

APS3227SP1C-P22 Ambient Light Photo Sensor

DESCRIPTION

- The APS3227SP1C-P22 is a NPN silicon phototransistor, It is a good effective solution to the power saving of display backlighting appliances and the device is sensitive to the visible spectrum

FEATURES

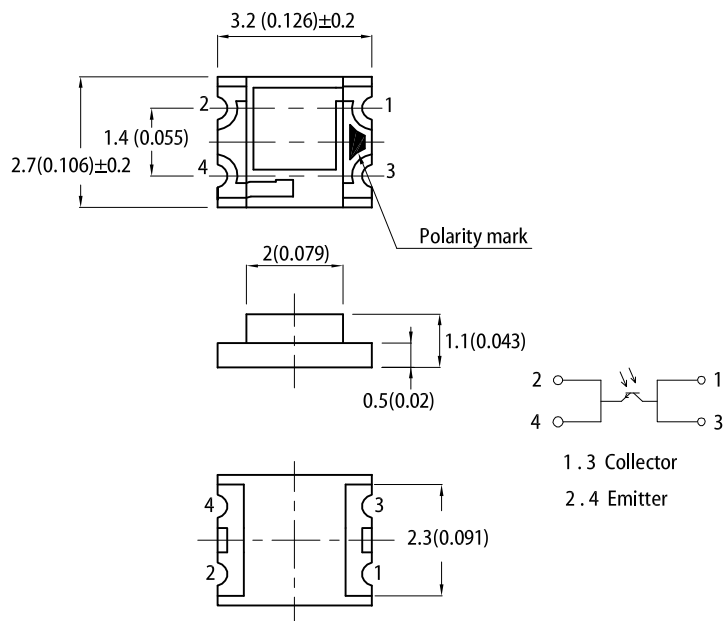
- Lead-free package
- Component in accordance with RoHS
- Adapted to human eye responsive
- Wide angle of half sensitivity
- Moisture sensitivity level: 3
- Package: 2000 pcs / reel
- Water clear lens
- Halogen-free

APPLICATIONS

Detection of ambient light to control display backlighting in:

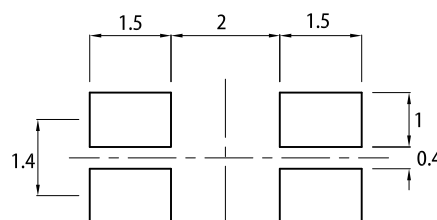
- Mobile phones
- PDAs
- Note books
- Video cameras

PACKAGE DIMENSIONS



RECOMMENDED SOLDERING PATTERN

(units : mm; tolerance : ± 0.1)



Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.1(0.004") unless otherwise noted.
3. The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.
4. The device has a single mounting surface. The device must be mounted according to the specifications.

ABSOLUTE MAXIMUM RATINGS at $T_A=25^\circ\text{C}$

Parameter	Symbol	Value	Unit	Notice
Collector Emitter Voltage	V_{ce0}	60	V	$I_{ce0} = 100 \mu\text{A}$
Emitter-Collector Voltage	V_{eco}	4	V	$I_{eco} = 100 \mu\text{A}$
Operating Temperature	T_{opr}	-40 to +85	$^\circ\text{C}$	-
Storage Temperature	T_{stg}	-40 to +85	$^\circ\text{C}$	-

Note:

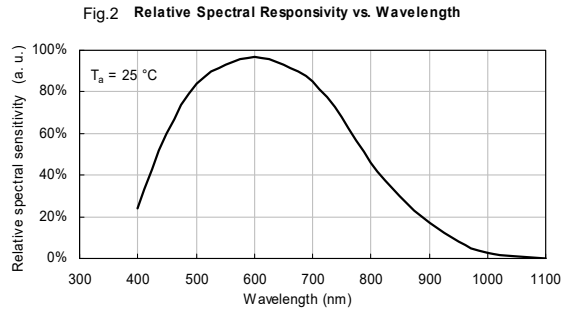
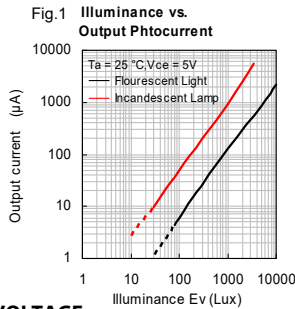
1. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity – Ref JEDEC/JESD625-A and JEDEC/J-STD-033.

ELECTRICAL / OPTICAL CHARACTERISTICS at $T_A=25^\circ\text{C}$

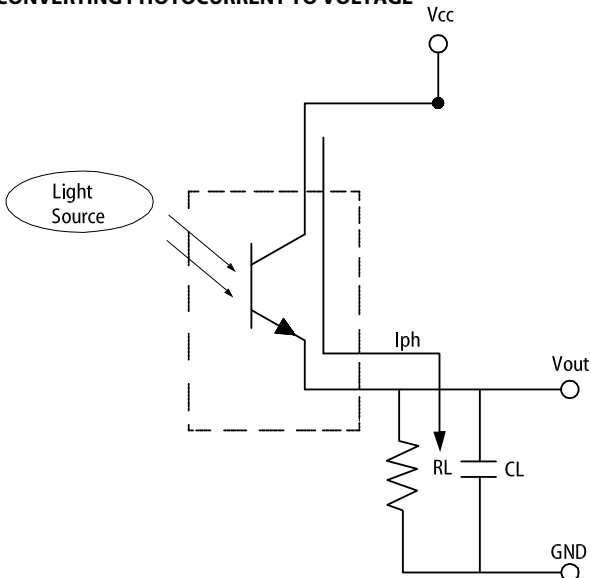
Parameter	Symbol	Value			Unit	Conditions
		Min.	Typ.	Max.		
Collector Emitter Breakdown Voltage	$B_{V_{ce0}}$	60	-	-	V	$I_{ce0} = 100 \mu\text{A}$
Emitter Collector Breakdown Voltage	$B_{V_{eco}}$	4	-	-	V	$I_{eco} = 100 \mu\text{A}$
Collector dark current	I_D	-	10	100	nA	$V_{CE} = 5\text{V}, E_V = 0\text{Lx}$
Light Current (1)	I_{PH1}	-	6	-	μA	$V_{CE} = 5\text{V}, E_V = 100\text{Lx}$ ^[1]
Light Current (2)	I_{PH2}	-	130	-	μA	$V_{CE} = 5\text{V}, E_V = 1000\text{Lx}$ ^[1]
Light Current (3)	I_{PH3}	-	950	-	μA	$V_{CE} = 5\text{V}, E_V = 1000\text{Lx}$ ^[2]
Light Current (4)	I_{PH4}	-	420	-	μA	$V_{CE} = 5\text{V}, E_V = 1000\text{Lx}$ ^[3]
Light Test Current	I_{TPH}	40	-	290	μA	$V_{CE} = 5\text{V}, E_V = 100\text{Lx}$, at 630 nm LED ^[4]
Rise Time(10% to 90%)	t_r	-	3.24	-	μs	$R_L = 50\Omega, V_R = 5\text{V}$, $F = 1\text{KHz}, \text{CCT/K} = 11195$, 1000Lux
Fall Time(90% to 10%)	t_f	-	1	-	μs	
Saturation Output Voltage	V_o	4.5	4.7	-	V	$V_{CC} = 5\text{V}, E_V = 1000\text{Lx}$ ^[1] , $R_L = 75\text{K} \Omega$
Response Wavelength	λ	390	-	700	nm	>10% Response
Collector Emitter Saturation Voltage	$V_{CE(sat)}$	-	-	0.4	V	$I_C = 10\text{mA}$
Range of Spectral Bandwidth	$\lambda_{0.1}$	390	-	950	nm	-
Wavelength of Peak Sensitivity	λ_p	-	580	-	nm	-

Notes:

- White Fluorescent light (Color Temperature = 6200K) is used as light source.
- Illuminance by CIE standard illuminant-A/2856K, incandescent lamp.
- Sunlight (Color Temperature = 4600K) is used as light source.
- 630nm LED is substituted in mass production.
- Excess driving current and / or operating temperature higher than recommended conditions may result in severe light degradation or premature failure.



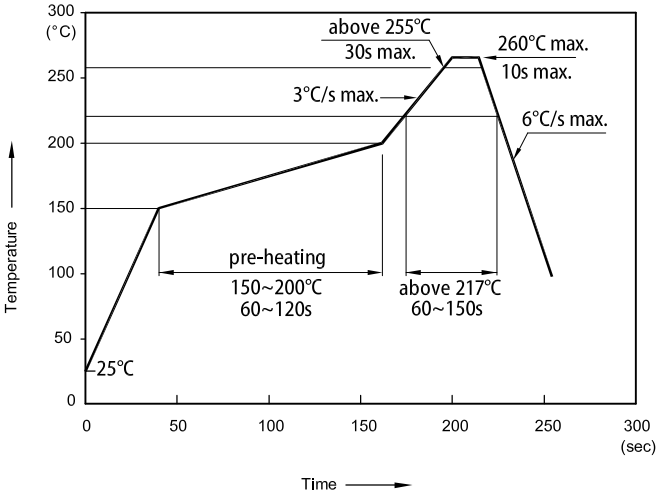
CONVERTING PHOTOCURRENT TO VOLTAGE



Notes:

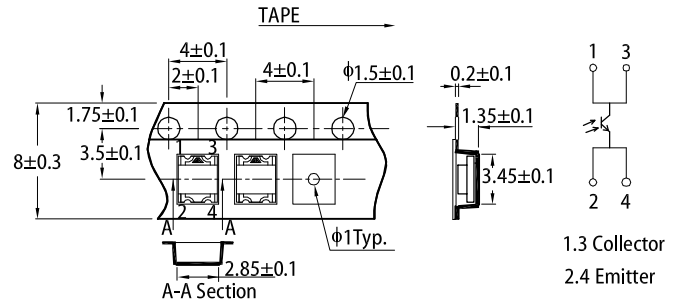
- The output voltage (V_{out}) is the product of photocurrent (I_{PH}) and loading resistor (R_L)
- A right loading resistor shall be chosen to meet the requirement of maximum ambient light, and Output saturation voltage:
 $V_{out(max)} = I_{out(max)} \times R_L \leq V_{out(saturation)} = V_{cc} - 0.3\text{V}$

REFLOW SOLDERING PROFILE for LEAD-FREE SMD PROCESS

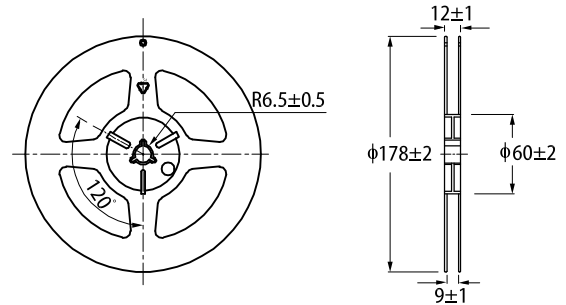


Notes:
 1. Don't cause stress to the LEDs while it is exposed to high temperature.
 2. The maximum number of reflow soldering passes is 2 times.
 3. Reflow soldering is recommended. Other soldering methods are not recommended as they might cause damage to the product.

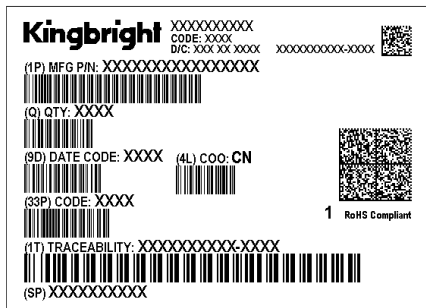
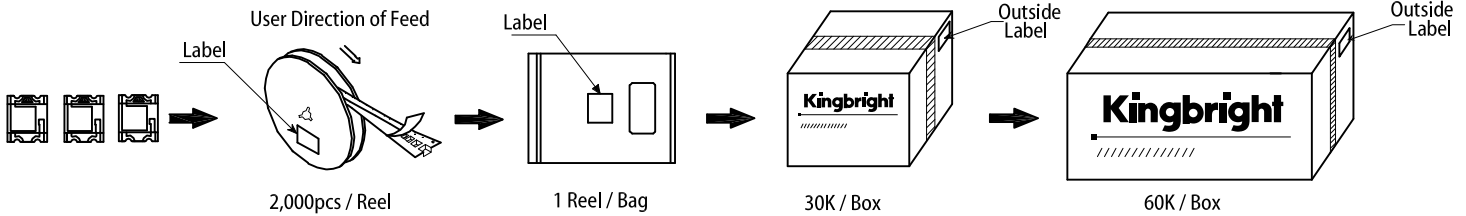
TAPE SPECIFICATIONS (units : mm)



REEL DIMENSION (units : mm)



PACKING & LABEL SPECIFICATIONS



PRECAUTIONARY NOTES

- The information included in this document reflects representative usage scenarios and is intended for technical reference only.
- The part number, type, and specifications mentioned in this document are subject to future change and improvement without notice. Before production usage customer should refer to the latest datasheet for the updated specifications.
- When using the products referenced in this document, please make sure the product is being operated within the environmental and electrical limits specified in the datasheet. If customer usage exceeds the specified limits, Kingbright will not be responsible for any subsequent issues.
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