

## 1800V Normally Open (1-Form-A) Optical MOSFET Relay

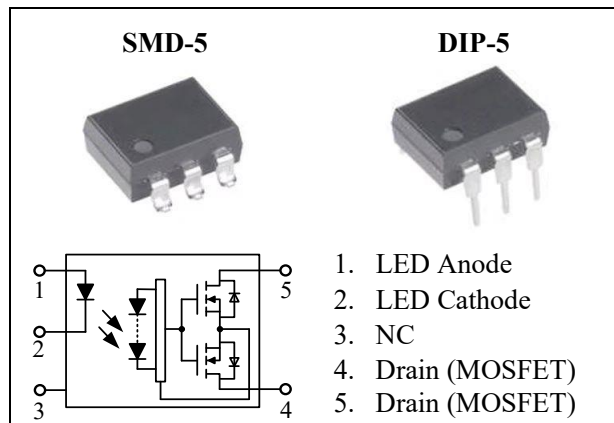
### General Features

- Low-level off State Leakage Current
- No Moving Parts
- Fast Switching Speed
- 3750 Vrms Input/Output Isolation
- Arc-Free With No Snubbing Circuits
- Highly Efficient GaAlAs Infrared LED and High-Reliability MOSFETs

$V_{OFF}$	$I_{ON}$	$R_{ON(TYP.)}$
<b>1800V</b>	<b>30mA</b>	<b>80Ω</b>

### Application

- Telecom/Datacom switching
- Multiplexers
- Meter reading systems
- Data acquisition
- Medical equipment
- Battery monitoring



### Ordering Information

Part Number	Package	Marking	Packing Quantity
OPV278A	DIP-5	OPV278A	50pcs/Tube
OPV278D	SMD-5	OPV278D	1000pcs/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
	LED Power Dissipation	$P_D$	--	75	mW
Output	Off-state Output Terminal Voltage	$V_{OFF}$	AC Peak or DC	1800	V
	On-state Current	$I_{ON}$	--	30	mA
	On-state Peak Current	$I_{ONP}$	100ms (1 pulse)	150	mA
	Output Power Dissipation	$P_O$	--	450	mW
Total Power Dissipation		$P_T$	--	500	mW
Storage Temperature		$T_{stg}$	--	-40 to 125	$^{\circ}\text{C}$
Operating Temperature		$T_{opr}$	--	-40 to 100	$^{\circ}\text{C}$
Lead Soldering Temperature		$T_{sol}$	10 sec max.	260	$^{\circ}\text{C}$
Isolation Voltage <sup>[1]</sup>		$BV_{IO}$	$RH \leq 60\%$ , 60s	3750	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

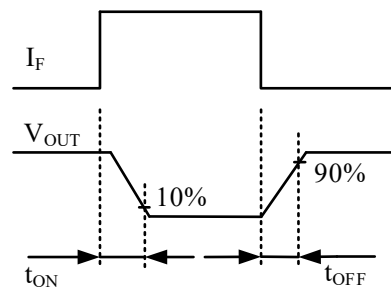
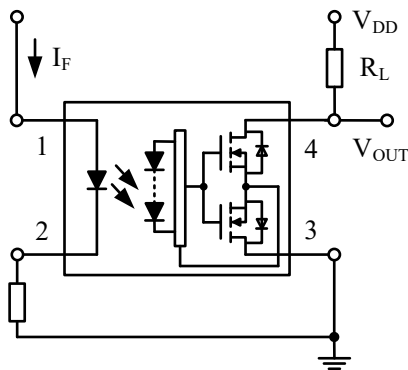
Item		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Input	LED Forward Voltage	$V_F$	1.1	1.35	1.5	V	$I_F = 10\text{mA}$
	LED Reverse Current	$I_R$	--	--	5.0	$\mu\text{A}$	$V_R = 5\text{V}$
	Trigger LED Current	$I_{FT}$	--	0.55	5.0	mA	$I_{ON} = 30\text{mA}$
	Return LED Current	$I_{FC}$	0.25	0.35	--	mA	$I_{OFF} = 100\mu\text{A}$
Output	On-state Resistance <sup>[2]</sup>	$R_{ON}$	--	80	160	$\Omega$	$I_F = 10\text{mA}, I_{ON} = 30\text{mA}$
	Off-state Leakage Current	$I_{OFF}$	--	--	1	$\mu\text{A}$	$V_{OFF} = 1800\text{V}$
	Output Capacitance	$C_{OUT}$	--	10	--	pF	$V_{OFF} = 0\text{V}, f = 1\text{MHz}$
Transmission	Turn-on Time <sup>[3]</sup>	$T_{ON}$	--	0.10	0.2	ms	$I_F = 10\text{mA}, I_{ON} = 30\text{mA}$
	Turn-off Time <sup>[3]</sup>	$T_{OFF}$	--	0.05	0.2	ms	
Coupled	Capacitance Input to Output	$C_{IO}$	--	0.8	1.3	pF	$f = 1\text{MHz}$
	Isolation Resistance	$R_{IO}$	$10^{10}$	--	--	$\Omega$	DC = 500V

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

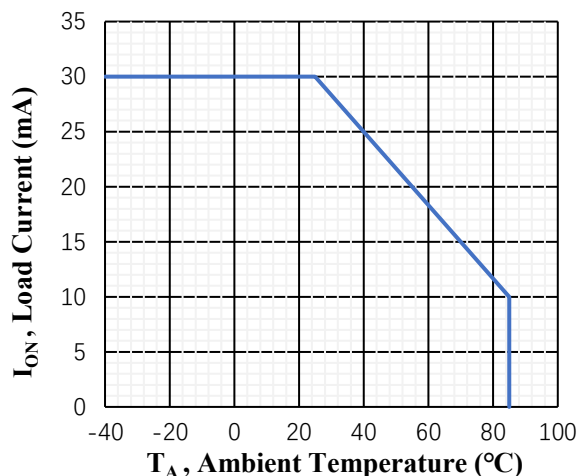


Figure 2. On-state Resistance vs. Ambient Temperature

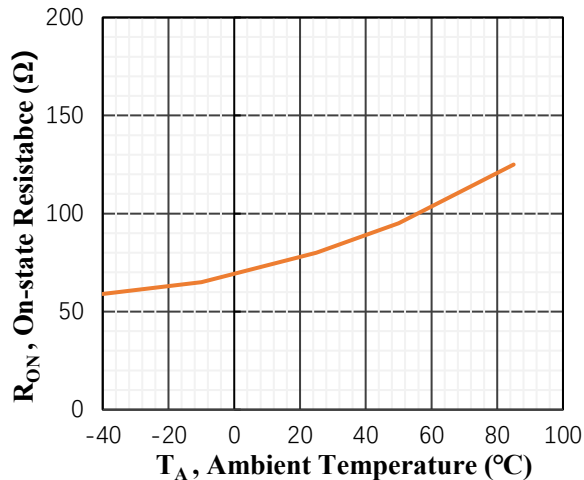


Figure 3. Switching Time vs. Ambient Temperature

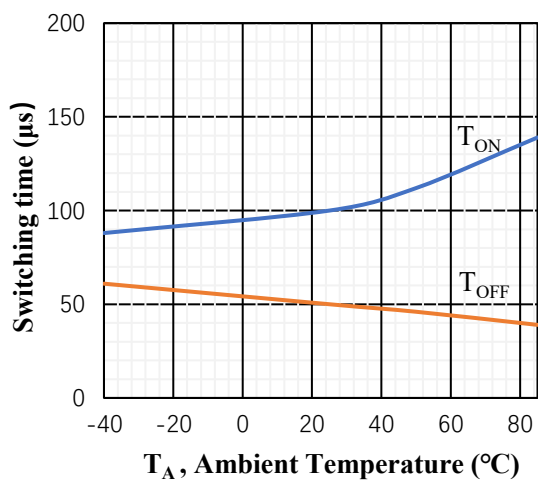


Figure 4. Trigger LED Current vs. Ambient Temperature

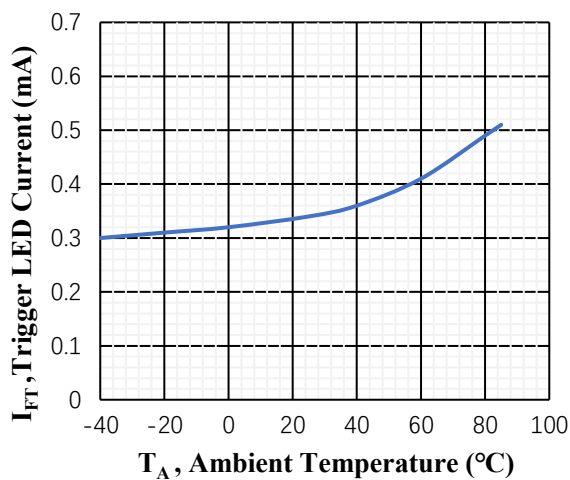


Figure 5. LED forward Voltage Vs. Ambient Temperature

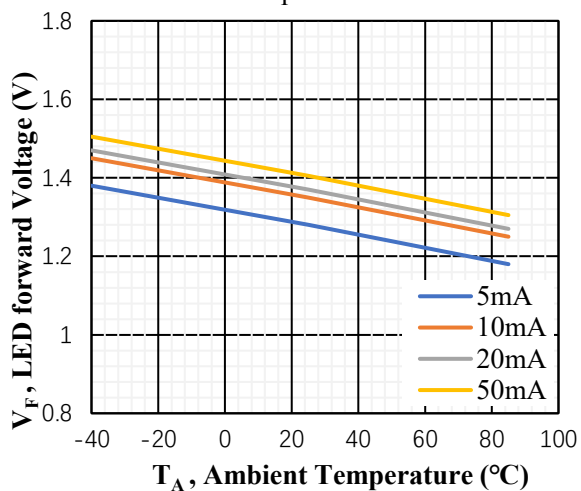
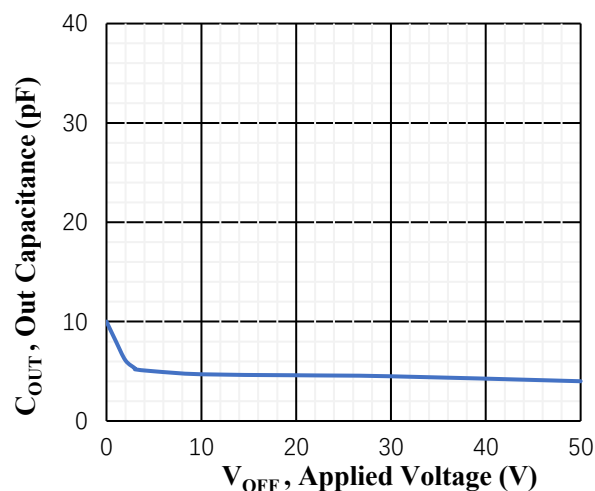
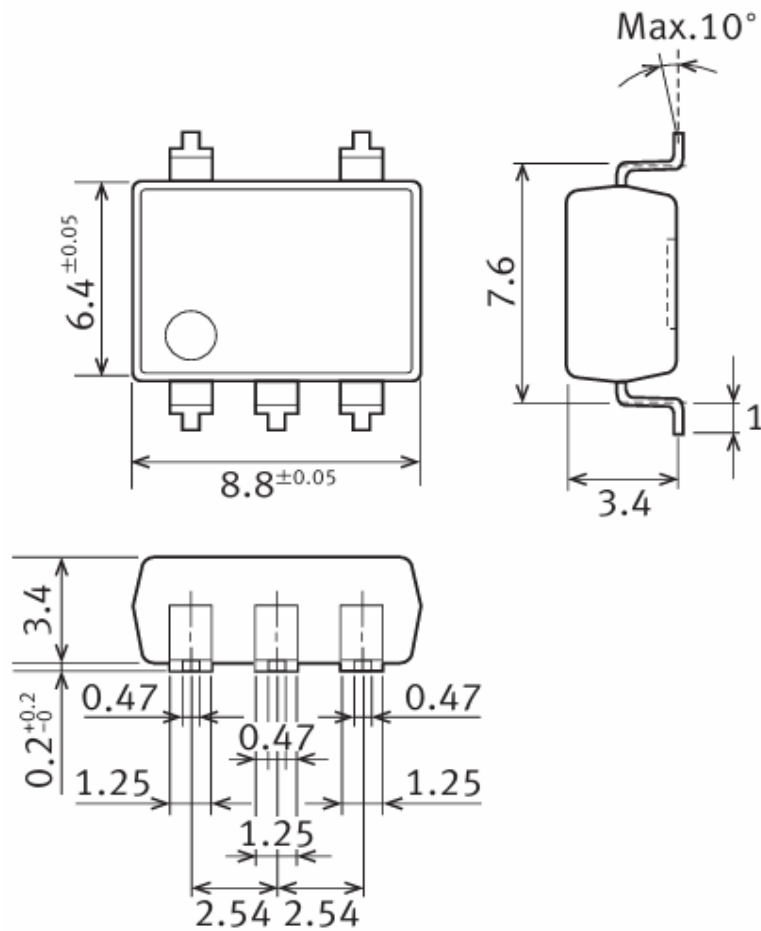


Figure 6. Output Capacitance Vs. Applied Voltage



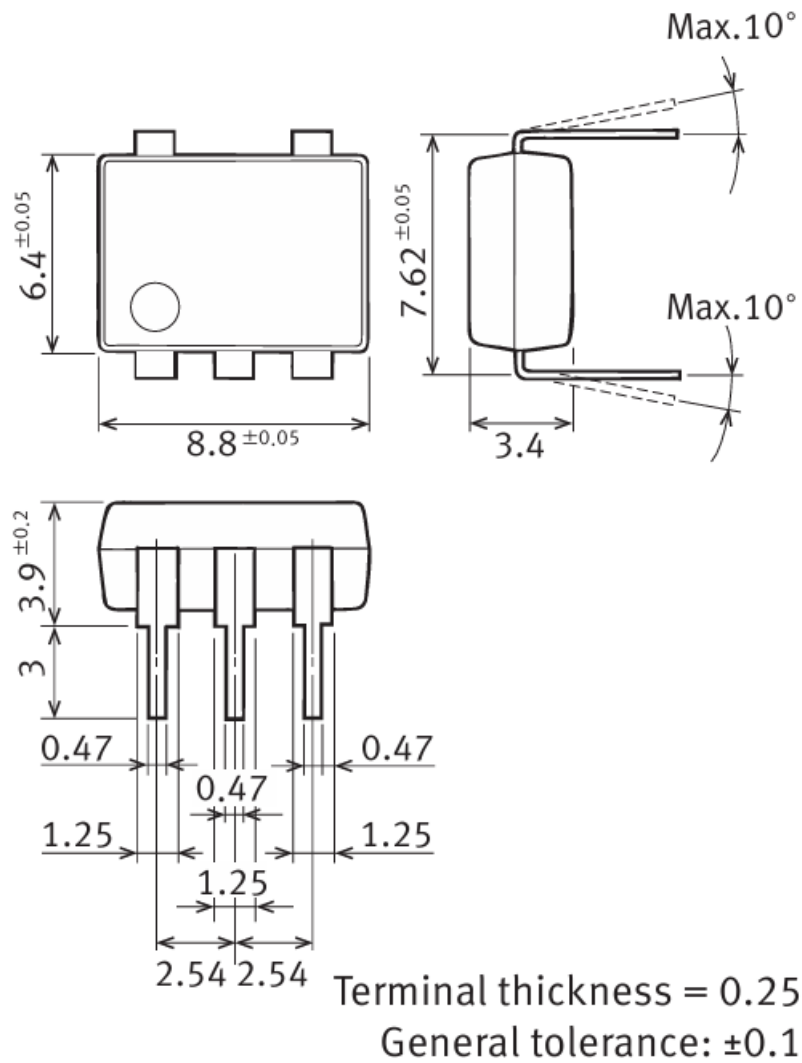
## Package Dimensions

### SMD-5



Terminal thickness = 0.25

General tolerance:  $\pm 0.1$

**DIP-5**


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