

## 60V Normally Closed (1-Form-B) Solid State Relay

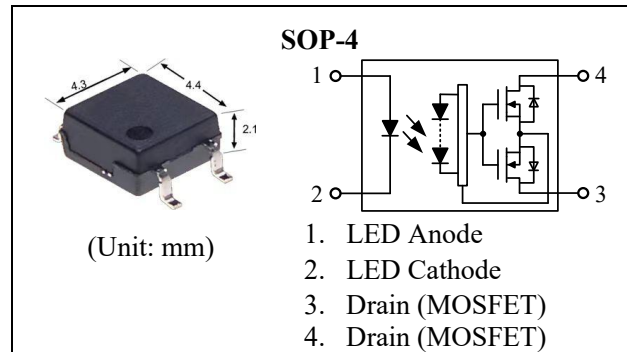
### General Features

- Low-level off State Leakage Current
- No Moving Parts
- 1500 Vrms Input/Output Isolation
- Fast Switching Speed
- SOP Package 4 Pin Type in Miniature Design
- Highly Efficient GaAlAs Infrared LED and Reliability MOSFETs

$V_{OFF}$	$I_{ON}$	$R_{ON(TYP.)}$
<b>60V</b>	<b>300mA</b>	<b>2.3Ω</b>

### Applications

- Data Acquisition
- I/O Subsystems
- Industrial Control
- Sensor Circuitry
- Aerospace
- Electronic Switching



### Ordering Information

Part Number	Package	Marking	Packing quantity
OPY412S	SOP-4	OPY412S	2000pcs/REEL

### Absolute Maximum Ratings

$T_a=25^{\circ}\text{C}$  unless otherwise specified

Item		Symbol	Note	Value	Unit
Input	LED Forward Current	$I_F$	--	50	mA
	LED Pulse Forward Current	$I_{FP}$	$f=100\text{Hz}$ , duty=1%	1000	mA
	LED Reverse Voltage	$V_R$	--	5	V
	Diode Power Dissipation	$P_D$	--	75	mW
Output	Load Voltage	$V_{OFF}$	AC Peak or DC	60	V
	On-state Current	$I_{ON}$	--	300	mA
	On-state Peak Current	$I_{ONP}$	100ms (1 pulse)	800	mA
	Output Power Dissipation	$P_O$	--	300	mW
Total Power Dissipation		$P_T$	--	350	mW
Storage Temperature		$T_{stg}$	--	-40 to 100	$^{\circ}\text{C}$
Operating Temperature		$T_{opr}$	--	-40 to 85	$^{\circ}\text{C}$
Lead Soldering Temperature		$T_{sol}$	10 sec max.	260	$^{\circ}\text{C}$
Isolation Voltage <sup>[1]</sup>		$BV_{IO}$	AC, $RH \leq 60\%$ , 60s	1500	Vrms

Caution: Stresses beyond those listed in the "Absolute Maximum Ratings" may cause permanent damage to the device.

## Electrical Characteristics

 $T_a = 25^\circ\text{C}$  unless otherwise specified

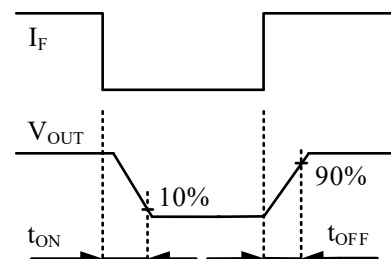
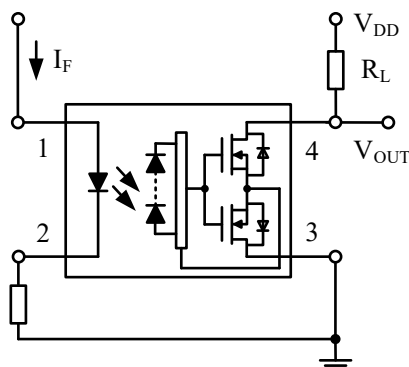
Item		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Input	LED Forward Voltage	$V_F$	--	1.3	1.4	V	$I_F = 10\text{mA}$
	Trigger LED Current	$I_{FC}$	--	0.2	2.0	mA	$I_{OFF} = 100\mu\text{A}$
	Return LED Current	$I_{FT}$	0.1	0.2	--	mA	$I_{ON} = 100\text{mA}$
Output	On-Resistance [2]	$R_{ON}$	--	2.3	5	$\Omega$	$I_{ON} = 100\text{mA}$
	Off-State Leakage Current	$I_{OFF}$	--	--	1.0	$\mu\text{A}$	$V_{OFF} = 60\text{V}$ , $I_F = 5\text{mA}$
	Output Capacitance	$C_{OUT}$	--	45	--	pF	$V_{OFF} = 0\text{V}$ , $f = 1\text{MHz}$ $I_F = 5\text{mA}$
Transmission	Turn-on Time [3]	$T_{ON}$	--	50	500	$\mu\text{s}$	$I_F = 5\text{mA}$ , $I_{ON} = 100\text{mA}$
	Turn-off Time [3]	$T_{OFF}$	--	20	500	$\mu\text{s}$	
Coupled	Capacitance Input to Output	$C_{IO}$	--	0.6	--	pF	$V_{IO} = 0\text{V}$ , $f = 1\text{MHz}$
	Isolation Resistance	$R_{IO}$	$10^{10}$	--	--	$\Omega$	DC = 500V
	Isolation Voltage	$BV_{IO}$	1500	--	--	V	AC, 60s

NOTE:

[1] LED pins are shorted together. Detector pins are also shorted together.

[2] Measurement Taken within 1 Second of On-time.

[3] Switching Time Test Circuit.



## Typical Device Performance

Figure 1. Load Current vs. Ambient Temperature

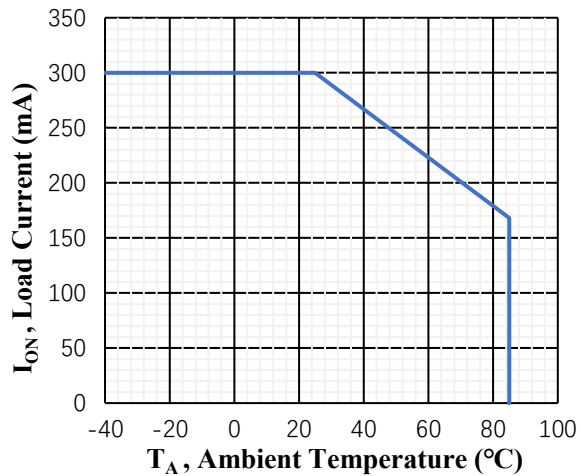


Figure 2. On-state Resistance vs. Ambient Temperature

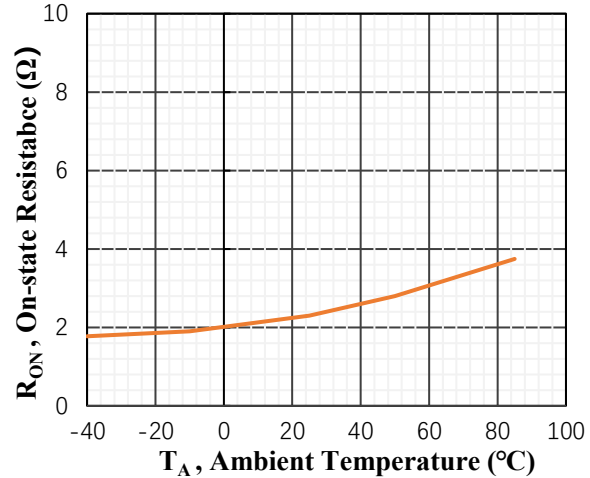


Figure 3. Switching Time vs. Ambient Temperature

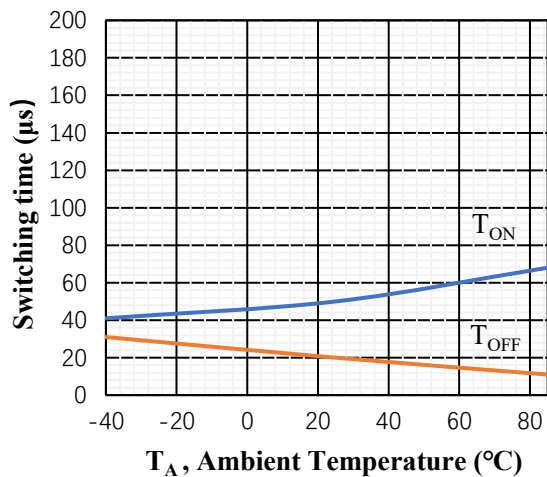


Figure 4. Trigger LED Current vs. Ambient Temperature

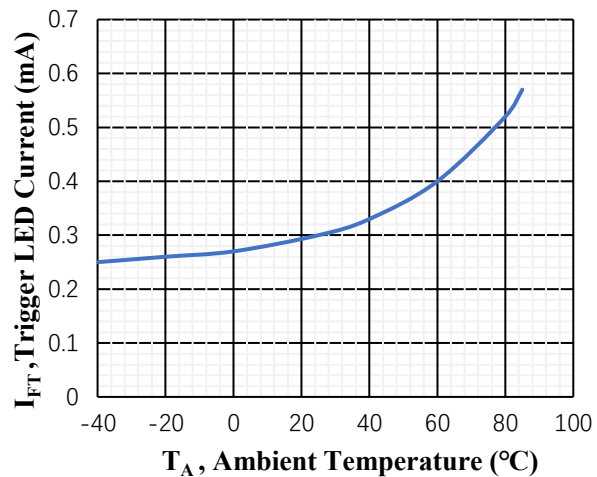


Figure 5. LED forward Voltage Vs. Ambient Temperature

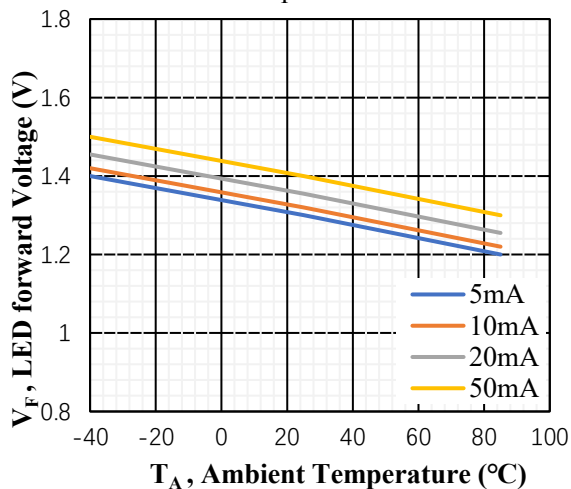
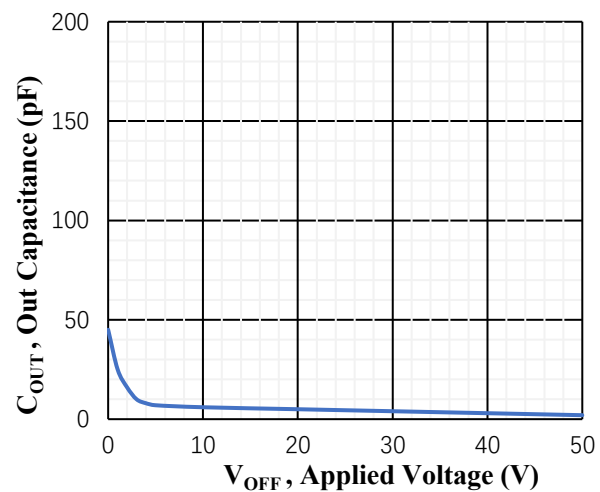
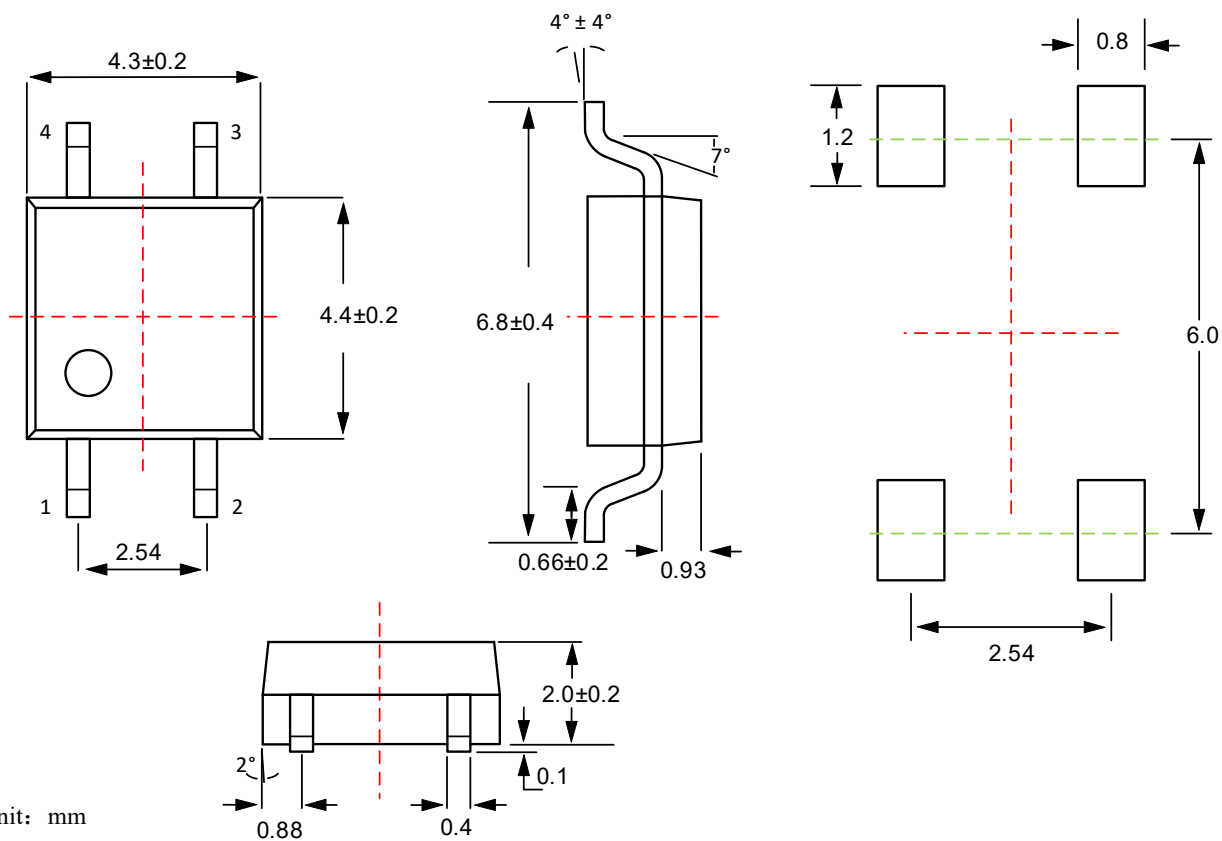


Figure 6. Output Capacitance Vs. Applied Voltage



# Package Dimensions

## SOP - 4



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