RL=100Ω, IL=5mA)	
Falling time	TYP:4 us (Conditions VCC=5V, RL=100Ω, IL=5mA)	

[Characteristics]

Item	Product discontinuation Model EE-SPY415	Recommendable replacement Model B5W-LB2112-1
Power supply voltage	Maximum Ratings 7 V	Maximum Ratings 26.4 V
Output voltage	Maximum Ratings 16 V	Maximum Ratings 26.4 V
Output current	Maximum Ratings 30 mA	Maximum Ratings 60 mA
Operating temperature	-25°C ~ 85°C	-10°C ~ 60°C
Storage temperature	-30°C ~ 100°C	-25°C ~ 80°C
Current consumption	MAX: 25 mA (Conditions With and without incident)	MAX: 20 mA (Conditions With and without incident)
Low-level output voltage	MAX: 0.4 V (Conditions IOU=20 mA , With incident)	MAX: 0.8 V (Conditions IOU=50 mA) MAX: 0.32 V (Conditions IOU=10 mA)
High-level output voltage	MIN: (VCC×0.9) (Conditions VOUT= VCC, RL=1kΩ , Without incident)	-
Response delay time	MAX:1 ms (Conditions VOUT= VCC, RL=1kΩ)	MAX:1 ms (Conditions VOUT= VCC)

[Characteristics]

Item	Product discontinuation Model EE-SX1023-W1	Recommendable replacement Model EE-SX1088-W11
Emitter Forward current	Maximum Ratings 50 mA	
Emitter Reverse voltage	Maximum Ratings 4 V	
Detector Collector–Emitter voltage	Maximum Ratings 30 V	
Detector Collector current	Maximum Ratings 20mA	
Detector Collector dissipation	Maximum Ratings 100 mW	
Operating temperature	-25°C ~ 85°C	-25°C ~ 80°C
Storage temperature	-30°C ~ 100°C	-25°C ~ 85°C
Emitter Forward voltage	TYP:1.2 V MAX:1.5 V (Conditions IF=30mA)	
Emitter Reverse current	TYP:0.01 uA MAX:10 uA (Conditions VR=4V)	
Emitter Peak emission wavelength	TYP: 940nm (Conditions IF=20mA)	
Detector Light current	MIN:0.5 mA (Conditions IF=20mA、VCE=5V)	MIN:0.5 mA MAX:14 mA (Conditions IF=20mA、VCE=10V)
Detector Dark current	TYP:2 nA MAX: 200 nA (VCE=10V、0 lx)	
Detector Collector–Emitter saturated voltage	TYP:0.1 V MAX: 0.4 V (Conditions IF=20mA、IL=0.1mA)	TYP:0.15 V MAX: 0.4 V (Conditions IF=20mA、IL=0.1mA)
Detector Peak spectral sensitivity wavelength	TYP:850 nm (Conditions VCE=5V)	
Rising time	TYP:4 us (Conditions VCC=5V, RL=100Ω, IL=5mA)	
Falling time	TYP:4 us (Conditions VCC=5V, RL=100Ω, IL=5mA)	

[Characteristics]

Item	Product discontinuation Model EE-SX1057	Recommendable replacement Model EE-SX1071
Emitter Forward current	Maximum Ratings 50 mA	
Emitter Reverse voltage	Maximum Ratings 4 V	
Detector Collector–Emitter voltage	Maximum Ratings 30 V	
Detector Emitter-Collector voltage	Maximum Ratings 5 V	-
Detector Collector current	Maximum Ratings 20mA	
Detector Collector dissipation	Maximum Ratings 100 mW	
Operating temperature	-25°C ~ 85°C	-25°C ~ 80°C
Storage temperature	-30°C ~ 100°C	-25°C ~ 85°C
Emitter Forward voltage	TYP:1.15 V MAX:1.5 V (Conditions IF=30mA)	TYP:1.2 V MAX:1.5 V (Conditions IF=30mA)
Emitter Reverse current	TYP:0.01 uA MAX:10 uA (Conditions VR=4V)	
Emitter Peak emission wavelength	TYP: 940nm (Conditions IF=20mA)	
Detector Light current	MIN:1.5 mA MAX:8 mA (Conditions IF=15mA, VCE=2V)	MIN:0.5 mA MAX:14 mA (Conditions IF=20mA, VCE=10V)
Detector Dark current	TYP:2 nA MAX: 200 nA (VCE=10V, 0 lx)	
Detector Collector–Emitter saturated voltage	MAX: 0.4 V (Conditions IF=30mA, IL=0.1mA)	TYP:0.15 V MAX: 0.4 V (Conditions IF=20mA, IL=0.1mA)
Detector Peak spectral sensitivity wavelength	TYP:850 nm (Conditions VCE=10V)	
Rising time	TYP:4 us MAX:20 us (Conditions VCC=5V, RL=100Ω, IL=5mA)	TYP:4 us (Conditions VCC=5V, RL=100Ω, IL=5mA)
Falling time	TYP:4 us MAX:20 us (Conditions VCC=5V, RL=100Ω, IL=1mA)	TYP:4 us (Conditions VCC=5V, RL=100Ω, IL=1mA)

[Characteristics]

Item	Product discontinuation Model EE-SX1115	Recommendable replacement Model EE-SX1042
Emitter Forward current	Maximum Ratings 50 mA	
Emitter Reverse voltage	Maximum Ratings 4 V	
Detector Collector–Emitter voltage	Maximum Ratings 30 V	
Detector Collector current	Maximum Ratings 20mA	
Detector Collector dissipation	Maximum Ratings 100 mW	
Operating temperature	-25°C ~ 85°C	
Storage temperature	-30°C ~ 100°C	
Emitter Forward voltage	TYP:1.2 V MAX:1.5 V (Conditions IF=30mA)	
Emitter Reverse current	TYP:0.01 uA MAX:10 uA (Conditions VR=4V)	
Emitter Peak emission wavelength	TYP: 940nm (Conditions IF=20mA)	
Detector Light current	MIN:0.55 mA MAX:14 mA (Conditions IF=20mA, VCE=10V)	MIN:0.5 mA MAX:10 mA (Conditions IF=20mA, VCE=10V)
Detector Dark current	TYP:2 nA MAX: 200 nA (VCE=10V, 0 lx)	
Detector Collector–Emitter saturated voltage	TYP:0.1 V MAX: 0.4 V (Conditions IF=20mA, IL=0.1mA)	
Detector Peak spectral sensitivity wavelength	TYP:850 nm (Conditions VCE=10V)	
Rising time	TYP:4 us (Conditions VCC=5V, RL=100Ω, IL=5mA)	
Falling time	TYP:4 us (Conditions VCC=5V, RL=100Ω, IL=5mA)	

[Characteristics]

Item	Product discontinuation Model EE-SX1235A-P2	Recommendable replacement
Emitter Forward current	Maximum Ratings 50 mA	No recommended replacement
Emitter Reverse voltage	Maximum Ratings 4 V	
Detector Collector–Emitter voltage	Maximum Ratings 30 V	
Detector Collector current	Maximum Ratings 20mA	
Detector Collector dissipation	Maximum Ratings 100 mW	
Operating temperature	-25°C ~ 95°C	
Storage temperature	-40°C ~ 100°C	
Emitter Forward voltage	TYP:1.2 V MAX:1.5 V (Conditions IF=30mA)	
Emitter Reverse current	TYP:0.01 uA MAX:10 uA (Conditions VR=4V)	
Emitter Peak emission wavelength	TYP: 940nm (Conditions IF=30mA)	
Detector Light current	MIN:0.6 mA MAX:14 mA (Conditions IF=20mA、VCE=5V)	
Detector Dark current	MAX: 200 nA (VCE=10V、0 lx)	
Detector Collector–Emitter saturated voltage	TYP:0.1 V MAX: 0.4 V (Conditions IF=20mA、IL=0.3mA)	
Detector Peak spectral sensitivity wavelength	TYP:850 nm (Conditions VCE=5V)	
Rising time	TYP:8 us (Conditions VCC=5V, RL=100Ω, IL=5mA)	
Falling time	TYP:8 us (Conditions VCC=5V, RL=100Ω, IL=1mA)	

[Characteristics]

Item	Product discontinuation Model EE-SX□01	Recommendable replacement Model EE-SX□98
Emitter Forward current	Maximum Ratings 50 mA	
Emitter Reverse voltage	Maximum Ratings 4 V	
Detector Power supply voltage	Maximum Ratings 16 V	
Detector Output voltage	Maximum Ratings 28 V	
Detector Output current	Maximum Ratings 20mA	
Detector Permissible output dissipation	Maximum Ratings 250 mW	
Operating temperature	-40°C ~ 75°C	
Storage temperature	-40°C ~ 85°C	
Emitter Forward voltage	TYP:1.2 V MAX:1.5 V (Conditions IF=20mA)	
Emitter Reverse current	TYP:0.01 uA MAX:10 uA (Conditions VR=4V)	
Emitter Peak emission wavelength	TYP: 940nm (Conditions IF=20mA)	
Detector Low-level output voltage	TYP:0.12 V MAX:0.4 V (Conditions VCC=4.5~16V, IOL=16mA, IF=0mA:EE-SX301 IF=8mA:EE-SX401)	TYP:0.12 V MAX:0.4 V (Conditions VCC=4.5~16V, IOL=16mA, IF=0mA:EE-SX398 IF=8mA:EE-SX498)
Detector High-level output voltage	MIN:15 V (Conditions VCC=16V, RL=1kΩ, IF=8mA:EE-SX301 IF=0mA:EE-SX401)	MIN:15 V (Conditions VCC=16V, RL=1kΩ, IF=8mA:EE-SX398 IF=0mA:EE-SX498)
Detector Current consumption	TYP:3.2 mA MAX:10 mA (Conditions VCC=16V)	
Detector Peak spectral sensitivity wavelength	TYP:870 nm (Conditions VCE=4.5~16V)	
LED current when output is OFF	TYP:3mA MAX:8mA (Conditions VCE=4.5~16V, EE-SX301)	TYP:2 mA MAX:5 mA (Conditions VCE=4.5~16V, EE-SX398)
LED current when output is ON	TYP:3mA MAX:8mA (Conditions VCE=4.5~16V, EE-SX401)	TYP:2 mA MAX:5 mA (Conditions VCE=4.5~16V, EE-SX498)
Hysteresis	TYP:15 % (Conditions VCE=4.5~16V)	
Response frequency	MIN:3 kHz (Conditions VCE=4.5~16V, IF=15mA, IOL=16mA)	
Response delay time	TYP:3 us (Conditions VCC=4.5~16V, IF=15mA, IOL=16mA) EE-SX301: raise time EE-SX401: falling time	TYP:3 us (Conditions VCC=5V, RL=100Ω, IL=5mA) EE-SX398: raise time EE-SX498: falling time
Response delay time	TYP:20 us (Conditions VCC=4.5~16V, IF=15mA, IOL=16mA) EE-SX301: falling time EE-SX401: raise time	TYP:20 us (Conditions VCC=4.5~16V, IF=15mA, IOL=16mA) EE-SX398: falling time EE-SX498: raise time

[Characteristics]

Item	Product discontinuation Model EE-SX□239-P2	Recommendable replacement
Power supply voltage	Maximum Ratings 7 V	No recommended replacement
Output voltage	Maximum Ratings 28 V	
Output current	Maximum Ratings 16 mA	
Permissible output dissipation	Maximum Ratings 250 mW	
Operating temperature	-20°C ~ 75°C	
Storage temperature	-40°C ~ 85°C	
Current consumption	MAX:16.5 mA (Conditions VCC=5V,With and without incident)	
Low-level output voltage	MAX:0.35 V (Conditions VCC=5V,IOUT=16 mA without incident: EE-SX3239-P2 with incident: EE-SX4239-P2)	
High-level output voltage	(MIN:VCC × 0.9V) (Conditions VCC=5V,IOUT=16 mA with incident: EE-SX3239-P2 without incident: EE-SX4239-P2)	
Response frequency	MIN:3 kHz (Conditions VCC=5V,VOUT=VCC, RL=47kΩ)	

Item	Product discontinuation Model EE-SX4235A-P2(-5)	Recommendable replacement
Power supply voltage	Maximum Ratings 7 V:EE-SX4235A-P2 Maximum Ratings 13 V:EE-SX4235A-P2-5	No recommended replacement
Output voltage	Maximum Ratings 28 V	
Output current	Maximum Ratings 16 mA	
Permissible output dissipation	Maximum Ratings 250 mW	
Operating temperature	-20°C ~ 75°C	
Storage temperature	-40°C ~ 85°C	
Current consumption	MAX:16.5 mA (Conditions VCC=5V, With and without incident:EE-SX4235A-P2 VCC=5V, With and without incident:EE-SX4235A-P2-5)	
Low-level output voltage	MAX:0.35 V (Conditions VCC=5V,IOUT=16 mA:EE-SX4235A-P2 VCC=12V, IOUT=16 mA:EE-SX4235A-P2-5)	
High-level output voltage	(MIN:VCC × 0.9V) (Conditions VCC=5V, IOUT=16 mA:EE-SX4235A-P2 VCC=5V, IOUT=16 mA:EE-SX4235A-P2-5)	
Response frequency	MIN:3 kHz (Conditions VCC=5V,VOUT=VCC,RL=47kΩ:EE-SX4235A-P2 VCC=5V,VOUT=VCC,RL=47kΩ:EE-SX4235A-P2-5)	

[Characteristics]

Item	Product discontinuation Model EE-SY□13	Recommendable replacement Model EE-SY□10
Emitter Forward current	Maximum Ratings 50 mA	
Emitter Reverse voltage	Maximum Ratings 4 V	
Detector Power supply voltage	Maximum Ratings 16 V	
Detector Output voltage	Maximum Ratings 28 V	
Detector Output current	Maximum Ratings 20mA	
Detector Permissible output dissipation	Maximum Ratings 250 mW	
Operating temperature	-40°C ~ 75°C	
Storage temperature	-40°C ~ 85°C	
Emitter Forward voltage	TYP:1.2 V MAX:1.5 V (Conditions IF=20mA)	
Emitter Reverse current	TYP:0.01 uA MAX:10 uA (Conditions VR=4V)	
Emitter Peak emission wavelength	TYP: 920nm (Conditions IF=20mA)	
Detector Low-level output voltage	TYP:0.12 V MAX:0.4 V (Conditions VCC=4.5~16V, IOL=16mA, without incident:EE-SY313, with incident:EE-SY413)	TYP:0.12 V MAX:0.4 V (Conditions VCC=4.5~16V, IOL=16mA, without incident:EE-SY313, with incident:EE-SY413)
Detector High-level output voltage	MIN:15 V (Conditions VCC=16V, RL=1kΩ, with incident:EE-SY313, without incident:EE-SY413)	MIN:15 V (Conditions VCC=16V, RL=1kΩ, with incident:EE-SY310, without incident:EE-SY410)
Detector Current consumption	TYP:3.2 mA MAX:10 mA (Conditions VCC=16V)	
Detector Peak spectral sensitivity wavelength	TYP:870 nm (Conditions VCE=4.5~16V)	
LED current when output is OFF	TYP:10mA MAX:20mA (Conditions VCE=4.5~16V, EE-SY313)	TYP:6 mA MAX:15 mA (Conditions VCE=4.5~16V, EE-SY310)
LED current when output is ON	TYP:10mA MAX:20mA (Conditions VCE=4.5~16V, EE-SY413)	TYP:6 mA MAX:15 mA (Conditions VCE=4.5~16V, EE-SY410)
Hysteresis	TYP:15 % (Conditions VCE=4.5~16V)	
Response frequency	MIN:50 pps (Conditions VCE=4.5~16V, IF=20mA, IOL=16mA)	MIN:50 pps (Conditions VCE=4.5~16V, IF=15mA, IOL=16mA)
Response delay time	TYP:3 us (Conditions VCC=4.5~16V, IF=15mA, IOL=16mA) EE-SY313: raise time EE-SY413: falling time	TYP:3 us (Conditions VCC=5V, RL=100Ω, IL=5mA) EE-SY310: raise time EE-SY410: falling time
Response delay time	TYP:20 us (Conditions VCC=4.5~16V, IF=15mA, IOL=16mA) EE-SY313: falling time EE-SY410: raise time	TYP:20 us (Conditions VCC=4.5~16V, IF=15mA, IOL=16mA) EE-SX310: falling time EE-SY413: raise time

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