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Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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PHOTO DIODE INTERNAL I/V AMPLIFIER DETECTOR FOR CD

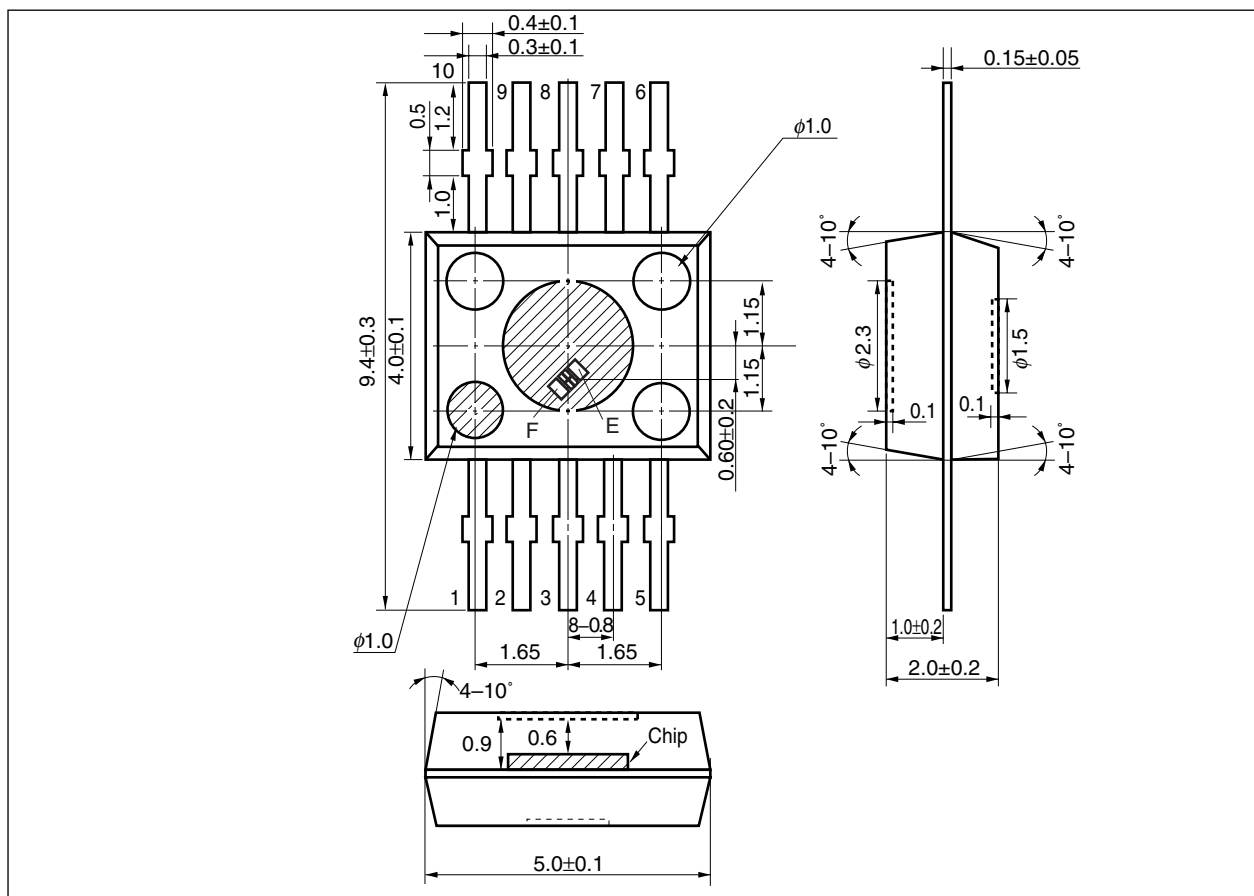
DESCRIPTION

The PH525F is 6 elements photo diode built in I/V amplifiers for CD. It is easy to adjust the center of beam spot by using the Focus and Tracking input terminal, and possible to obtain high speed and high sensitivity.

FEATURES

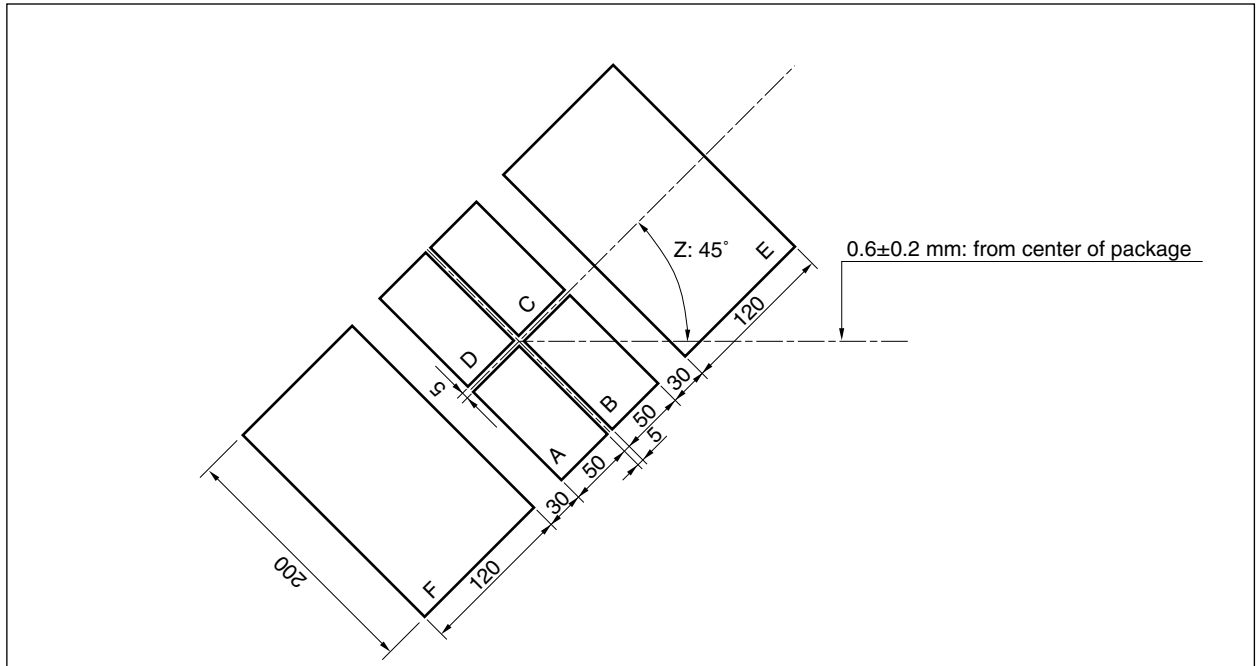
- High speed Frequency response: $f_c = 14$ MHz TYP.
- High sensitivity Output voltage: $V_{oF} = 180$ mV, $V_{oT} = 365$ mV ($P_i = 5$ μ W)
- Wide operating temperature $T_{opt} = -20$ to $+70^\circ\text{C}$
- Small package 4.0×5.0 mm

PACKAGE DIMENSIONS (UNIT: mm)

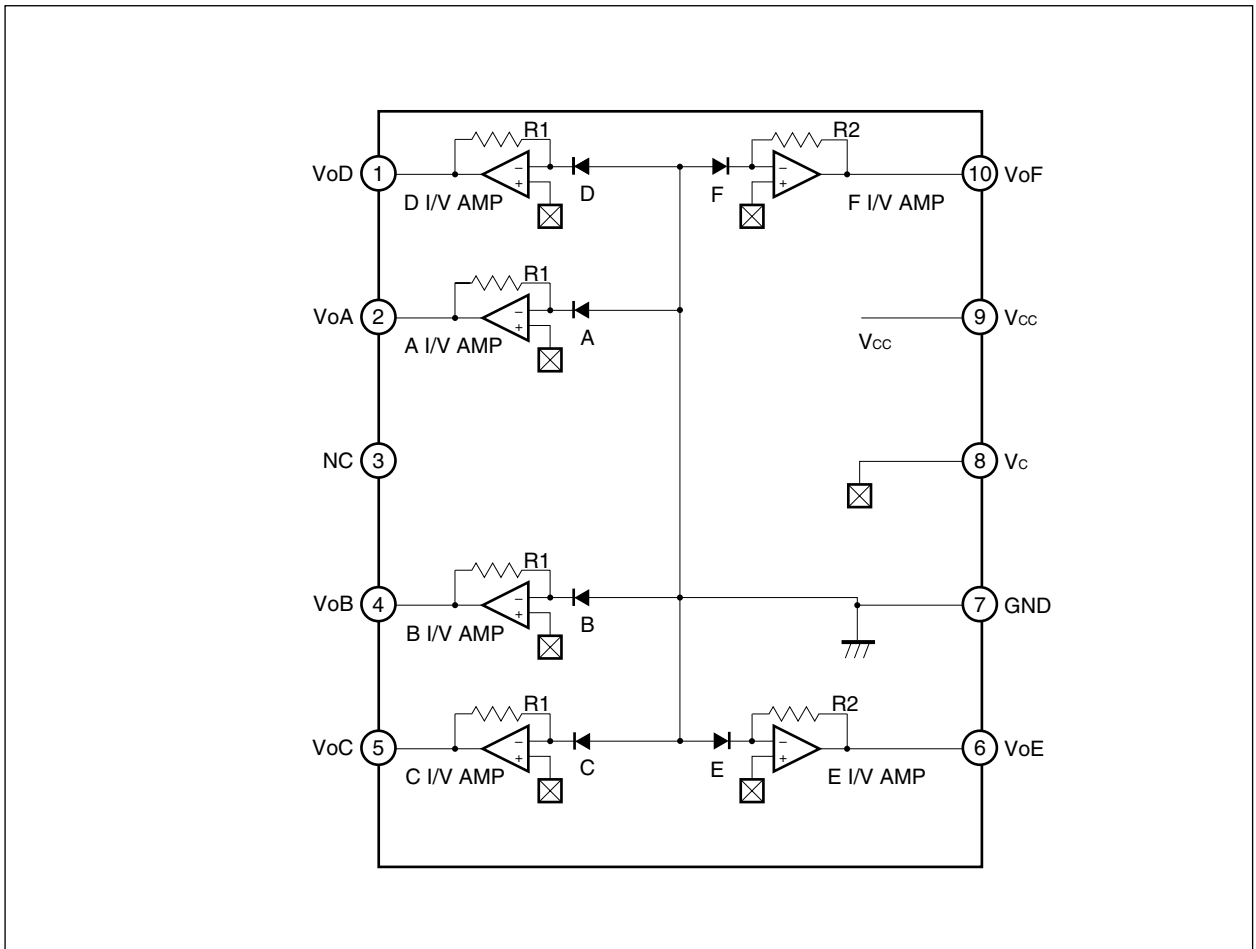


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Not all devices/types available in every country. Please check with local NEC Compound Semiconductor Devices representative for availability and additional information.

CHIP PATTERN (Unit: μm)



PIN CONNECTIONS



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

Parameter	Symbol	Ratings	Unit
Supply Voltage	V _{CC}	6	V
Power Dissipation	P _D	100	mW
Operating Temperature	T _{opt}	-20 to +70	°C
Storage Temperature	T _{stg}	-40 to +85	°C

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Supply Voltage of V _c	V _c	1.35	V _{CC} /2	V _{CC} -1.3	V
Supply Voltage Limit	V _{CC}	2.7	5.0	6.0	V

ELECTRO-OPTICAL CHARACTERISTICS

(T_A = 25°C, V_{CC} = 3 V, 5 V, V_C = 1/2 V_{CC}, R_L = 10 kΩ, C_L = 10 pF, unless otherwise specified)

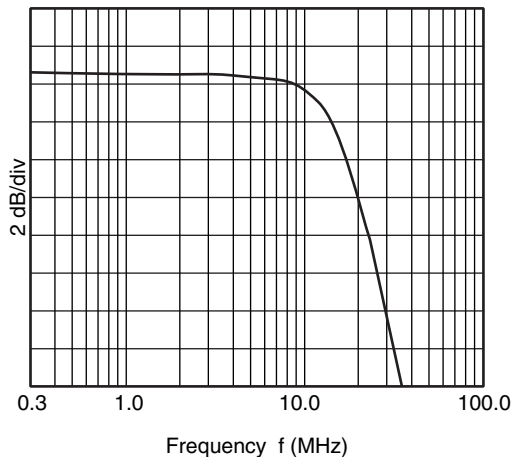
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Supply Current	I _{CC}	Shield a light, V _{CC} = 3 V		3	5	mA
		Shield a light, V _{CC} = 5 V		3	5	
Output Voltage ^{*1}	V _{oF}	P _i = 5 μW, λ = 780 nm, V _{CC} = 3 V, A to D	130	180	225	mV
	V _{oT}	P _i = 5 μW, λ = 780 nm, V _{CC} = 3 V, E, F	275	365	455	
	V _{oF}	P _i = 10 μW, λ = 780 nm, V _{CC} = 5 V, A to D	270	360	450	
	V _{oT}	P _i = 10 μW, λ = 780 nm, V _{CC} = 5 V, E, F	550	730	910	
Output Offset Voltage ^{*2}	V _{off}	Shield a light, A to F	-15	0	15	mV
Offset Voltage Difference	ΔV _{off}	Shield a light, (A+B)-(C+D)	-10	0	10	mV
		Shield a light, (A+D)-(B+C)	-10	0	10	
		Shield a light, (A+C)-(B+D)	-10	0	10	
		Shield a light, E-F	-10	0	10	
Frequency Response	f _c	λ = 780 nm, f = 100 kHz reference, -3 dB, A to D	6	14		MHz
		λ = 780 nm, f = 100 kHz reference, -3 dB, E, F	1	2		
Maximum of Output Voltage ^{*3}	V _{oM}	P _i = 100 μW, V _{CC} = 3 V, A to D	2.5	2.8		V
		P _i = 100 μW, V _{CC} = 5 V, A to D	4.5	4.8		
		P _i = 100 μW, V _{CC} = 3 V, E, F	2.5	2.8		
		P _i = 100 μW, V _{CC} = 5 V, E, F	4.5	4.8		

- *1 Reference for Output offset voltage
- *2 Reference for Supply voltage of V_C
- *3 Reference for GND

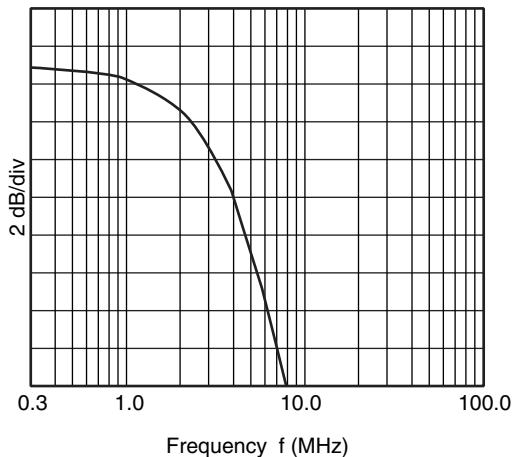
TYPICAL CHARACTERISTICS (T_A = 25°C, unless otherwise specified)

FREQUENCY RESPONSE (V_{CC} = 3 V, V_C = 1.5 V, R_L = 10 kΩ, C_L = 10 pF)

FOCUS

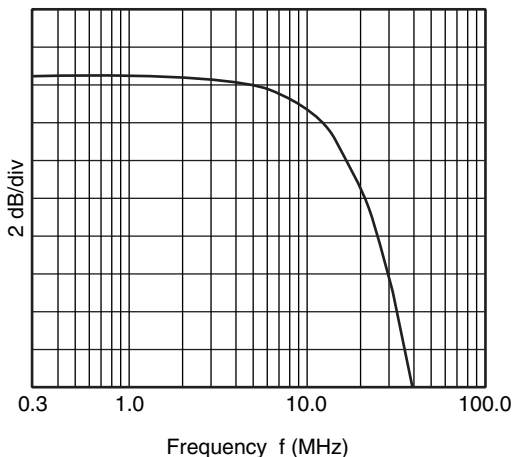


TRACKING

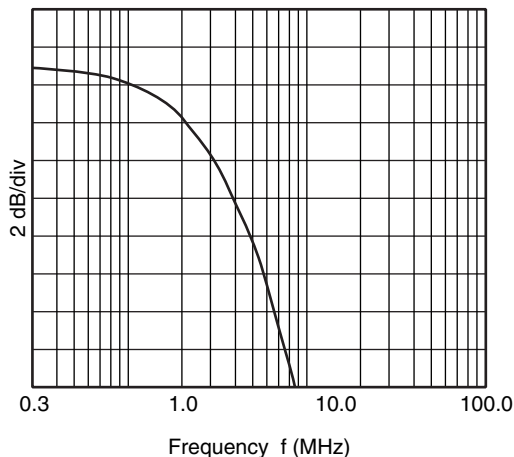


FREQUENCY RESPONSE (V_{CC} = 5 V, V_C = 2.5 V, R_L = 10 kΩ, C_L = 10 pF)

FOCUS



TRACKING



Remark The graphs indicate nominal characteristics.

RECOMMENDED SOLDERING CONDITIONS AND WARNING ON HANDLING

Since the device requires transparency, the resin used is relatively weak against heat and equipment. Follow the next points.

(1) Solder the device under following conditions (Partial Heating)

- Maximum temperature (pin temperature) : 260°C or below
- Time (per side of the device) : 5 seconds or less
- Maximum chlorine content of rosin flux (weight percent) : 0.2 Wt% or less
- Soldering position : 1.5 mm (MIN.) from housing

(2) Beware the temperature rise of the molded part when stress is on the lead. It may have possibility to deform or damage the resin and cause internal short or breakdown.

(3) Do not conduct following methods:

- Infrared Soldering Reflow
- VPS
- Wave Soldering

(4) Cleaning methods:

Conditions

- Solvent : Methyl alcohol, Ethyl alcohol, Isopropyl alcohol
- Solvent temperature : 45°C or below
- Dipping time : 3 minutes or less

Ultrasonic cleaning gives stress on the devices. The degree of stress differs from power, size of PWB and the device furnishing. Therefore, make sure to examine the device beforehand under the same conditions of actual use.

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