400V MOSFET Photocouplers Photorelay

Description

The SL214X optical relay consists of an infrared light-emitting diode, a photoelectric generator, and an optically coupled MOSFET.

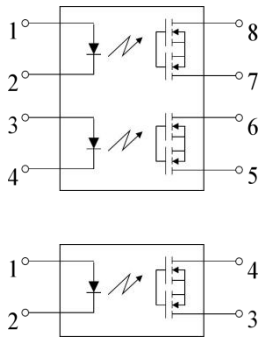
Features

- Normally open, single-pole single-throw
- Control 400V AC or DC voltage
- Switch 120mA load
- Control low-level analog signals
- High sensitivity, low on-resistance
- Low leakage current in the off-state at low level
- High isolation voltage 5KV (DIP/SMD)
- Lead-free, compliant with RoHS standards

Applications

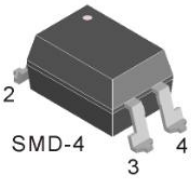
- Communication products (personal computers, laptop computers)
- Modems/sensors
- Mobile phones/security devices
- Measurement and testing equipment
- Factory automation equipment
- High-speed inspection machines

Structural schematic diagram and encapsulation

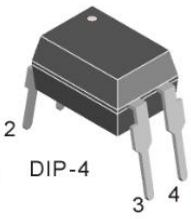


SL214S SMD8

SL214P DIP8



SL214M SMD-4



SL214N DIP-4

Absolute Maximum Ratings (Unless otherwise specified, Ta = 25 °C)

Characteristics		Symbol	Rating	Unit	Condition
Input	LED Forward current	I_F	50	mA	
	LED Reverse voltage	V_R	3	V	
	Reverse voltage	I_{FP}	1	A	f =100 Hz, duty cycle= 0.1%
	Input power	P	75	mW	
Output	Load Voltage (AC Peak)	V_L	400	V	
	Continuous Load Current (AC Peak)	I_L	0.12	A	
	Peak load current	I_{peak}	0.3	A	100 ms (1 shot), VL= DC
	Output Power	P_{out}	800	mW	DIP8 SMD8 DIP4 SMD4
			500		
I/O isolation voltage		V_{iso}	5,000	VAC	DIP SMD
Extreme temperatures	Operating temperature	T_{opr}	–40°C ~ + 85°C	°C	Does not freeze at low temperatures
	Storage temperature	T_{stg}	－40° C ~ + 100° C		

Absolute Maximum Rating (Unless otherwise specified, T_a=25°C)

Parameter		Symbol	Condition	Min	Typ	Max	Unit
Input	LED Operating current	I_{Fon}	I_L=0.12A	0.5	1.8	3	mA
	LED Shutdown current	I_{Foff}	I_L=0.12A	0	1.7	2	mA
	LED Positive pressure drop	V_F	I_F=5mA	1	1.3	1.4	V
Output	On-resistance	R_{on}	I_F=5mA，I_L=0.12A，Power-on time = less than 1 second	0	10	20	
	Turn off leakage	I_{Leak}	I_F=0mA，V_L=400V	-	-	1000	nA
Transmission-Characteristics	Turn on time*	T_{on}	I_F=5mA，I_L=0.12A	200	600	2000	us
	Shut down time*	T_{off}	I_F=5mA，I_L=0.12A	10	700	1000	us
	I/O capacitance	C_{iso}	f=1MHz，V_B=0		0.8	1.5	pF
	Initial I/O isolation resistor	R_{iso}	500V DC	1,000			M

Note: The recommended forward current for the LED is I_F=5 to 10mA.

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Characteristic curve

Fig.1 Load current-ambient temperature characteristics

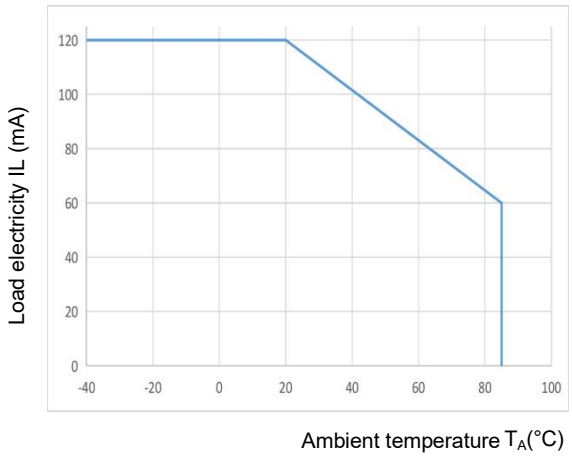


Fig.2 On-resistance-ambient temperature characteristics

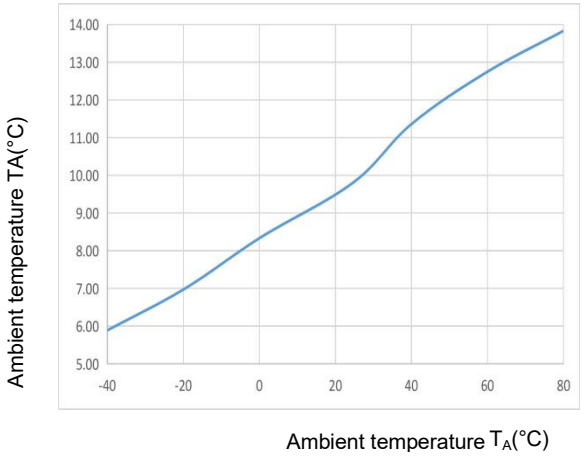


Fig.3 Characteristics of the opening time-ambient temperature

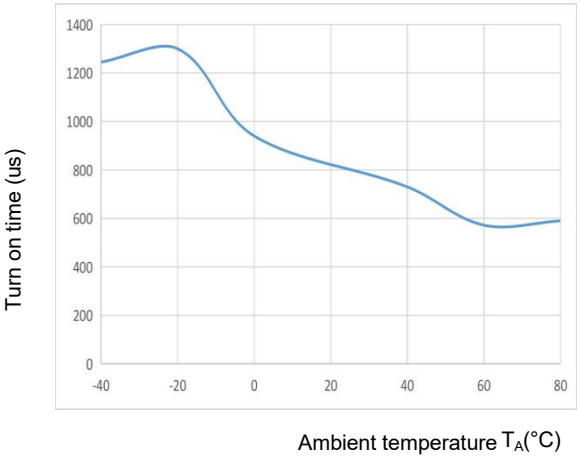


Fig.4 Shutdown time-ambient temperature characteristics

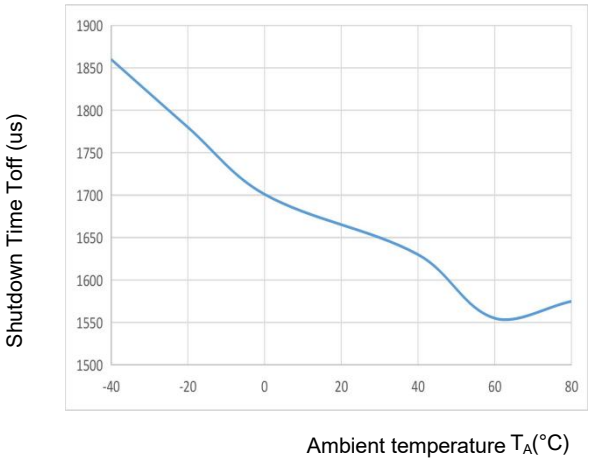


Fig.5 LED operating current-ambient temperature characteristics

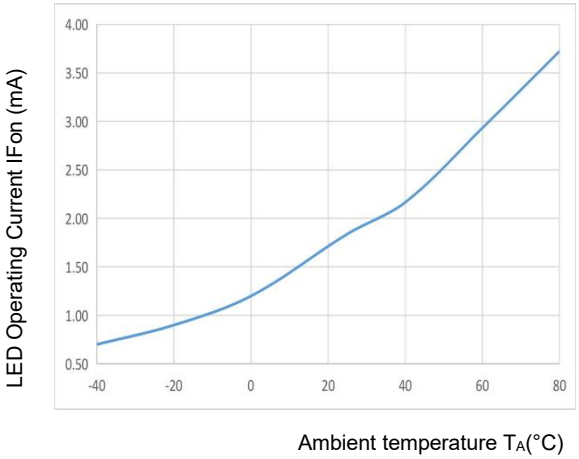


Fig.6 LED shutdown current-ambient temperature characteristics

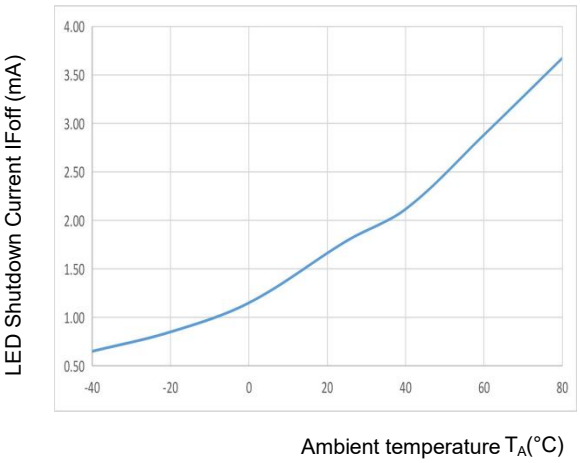


Fig.7 LED Forward Voltage Drop Ambient Temperature Characteristics

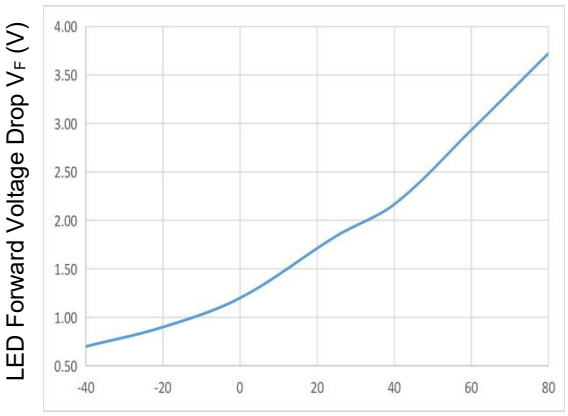


Fig.8 Output current-voltage characteristics

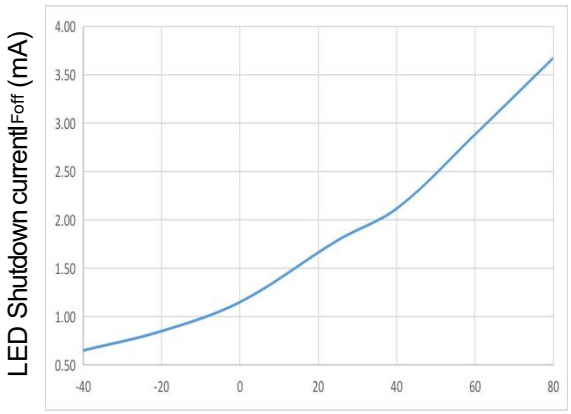


Fig.9 Shutdown leakage current-load voltage characteristics

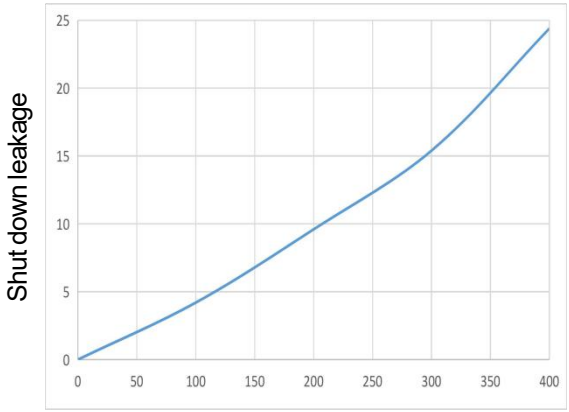


Fig.10 Turn-on time-forward current characteristics

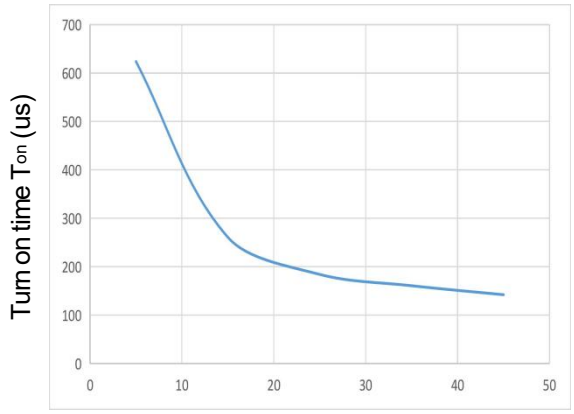
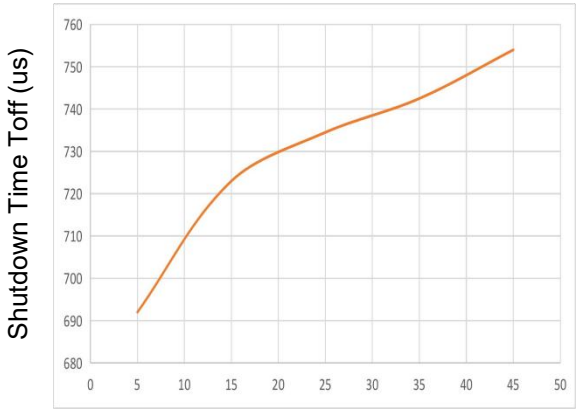
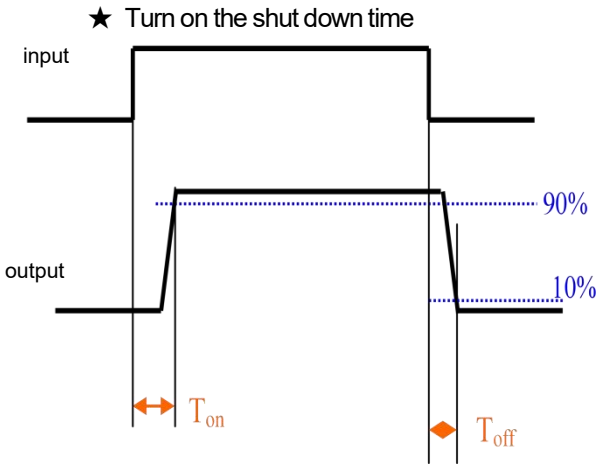


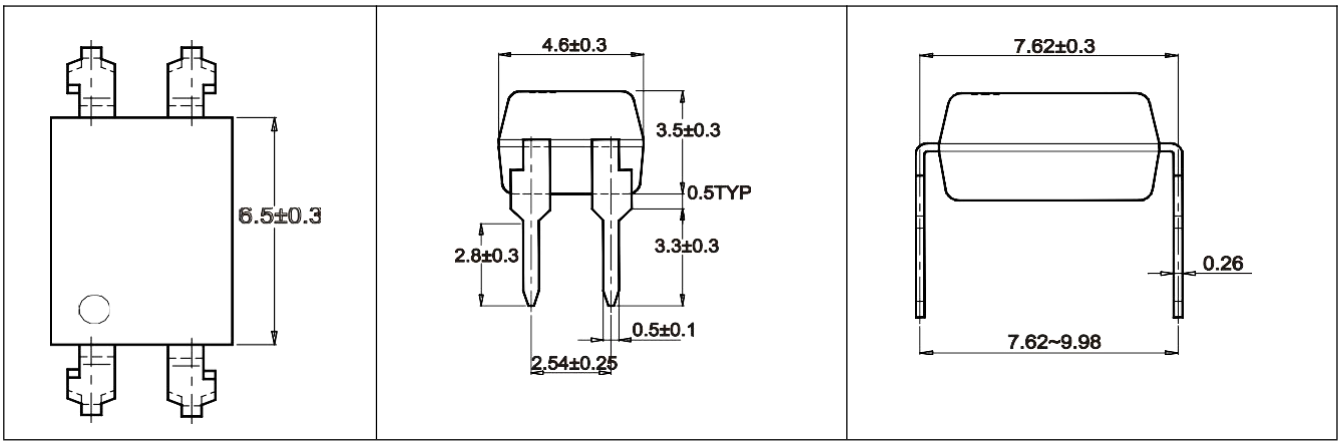
Fig.11 Turn-off time-forward current characteristics





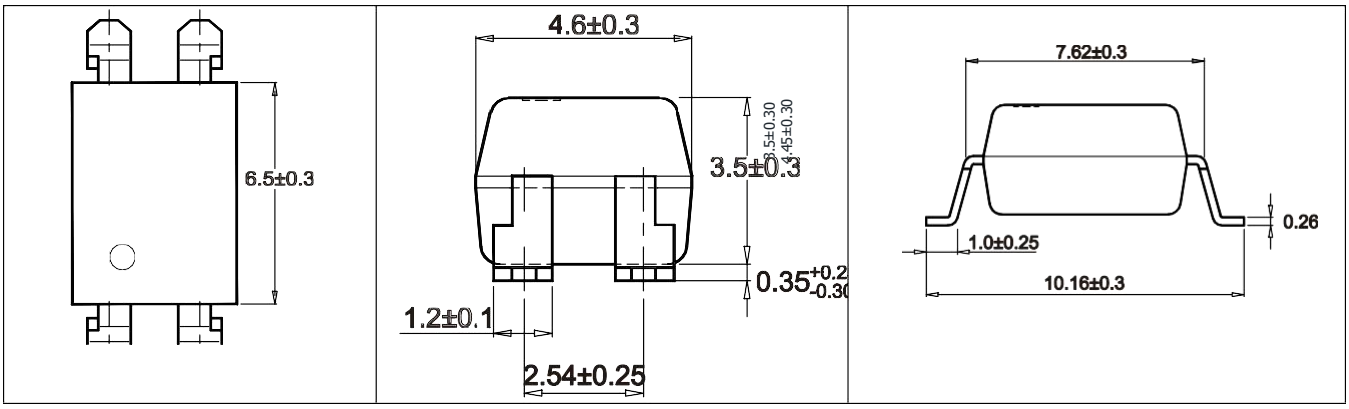
Package Dimensions

Unit: mm



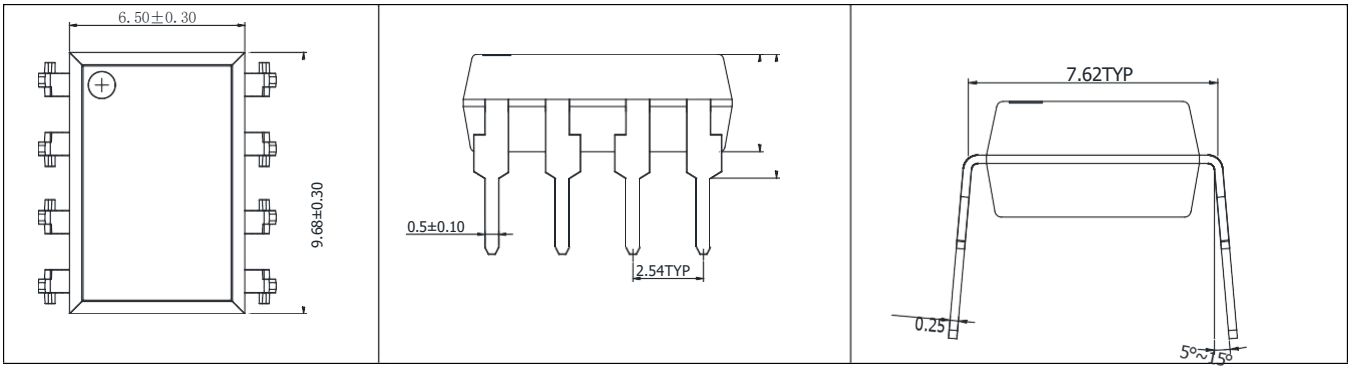
4-pin DIP

Unit: mm



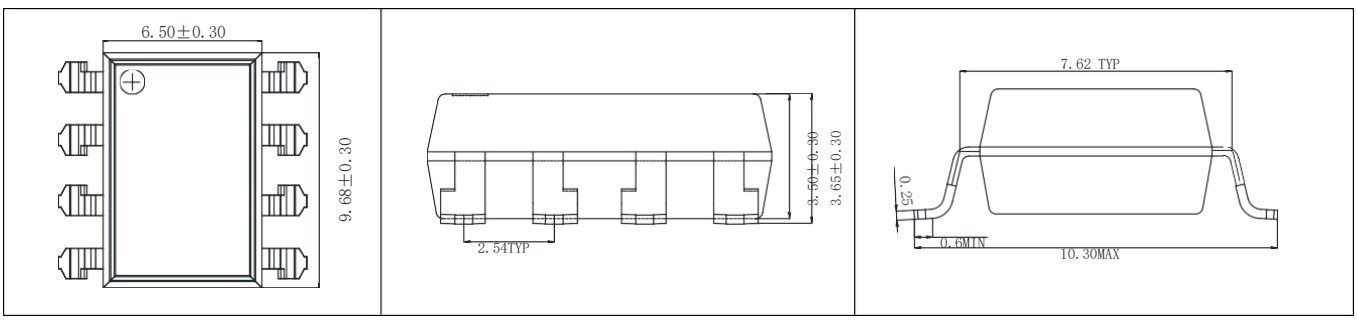
4-pin SMD

Unit: mm



8-pin DIP

Unit: mm



8-pin SMD