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Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

GP1S74PJ000F

Gap : 5mm Slit : 0.5mm Phototransistor Output, Snap-in fixing Transmissive Photointerrupter with Connector

■ Description

GP1S74PJ000F is a standard, phototransistor output, transmissive photointerrupter with opposing emitter and detector in a case, providing non-contact sensing. For this family of devices, the emitter and detector are inserted in a case, and a 3-pin connector is included to allow remote-mount or off-board designs.

■ Features

1. Transmissive with phototransistor output
2. Highlights :
   - Special position hooks compatible with 3 different plate thicknesses (1.0, 1.2, 1.6mm)
   - Snap insertion
3. Key Parameters :
   - Gap Width : 5mm
   - Slit Width (detector side): 0.5mm
   - Package : 17×12.8×8mm (without connector and hooks)
   - Connector : Tyco Electronics AMP K.K. (PN : 292133-3)
4. Lead free and RoHS directive compliant

■ Agency approvals/Compliance

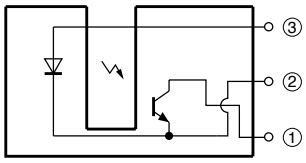
1. Compliant with RoHS directive

■ Applications

1. General purpose detection of object presence or motion.
2. Example : PPC, FAX, Printer

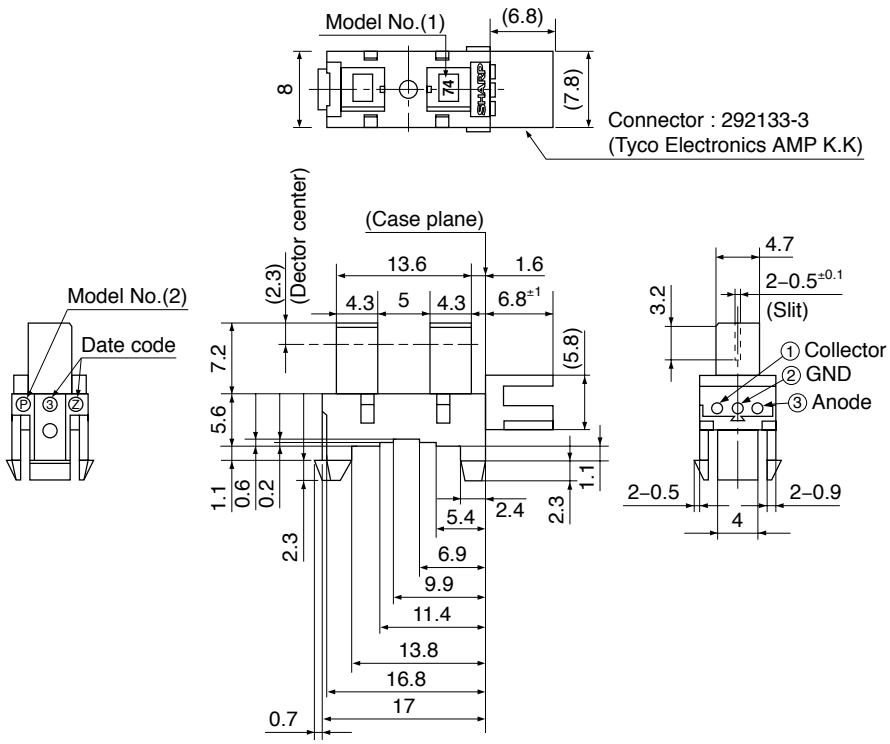
Sheet No.: D3-A04401EN
Date Oct. 3. 2005

■ Internal Connection Diagram



■ Outline Dimensions

(Unit : mm)



• Unspecified tolerance shall be as follows ;

Dimensions(d)	Tolerance
d≤5	±0.15
5≤d<15	±0.2
15≤d	±0.3

• ( ) : Reference dimensions

Product mass : approx. 0.8g

Connector terminal plating material : Sn

Date code (2 digit)

1st digit		2nd digit	
Year of production		Month of production	
A.D.	Mark	Month	Mark
2000	0	1	1
2001	1	2	2
2002	2	3	3
2003	3	4	4
2004	4	5	5
2005	5	6	6
2006	6	7	7
2007	7	8	8
2008	8	9	9
2009	9	10	X
2010	0	11	Y
:	:	12	Z

repeats in a 10 year cycle

Country of origin

Japan or Philippines
(Indicated on the packing case)

■ Absolute Maximum Ratings

(T_a=25°C)

Parameter		Symbol	Rating	Unit
Input	*1 Forward current	I_F	50	mA
	*1, 2 Peak forward current	I_{FM}	1	A
	Reverse voltage	V_R	6	V
	Power dissipation	P	75	mW
Output	Collector-emitter voltage	V_{CEO}	35	V
	Emitter-collector voltage	V_{ECO}	6	V
	Collector current	I_C	20	mA
	*1 Collector power dissipation	P_C	75	mW
*3 Operating temperature		T_{opr}	–25 to +85	°C
*3 Storage temperature		T_{stg}	–40 to +85	°C

*1 Refer to Fig. 1, 2, 3
*2 Pulse width ≤ 100μs, Duty ratio=0.01
*3 The connector should be plugged in/out at normal temperature.

■ Electro-optical Characteristics

(T_a=25°C)

Parameter			Symbol	Condition	MIN.	TYP.	MAX.	Unit
Input	Forward voltage		V_F	I_F=20mA	–	1.2	1.4	V
	Peak forward voltage		V_{FM}	I_{FM}=0.5A		3	4	V
	Reverse current		I_R	V_R=3V	–	–	10	μA
Output	Collector dark current		I_{CEO}	V_{CE}=20V	–	1	100	nA
Transfer characteristics	Collector current		I_C	V_{CE}=5V, I_F=20mA	0.5	–	15	mA
	Collector-emitter saturation voltage		$V_{CE(sat)}$	I_F=40mA, I_C=0.5mA	–	–	0.4	V
	Response time	Rise time	t_r	V_{CE}=2V, I_C=2mA, R_L=100Ω	–	3	15	μs
		Fall time	t_f		–	4	20	

Fig.1 Forward Current vs. Ambient Temperature

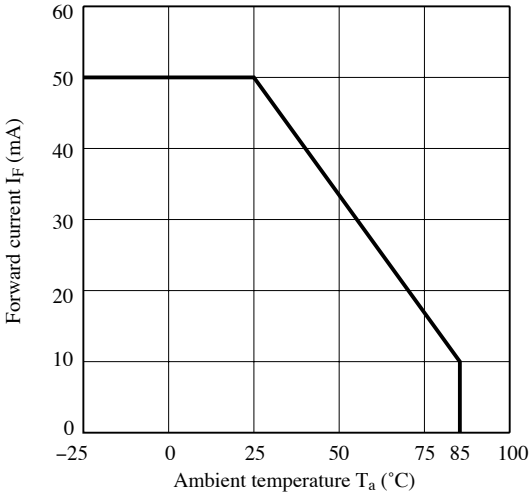


Fig.2 Collector Power Dissipation vs. Ambient Temperature

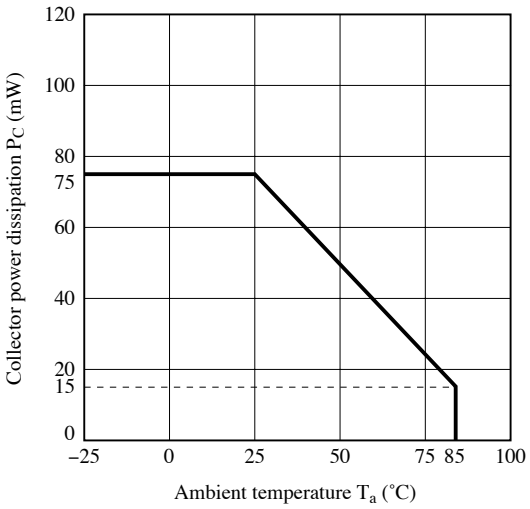


Fig.3 Peak Forward Current vs. Duty Ratio

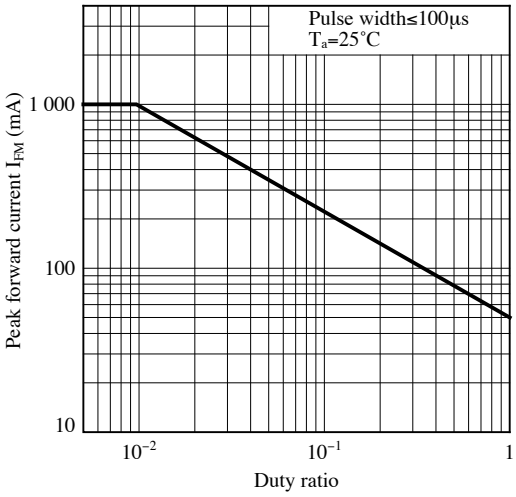


Fig.4 Forward Current vs. Forward Voltage

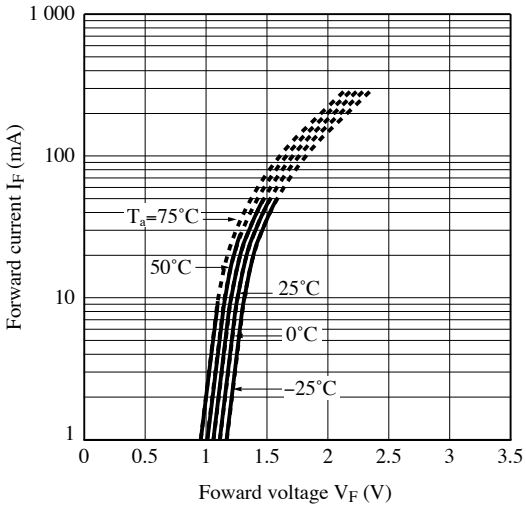


Fig.5 Collector Current vs. Forward Current

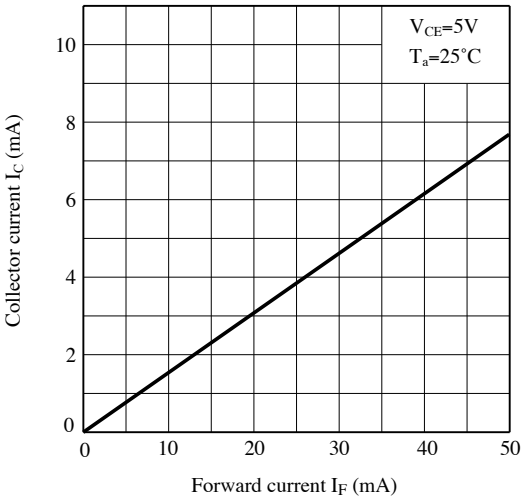


Fig.6 Collector Current vs. Collector-emitter Voltage

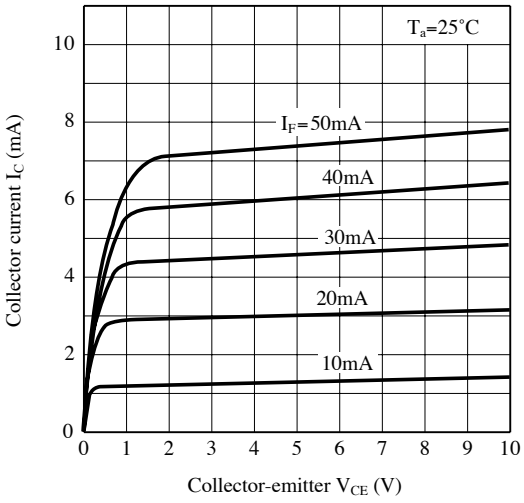


Fig.7 Collector Current vs. Ambient Temperature

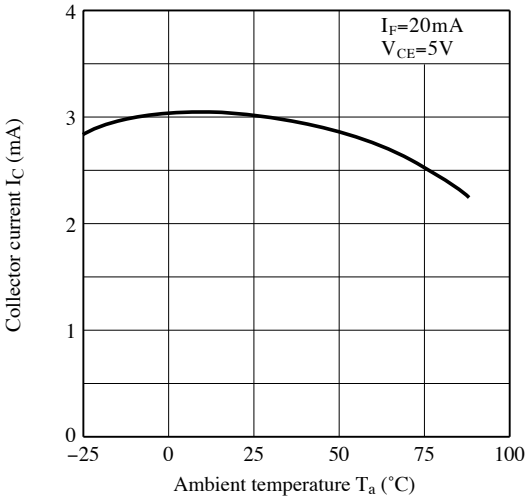


Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature

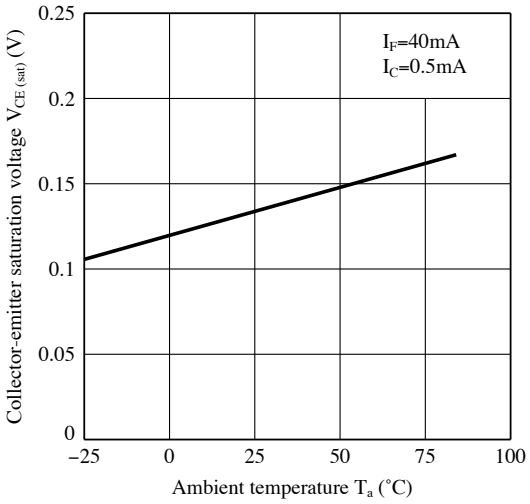


Fig.9 Response Time vs. Load Resistance

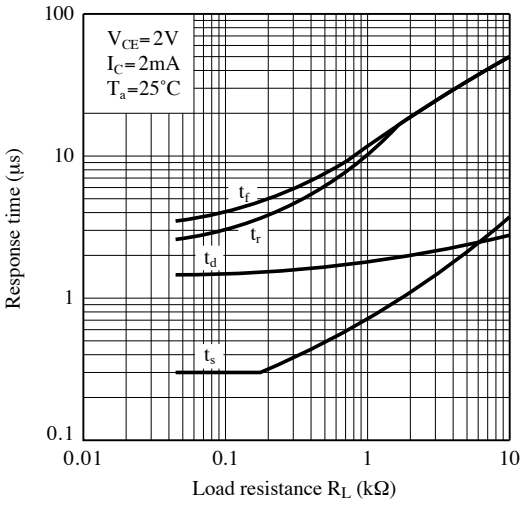


Fig.10 Test Circuit for Response Time

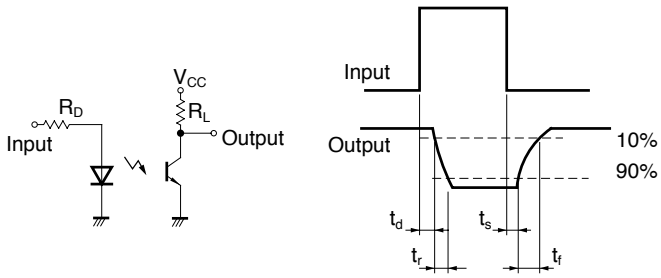


Fig.11 Frequency Response

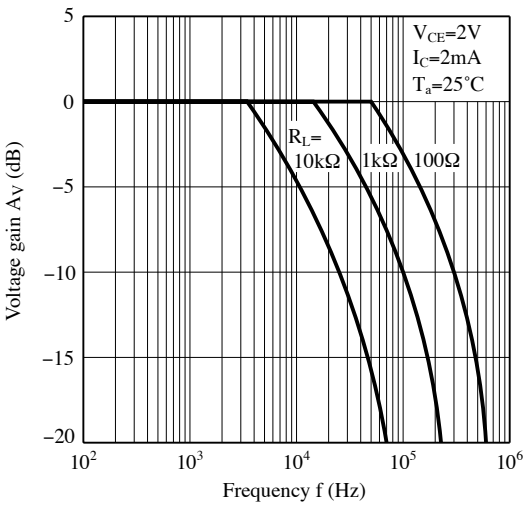


Fig.12 Collector Dark Current vs. Ambient Temperature

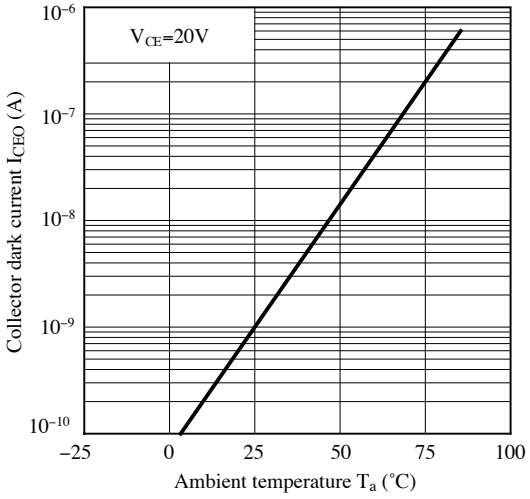


Fig.13 Detecting Position Characteristics (1)

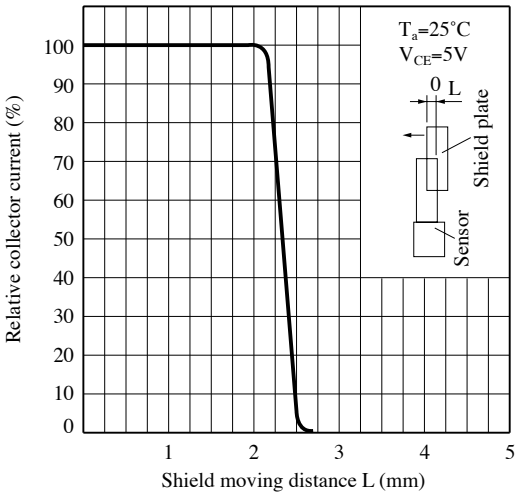
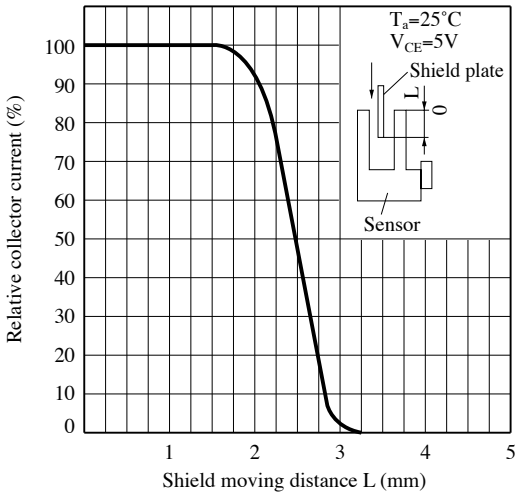


Fig.14 Detecting Position Characteristics (2)



Remarks : Please be aware that all data in the graph are just for reference and not for guarantee.

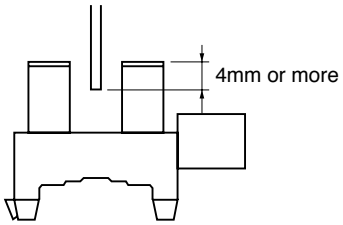
■ Design Considerations

● Design guide

1) Prevention of detection error
To prevent photointerrupter from faulty operation caused by external light, do not set the detecting face to the external light.

2) Position of opaque board
Opaque board shall be installed at place 4mm or more from the top of elements.

(Example)



This product is not designed against irradiation and incorporates non-coherent IRED.

● Degradation

In general, the emission of the IRED used in photocouplers will degrade over time.
In the case of long term operation, please take the general IRED degradation (50% degradation over 5 years) into the design consideration.

● Parts

This product is assembled using the below parts.

• Photodetector (qty. : 1)

Category	Material	Maximum Sensitivity wavelength (nm)	Sensitivity wavelength (nm)	Response time (μs)
Phototransistor	Silicon (Si)	930	400 to 1 200	3

• Photo emitter (qty. : 1)

Category	Material	Maximum light emitting wavelength (nm)	I/O Frequency (MHz)
Infrared emitting diode (non-coherent)	Gallium arsenide (GaAs)	950	0.3

• Material

Case	Lead frame	Connector terminal finish
Black polycarbonate resin (UL94 V-2)	42Alloys (No plating)	Sn plating

● Recommended Installation Hole drawing

1) We recommend to fix the product at punching side on the fixing plate (metal plate).
2) Please decide the final dimensions at your side after confirmation by the actual applications. Because mounting efficiency and mounted stabilization are dependent on mounting hole corner curve and punched state.
3) Tolerance shall be ±0.1mm

Normal type

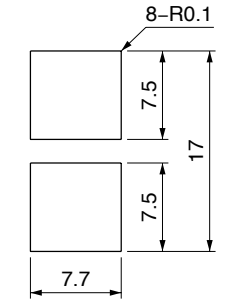


Plate thickness : 1.6mm

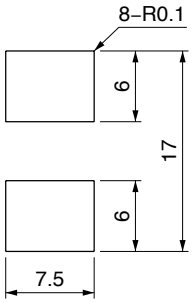


Plate thickness : 1.2mm

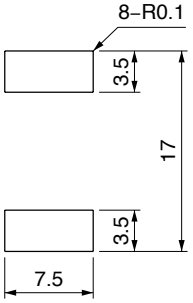


Plate thickness : 1mm

Reverse-insertion prevention type

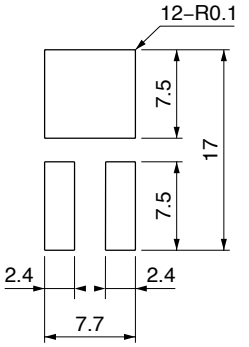


Plate thickness : 1.6mm

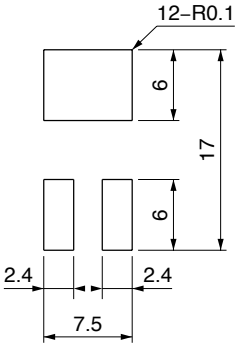


Plate thickness : 1.2mm

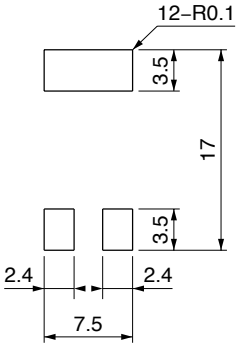


Plate thickness : 1mm

■ Manufacturing Guidelines

● Notes of cleaning

Please carry out neither the immersion cleaning nor the ultrasonic cleaning to avoid the solvent residue inside the case.

When necessary, dust and stain shall clean by air-blow or wipe off by soft cloth soaked in cleaning agent. The cleaning agent used to wipe off must use only the following kind. Ethyl alcohol, Methyl alcohol and Isopropyl alcohol.

● Presence of ODC

This product shall not contain the following materials.
And they are not used in the production process for this product.
Regulation substances : CFCs, Halon, Carbon tetrachloride, 1.1.1-Trichloroethane (Methylchloroform)

Specific brominated flame retardants such as the PBBOs and PBBs are not used in this product at all.

This product shall not contain the following materials banned in the RoHS Directive (2002/95/EC).

- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE).

■ Package specification

● Case package

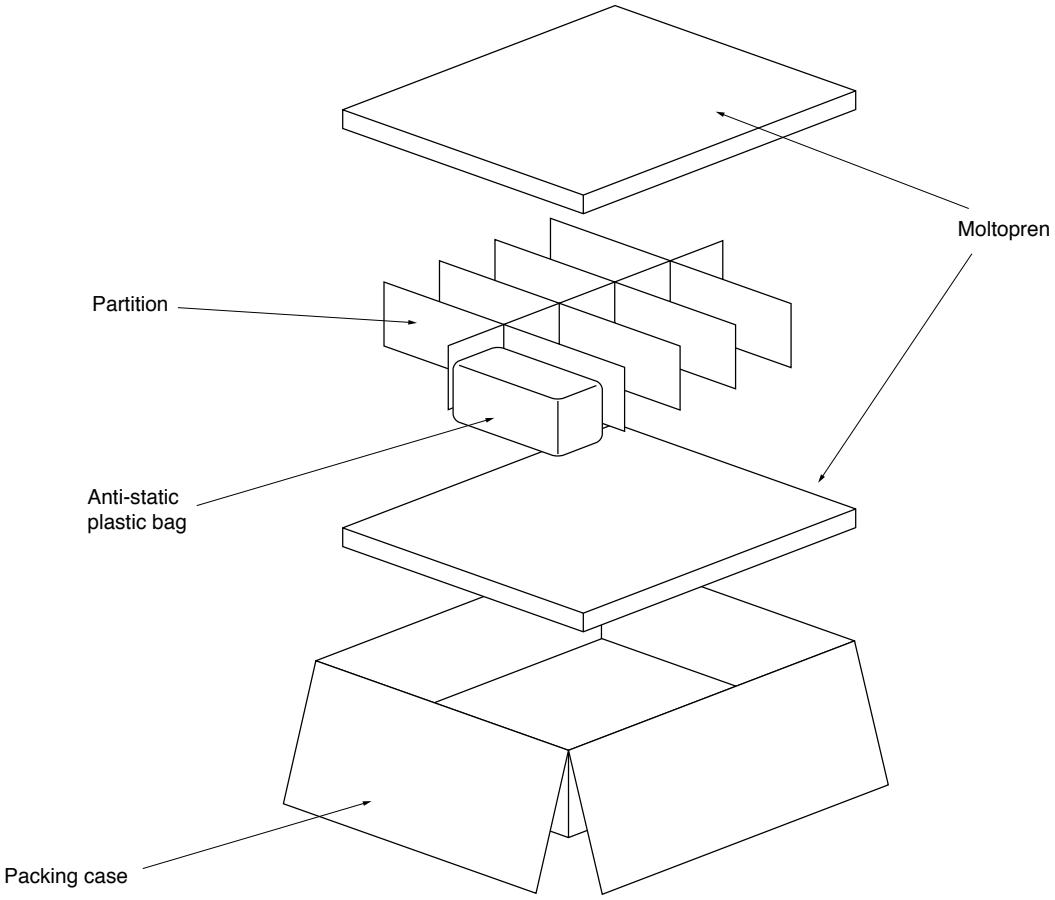
Package materials

Anti-static plastic bag : Polyethtylene
Moltopren : Urethane
Partition : Corrugated fiberboard
Packing case : Corrugated fiberboard

Package method

100 pcs of products shall be packaged in a plastic bag, Ends shall be sealed by stapler. The bottom ot the packing case is covered with moltopren, and the partition is set in the packing case. Each partition should have 1 plastic bag.
The 10 plastic bags containing a product are put in the packing case.
Moltopren should be located after all product are settled (1 packing conteains 1 000 pcs).

Packing composition



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(i) The devices in this publication are designed for use in general electronic equipment designs such as:

--- Personal computers
--- Office automation equipment
--- Telecommunication equipment [terminal]
--- Test and measurement equipment
--- Industrial control
--- Audio visual equipment
--- Consumer electronics

(ii) Measures such as fail-safe function and redundant design should be taken to ensure reliability and safety when SHARP devices are used for or in connection with equipment that requires higher reliability such as:

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--- Traffic signals
--- Gas leakage sensor breakers
--- Alarm equipment
--- Various safety devices, etc.

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--- Telecommunication equipment [trunk lines]
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