

PHOTOCOUPLER

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

HIGH COLLECTOR TO EMITTER VOLTAGE 4, 16-PIN SOP PHOTOCOUPLER

-NEPOC Series-

DESCRIPTION

The 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 SOP (Small Outline Package) type for high density mounting applications.

FEATURES

High collector to emitter voltage (VcEo = 300 V: PS2832-1, -4)

(VCEO = 350 V: PS2833-1, -4)

- Small and thin package (4, 16-pin SOP, Pin pitch 1.27 mm)
- High isolation voltage (BV = 2 500 Vr.m.s.)
- High current transfer ratio (CTR = 2 000 % TYP.)
- Ordering number of tape product: PS2832-1-F3, F4, PS2832-4-F3, F4

PS2833-1-F3, F4, PS2833-4-F3, F4

• Safety standards: PS2832-1, -4

• UL approved: File No. E72422 (S)

• BSI approved: No. 8315, 8316

• VDE0884 approved (Option)

PS2833-1, -4

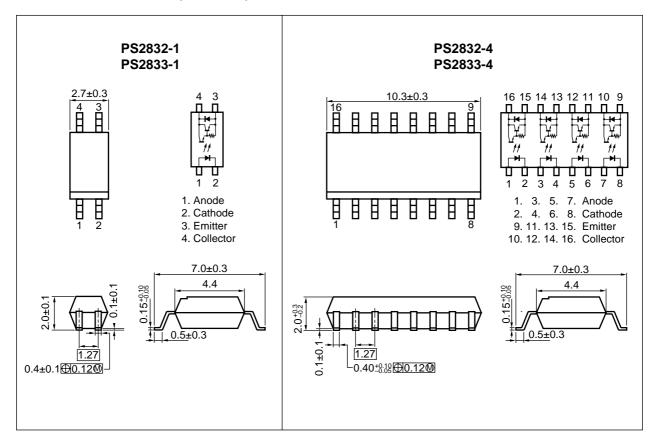
UL approved: File No. E72422 (S)

APPLICATIONS

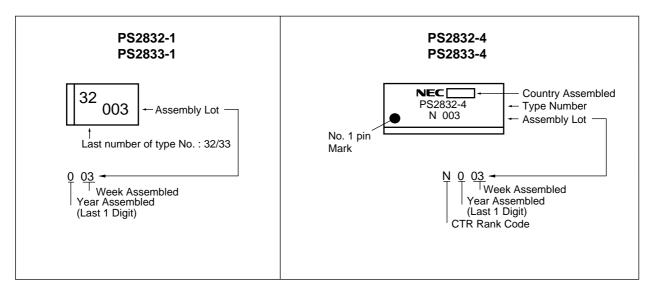
- Hybrid IC
- Telephone/Telegraph Receiver
- FAX

The information in this document is subject to change without notice. Before using this document, please confirm that this is the latest version.

★ PACKAGE DIMENSIONS (UNIT: mm)



MARKING



ORDERING INFORMATION (Solder Contains Lead)

Part Number	Package	Packing Style Safety Standards Approval		Application Part Number *1
PS2832-1	4-pin SOP	50 pcs (Tape 50 pcs cut)	Approved products	PS2832-1
PS2832-1-F3		Embossed Tape 3 500 pcs/reel	other than VDE	
PS2832-1-F4				
PS2832-4	16-pin SOP	Magazine Case 45 pcs		PS2832-4
PS2832-4-F3		Embossed Tape 2 500 pcs/reel		
PS2832-4-F4				
PS2832-1-V	4-pin SOP	50 pcs (Tape 50 pcs cut)	VDE0884 approved	PS2832-1
PS2832-1-V-F3		Embossed Tape 3 500 pcs/reel	(Option)	
PS2832-1-V-F4				
PS2832-4-V	16-pin SOP	Magazine Case 45 pcs		PS2832-4
PS2832-4-V-F3		Embossed Tape 2 500 pcs/reel		
PS2832-4-V-F4				
PS2833-1	4-pin SOP	50 pcs (Tape 50 pcs cut)	Approved products	PS2833-1
PS2833-1-F3		Embossed Tape 3 500 pcs/reel	other than VDE	
PS2833-1-F4				
PS2833-4	16-pin SOP	Magazine Case 45 pcs		PS2833-4
PS2833-4-F3		Embossed Tape 2 500 pcs/reel		
PS2833-4-F4				

^{*1} For the application of the Safety Standard, following part number should be used.

ORDERING INFORMATION (Pb-Free)

Part Number	Package	Packing Style	Packing Style Safety Standards Appl Approval N			
PS2832-1-A	4-pin SOP	50 pcs (Tape 50 pcs cut)	Approved products	PS2832-1		
PS2832-1-F3-A		Embossed Tape 3 500 pcs/reel	other than VDE			
PS2832-1-F4-A						
PS2832-4-A	16-pin SOP	Magazine Case 45 pcs		PS2832-4		
PS2832-4-F3-A		Embossed Tape 2 500 pcs/reel				
PS2832-4-F4-A						
PS2832-1-V-A	4-pin SOP	50 pcs (Tape 50 pcs cut)	VDE0884 approved	PS2832-1		
PS2832-1-V-F3-A		Embossed Tape 3 500 pcs/reel	(Option)			
PS2832-1-V-F4-A						
PS2832-4-V-A	16-pin SOP	Magazine Case 45 pcs		PS2832-4		
PS2832-4-V-F3-A		Embossed Tape 2 500 pcs/reel				
PS2832-4-V-F4-A						
PS2833-1-A	4-pin SOP	50 pcs (Tape 50 pcs cut)	Approved products	PS2833-1		
PS2833-1-F3-A		Embossed Tape 3 500 pcs/reel	other than VDE			
PS2833-1-F4-A						
PS2833-4-A	16-pin SOP	Magazine Case 45 pcs		PS2833-4		
PS2833-4-F3-A		Embossed Tape 2 500 pcs/reel				
PS2833-4-F4-A						

^{*1} For the application of the Safety Standard, following part number should be used.

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

Parameter		Symbol	Ratings				
			PS2832-1	PS2833-1	PS2832-4	PS2833-4	Unit
Diode	Forward Current (DC)	lF	50		mA		
	Reverse Voltage		6			V	
	Power Dissipation Derating	⊿P₀/°C	0.6 0.8		.8	mW/°C	
	Power Dissipation	Po	60 80		0	mW/ch	
	Peak Forward Current*1	IFP	1		Α		
Transistor	Collector to Emitter Voltage	Vceo	300	350	300	350	V
Emitter to Collector Voltage		VECO	0.3			V	
Collector Current Power Dissipation Derating		lc	60				mA/ch
		⊿Pc/°C	1.2				mW/°C
Power Dissipation		Pc	120			mW/ch	
Isolation Voltage*2		BV	2 500			Vr.m.s.	
Operating Ambient Temperature		TA	-55 to +100			°C	
Storage Temperature		Tstg	-55 to +150			°C	

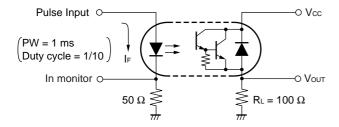
^{*1} PW = 100 μ s, Duty Cycle = 1 %

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

ELECTRICAL CHARACTERISTICS (TA = 25 °C)

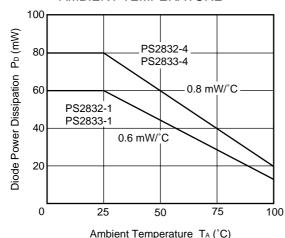
Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Diode	Forward Voltage	VF	IF = 10 mA		1.2	1.4	V
	Reverse Current	lR	VR = 5 V			5	μА
	Terminal Capacitance	Ct	V = 0 V, f = 1 MHz		15		pF
Transistor	Collector to Emitter Dark Current	Iceo	IF = 0 mA, VcE = 300 V			400	nA
Coupled	Current Transfer Ratio	CTR	IF = 1 mA, VcE = 2 V	400	2 000	4 500	%
	Collector Saturation Voltage	VCE (sat)	IF = 1 mA, Ic = 2 mA			1.0	V
	Isolation Resistance	R _{I-O}	Vi-o = 1 kVDC	10 ¹¹			Ω
	Isolation Capacitance	CI-O	V = 0 V, f = 1 MHz		0.4		pF
	Rise Time ^{*1}	tr	$Vcc = 5 \text{ V, } Ic = 10 \text{ mA, } R_L = 100 \Omega$		20		μS
	Fall Time *1	t _f			5		

*1 Test circuit for switching time

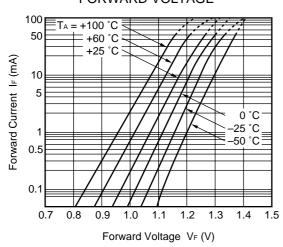


TYPICAL CHARACTERISTICS (TA = 25 °C, unless otherwise specified)

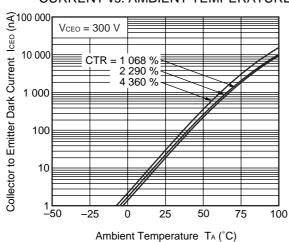
DIODE POWER DISSIPATION vs. AMBIENT TEMPERATURE



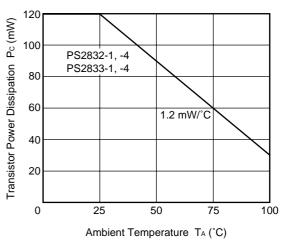
FORWARD CURRENT vs. FORWARD VOLTAGE



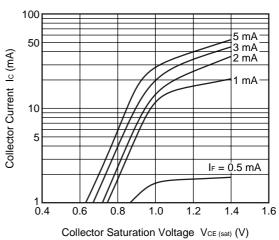
COLLECTOR TO EMITTER DARK CURRENT vs. AMBIENT TEMPERATURE



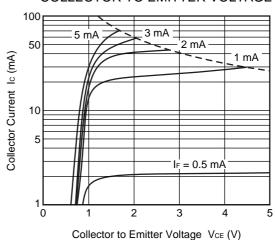
TRANSISTOR POWER DISSIPATION vs. AMBIENT TEMPERATURE



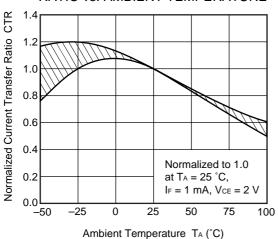
COLLECTOR CURRENT vs. COLLECTOR SATURATION VOLTAGE



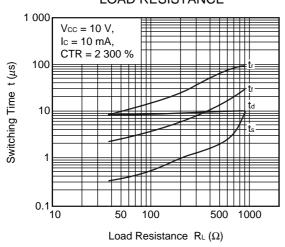
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



NORMALIZED CURRENT TRANSFER RATIO vs. AMBIENT TEMPERATURE

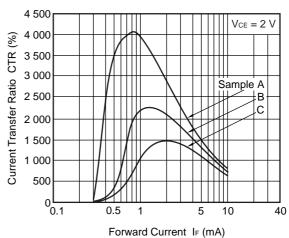


SWITCHING TIME vs. LOAD RESISTANCE

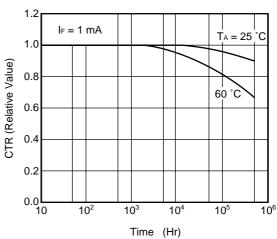


Remark The graphs indicate nominal characteristics.

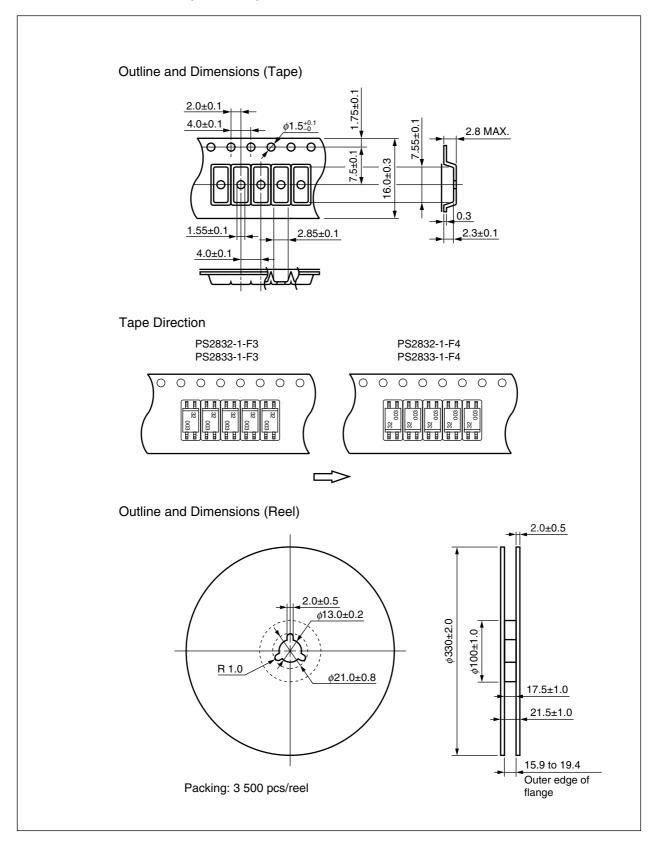
CURRENT TRANSFER RATIO vs. FORWARD CURRENT

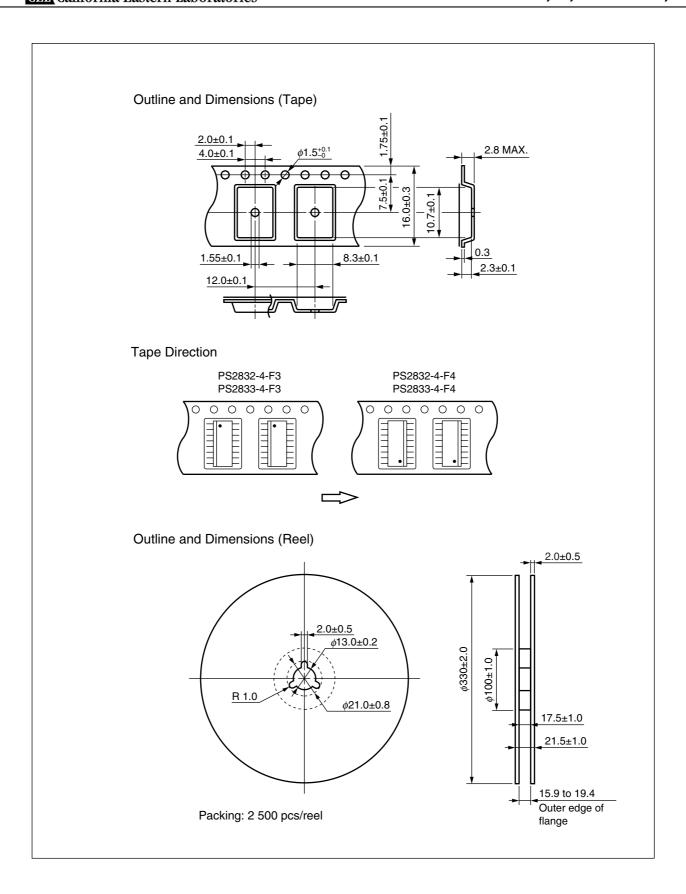


LONG TERM CTR DEGRADATION



★ TAPING SPECIFICATIONS (UNIT: mm)





NOTES ON HANDLING

1. Recommended soldering conditions

(1) Infrared reflow soldering

• Peak reflow temperature 260°C or below (package surface temperature)

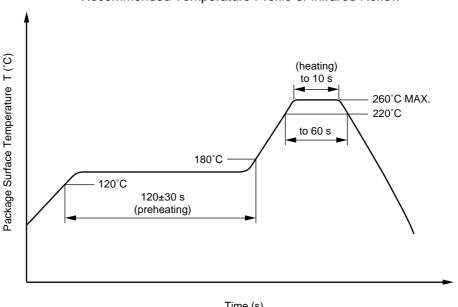
• Time of peak reflow temperature 10 seconds or less • Time of temperature higher than 220°C 60 seconds or less

• Time to preheat temperature from 120 to 180°C 120±30 s · 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



Time (s)

(2) Wave soldering

• Temperature 260°C or below (molten solder temperature)

• Time 10 seconds or less

· Preheating conditions 120°C or below (package surface temperature)

· Number of times One (Allowed to be dipped in solder including plastic mold portion.)

• 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 freon-based and chlorine-based cleaning solvent.

2. Cautions regarding noise

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

★ USAGE CAUTIONS

- 1. Protect against static electricity when handling.
- 2. Avoid storage at a high temperature and high humidity.



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Subject: Compliance with EU Directives

CEL certifies, to its knowledge, that semiconductor and laser products detailed below are compliant with the requirements of European Union (EU) Directive 2002/95/EC Restriction on Use of Hazardous Substances in electrical and electronic equipment (RoHS) and the requirements of EU Directive 2003/11/EC Restriction on Penta and Octa BDE.

CEL Pb-free products have the same base part number with a suffix added. The suffix –A indicates that the device is Pb-free. The -AZ suffix is used to designate devices containing Pb which are exempted from the requirement of RoHS directive (*). In all cases the devices have Pb-free terminals. All devices with these suffixes meet the requirements of the RoHS directive.

This status is based on CEL's understanding of the EU Directives and knowledge of the materials that go into its products as of the date of disclosure of this information.

Restricted Substance per RoHS	Concentration Limit per RoHS (values are not yet fixed)	Concentration contained in CEL devices		
Lead (Pb)	< 1000 PPM	-A Not Detected	-AZ (*)	
Mercury	< 1000 PPM	Not Detected		
Cadmium	< 100 PPM	Not Detected		
Hexavalent Chromium	< 1000 PPM	Not Detected		
PBB	< 1000 PPM	Not Detected		
PBDE	< 1000 PPM	Not Detected		

If you should have any additional questions regarding our devices and compliance to environmental standards, please do not hesitate to contact your local representative.

Important Information and Disclaimer: Information provided by CEL on its website or in other communications concerting the substance content of its products represents knowledge and belief as of the date that it is provided. CEL bases its knowledge and belief on information provided by third parties and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. CEL has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. CEL and CEL suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

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