PS2514-1,PS2514L-1

–NEPOC Series–

HIGH-SPEED SWITCHING/HIGH ISOLATION VOLTAGE PHOTOCOUPLER SERIES

R08DS0012EJ0001
Rev.0.01
May 28, 2010

DESCRIPTION

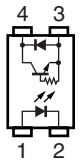
The PS2514-1 and PS2514L-1 are optically coupled isolators containing a GaAs light emitting diode and an NPN silicon phototransistor, enabling relatively high switching speed with high load resistor of several kΩ.

The PS2514-1 is in a plastic DIP (Dual In-line Package) and the PS2514L-1 is lead bending type (Gull-wing) for surface mount.

FEATURES

- High isolation voltage (BV = 5 000 Vr.m.s.)
- High collector to emitter voltage (V_{CEO} = 40 V)
- Guaranteed maximum switching speed
  ($t_{off} \leq 25$ μs @ I_F = 5 mA, V_{CC} = 5 V, R_L = 5 kΩ)
- High-speed switching (t_{on} = 15 μs TYP. @ I_F = 5 mA, V_{CC} = 5 V, R_L = 5 kΩ)
  (t_{off} = 15 μs TYP. @ I_F = 5 mA, V_{CC} = 5 V, R_L = 5 kΩ)
- Embossed tape product: PS2514L-1-F3: 2 000 pcs/reel
- Safety standards*1
  - UL approved: No. E72422
  - CSA awaiting approval
  - DIN EN60747-5-2 (VDE0884 Part2) awaiting approval

PIN CONNECTION
(Top View)



1. Anode
2. Cathode
3. Emitter
4. Collector

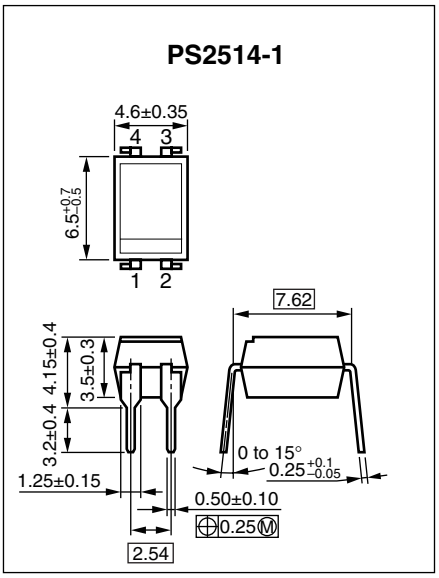
***1** Safety standards were certificated as former NEC Electronics Corporation. When customer want to apply to safety standards, above company name should be used.

APPLICATIONS

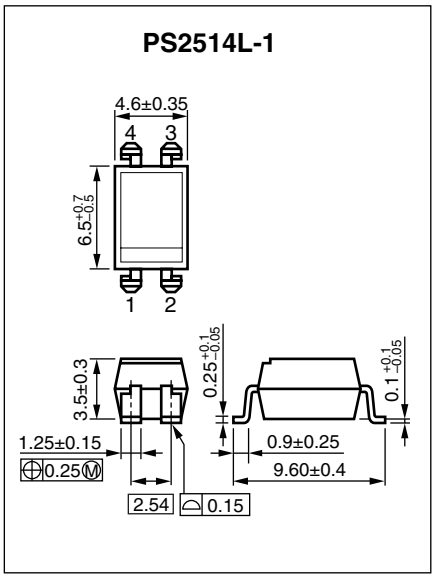
- Power supply
- FA equipment
- Electronic electricity meter

PACKAGE DIMENSIONS (UNIT: mm)

DIP Type



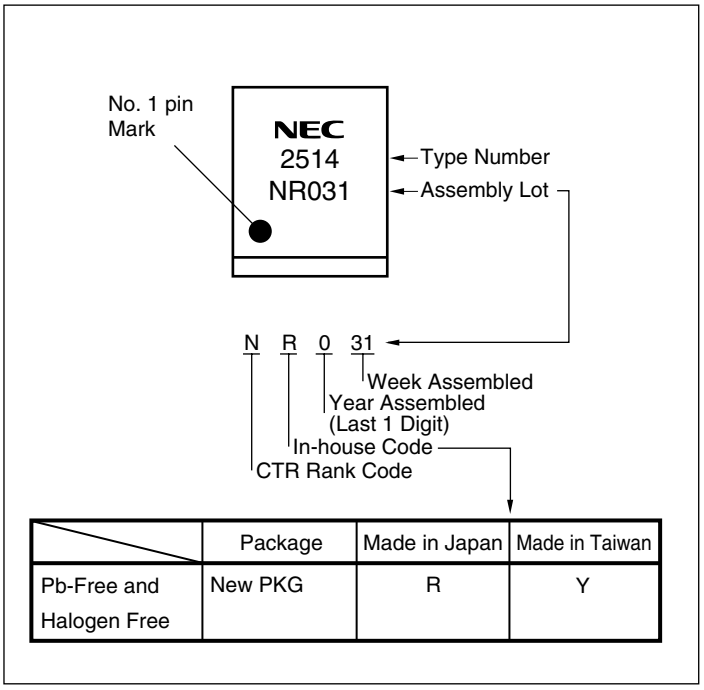
Lead Bending Type



PHOTOCOUPLER CONSTRUCTION

Parameter	Unit (MIN.)
Air Distance	7 mm
Outer Creepage Distance	7 mm
Inner Creepage Distance	3.5 mm
Isolation Thickness	0.3 mm

MARKING EXAMPLE



	Package	Made in Japan	Made in Taiwan
Pb-Free and Halogen Free	New PKG	R	Y

ORDERING INFORMATION

Part Number	Order Number	Solder Plating Specification etc.	Packing Style	Safety Standard Approval	Application Part Number*1
PS2514-1	PS2514-1Y-A	Pb-Free and Halogen Free	Magazine case 100 pcs	Standard products (UL approved and CSA awaiting approval)	PS2514-1
PS2514L-1	PS2514L-1Y-A				
PS2514L-1-F3	PS2514L-1Y-F3-A		Embossed Tape 2 000 pcs/reel		
PS2514-1-V	PS2514-1Y-V-A		Magazine case 100 pcs	DIN EN60747-5-2 (VDE0884 Part2) awaiting approval (Option)	
PS2514L-1-V	PS2514L-1Y-V-A				
PS2514L-1-V-F3	PS2514L-1Y-V-F3-A		Embossed Tape 2 000 pcs/reel		

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

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

Parameter		Symbol	Ratings	Unit
Diode	Reverse Voltage	V_R	6	V
	Forward Current (DC)	I_F	30	mA
	Power Dissipation Derating	ΔP_D/°C	1.5	mW/°C
	Power Dissipation	P_D	150	mW
	Peak Forward Current*1	I_{FP}	0.5	A
Transistor	Collector to Emitter Voltage	V_{CEO}	40	V
	Emitter to Collector Voltage	V_{ECO}	0.6	V
	Collector Current	I_C	20	mA
	Power Dissipation Derating	ΔP_C/°C	1.5	mW/°C
	Power Dissipation	P_C	150	mW
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.
Pins 1-2 shorted together, 3-4 shorted together.

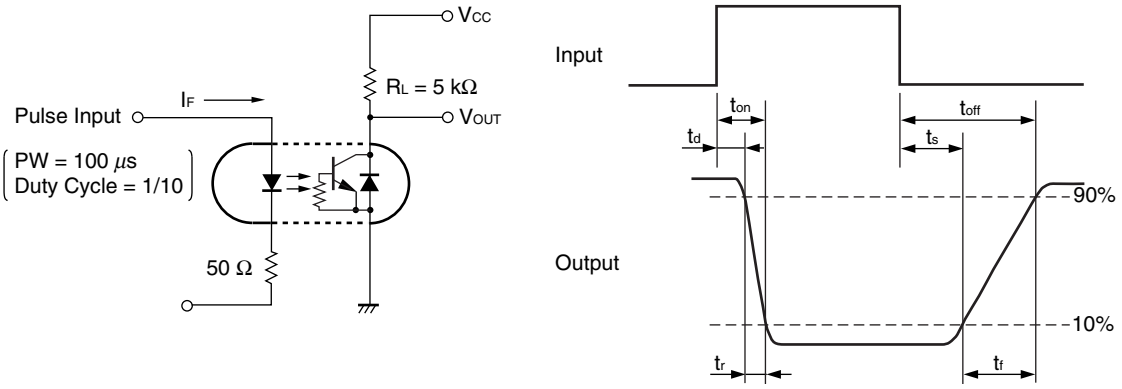
RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Input Current	I_F	5	6	7	mA

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

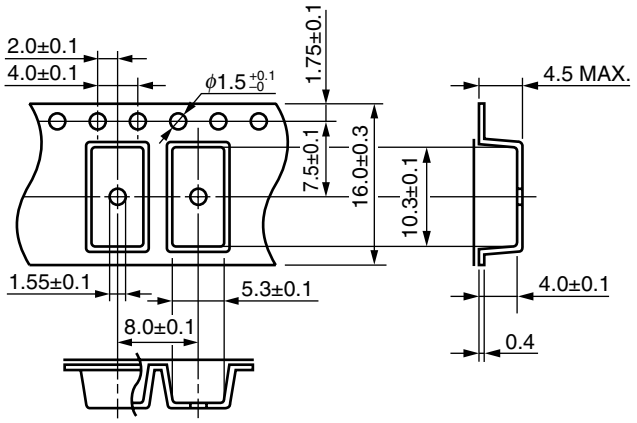
Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Diode	Forward Voltage	V_F	I_F = 5 mA		1.1	1.3	V
	Reverse Current	I_R	V_R = 5 V			5	μA
	Terminal Capacitance	C_t	V = 0 V, f = 1.0 MHz		10		pF
Transistor	Collector to Emitter Dark Current	I_{CEO}	V_{CE} = 40 V, I_F = 0 mA			100	nA
Coupled	Current Transfer Ratio	CTR	I_F = 5 mA, V_{CE} = 5 V	50	125	200	%
	Collector Saturation Voltage	$V_{CE (sat)}$	I_F = 5 mA, I_C = 1 mA			0.35	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		0.5		pF
	Turn-on Time*1	t_{on}	V_{CC} = 5 V, I_F = 5 mA, R_L = 5 kΩ		15	25	μs
	Turn-off Time*1	t_{off}			15	25	

***1** Test circuit for switching time



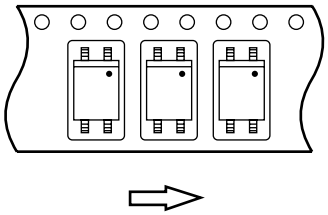
TAPING SPECIFICATIONS (UNIT: mm)

Outline and Dimensions (Tape)

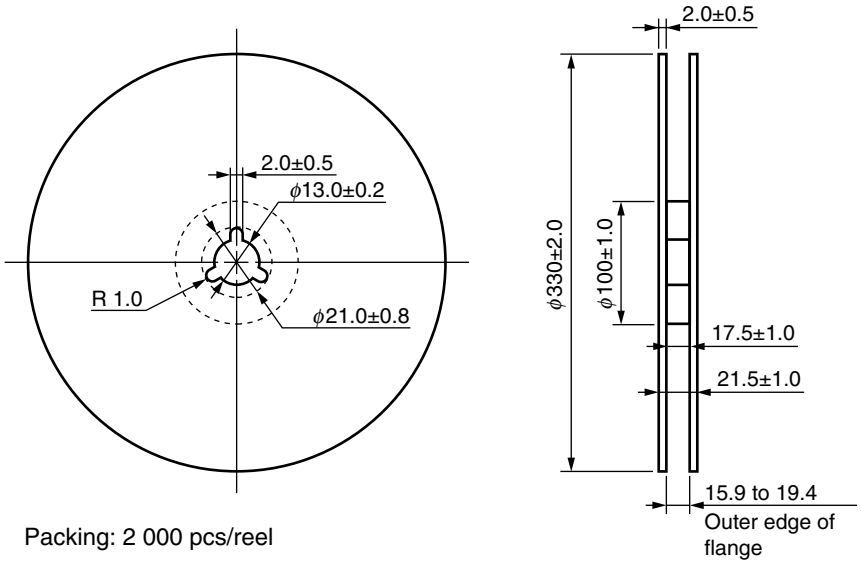


Tape Direction

PS2514L-1-F3



Outline and Dimensions (Reel)



Packing: 2 000 pcs/reel

Caution GaAs Products	This product uses gallium arsenide (GaAs). GaAs vapor and powder are hazardous to human health if inhaled or ingested, so please observe the following points. • Follow related laws and ordinances when disposing of the product. If there are no applicable laws and/or ordinances, dispose of the product as recommended below. 1. Commission a disposal company able to (with a license to) collect, transport and dispose of materials that contain arsenic and other such industrial waste materials. 2. Exclude the product from general industrial waste and household garbage, and ensure that the product is controlled (as industrial waste subject to special control) up until final disposal. • Do not burn, destroy, cut, crush, or chemically dissolve the product. • Do not lick the product or in any way allow it to enter the mouth.

Revision History	PS2514-1,PS2514L-1 Preliminary Data Sheet

Rev.	Date	Description	
		Page	Summary
0.01	May 28, 2010	–	First edition issued

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Renesas Electronics America Inc.
2880 Scott Boulevard Santa Clara, CA 95050-2554, U.S.A.
Tel: +1-408-588-6000, Fax: +1-408-588-6130

Renesas Electronics Canada Limited
1101 Nicholson Road, Newmarket, Ontario L3Y 9C3, Canada
Tel: +1-905-898-5441, Fax: +1-905-898-3220

Renesas Electronics Europe Limited
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K
Tel: +44-1628-585-100, Fax: +44-1628-585-900

Renesas Electronics Europe GmbH
Arcadiastrasse 10, 40472 Düsseldorf, Germany
Tel: +49-211-6503-0, Fax: +49-211-6503-1327

Renesas Electronics (China) Co., Ltd.
7th Floor, Quantum Plaza, No.27 ZhiChunLu Haidian District, Beijing 100083, P.R.China
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

Renesas Electronics (Shanghai) Co., Ltd.
Unit 204, 205, AZIA Center, No.1233 Lujiazui Ring Rd., Pudong District, Shanghai 200120, China
Tel: +86-21-5877-1818, Fax: +86-21-6887-7858 / -7898

Renesas Electronics Hong Kong Limited
Unit 1601-1613, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong
Tel: +852-2886-9318, Fax: +852 2886-9022/9044

Renesas Electronics Taiwan Co., Ltd.
7F, No. 363 Fu Shing North Road Taipei, Taiwan, R.O.C.
Tel: +886-2-8175-9600, Fax: +886 2-8175-9670

Renesas Electronics Singapore Pte. Ltd.
1 harbourFront Avenue, #06-10, keppel Bay Tower, Singapore 098632
Tel: +65-6213-0200, Fax: +65-6278-8001

Renesas Electronics Malaysia Sdn.Bhd.
Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: +60-3-7955-9390, Fax: +60-3-7955-9510

Renesas Electronics Korea Co., Ltd.
11F., Samik Lavied' or Bldg., 720-2 Yeoksam-Dong, Kangnam-Ku, Seoul 135-080, Korea
Tel: +82-2-558-3737, Fax: +82-2-558-5141

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