

# NEC

## HIGH ISOLATION VOLTAGE HIGH COLLECTOR TO EMITTER VOLTAGE SOP MULTI OPTOCOUPLER

PS2832-1,-4  
PS2833-1,-4

### FEATURES

- **HIGH COLLECTOR TO EMITTER VOLTAGE**  
 $V_{CE0} = 300\text{ V}$  : PS2832-1,-4  
 $V_{CE0} = 350\text{ V}$  : PS2833-1,-4
- **SMALL THIN PACKAGE**  
4, 16-pin SOP, pin pitch 1.27 mm
- **HIGH ISOLATION VOLTAGE**  
 $BV = 2500\text{ Vr.m.s.}$
- **HIGH CURRENT TRANSFER RATIO**  
 $CTR = 2000\% \text{ TYP}$
- **TAPING PRODUCT NUMBER**  
PS2832-1-F3, F4, PS2833-1-F3, F4  
PS2832-4-F3, F4, PS2833-4-F3, F4

### DESCRIPTION

PS2832-1,-4 and PS2833-1,-4 are optically coupled isolators containing a GaAs light emitting diode and an NPN silicon darlington-connected phototransistor. The package is an SSOP (Super Small Out-Line Package) type for high density mounting applications.

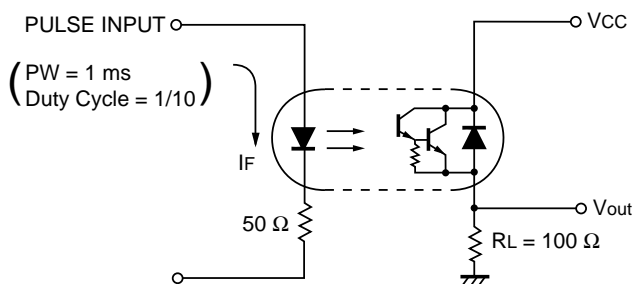
### APPLICATIONS

- HYBRID IC
- TELEPHONE / TELEGRAPH RECEIVER
- FAX

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )

		PART NUMBER	PS2832-1, -4, PS2833-1, -4			
	SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
Diode	$V_F$	Forward Voltage, $I_F = 10\text{ mA}$	V		1.2	1.4
	$I_R$	Reverse Current, $V_R = 5\text{ V}$	$\mu\text{A}$			5
	C	Terminal Capacitance, $V = 0, f = 1.0\text{ MHz}$	pF		15	
Tran-sistor	$I_{CE0}$	Collector to Emitter Current $I_F = 0\text{ mA}, V_{CE} = 300\text{ V}$	nA			400
Coupled	CTR	Current Transfer Ratio, $(I_C/I_F)$ $I_F = 1\text{ mA}, V_{CE} = 2\text{ V}$	%	400	2000	4500
	$V_{CE(sat)}$	Collector Saturation Voltage, $I_F = 1\text{ mA}, I_C = 2\text{ mA}$	V			1.0
	Ri-o	Isolation Resistance, $V_{in-out} = 1.0\text{ kVDC}$	$\Omega$	$10^{11}$		
	CI-o	Isolation Capacitance, $V = 0, f = 1.0\text{ MHz}$	pF		0.4	
	$t_r$	Rise Time <sup>1</sup> , $V_{CC} = 5\text{ V}, I_C = 10\text{ mA}, R_L = 100\ \Omega$	$\mu\text{s}$		20	
$t_f$	Fall Time <sup>1</sup> , $V_{CC} = 5\text{ V}, I_C = 10\text{ mA}, R_L = 100\ \Omega$	$\mu\text{s}$		5		

#### 1. Test Circuit for Switching Time



# PS2832-1, -4, PS2833-1, -4

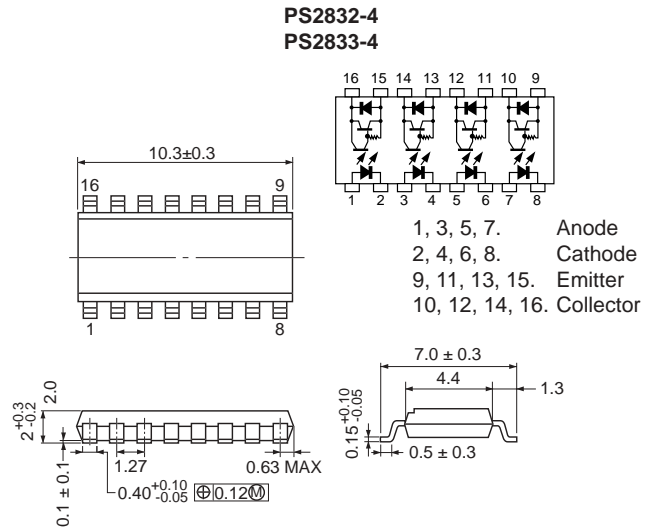
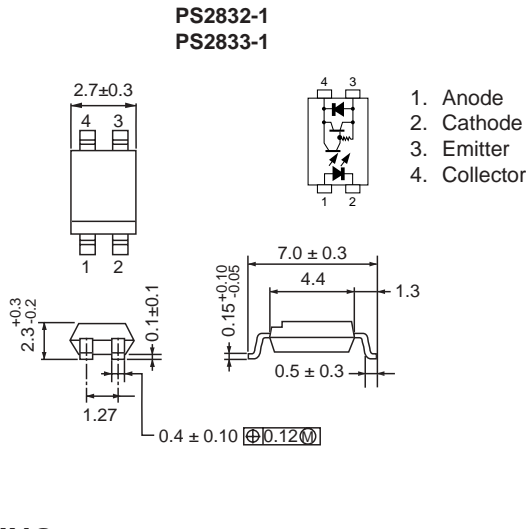
## ABSOLUTE MAXIMUM RATINGS<sup>1</sup> (T<sub>A</sub> = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS			
			PS2832-1	PS2833-1	PS2832-4	PS2833-4
Diode						
I <sub>F</sub>	Forward Current (DC)	mA	50			
V <sub>R</sub>	Reverse Voltage	V	6			
ΔP <sub>D</sub> /°C	Power Dissipation Derating	mW/°C	0.6		0.8	
P <sub>D</sub>	Power Dissipation	mW/Ch	60		80	
I <sub>F(Peak)</sub>	Peak Forward Current PW = 100 μs, Duty Cycle 1%	A	1			
Transistor						
V <sub>CEO</sub>	Collector to Emitter Voltage	V	300	350	300	350
V <sub>ECO</sub>	Emitter to Collector Voltage	V	0.3			
I <sub>C</sub>	Collector Current	mA/Ch	60			
ΔP <sub>C</sub> /°C	Power Dissipation Derating	mW/°C	1.2			
P <sub>C</sub>	Power Dissipation	mW/Ch	120			
Coupled						
BV	Isolation Voltage <sup>2</sup>	V <sub>r.m.s.</sub>	2500			
T <sub>A</sub>	Operating Ambient Temp.	°C	-55 to +100			
T <sub>STG</sub>	Storage Temperature	°C	-55 to +150			

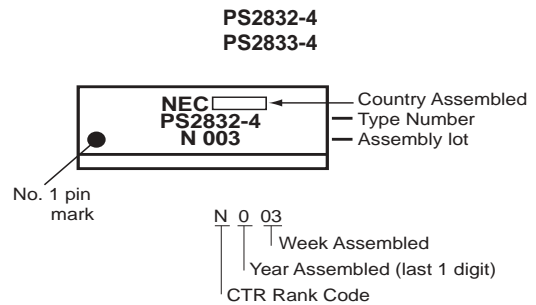
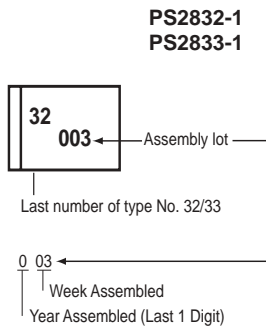
### Notes:

- Operation in excess of any one of these parameters may result in permanent damage.
- AC voltage for 1 minute at T<sub>A</sub> = 25 °C, RH = 60 % between input and output.

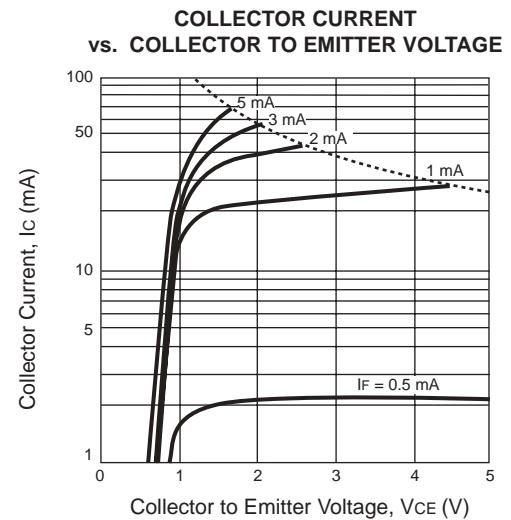
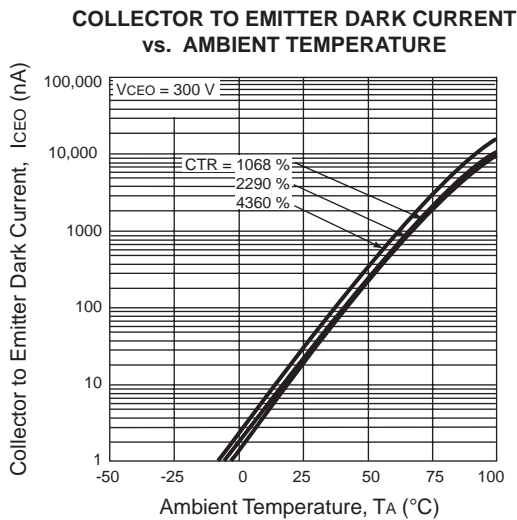
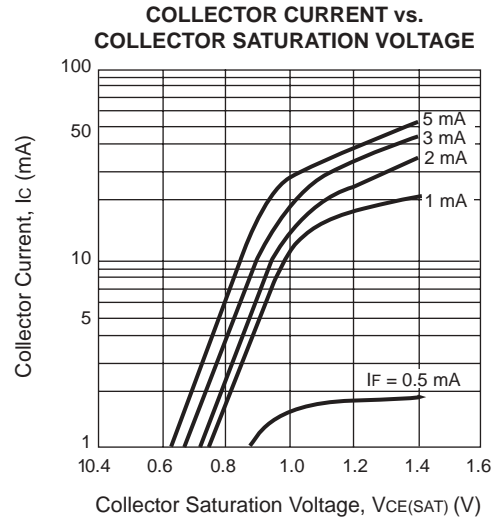
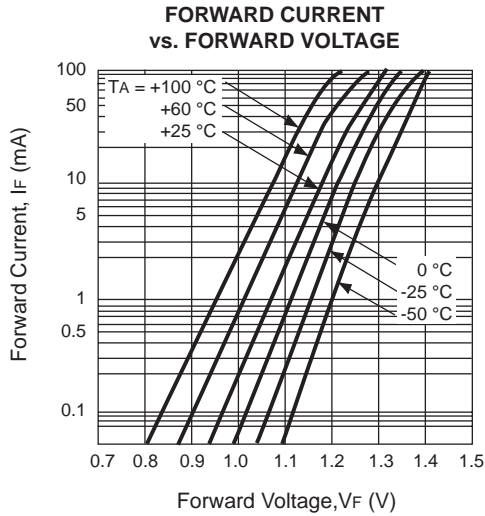
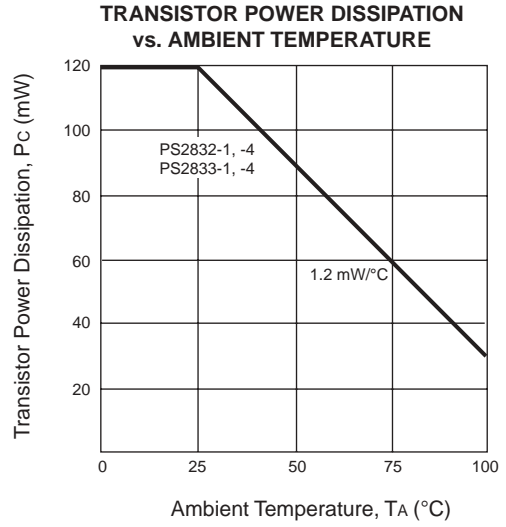
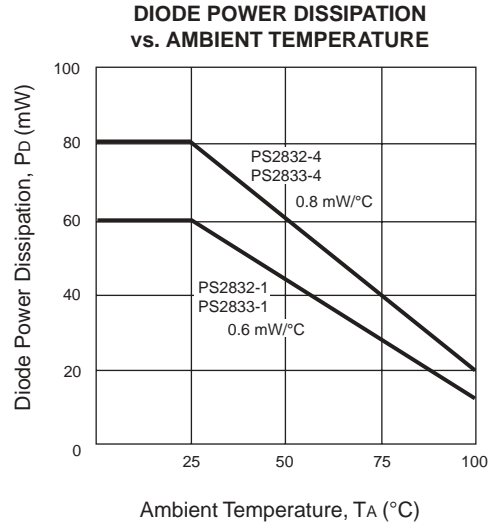
## OUTLINE DIMENSIONS (Units in mm)



## MARKING

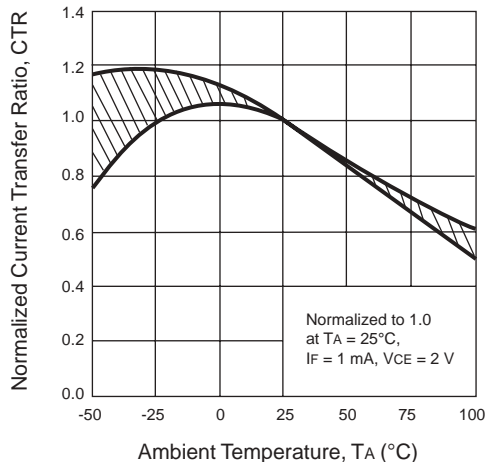


**TYPICAL PERFORMANCE CURVES** ( $T_A = 25^\circ\text{C}$  unless otherwise specified)

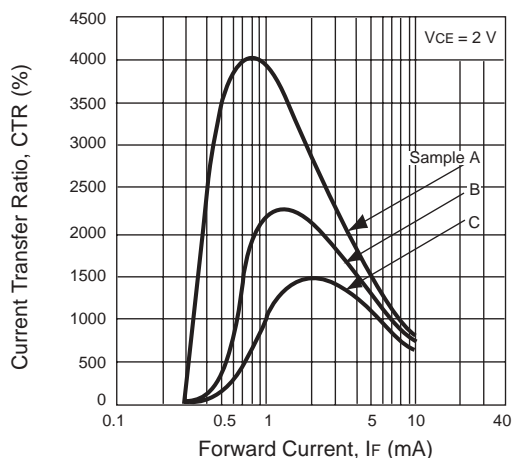


**TYPICAL PERFORMANCE CURVES** (TA = 25°C unless otherwise specified)

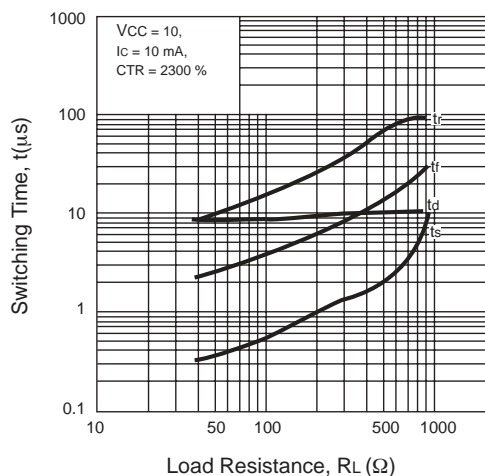
**NORMALIZED CURRENT TRANSFER RATIO vs. AMBIENT TEMPERATURE**



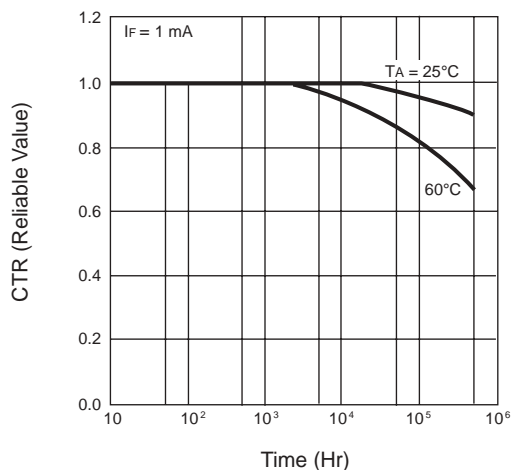
**CURRENT TRANSFER RATIO vs. FORWARD CURRENT**



**SWITCHING TIME vs. LOAD RESISTANCE**



**LONG TERM CTR DEGRADATION**



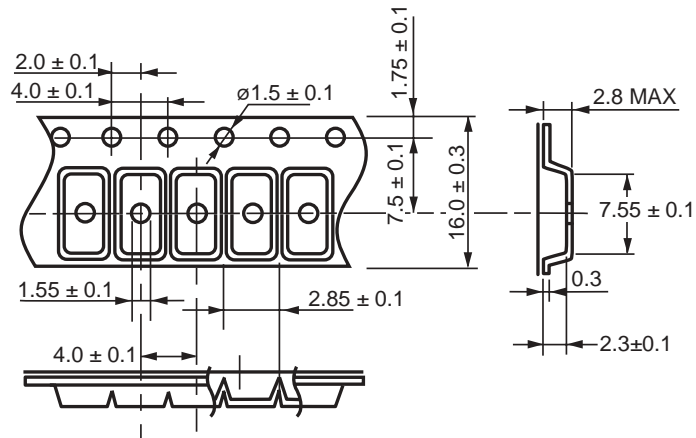
Remark: The graphs indicate nominal characteristics.

**ORDERING INFORMATION**

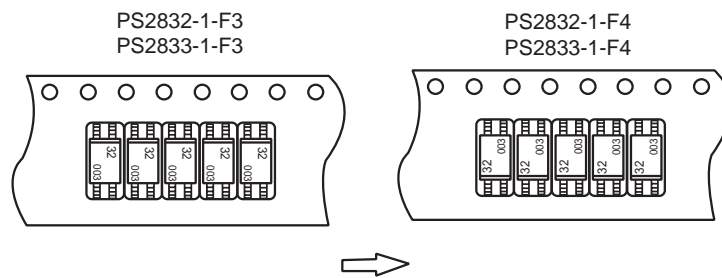
PART NUMBER	PACKAGE	PACKING STYLE	PART NUMBER	PACKAGE	PACKING STYLE
PS2832-1	4 pin SOP	50 pcs (Tape 50 pcs cut)	PS2833-1	4 pin SOP	50 pcs (Tape 50 pcs cut)
PS2832-1-F3		Embossed Tape 3500 pcs/reel	PS2833-1-F3		Embossed Tape 3500 pcs/reel
PS2832-1-F4			PS2833-1-F4		
PS2832-4	16 pin SOP	Magazine case 45 pcs	PS2833-4	16 pin SOP	Magazine case 45 pcs
PS2832-4-F3		Embossed Tape 2500 pcs/reel	PS2833-4-F3		Embossed Tape 2500 pcs/reel
PS2832-4-F4			PS2833-4-F4		
PS2832-1-V	4 pin SOP	50 pcs (Tape 50 pcs cut)	PS2833-1-V	4 pin SOP	50 pcs (Tape 50 pcs cut)
PS2832-1-V-F3		Embossed Tape 3500 pcs/reel	PS2833-1-V-F3		Embossed Tape 3500 pcs/reel
PS2832-1-V-F4			PS2833-1-V-F4		
PS2832-4-V	16 pin SOP	Magazine case 45 pcs	PS2833-4-V	16 pin SOP	Magazine case 45 pcs
PS2832-4-V-F3		Embossed Tape 2500 pcs/reel	PS2833-4-V-F3		Embossed Tape 2500 pcs/reel
PS2832-4-V-F4			PS2833-4-V-F4		

**TAPING SPECIFICATIONS** (Units in mm)

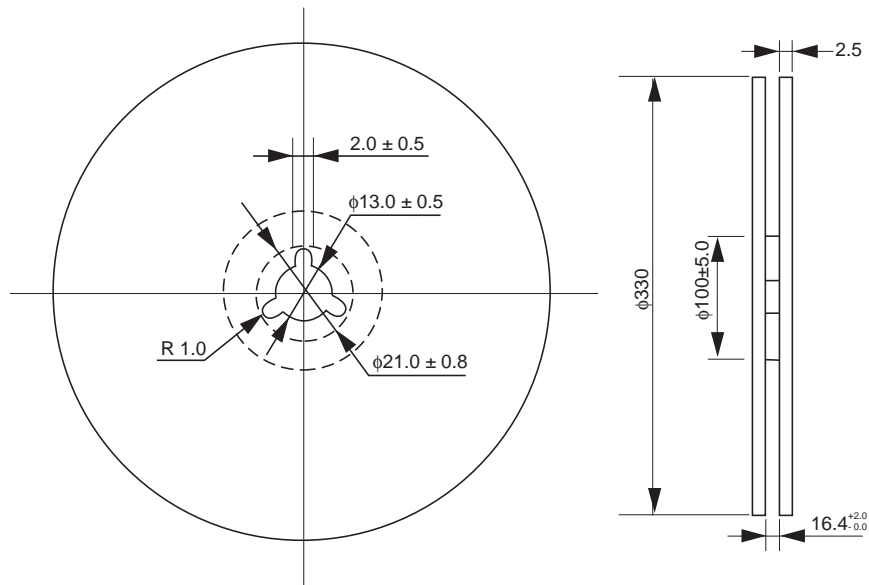
**TAPE OUTLINE AND DIMENSIONS**



**TAPE DIRECTION**



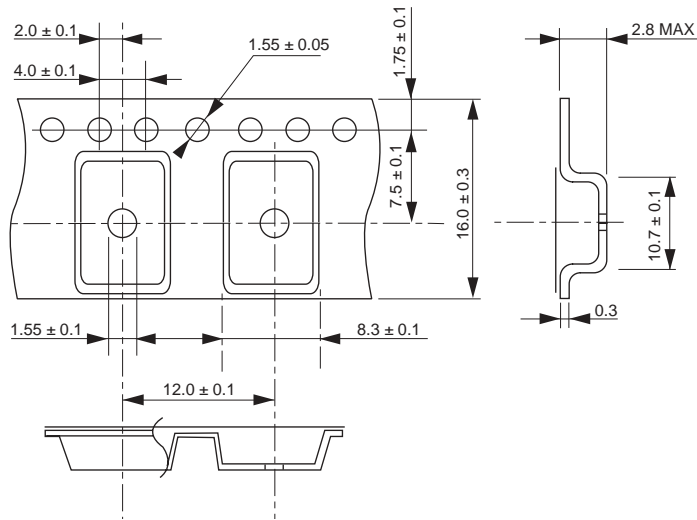
**REEL OUTLINE DIMENSIONS**



Packing: 3500 pcs/Reel

**TAPING SPECIFICATIONS** (Units in mm)

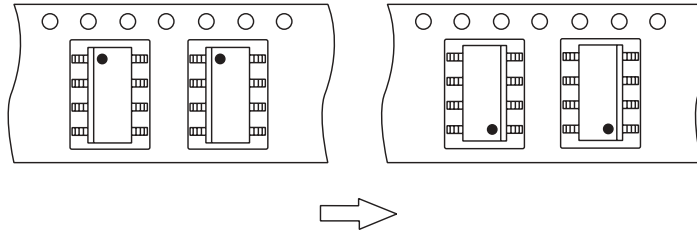
**TAPE OUTLINE AND DIMENSIONS**



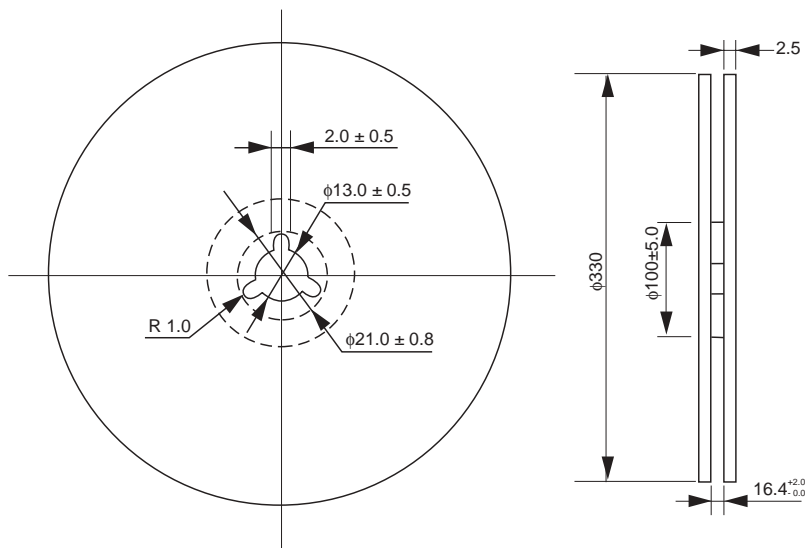
**TAPE DIRECTION**

PS2832-4-F3  
PS2833-4-F3

PS2832-4-F4  
PS2833-4-F4



**REEL OUTLINE DIMENSIONS**

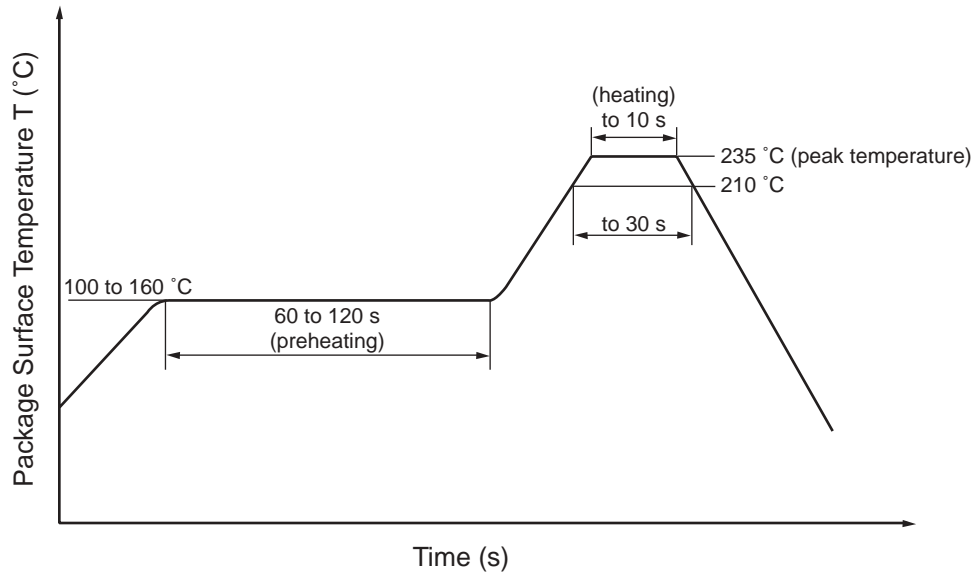


Packing: 2500 ppcs/reel

## 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).



### (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).

### (3) Cautions

- Fluxes Avoid removing the residual flux with chlorine-based cleaning solvent after a reflow process.

### CAUTIONS REGARDING NOISE

Be aware that when voltage is applied suddenly between the photocoupler's input and output or between corrector-emitters at start-up, the output side may enter the on state, even if the voltage is within the absolute maximum ratings.

#### Life Support Applications

These NEC products are not intended for use in life support devices, appliances, or systems where the malfunction of these products can reasonably be expected to result in personal injury. The customers of CEL using or selling these products for use in such applications do so at their own risk and agree to fully indemnify CEL for all damages resulting from such improper use or sale.

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