DATA SHEET

NEC

PHOTOCOUPLER

PS2625, PS2626, PS2625L, PS2626L

HIGH ISOLATION VOLTAGE AC INPUT LARGE FORWARD AC INPUT TYPE 6 PIN PHOTOCOUPLER

— NEPOC Series —

DESCRIPTION

PS2625, PS2626 and PS2625L, PS2626L are optically coupled isolators containing a GaAs light emitting diode and an NPN silicon phototransistor.

PS2625, PS2626 are in a plastic DIP (Dual In-line Package).

PS2625L, PS2626L are lead bending type (Gull-wing) for surface mount.

PS2625, PS2625L have base pin and PS2622, PS2622L have no base pin.

FEATURES

- High isolation voltage (BV: 5 $kV_{r.m.s.}$ MIN.)
- AC input response
- Large forward input (current) (I_F: ±150 mA MAX.)
- High collector to emitter voltage (V_{CEO}: 80 V MIN.)
- High speed switching (t_r = 3 μs, t_f = 5 μs TYP.)
- UL recognized [File No. E72422(S)]
- Taping product name (PS2625L-E3, E4, PS2626L-E3, E4)

APPLICATIONS

Interface circuit for various instrumentations, control equipments.

- AC Line/Digital Logic .... Isolate high voltage transient
- Digital Logic/Digital Logic .... Eliminate spurious ground loops
- Twisted pair line receiver .... Eliminate ground loop pick-up
- Telephone/Telegraph line receiver .... Isolate high voltage transient
- High Frequency Power Supply Feedback Control .... Maintain floating ground

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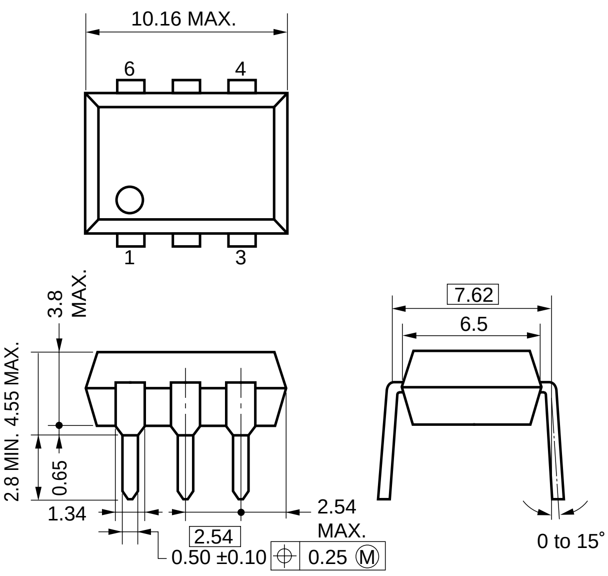
PACKAGE DIMENSIONS (Unit: mm)

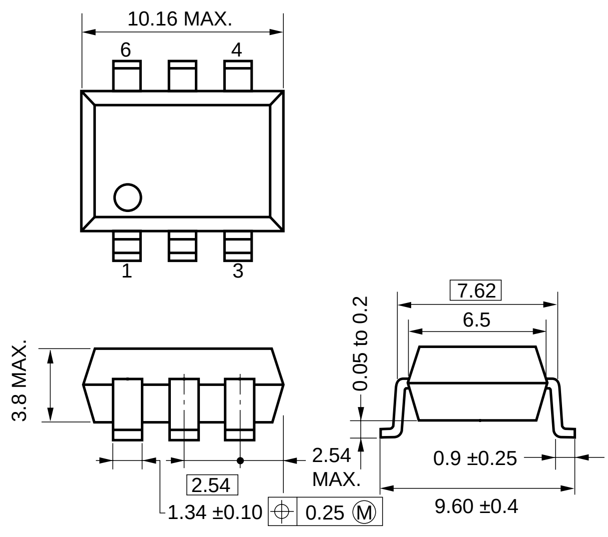
DIP (Dual In-line Package)

PS2625, PS2626



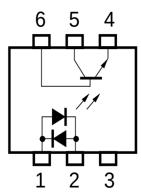
Lead Bending type (Gull-wing)

PS2625L, PS2626L



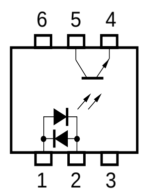
PIN CONNECTION (Top View)

PS2625, PS2625L



1. Anode, Cathode
2. Cathode, Anode
3. NC
4. Emitter
5. Collector
6. Base

PS2626, PS2626L



1. Anode, Cathode
2. Cathode, Cathode
3. NC
4. Emitter
5. Collector
6. NC

ABSOLUTE MAXIMUM RATINGS (T_A = 25 ˚C)

Diode			
Forward Current (DC)	I_F	±150	mA
Power Dissipation Derating	ΔP_D/˚C	2.0	mW/˚C
Power Dissipation	P_D	200	mW
Peak Forward Current (PW = 100 μs, Duty Cycle 1 %)	$I_{F(Peak)}$	±1	A
Transistor			
Collector to Emitter Voltage	V_{CEO}	80	V
Emitter to Collector Voltage	V_{ECO}	7	V
Collector Current	I_C	50	mA
Power Dissipation Derating	ΔP_C/˚C	1.5	mW/˚C
Power Dissipation	P_C	150	mW
Coupled			
Isolation Voltage *1)	BV	5 000	$V_{r.m.s.}$
Storage Temperature	T_{stg}	–55 to +150	˚C
Operating Temperature	T_{opt}	–55 to +100	˚C

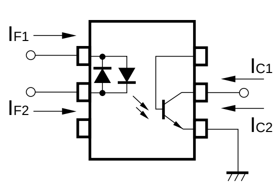
***1)** AC voltage for 1 minute at T_A = 25 ˚C, RH = 60 % between input (Pin No. 1, 2, 3, Common) and output (Pin No. 4, 5, 6 Common).

ELECTRICAL CHARACTERISTICS (T_A = 25 ˚C)

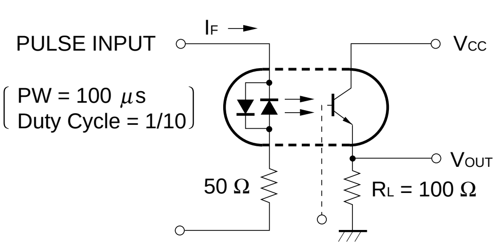
CHARACTERISTIC		SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Diode	Forward Voltage	V_F		1.3	1.7	V	I_F = ±100 mA
	Junction Capacitance	C		140		pF	V = 0, f = 1.0 MHz
Transistor	Collector to Emitter Dark Current	I_{CEO}			100	nA	V_{CE} = 80 V, I_F = 0
	DC Current Gain*2)	h_{FE}		700			I_C = 2 mA, V_{CE} = 5 V
Coupled	Current Transfer Ratio	CTR	20		50	%	I_F = ±100 mA, V_{CE} = 3 V
	CTR Ratio*3)	CTR1/CTR2	0.3	1.0	3.0		I_F = ±100 mA, V_{CE} = 3 V
	Collector Saturation Voltage	$V_{CE(sat)}$			0.3	V	I_F = ±100 mA, I_C = 4 mA
	Isolation Resistance	R_{1-2}	10^{11}			Ω	V_{in-out} = 1.0 kV
	Isolation Capacitance	C_{1-2}		0.6		pF	V = 0, f = 1.0 MHz
	Rise Time*4)	t_r		3		μs	V_{CC} = 5 V, I_C = 2 mA, R_L = 100 Ω
	Fall Time*4)	t_f		5		μs	V_{CC} = 5 V, I_C = 2 mA, R_L = 100 Ω

***2)** PS2625, PS2625L only

***3)** $CTR1 = \frac{I_{C1}}{I_{F1}}$, $CTR2 = \frac{I_{C2}}{I_{F2}}$

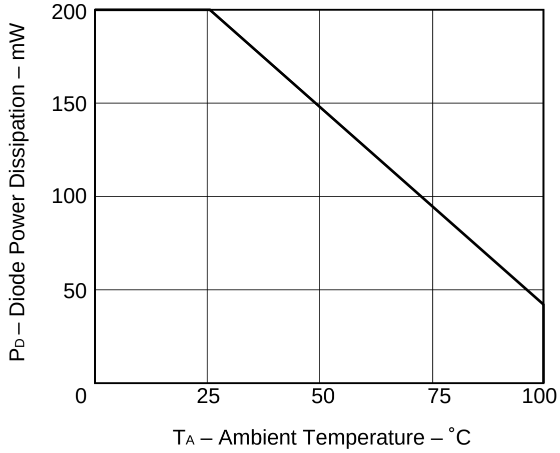


***4)** Test Circuit for Switching Time

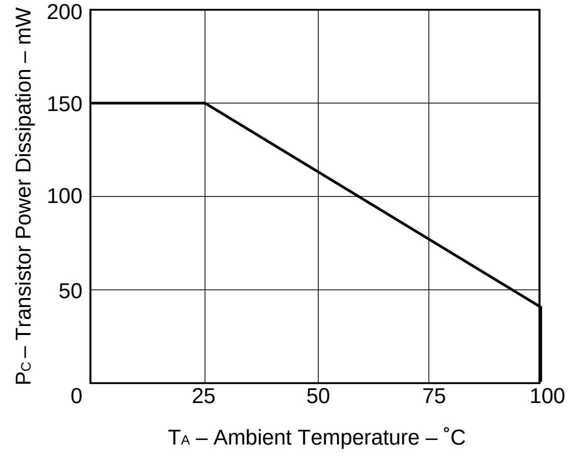


TYPICAL CHARACTERISTICS (T_A = 25 ˚C)

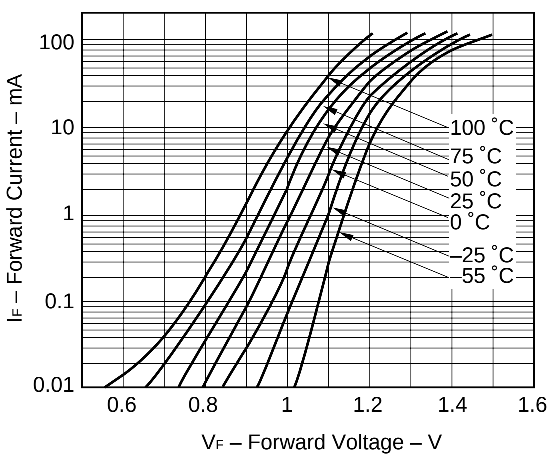
DIODE POWER DISSIPATION vs.
AMBIENT TEMPERATURE



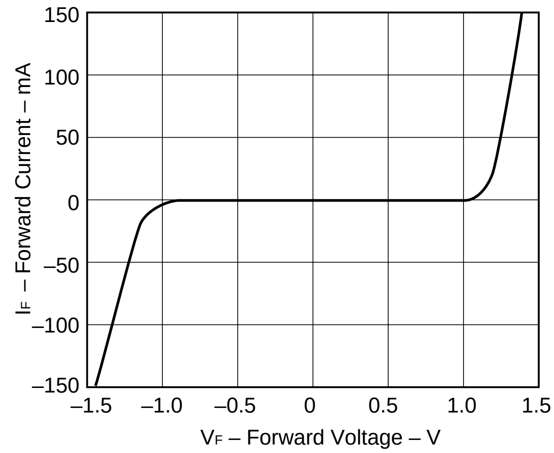
TRANSISTOR POWER DISSIPATION vs.
AMBIENT TEMPERATURE



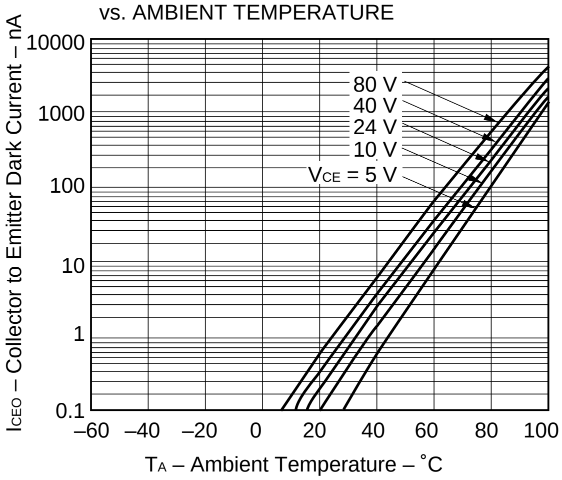
FORWARD CURRENT vs.
FORWARD VOLTAGE



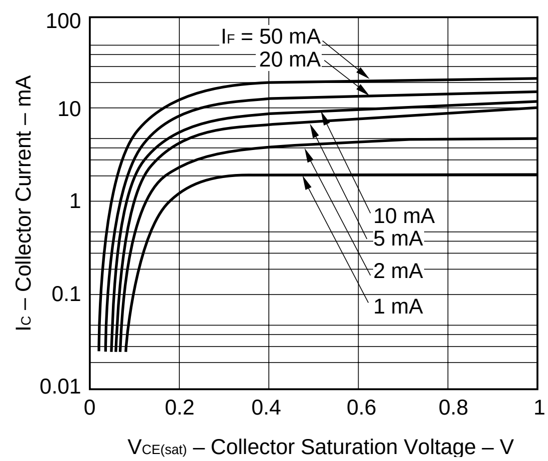
FORWARD CURRENT vs.
FORWARD VOLTAGE



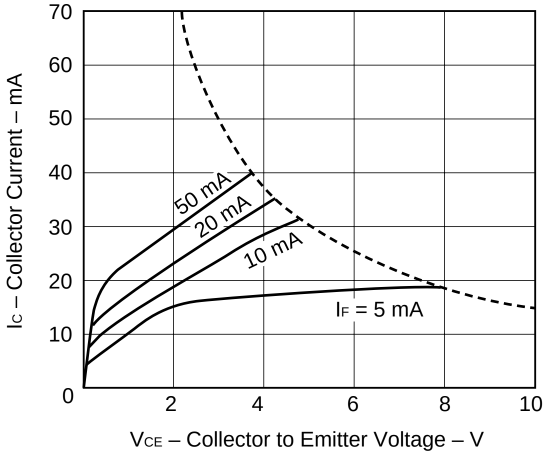
COLLECTOR TO EMITTER DARK CURRENT
vs. AMBIENT TEMPERATURE



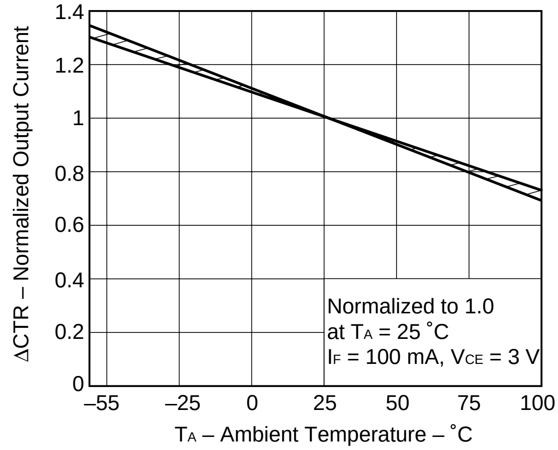
COLLECTOR CURRENT vs.
COLLECTOR SATURATION VOLTAGE



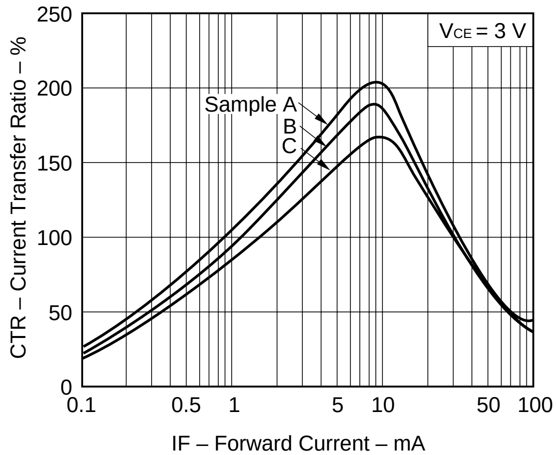
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



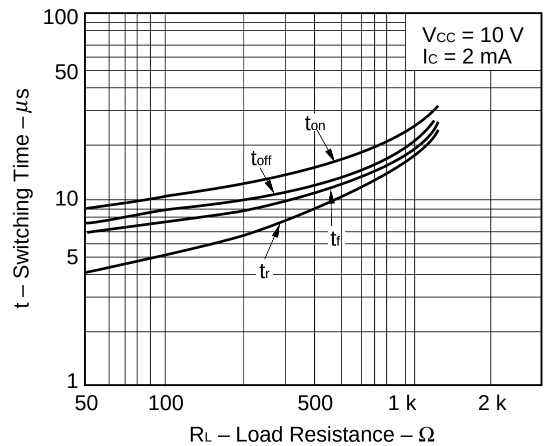
NORMALIZED OUTPUT CURRENT vs.
AMBIENT TEMPERATURE



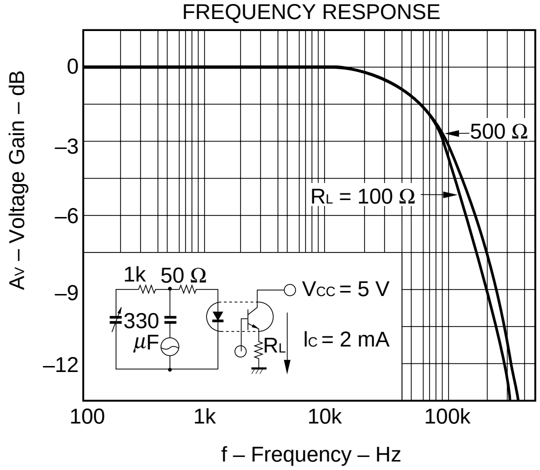
CURRENT TRANSFER RATIO (CTR) vs.
FORWARD CURRENT



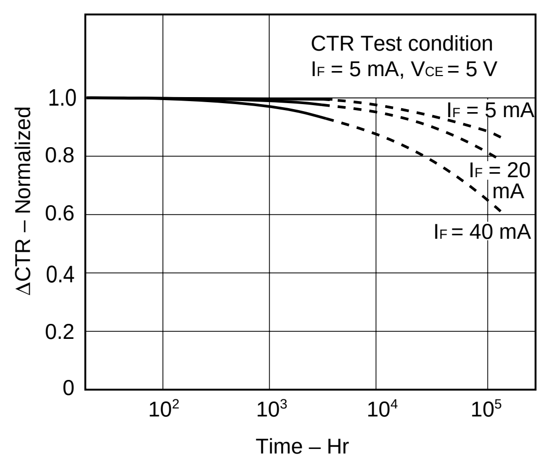
SWITCHING TIME vs.
LOAD RESISTANCE



FREQUENCY RESPONSE



CTR DEGRADATION



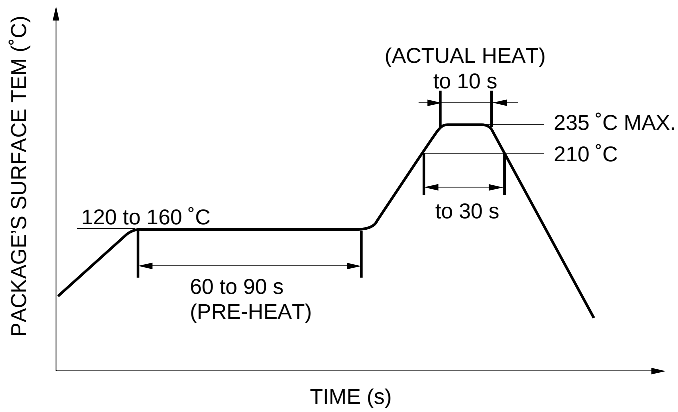
★ The measurement of TYPICAL CHARACTERISTICS are only for reference, not guaranteed.

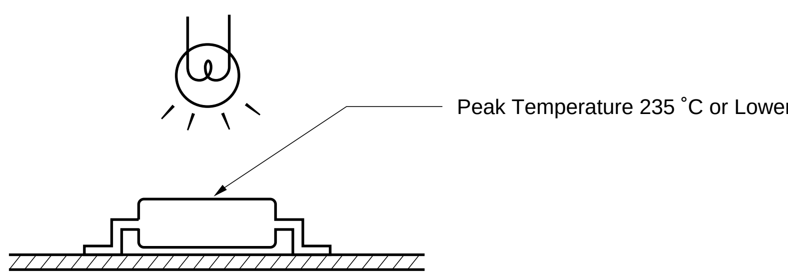
SOLDERING PRECAUTION

(1) Infrared reflow soldering

- Peak reflow temperature : 235 ˚C or below (Plastic surface temperature)
- Reflow time : 30 seconds or less
  (Time period during which the plastic surface temperature is 210 ˚C)
- Number of reflow processes : Three
- Flux : Rosin flux containing small amount of chlorine
  (The flux with a maximum chlorine content of 0.2 Wt % is recommended.)

INFRARED RAY REFLOW TEMPERATURE PROFILE





(2) Dip soldering

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

[MEMO]

Caution

**The Great Care must be taken in dealing with the devices in this guide.
The reason is that the material of the devices is GaAs (Gallium Arsenide), which is designated as harmful substance according to the law concerned.
Keep the law concerned and so on, especially in case of removal.**