ORIENT

Photo coupler

Product Data Sheet

Part Number: OR-357PVG(A)

Customer: _____

Date: _____

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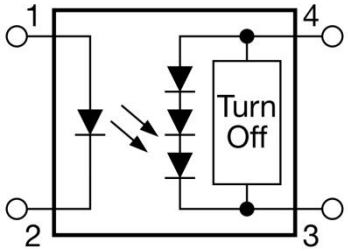
Preliminary

This datasheet is a preliminary design specification, and the formal specifications are subject to the recognition letter with jointly signed

1. Features

(1) Compliance Halogens Free (Br < 900ppm, Cl < 900ppm, Br+Cl < 1500ppm)
(2) High input-output isolation voltage (Viso = 3,750Vrms)
(3) Open circuit voltage at IF = 5 mA, 8 V typical
(4) Short circuit current at IF = 5 mA, 12 μA typical
(5) Logic compatible input
(6) High reliability
(7) Integrated rapid turn-off circuitry
(8) -40 ℃ to 110 ℃
(9) Safety approval
UL approved(No.E323844)
VDE approved(No.40029733)
CQC approved (No.CQC19001231256)
(10) In compliance with RoHS, REACH standards
(11) MSL Class I



2. Instructions

The OR-357PVG(A) is a stand-alone optically isolated MOSFET driver.

Unlike conventional MOSFET drivers, which require an external power supply to provide V_{CC} and or V_{DD} rails to the driver itself, the OR-357PVG(A) obtains all the required current to drive its internal circuitry from the LED current on the low voltage primary side of the isolation barrier. This saves the designer the space and cost associated with providing one or more external power supplies.

The OR-357PVG(A) also integrates a turn-off circuit internal to the component itself, thus doing away with the need for additional components in order to increase the overall switching speed by decreasing the turn-off time. These features, combined with a small SOP4 package, provide designers with a small footprint, highly integrated isolated gate driver solution for a large variety of MOSFET drive applications.

3. Application Range

（1）High-side driver （2）Solid-state relays （3）Floating power supply
（4）Power control （5）Data acquisition （6）ATE
（7）Isolated solenoid drivers （8）Isolated high current relay drivers
（9）Isolated high voltage relay drivers

4. Max Absolute rated Value (Normal Temperature=25℃)

Parameter	Symbol	Rated Value	Unit
Forward Current	I_F	50	mA
Junction Temperature	T_J	125	℃
Reverse Voltage	V_R	6	V
Consume Power	P	70	mW
*1 Insulation Voltage	V_{iso}	3750	Vrms
Working Temperature	T_{opr}	-40 to + 110	°C
Deposit Temperature	T_{stg}	-40 to + 125	
*2 Soldering Temperature	T_{sol}	260	

*1. AC Test, 1 minute, humidity = 40~60%
Insulation test method as below:
(1) Short circuit both terminals of photo coupler.
(2) No Current when testing insulationvoltage.
(3) Adding sine wave voltage when testing.
*2. soldering time is 10 seconds.

5. Opto-electronic Characteristics

Parameter		Symbol	Min	Typ.*	Max	Unit	Condition
Input	Forward Voltage	V_F	---	1.2	1.4	V	I_F=5mA
	Reverse Current	I_R	---	---	5	μA	V_R=5V
	Input Capacitance	C_{IN}	---	30	250	pF	V=0, f=1KHz
Output	Open circuit voltage	V_{OC}	7.5	8.5	---	V	I_F = 5 mA
	Short circuit current	I_{SC}	---	12.0	---	μA	I_F = 5 mA
Transforming Characteristics	Turn-on time	t_{on}	---	10	---	μs	C_L = 200 pF, I_F = 20 mA, P_W = 2 ms, Duty cycle = 50%
	Turn-off time	t_{off}	---	110	---	μs	

6. Order Information

Part Number

OR-357PVG(A)-W-Y-G

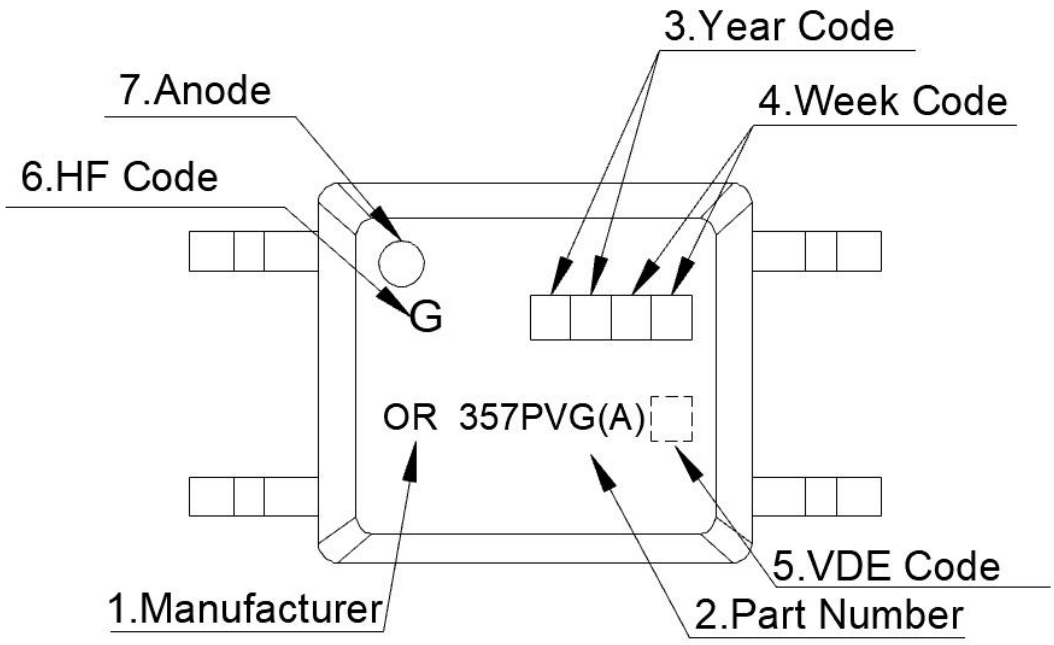
Note

357PVG(A) = Part Number.
W = Tape and reel option (TP or TP1).
Y = 'V' code for VDE safety (This options is not necessary).
G = 'G' code for Halogen free .

* VDE Code can be selected.

Option	Description	Packing quantity
TP	Surface mount lead form (low profile) + TP tape & reel option	3000 units per reel
TP1	Surface mount lead form (low profile) + TP1 tape & reel option	3000 units per reel

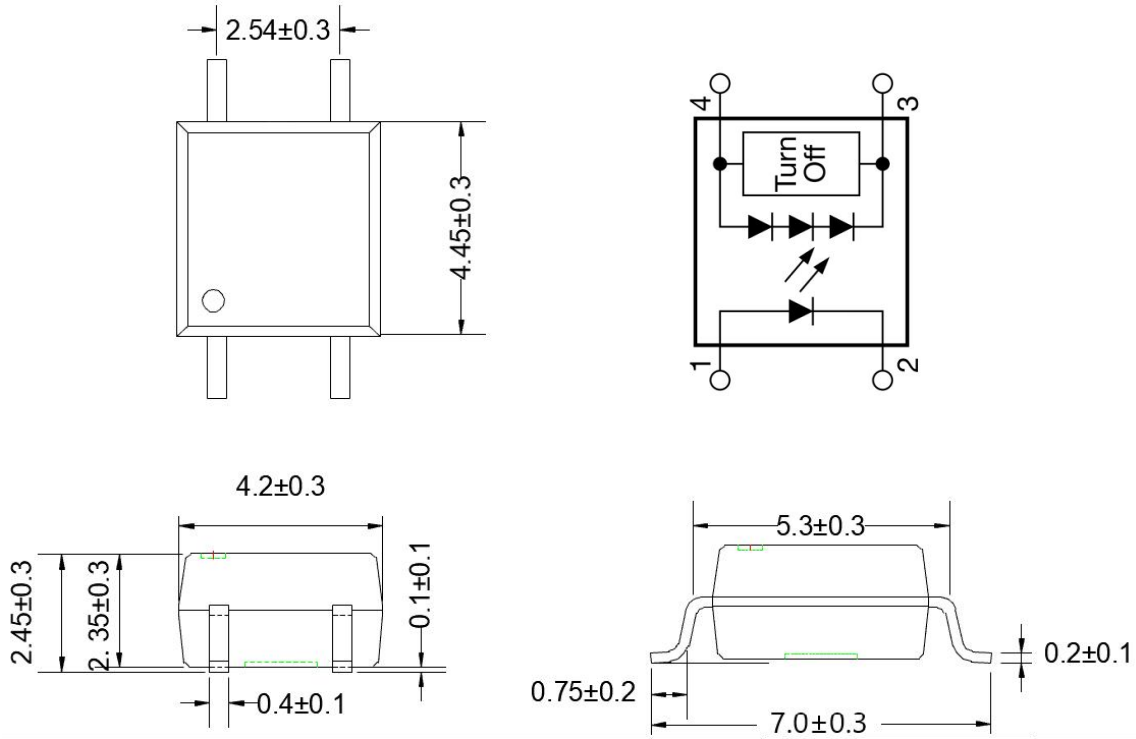
7. Naming Rule



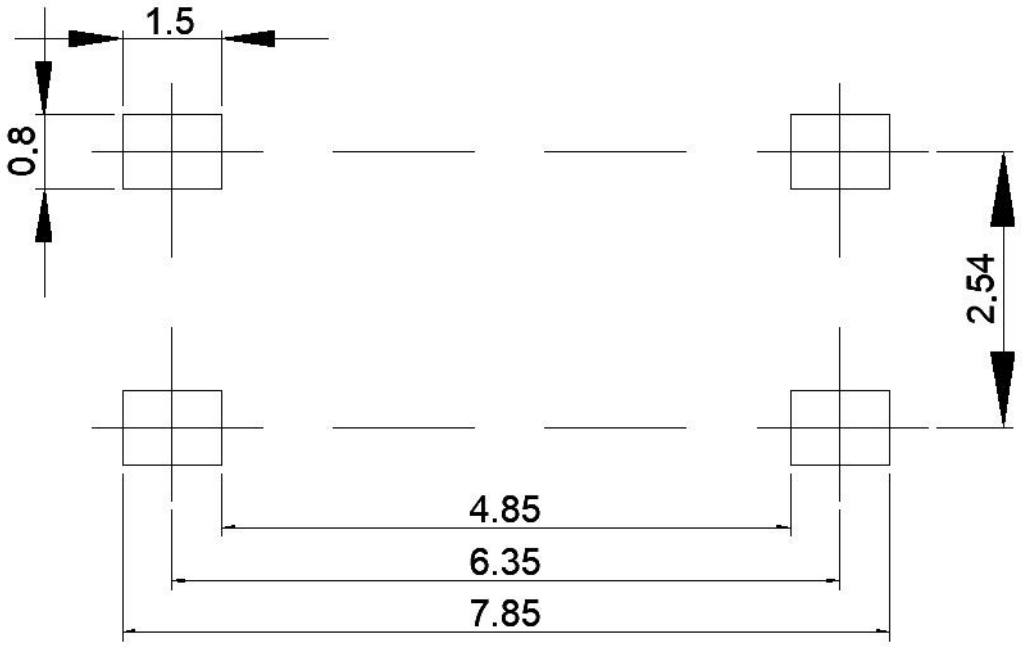
1. Manufacturer : ORIENT.
2. Part Number : 357PVG(A).
3. Year Code □□ : '21' means '2021' and so on.
4. Week Code □□ : 01 means the first week, 02 means the second week and so on.
5. VDE Code ⬚. (Optional)
6. HF Code G : Halogen Free.
7. Anode.

* VDE Mark can be selected.

8. Outer Dimension



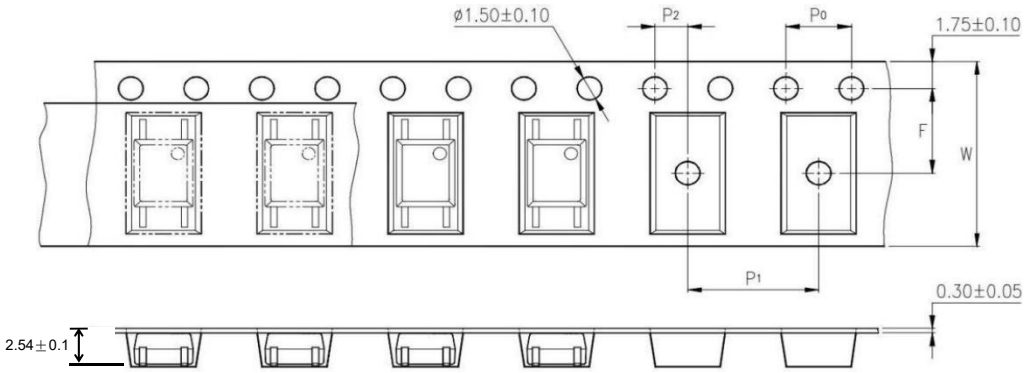
9. Recommended Foot Print Patterns (Mount Pad)



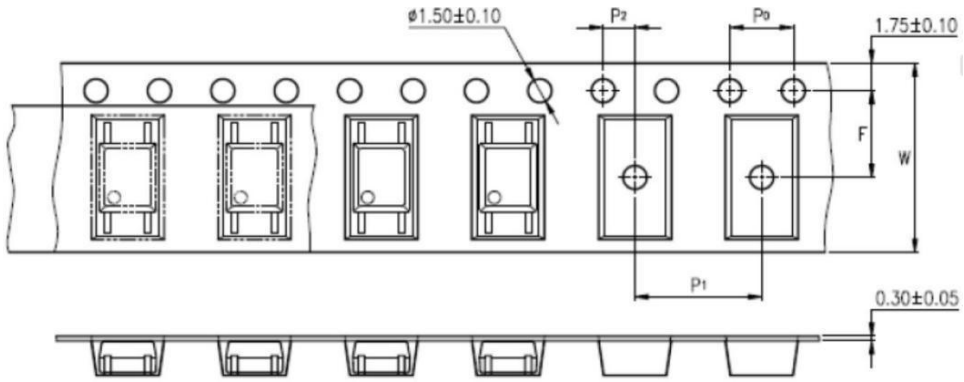
unit：mm

10. Taping Dimensions

（1）OR-357PVG(A)-TP



（2）OR-357PVG(A)-TP1



Description	Symbol	Dimension in mm(inch)
Tape wide	W	12±0.3（0.472）
Pitch of sprocket holes	P0	4±0.1（0.157）
Distance of compartment	F	5.5±0.1（0.217）
	P2	2±0.1（0.079）
Distance of compartment to compartment	P1	8±0.1（0.315）

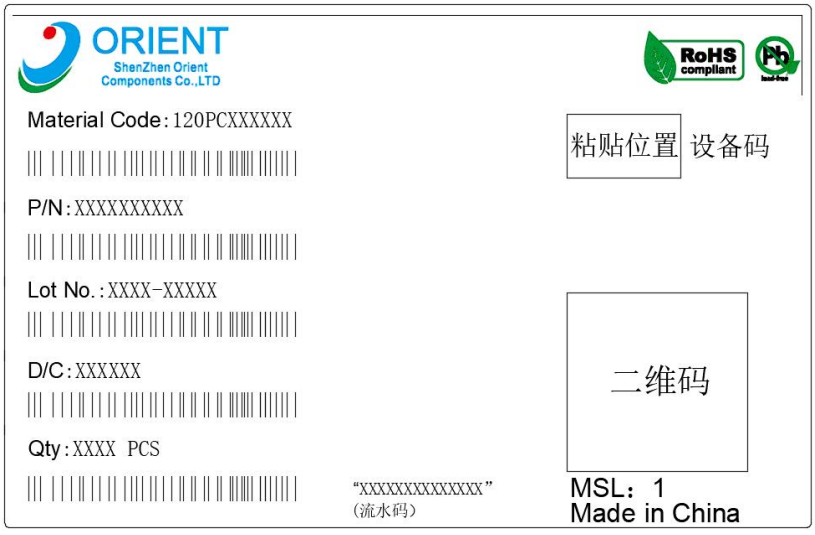
Package Type	TP/TP1
Quantities(pcs)	3000

11. Package Dimension

(1) package dimension

Packing Information	
Packing type	Reel type
Tape Width	12mm
Qty per Reel	3,000pcs
Small box (inner) Dimension	345*345*45mm
Large box (Outer) Dimension	480x360x360mm
Max qty per small box	6,000pcs
Max qty per large box	60,000pcs

(2)Packing Label Sample



Note:

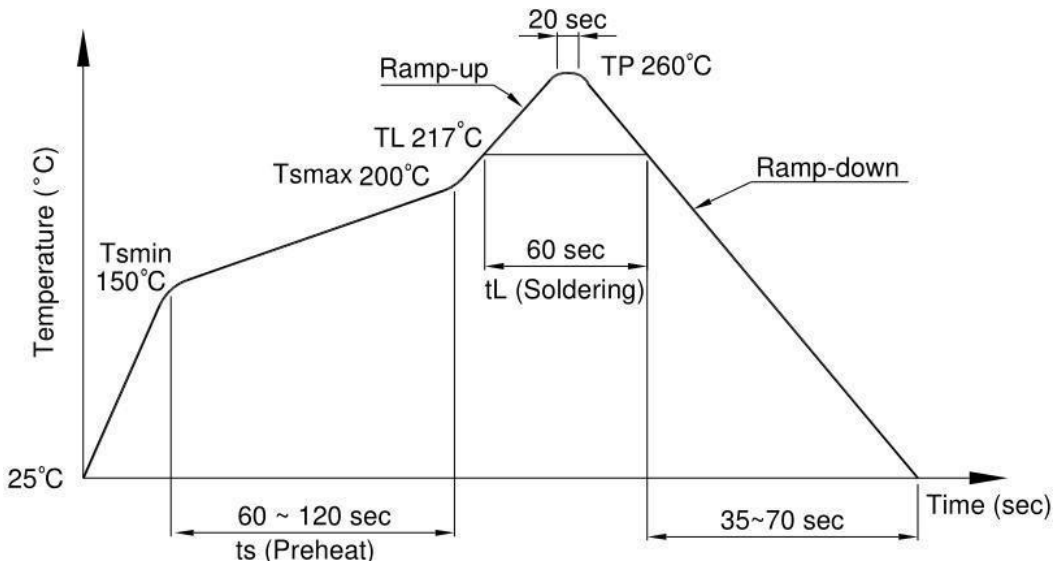
1. Material Code :Product ID.
2. P/N :Contents with "Order Information" in the specification.
3. Lot No. :Product data.
4. D/C :Product weeks.
5. Quantity :Packaging quantity.

12. Temperature Profile Of Soldering

（1） IR Reflow soldering

One time soldering reflow is recommended within the condition of temperature and time profile shown below.
Do not solder more than three times.

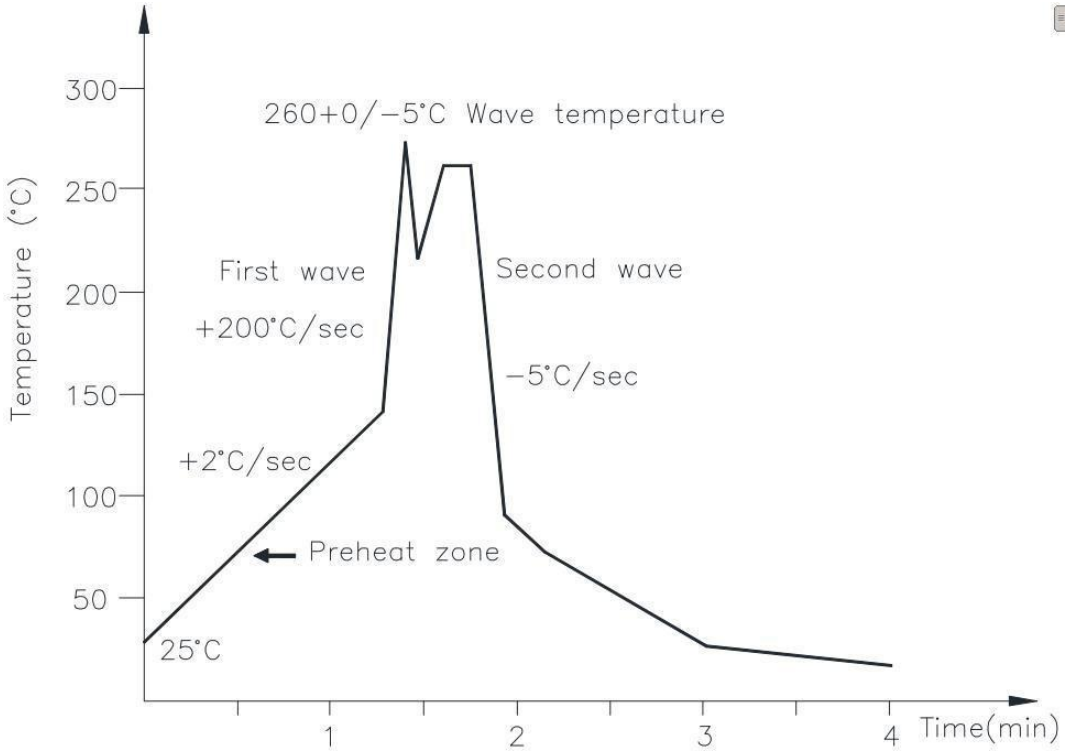
Profile item	Conditions
Preheat - Temperature Min (T Smin) - Temperature Max (T Smax) - Time (min to max) (ts)	 150˚C 200˚C 90±30 sec
Soldering zone - Temperature (TL) - Time (t L)	 217˚C 60 sec
Peak Temperature	260˚C
Peak Temperature time	20 sec
Ramp-up rate	3˚C / sec max.
Ramp-down rate from peak temperature	3~6˚C / sec
Reflow times	≤3



（2） Wave soldering

One time soldering is recommended within the condition of temperature.

Temperature Time	260+0/-5˚C 10 sec
Preheat temperature Preheat time	25 to 140˚C 30 to 80 sec



（3） Hand soldering by soldering iron

Allow single lead soldering in every single process. One time soldering is recommended.

Temperature Time	380+0/-5˚C 3 sec max

13. Characteristics Curve

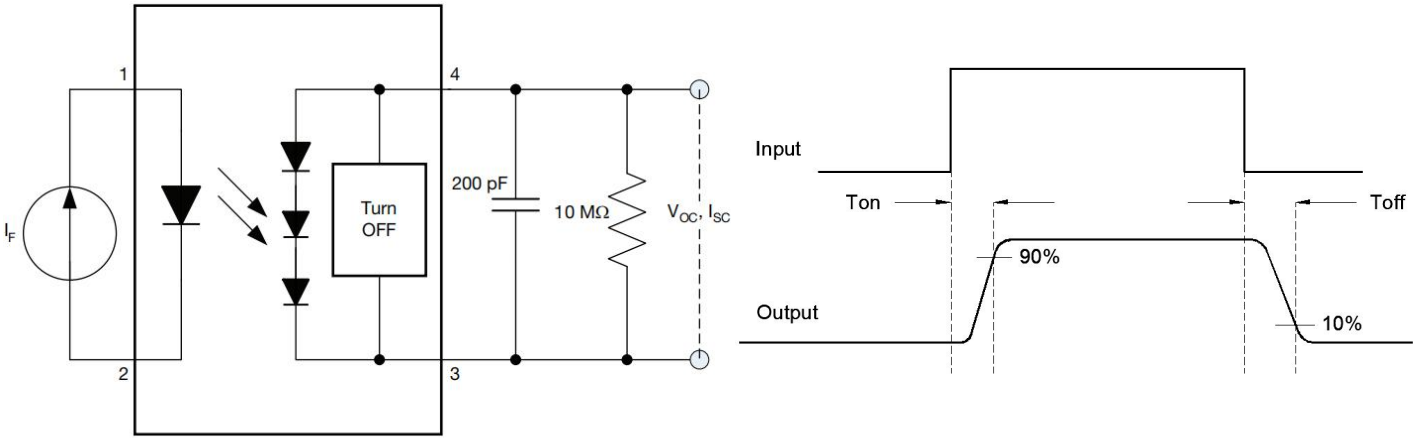


Fig. 1 - t_{on}, t_{off} Test Circuit and Waveforms

Fig.2 Output Open Circuit vs. LED Forward Current

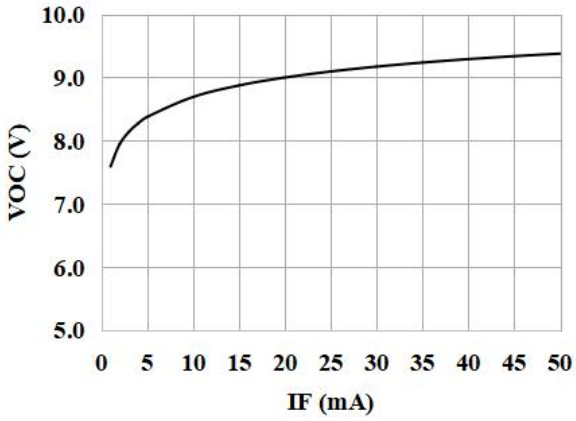


Fig.3 Output Open Circuit Voltage vs. Ambient Temperature

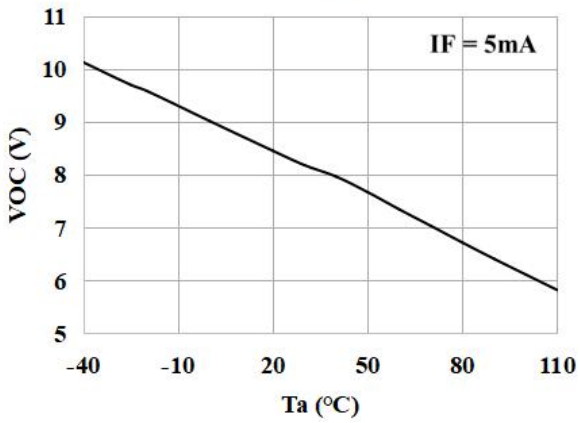


Fig.4 Output Short Circuit Current vs. Ambient Temperature

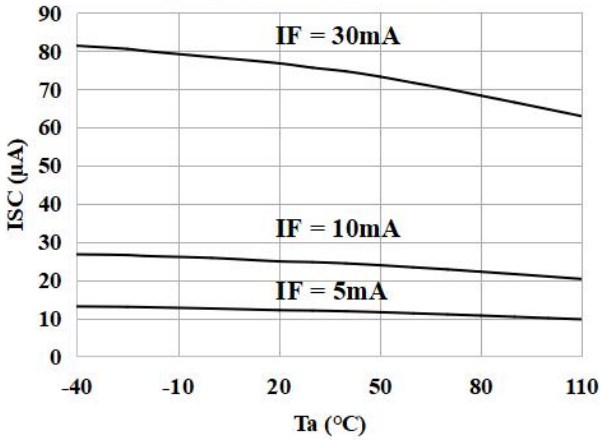


Fig.5 ton, toff vs. LED Forward Current

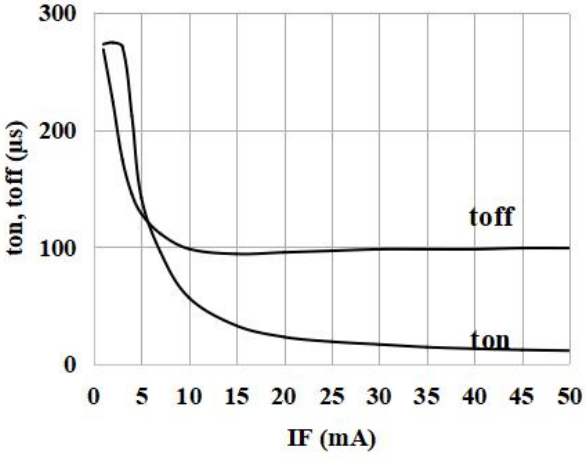


Fig.6 LED Reverse Current vs. Reverse Voltage

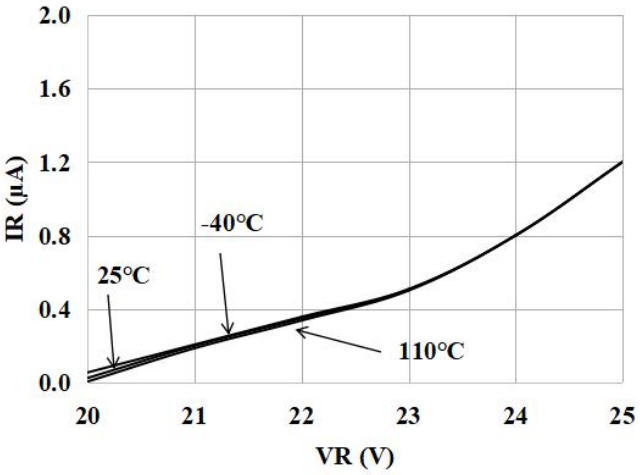


Fig.7 Short Circuit Output Current vs. Open Circuit Output Voltage

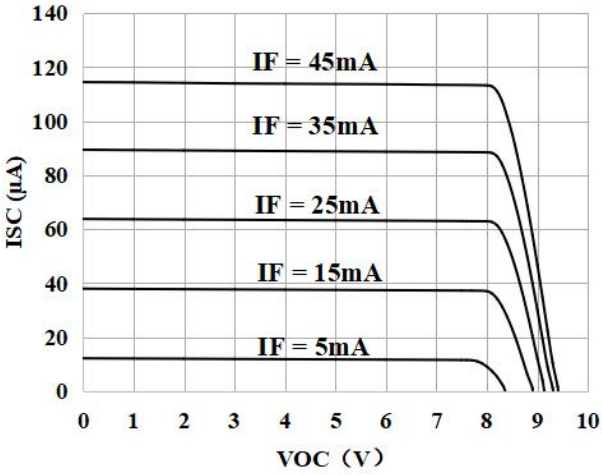
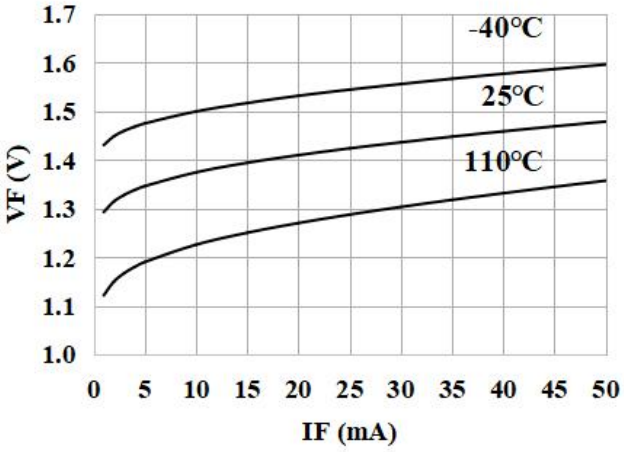


Fig.8 LED Forward Voltage vs. LED Forward Current



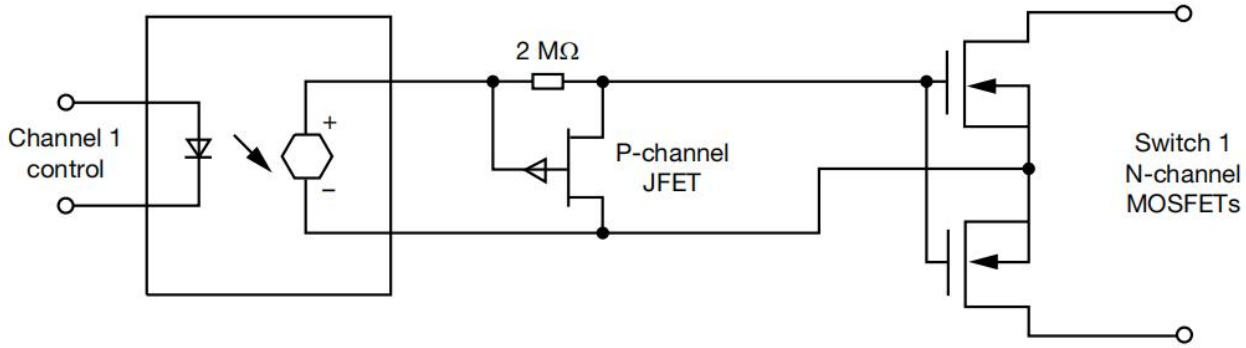
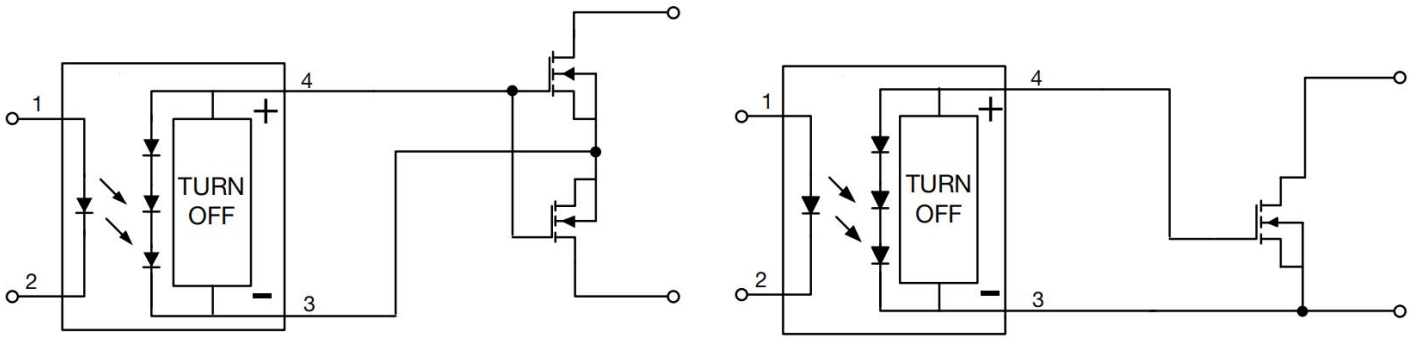


Fig. 9 - Typical MOSFET Driver Application without Integrated Fast Turn-Off



Bidirectional MOSFET Driver Application

Single MOSFET Driver Application

Fig. 10 - Typical MOSFET Driver Applications with Integrated Fast Turn-Off

14. Notes

(1) Orient is continually improving the quality, reliability, function or design and Orient reserves the right to make changes without further notices.

(2) The products shown in this publication are designed for the general use in electronic applications such as office automation equipment, communications devices, audio/visual equipment, electrical application and instrumentation.

(3) For equipment/devices where high reliability or safety is required, such as space applications, nuclear power control equipment, medical equipment, etc, please contact our sales representatives.

(4) When requiring a device for any “specific” application, please contact our sales in advice.

(5) If there are any questions about the contents of this publication, please contact us at your convenience.

(6) The contents described herein are subject to change without prior notice.

(7) Immerge unit’s body in solder paste is not recommended.