DATA SHEET

NEC
ELECTRON DEVICE

PHOTO TRIAC COUPLER
PS3701

HIGH ISOLATION VOLTAGE
PHOTO TRIAC OUTPUT TYPE
SOP PHOTO COUPLER

PS3701 is optically coupled isolator containing a GaAs light emitting diode and photo triac. Each is mounted in a plastic SOP (Small Out-line Package) for high density application.

FEATURES

- High critical rate of rise of off-state voltage (dv/dt: 500 V/μs TYP.)
- Low input trigger current (I_{FT}: 5 mA MAX.)
- High repetitive peak off-state voltage (V_{DRM}: 600 V MIN.)
- High isolation voltage (BV: 2 500 $V_{r.m.s.}$ MIN.)

APPLICATIONS

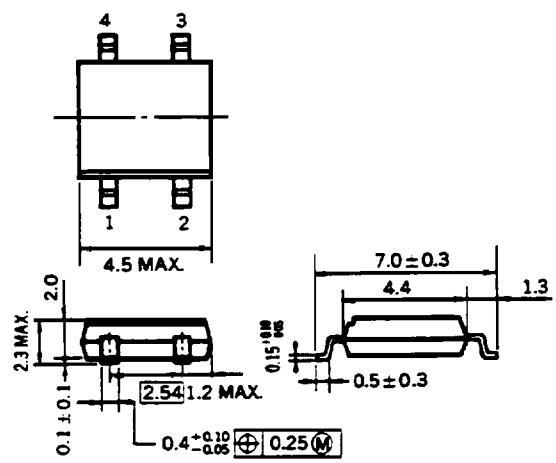
- SSR
- Programmable controller
- Electric home appliance
- Fan heater

QUALITY GRADE

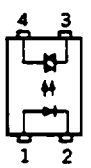
Standard

Please refer to "Quality grade on NEC Semiconductor Devices" (Document number IEI-1209) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

PACKAGE DIMENSIONS (Unit: mm)



PIN CONNECTION (Top View)



1. Anode
2. Cathode
3. Triac
4. Triac

The information contained in this document is being issued in advance of the production cycle for the device. The parameters for the device may change before final production of NEC Corporation, at its own discretion, may withdraw the device prior to its production.

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ABSOLUTE MAXIMUM RATINGS (T_a = 25 °C)

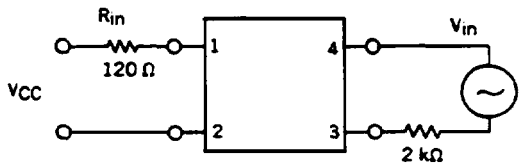
Diode			
Reverse Voltage	V_R	6	V
Forward Current	I_F	50	mA
Power Dissipation	P_D	80	mW
Peak Forward Current (PW = 100 μs, Duty Cycle 1 %)	I_{FP}	1	A
Detector			
Repetitive Peak Off-state Voltage	V_{DRM}	600	V
RMS On State Current	I_T	100	mA
Pulse On Current (PW = 100 μs, Duty Cycle 1 %)	I_{TP}	2	A
Coupler			
Isolation Voltage *1	BV	2 500	$V_{r.m.s.}$
Storage Temperature	T_{stg}	−40 to +125	°C
Operating Temperature	T_{opt}	−30 to +100	°C

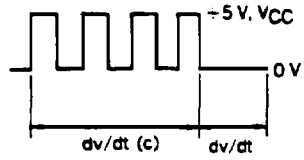
*1 AC voltage for 1 minute at T_a = 25 °C, RH = 60 % between input (pin No. 1, 2 Common) and output (pin No. 3, 4 Common).

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

PARAMETER		SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Diode	Forward Voltage	V_F			1.4	V	I_F = 10 mA
	Reverse Current	I_R			5	μA	V_R = 5 V
	Capacitance	C_t		50		pF	V = 0, f = 1 MHz
Photo triac	Peak Off-state Current	I_{DRM}			100	nA	V_{DRM} = 600 V
	On State Voltage	V_T			3	V	I_T = 100 mA
	Holding Current	I_H		0.2		mA	
	Rate Off-state Voltage *2	dv/dt		500		V/μs	V_{in} = 120 V
Coupled	LED Trigger Current	I_{FT}			5	mA	V = 3 V
	Isolation Resistance	R_{1-2}	11^{11}			Ω	V_{in-out} = 1 kV_{DC}
	Isolation High Capacitance	C_{1-2}		0.5		pF	V = 0, f = 1 MHz

*2 Test Circuit Rate Off-state Voltage



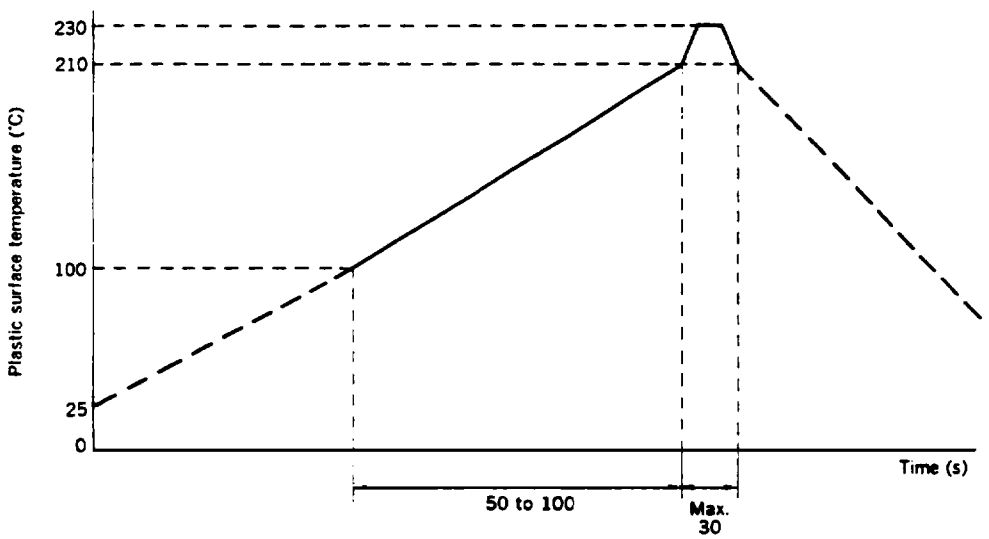


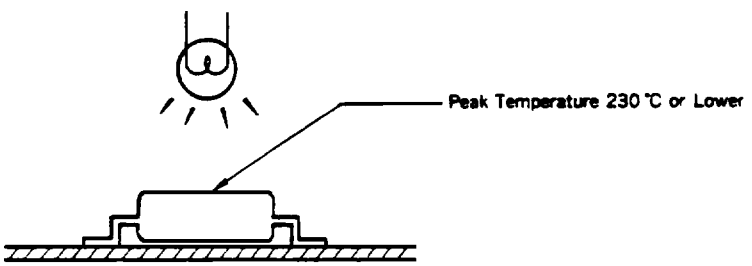
SOLDERING PRECAUTION

(1) Infrared reflow soldering

- Peak temperature : 230 °C or lower (plastic surface)
- Time : 30 s or less
  (Time during plastic surface temperature overs 210 °C)
- No. of reflow times : 1
- Flux : Rosin-base flux

Reflow Temperature Profile





(2) Dip soldering

- Peak temperature : 260 °C or lower
- Time : 10 s or less
- Flux : Rosin-base flux