

HIGH ISOLATION VOLTAGE
AC INPUT, DARLINGTON TRANSISTOR TYPE
MULTI PHOTOCOUPLER SERIES

-NEPOC™ Series-

DESCRIPTION

The PS2506-1, -2, -4 and PS2506L-1, -2, -4 are optically coupled isolators containing a GaAs light emitting diode and an NPN silicon darlington connected phototransistor.

The PS2506-1, -2, -4 are in a plastic DIP (Dual In-line Package) and the PS2506L-1, -2, -4 are lead bending type (Gull-wing) for surface mount.

FEATURES

- AC input response
- High isolation voltage (BV = 5 000 Vr.m.s.)
- High current transfer ratio (CTR = 2 000 % TYP.)
- High-speed switching ($t_r, t_f = 100 \mu s$ TYP.)
- Taping product number (PS2506L-1-E3, E4, F3, F4)
(PS2506L-2-E3, E4)
- UL approved (File No. E72422 (S))

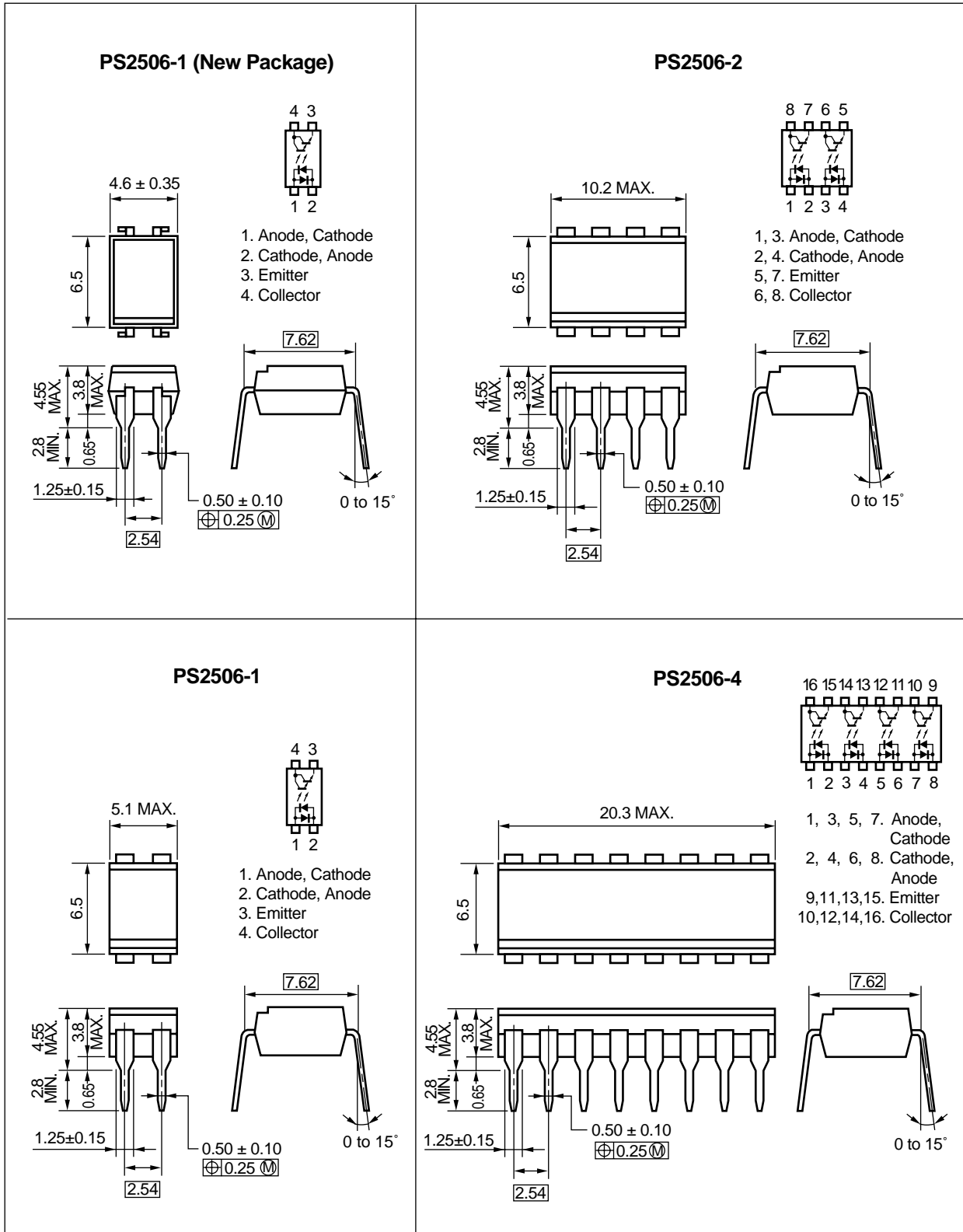
APPLICATIONS

- Power supply
- Telephone/FAX.
- FA/OA equipment
- Programmable logic controller

The information in this document is subject to change without notice.

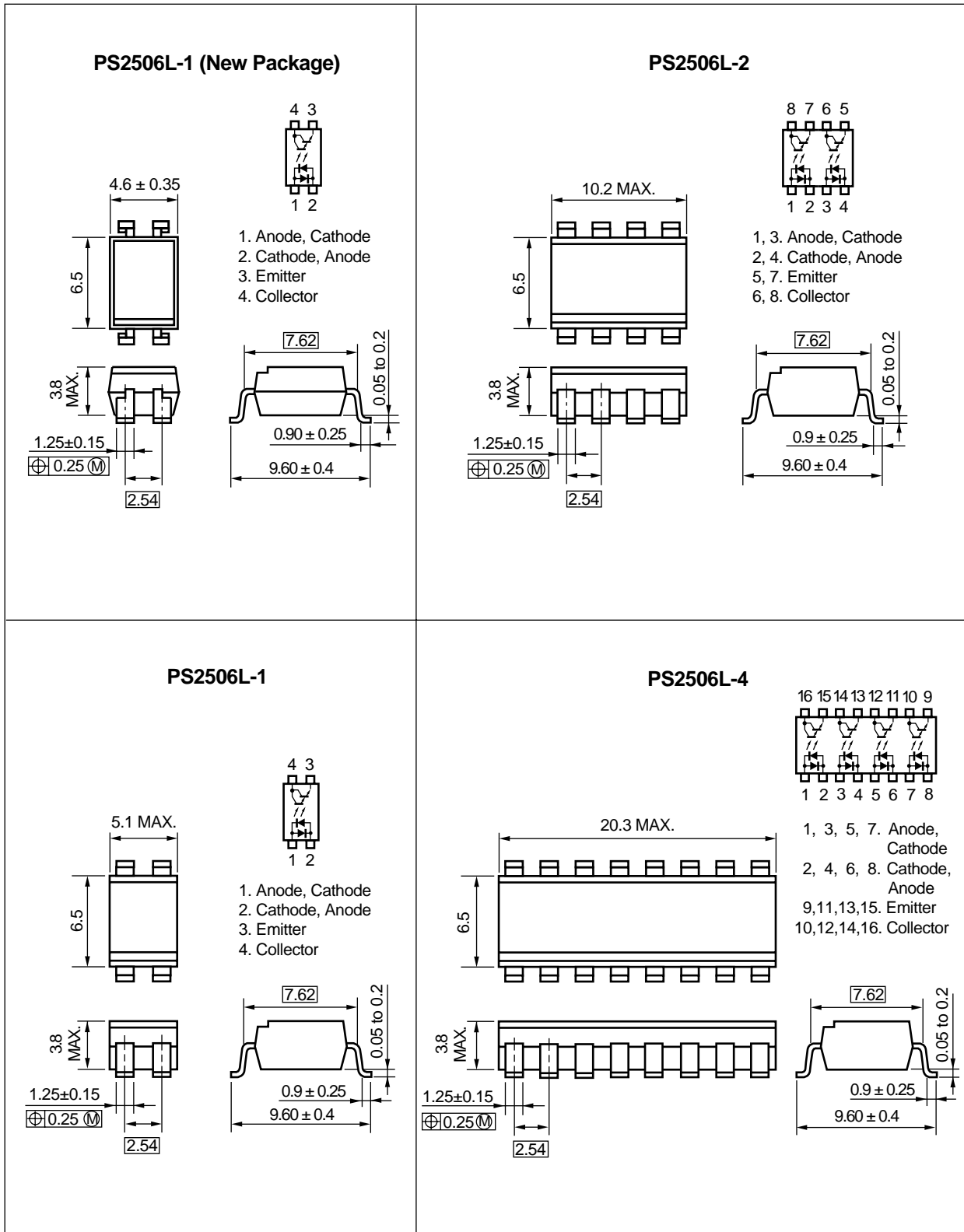
★ PACKAGE DIMENSIONS (in millimeters)

DIP Type



Caution New package 1-ch only

Lead Bending Type



Caution New package 1-ch only

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C, unless otherwise specified)

Parameter	Symbol	Ratings		Unit	
		PS2506-1, PS2506L-1	PS2506-2,-4 PS2506L-2,-4		
Diode	Forward Current (DC)	I _F	±80		mA
	Power Dissipation Derating	ΔP _D /°C	1.5	1.2	mW/°C
	Power Dissipation	P _D	150	120	mW/ch
	Peak Forward Current ^{*1}	I _{FP}	±1		A
Transistor	Collector to Emitter Voltage	V _{CEO}	40		V
	Emitter to Collector Voltage	V _{ECO}	6		V
	Collector Current	I _C	200	160	mA/ch
	Power Dissipation Derating	ΔP _C /°C	2.0	1.6	mW/°C
	Power Dissipation	P _C	200	160	mW/ch
Isolation Voltage ^{*2}	BV	5 000		Vr.m.s.	
Operating Ambient Temperature	T _A	-55 to +100		°C	
Storage Temperature	T _{stg}	-55 to +150		°C	

*1 PW = 100 μs, Duty Cycle = 1 %

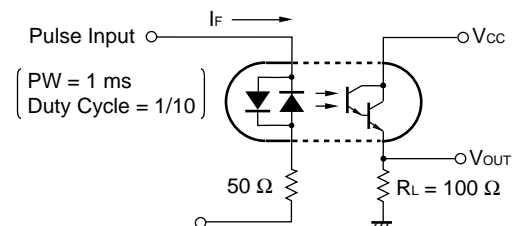
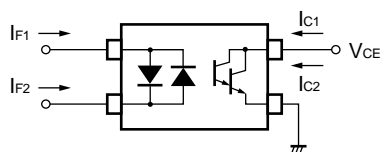
*2 AC voltage for 1 minute at T_A = 25 °C, RH = 60 % between input and output

ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit		
Diode	Forward Voltage	V _F	I _F = ±10 mA			1.17	1.4	V
	Terminal Capacitance	C _t	V = 0 V, f = 1.0 MHz			100		pF
Transistor	Collector to Emitter Dark Current	I _{CEO}	V _{CE} = 40 V, I _F = 0 mA				400	nA
Coupled	Current Transfer Ratio	CTR	I _F = ±1 mA, V _{CE} = 2 V		200	2 000		%
	CTR Ratio ^{*1}	CTR ₁ / CTR ₂	I _F = 1 mA, V _{CE} = 2 V		0.3	1.0	3.0	
	Collector Saturation Voltage	V _{CE(sat)}	I _F = ±1 mA, I _C = 2 mA				1.0	V
	Isolation Resistance	R _{I-o}	V _{I-o} = 1.0 kV		10 ¹¹			Ω
	Isolation Capacitance	C _{I-o}	V = 0 V, f = 1.0 MHz			0.5		pF
	Rise Time ^{*2}	t _r	V _{CC} = 10 V, I _C = 2 mA, R _L = 100 Ω			100		μs
Fall Time ^{*2}	t _f				100			

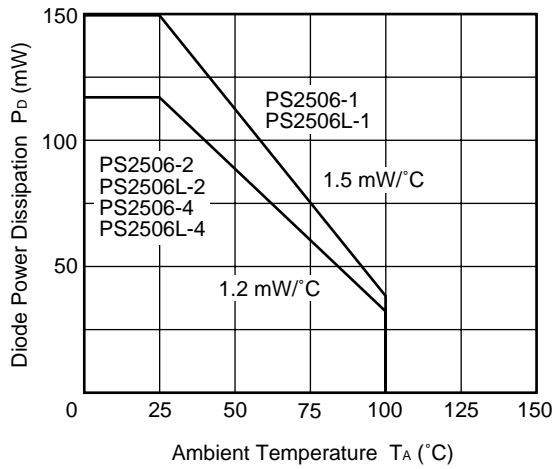
*1 CTR₁ = I_{C1}/I_{F1}, CTR₂ = I_{C2}/I_{F2}

*2 Test circuit for switching time

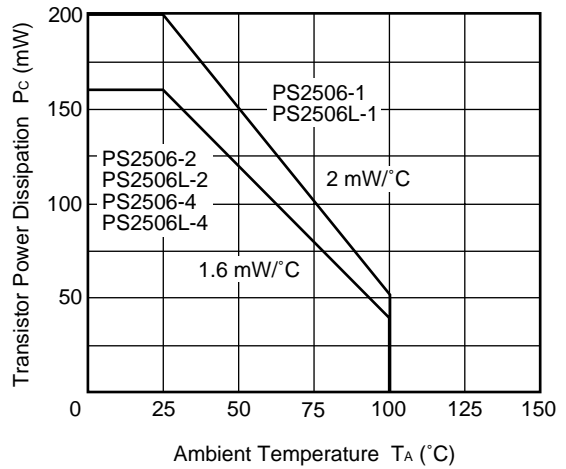


★ TYPICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$, unless otherwise specified)

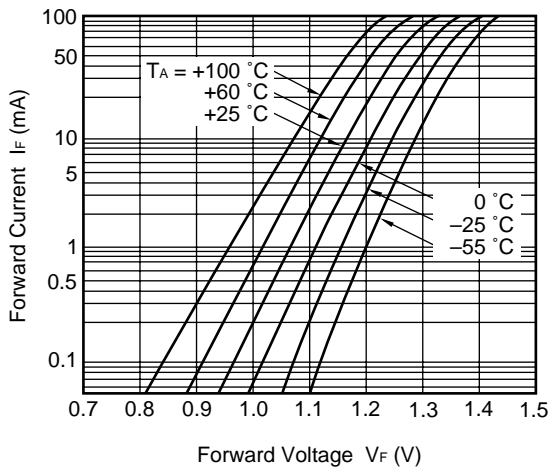
DIODE POWER DISSIPATION vs. AMBIENT TEMPERATURE



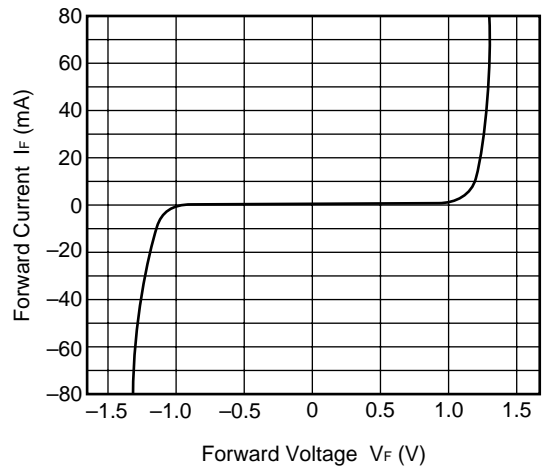
TRANSISTOR POWER DISSIPATION vs. AMBIENT TEMPERATURE



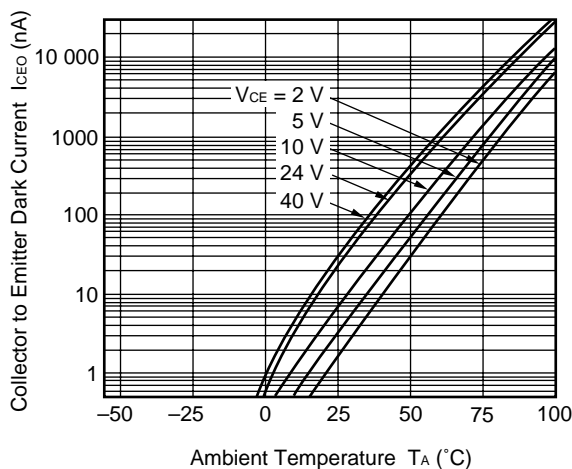
FORWARD CURRENT vs. FORWARD VOLTAGE



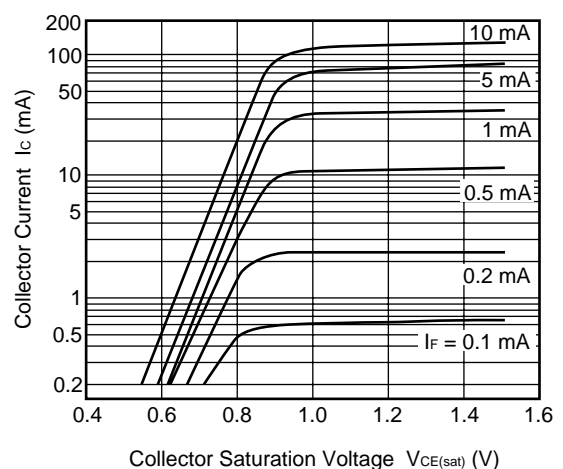
FORWARD CURRENT vs. FORWARD VOLTAGE



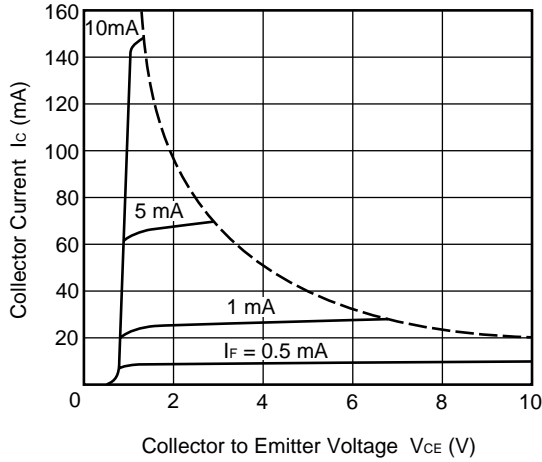
COLLECTOR TO EMITTER DARK CURRENT vs. AMBIENT TEMPERATURE



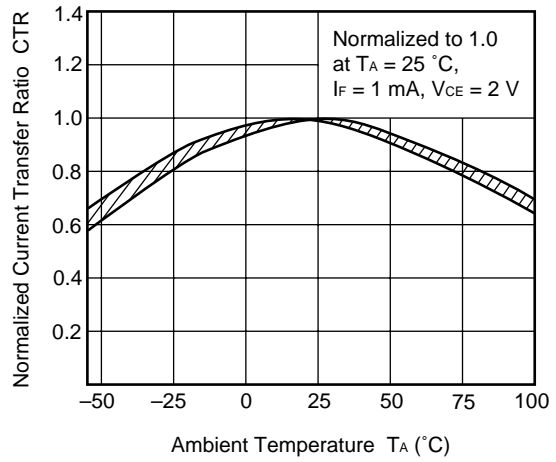
COLLECTOR CURRENT vs. COLLECTOR SATURATION VOLTAGE



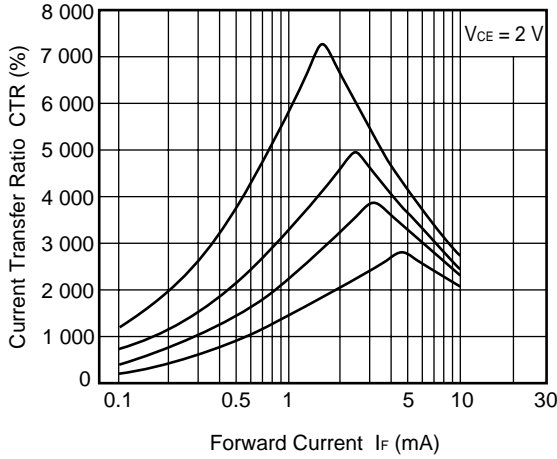
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



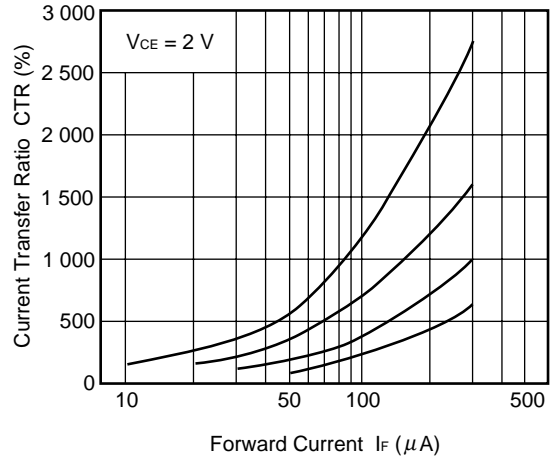
NORMALIZED CURRENT TRANSFER RATIO vs. AMBIENT TEMPERATURE



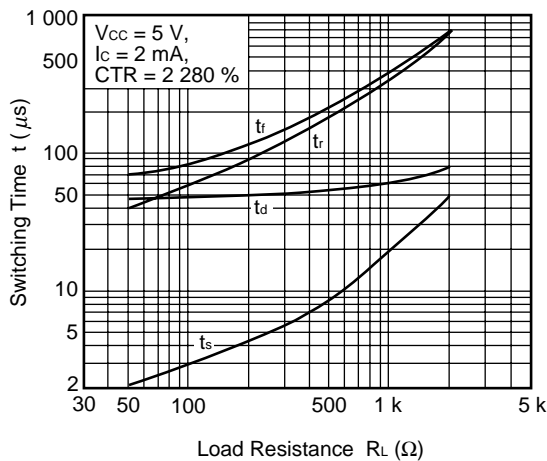
CURRENT TRANSFER RATIO vs. FORWARD CURRENT



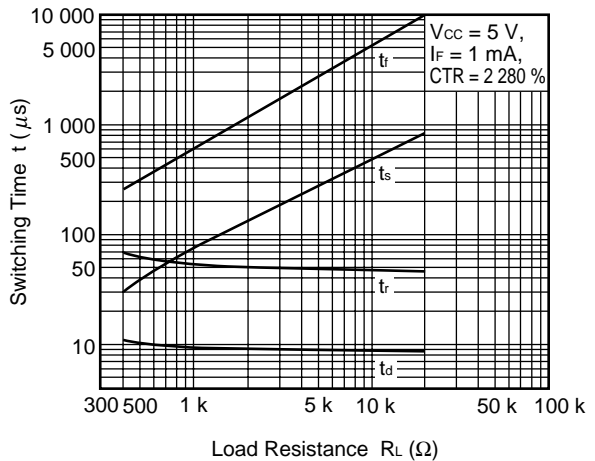
CURRENT TRANSFER RATIO vs. FORWARD CURRENT



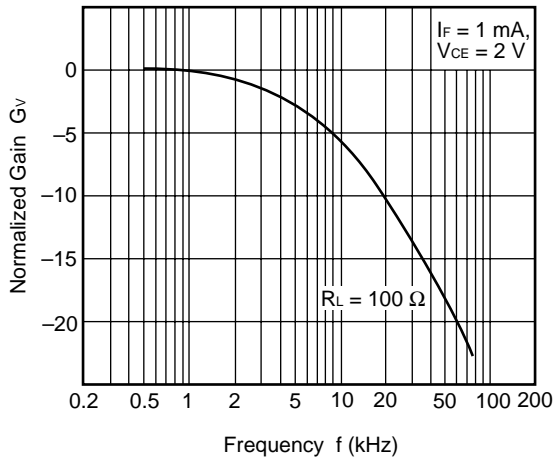
SWITCHING TIME vs. LOAD RESISTANCE



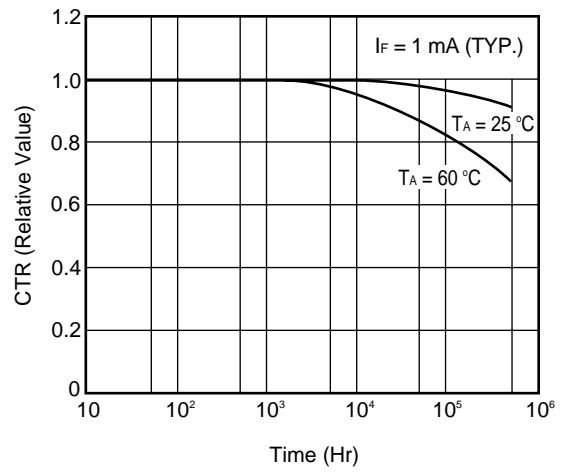
SWITCHING TIME vs. LOAD RESISTANCE



FREQUENCY RESPONSE

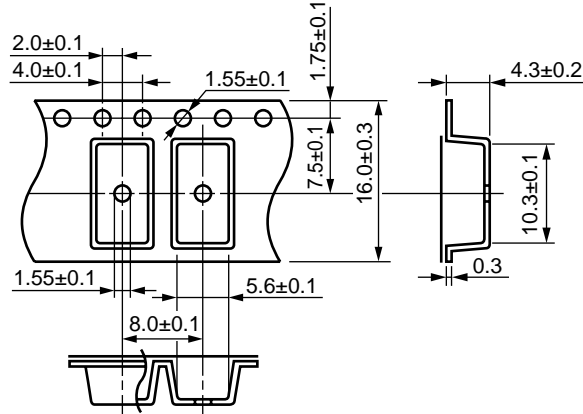


LONG TIME CTR DEGRADATION

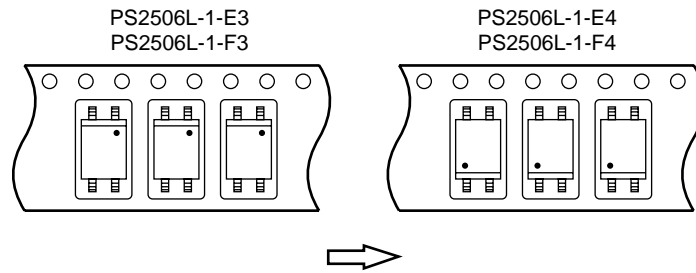


★ TAPING SPECIFICATIONS (in millimeters)

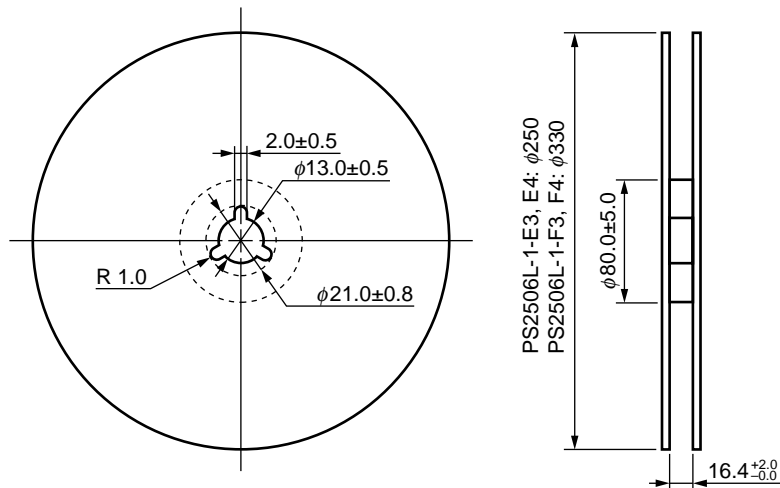
Outline and Dimensions (Tape)



Taping Direction

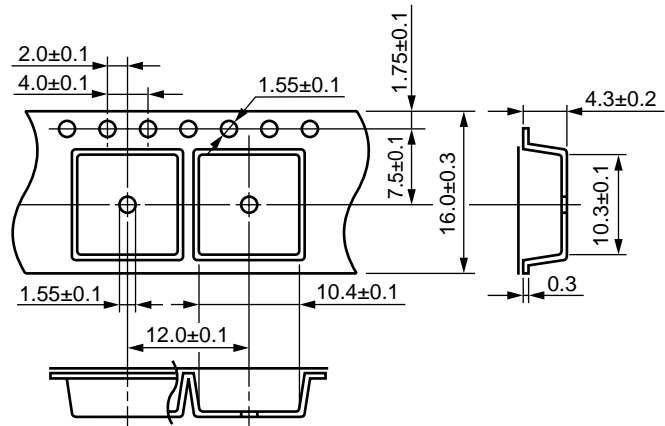


Outline and Dimensions (Reel)

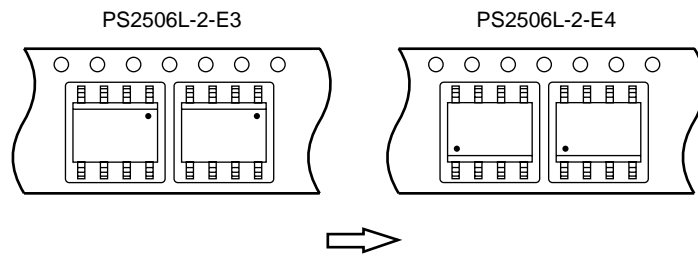


Packing: PS2506L-1-E3, E4 1 000 pcs/reel
 PS2506L-1-F3, F4 2 000 pcs/reel

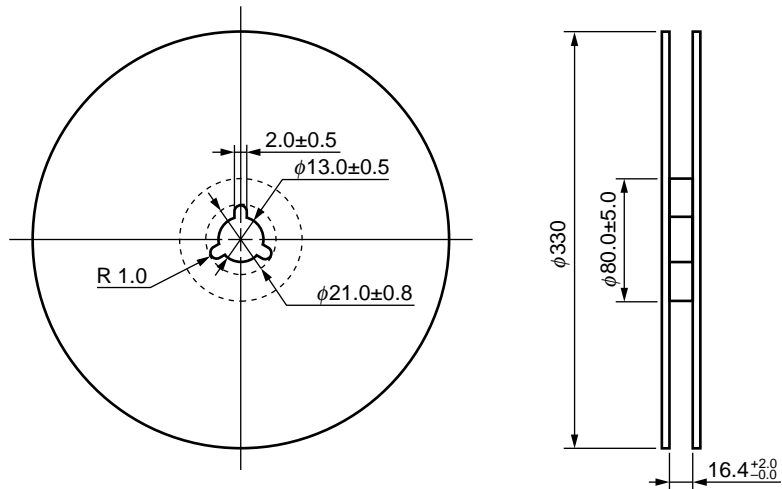
Outline and Dimensions (Tape)



Taping Direction



Outline and Dimensions (Reel)



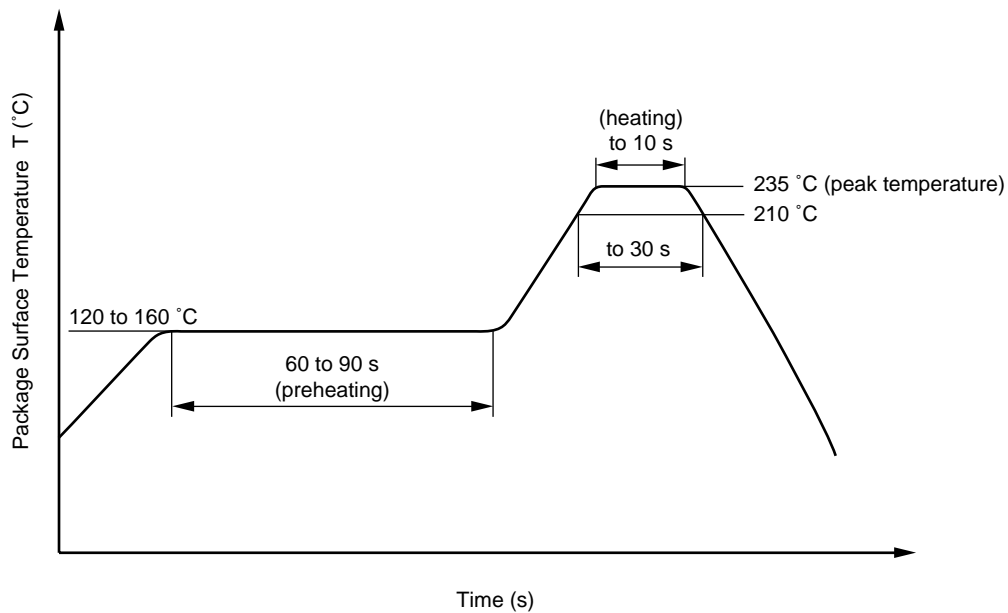
Packing: 1 000 pcs/reel

★ **RECOMMENDED SOLDERING CONDITIONS**

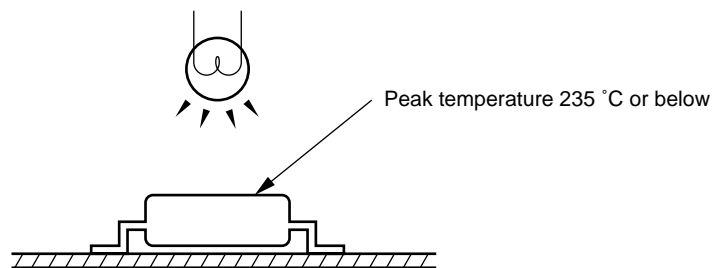
(1) Infrared reflow soldering

- Peak reflow temperature 235 °C (package surface temperature)
- Time of temperature higher than 210 °C 30 seconds or less
- Number of reflows Three
- Flux Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt % is recommended.)

Recommended Temperature Profile of Infrared Reflow



Caution Please avoid to removed the residual flux by water after the first reflow processes.



(2) Dip soldering

- Temperature 260 °C or below (molten solder temperature)
- Time 10 seconds or less
- Number of times One
- Flux Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt % is recommended.)

[MEMO]

CAUTION

Within this device there exists GaAs (Gallium Arsenide) material which is a harmful substance if ingested. Please do not under any circumstances break the hermetic seal.

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Anti-radioactive design is not implemented in this product.

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