

NEC

PHOTOCOUPLER
PS2521-1,-2,-4,PS2521L-1,-2,-4

LARGE FORWARD INPUT TYPE
HIGH ISOLATION VOLTAGE
MULTI PHOTOCOUPLER SERIES

–NEPOC™ Series–

DESCRIPTION

The PS2521-1, -2, -4 and PS2521L-1, -2, -4 are optically coupled isolators containing a GaAs light emitting diode and an NPN silicon phototransistor.

The PS2521-1, -2, -4 are in a plastic DIP (Dual In-line Package) and the PS2521L-1, -2, -4 are lead bending type (Gull-wing) for surface mount.

FEATURES

- Large forward input current ($I_F = 150 \text{ mA}$)
- High Isolation voltage ($BV = 5\,000 \text{ Vr.m.s.}$)
- High collector to emitter voltage ($V_{CEO} = 80 \text{ V}$)
- High-speed switching ($t_r = 3 \mu\text{s TYP.}$, $t_f = 5 \mu\text{s TYP.}$)
- Ordering number of taping product: PS2521L-1-E3, E4, F3, F4, PS2521L-2-E3, E4
- UL approved: File No. E72422 (S)

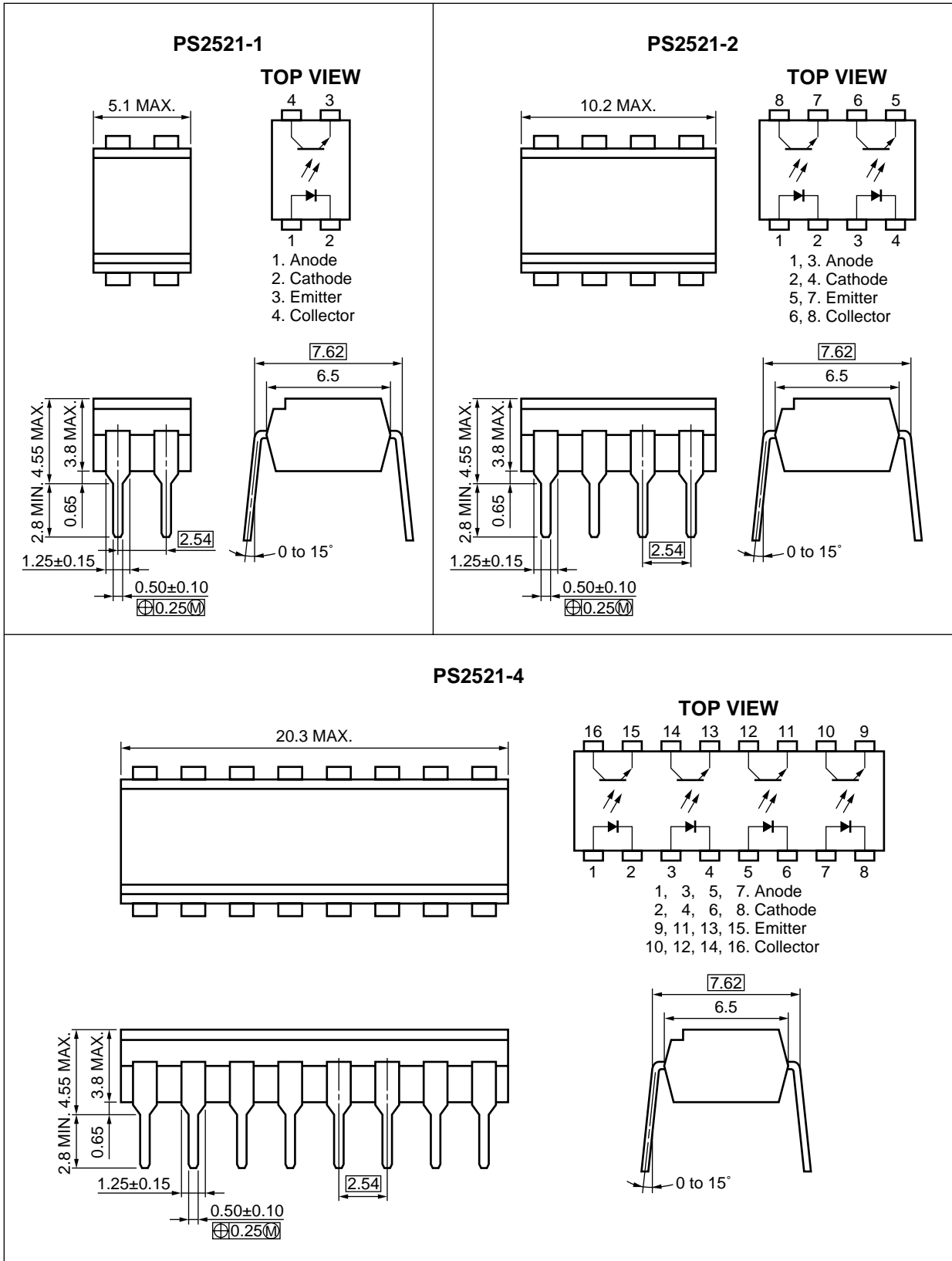
★ **APPLICATIONS**

- Exchange equipment
- FAX/MODEM
- LCR adapter

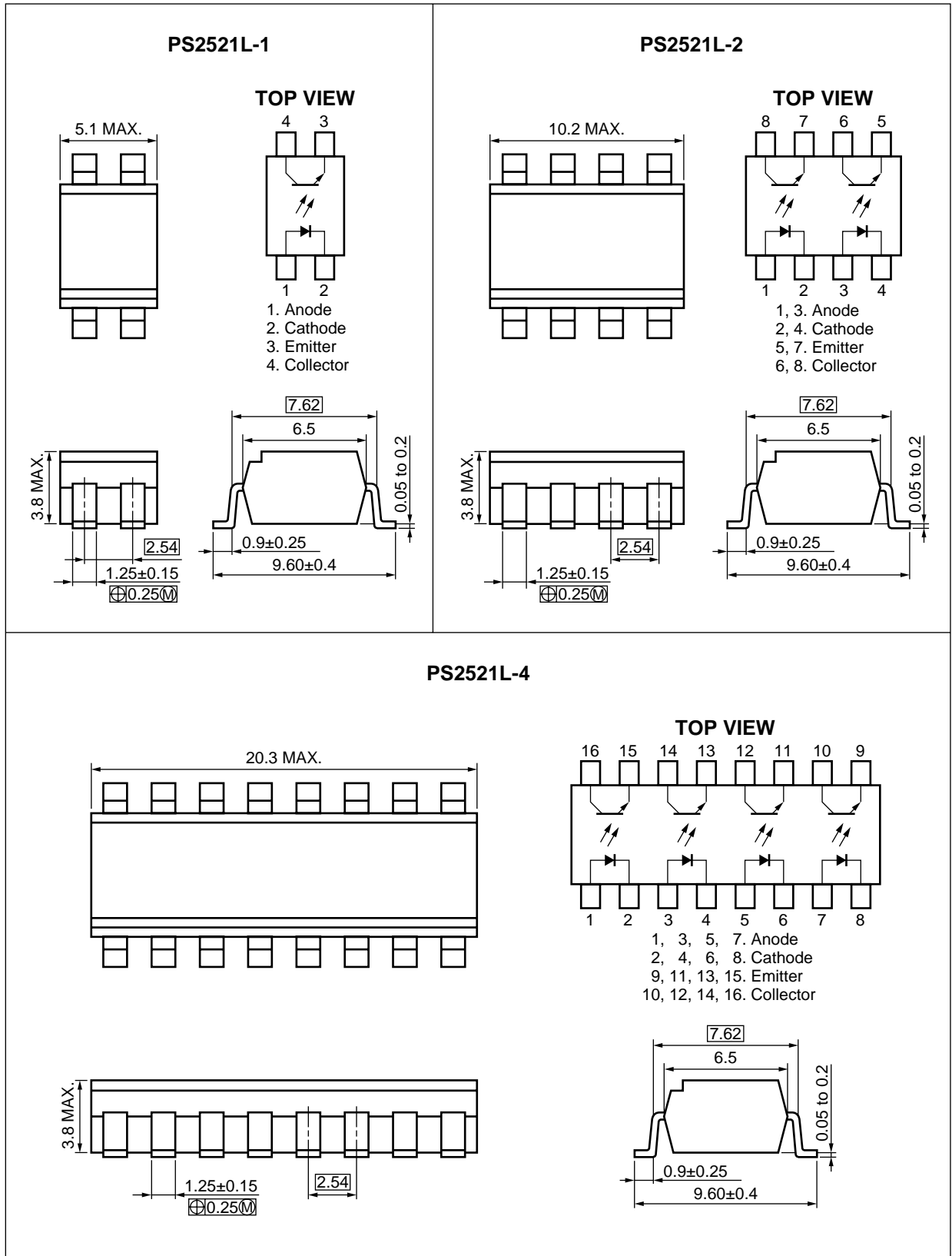
The information in this document is subject to change without notice.

★ PACKAGE DIMENSIONS (in millimeters)

DIP type



Lead bending type



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

Parameter		Symbol	Ratings		Unit
			PS2521-1, PS2521L-1	PS2521-2, -4, PS2521L-2, -4	
Diode	Forward Current (DC)	I _F	150		mA
	Reverse Voltage	V _R	6.0		V
	Power Dissipation Derating	ΔP _D /°C	2.5	2.0	mW/°C
	Power Dissipation	P _D	250	200	mW/ch
	Peak Forward Current ^{*1}	I _{FP}	1		A
Transistor	Collector to Emitter Voltage	V _{CEO}	80		V
	Emitter to Collector Voltage	V _{ECO}	6		V
	Collector Current	I _C	50		mA/ch
	Power Dissipation Derating	ΔP _C /°C	1.5	1.2	mW/°C
	Power Dissipation	P _C	150	120	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

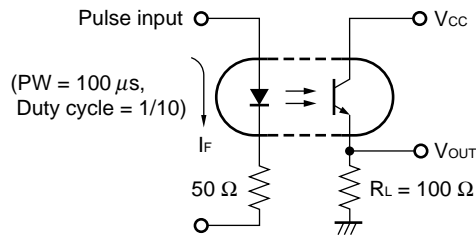
*1 PW = 100 μs, Duty Cycle = 1 %

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

ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

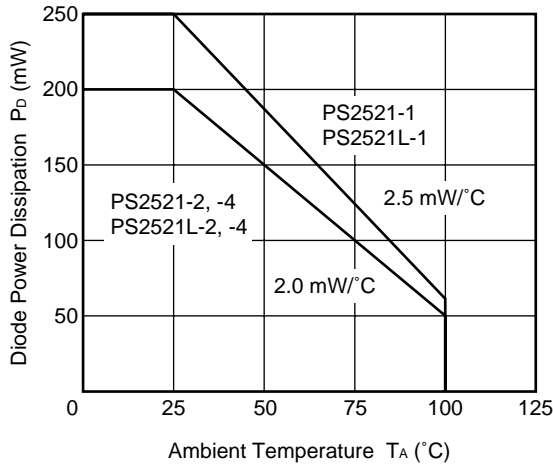
Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Diode	Forward Voltage	V _F	I _F = 100 mA		1.3	1.7	V
	Reverse Current	I _R	V _R = 5 V			5	μA
	Terminal Capacitance	C _t	V = 0 V, f = 1.0 MHz		70		pF
Transistor	Collector to Emitter Dark Current	I _{CEO}	V _{CE} = 80 V, I _F = 0 mA			100	nA
Coupled	Current Transfer Ratio	CTR	I _F = 100 mA, V _{CE} = 3 V	20		80	%
	Collector Saturation Voltage	V _{CE(sat)}	I _F = 100 mA, I _C = 4 mA			0.3	V
	Isolation Resistance	R _{I-O}	V _{I-O} = 1.0 kV _{DC}	10 ¹¹			Ω
	Isolation Capacitance	C _{I-O}	V = 0 V, f = 1.0 MHz		0.6		pF
	Rise Time ^{*1}	t _r	V _{CC} = 10 V, I _C = 2 mA, R _L = 100 Ω		3		μs
	Fall Time ^{*1}	t _f			5		

*1 Test circuit for switching time

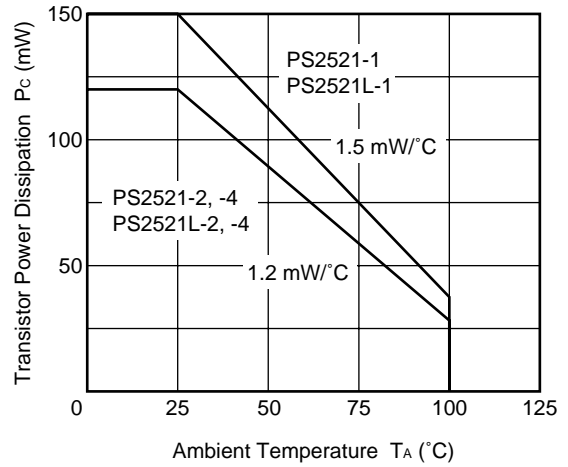


★ TYPICAL CHARACTERISTICS (T_A = 25 °C, unless otherwise specified)

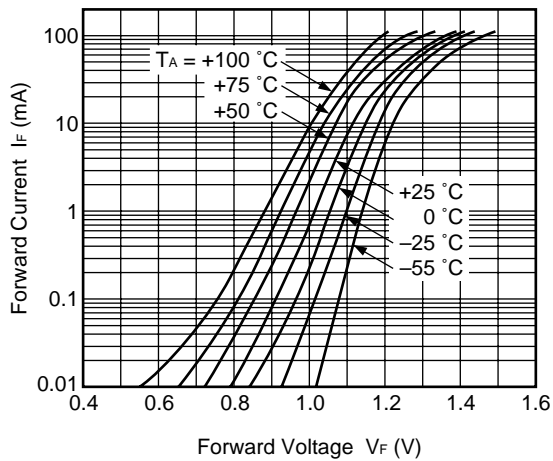
DIODE POWER DISSIPATION vs. AMBIENT TEMPERATURE



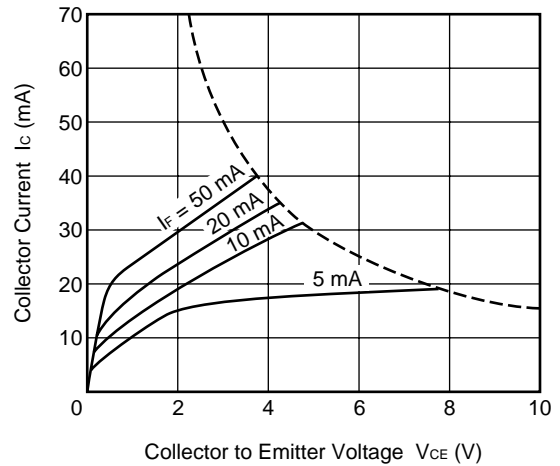
TRANSISTOR POWER DISSIPATION vs. AMBIENT TEMPERATURE



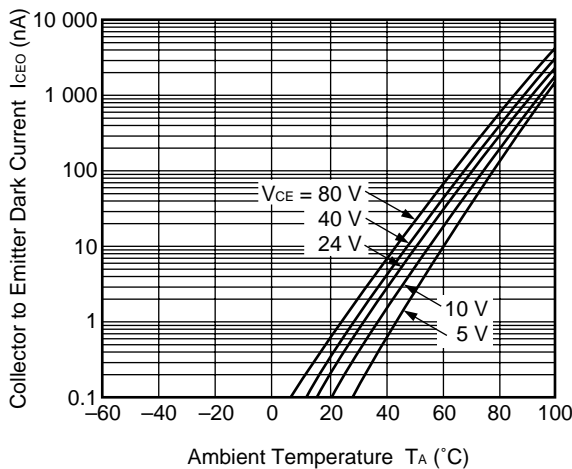
FORWARD CURRENT vs. FORWARD VOLTAGE



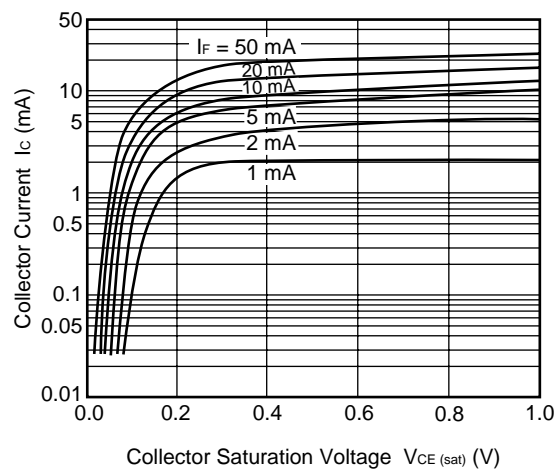
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



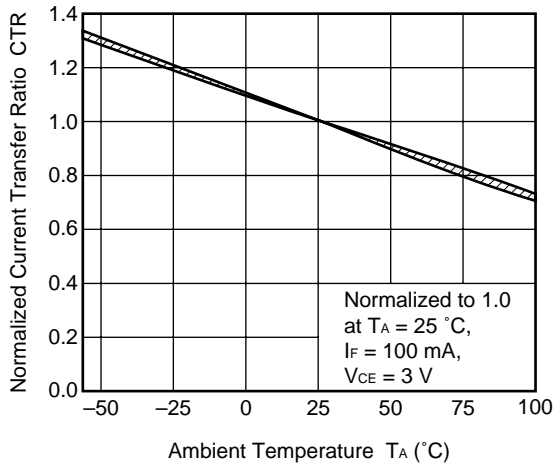
COLLECTOR TO EMITTER DARK CURRENT vs. AMBIENT TEMPERATURE



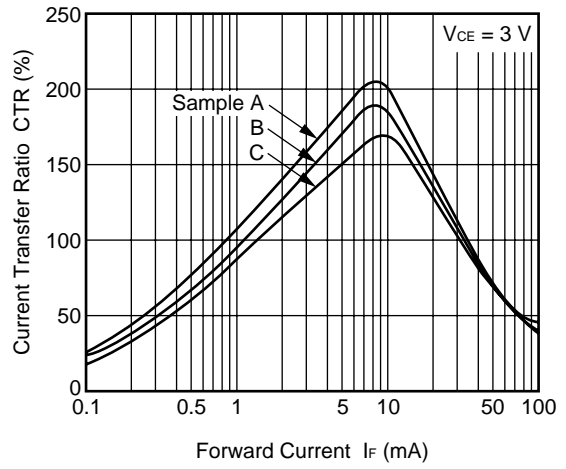
COLLECTOR CURRENT vs. COLLECTOR SATURATION VOLTAGE



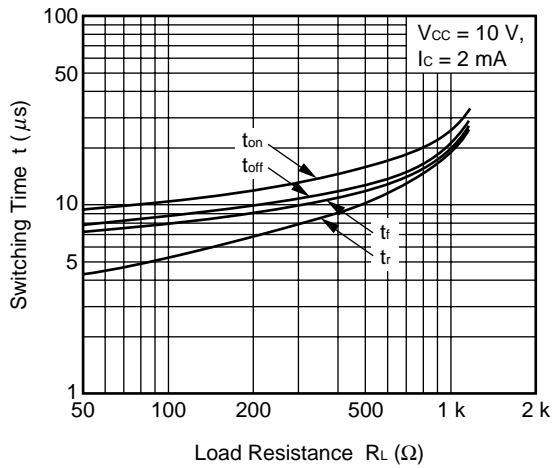
NORMALIZED CURRENT TRANSFER RATIO vs. AMBIENT TEMPERATURE



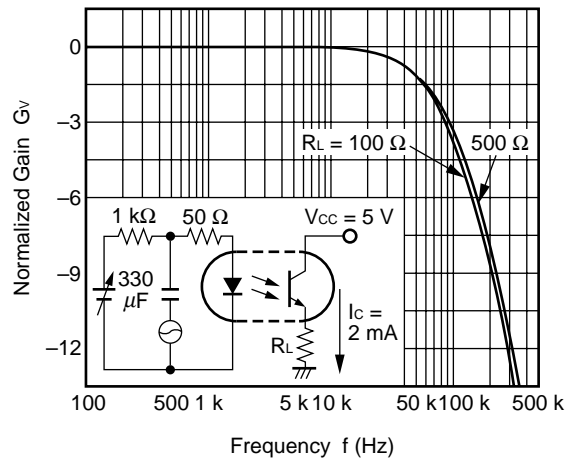
CURRENT TRANSFER RATIO vs. FORWARD CURRENT



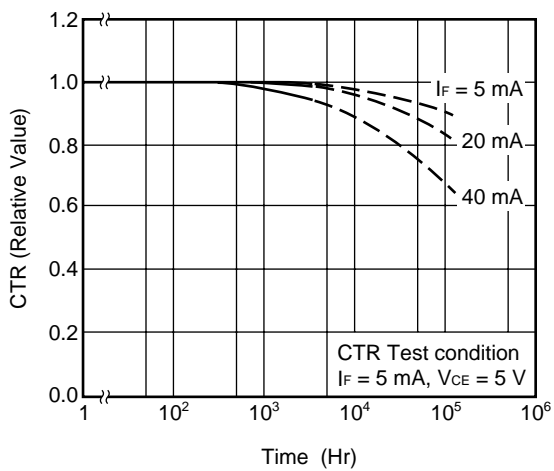
SWITCHING TIME vs. LOAD RESISTANCE



FREQUENCY RESPONSE



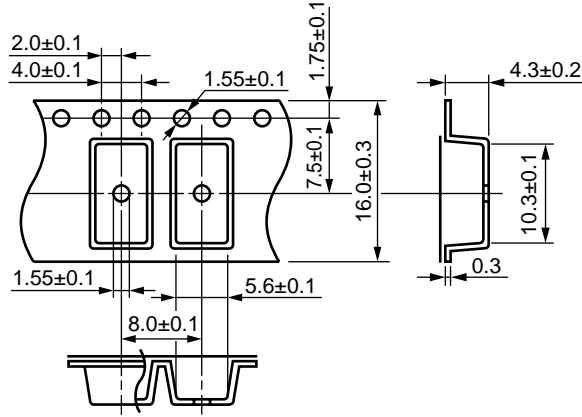
LONG TERM CTR DEGRADATION



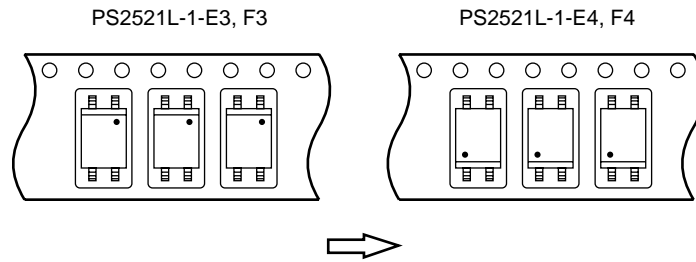
Remark The measurement of TYPICAL CHARACTERISTICS are only for reference, not guaranteed.

★ TAPING SPECIFICATIONS (in millimeters)

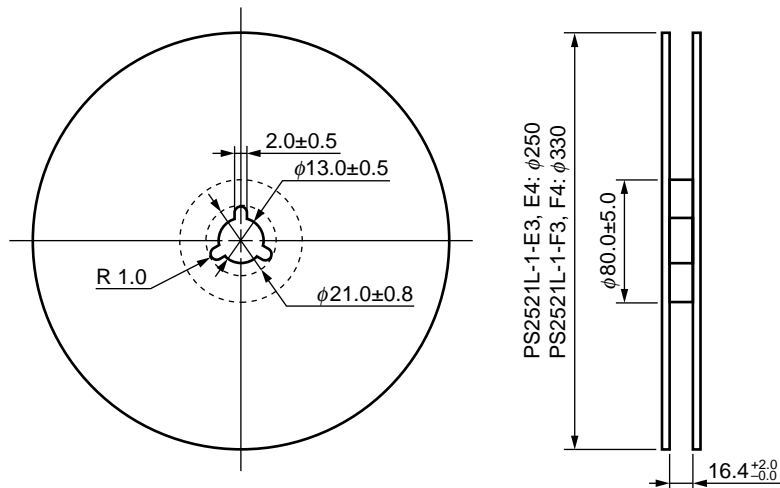
Outline and Dimensions (Tape)



Tape Direction



Outline and Dimensions (Reel)



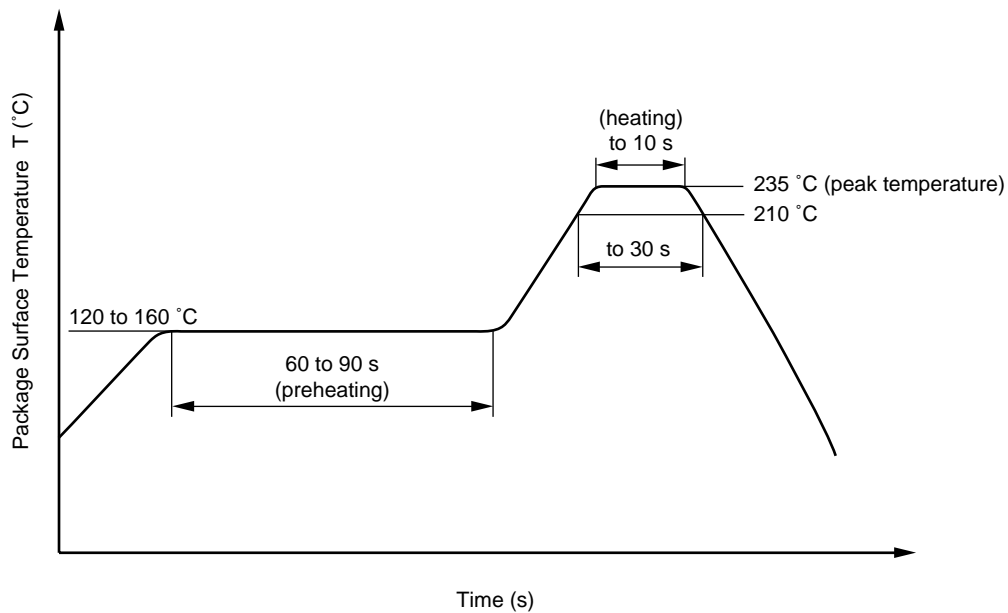
Packing: PS2521L-1-E3, E4 1 000 pcs/reel
 PS2521L-1-F3, F4 2 000 pcs/reel

RECOMMENDED SOLDERING CONDITIONS

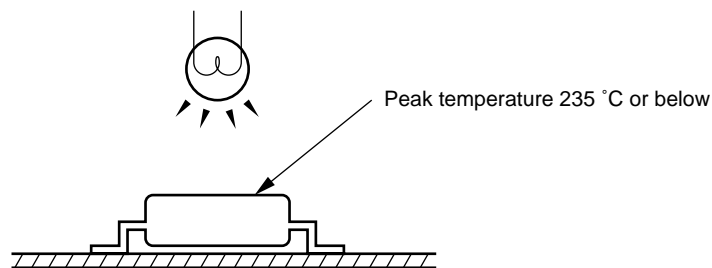
(1) Infrared reflow soldering

- 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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Special: Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)

Specific: Aircrafts, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.

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Anti-radioactive design is not implemented in this product.