DATA SHEET

NEC
ELECTRON DEVICE

PHOTO COUPLER
PS2733

HIGH ISOLATION VOLTAGE
HIGH COLLECTOR TO EMITTER VOLTAGE
SOP PHOTO COUPLER

DESCRIPTION

The PS2733 are optically coupled isolator containing a GaAs light emitting diode and an NPN silicon darlington-connected photo-transistor.

This is a plastic SOP (Small Out-line Package) for high density applications.

FEATURES

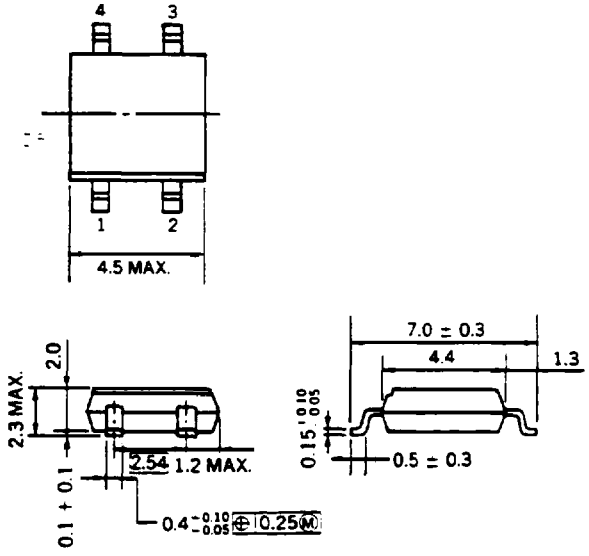
- High isolation voltage
  (BV: 2.5 $kV_{r.m.s.}$ MIN.)
- High collector to emitter voltage
  (V_{CEO}: 350 V MIN.)
- SOP (Small Out-line Package)
- Ultra high current transfer ratio
  (CTR: 1 500 % MIN.)
- Taping product name
  (PS2733-E3, E4)
  (PS2733-F3, F4)

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. Emitter
4. Collector

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 or NEC Corporation, at its own discretion, may withdraw the device prior to its production.

Document No. LP-2310
(O.D.No. LP-7698)
Date Published September 1992 M
Printed in Japan

ABSOLUTE MAXIMUM RATINGS (T_a = 25 °C)

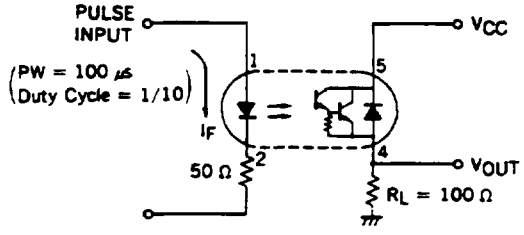
Diode			
Forward Current (DC)	I_F	50	mA
Power Dissipation	P_D	80	mW
Peak Forward Current (PW = 100 μs, Duty Cycle 1 %)	$I_{F(peak)}$	1	A
Transistor			
Collector to Emitter Voltage	V_{CEO}	350	V
Collector Current	I_C	200	mA
Power Dissipation	P_C	150	mW
Coupled			
Isolation Voltage *1)	BV	2500	$V_{r.m.s.}$
Storage Temperature	T_{stg}	−55 to +150	°C
Operating Temperature	T_{opt}	−55 to +100	°C

*1) AC voltage for 1 minute at T_a = 25 °C, RH = 60 % between input and output.

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

PARAMETER		SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Diode	Forward Voltage	V_F		1.15	1.4	V	I_F = 10 mA
	Reverse Current	I_R			5	μA	V_R = 5 V
	Junction Capacitance	C		30		pF	V = 0, f = 1.0 MHz
Transistor	Collector to Emitter Dark Current	I_{CEO}			400	nA	V_{CE} = 300 V, I_F = 0
	Collector to Emitter Breakdown Voltage	BV_{CEO}	350			V	I_C = 1 mA, I_B = 0
	Emitter to Base Breakdown Voltage	BV_{EBO}	6			V	I_E = 100 μA, I_C = 0
Coupled	Current Transfer Ratio	CTR	1500	4000	6500	%	I_F = 1 mA, V_{CE} = 2 V
	Collector Saturation Voltage	$V_{CE(sat)}$			1.0	V	I_F = 1 mA, I_C = 2 mA
	Isolation Resistance	R_{1-2}	10^{11}			Ω	V_{in-out} = 1.0 kV_{DC}
	Isolation Capacitance	C_{1-2}		0.6		pF	V = 0, f = 1.0 MHz
	Rise Time *2)	t_r		100		μs	V_{CC} = 5 V, I_C = 10 mA
	Fall Time *2)	t_f		100		μs	V_{CC} = 5 V, I_C = 10 mA

*2) Test Circuit for Switching Time

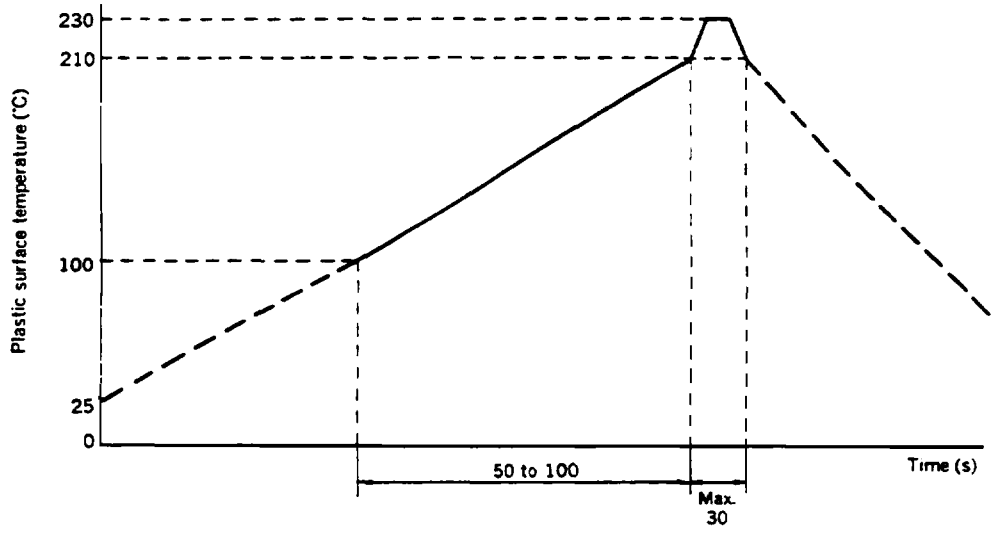


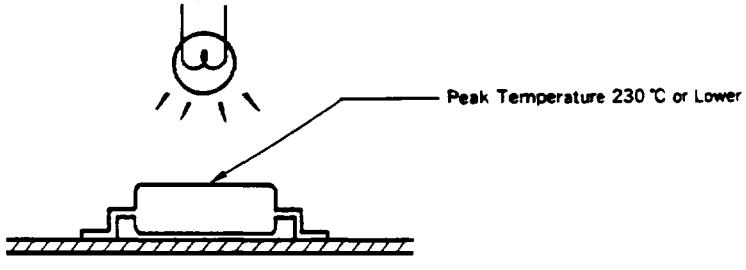
SOLDERING PRECAUTION

(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

PS2700 FAMILY

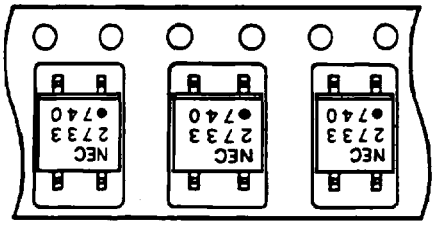
Feature / Type Number	High isolation voltage	Function	High V_{CEO} (MIN.)	High CTR (TYP.)	High speed switching (TYP.)
PS2701-1, -2, -4	2 500 $V_{r.m.s.}$	(Unidirectional input)	40 V	100 %	t_r = 3 μs, t_f = 5 μs
PS2702-1, -2, -4				2 000 %	t_r, t_f = 200 μs
PS2703-1, -2, -4			120 V	150 %	t_r, t_f = 10 μs
PS2705-1, -2, -4		AC input (Bidirectional input)	40 V	100 %	t_r = 3 μs, t_f = 5 μs
PS2706-1, -2, -4				2 000 %	t_r, t_f = 200 μs
PS2707-1, -2, -4			120 V	150 %	t_r, t_f = 10 μs
PS2732		(Unidirectional input)	300 V	4 000 %	t_r, t_f = 100 μs
PS2733			350 V	4 000 %	t_r, t_f = 100 μs

- **TAPING**

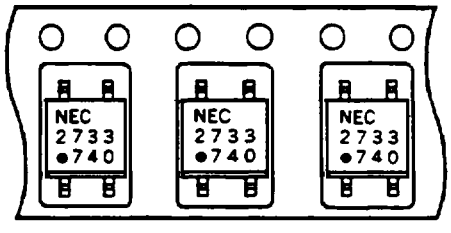
These conform to EIAJ "Electronic Parts Taping Size (RC-1009B: Chip type).

There are two types of taping according to the direction in which SOP photo couplers are stuck to the tape.

PS2733-E3*
PS2733-F3*



PS2733-E4
PS2733-F4



* E3, F3 types are recommended.

Storage number

PS2733-E3, E4 900 pieces/reel

PS2733-F3, F4 3 500 pieces/reel