



ORIENT

Photo MOS

Product Data Sheet

Part Number: OR-M4XXA

Customer: _____

Date: _____

SHENZHEN ORIENT COMPONENTS CO.,LTD.

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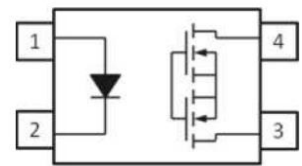
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www.orient-opto.com

1. Features

- Compliance Halogens Free (Br < 900ppm, Cl < 900ppm, Br+Cl < 1500ppm)
- High input-output isolation voltage (Viso = 3,750Vrms)
- Small 4pin SOP package in the 400V & 600V load voltage series
- Normally open signal pole signal throw relay
- Low operating current
- Low on resistance
- SOP-4 package
- -55 °C to 110 °C
- In compliance with RoHS, REACH standards
- MSL Class I



Pin Configuration

1. Anode
2. Cathode
3. 4. MOSFET

2. Instructions

The OR-M4XXA is solid state relays containing an AlGaAs infrared LEDs on the light emitting side (input side) optically coupled to a high voltage output detector circuit. The detector consists of a photovoltaic diode array and MOSFETs on the output side. The single channel configuration is equivalent to 1 form A EMR. The devices in a 4-pin small outline SMD package .

3. Application Range

- Exchange equipment
- Measurement and testing equipment
- FA/OA equipment
- Industrial controls
- Security

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

Parameter		Symbol	Rating		Unit
			OR-M440A	OR-M460A	
Input	Forward Current	I_F	50		mA
	Reverse Voltage	V_R	5		V
	Peak Forward Current*1	I_{FP}	1		A
	Power Dissipation	P_{in}	75		mW
Output	Break Down Voltage	V_L	400	600	V
	Continuous Load Current	I_L	120	50	mA
	Pulse Load Current*2	I_{LPeak}	0.3	0.15	A
	Power Dissipation	P_{out}	500		mW
Total Power Dissipation		P_T	550		mW
Isolation Voltage*3		V_{iso}	3750		Vrms
Storage Temperature		T_{STG}	-40 to 125		° C
Operating Temperature		T_{OPR}	-40 to 85		° C
Soldering Temperature*4		T_{SOL}	260		° C

Notes:

*1. $f = 100\text{Hz}$, Duty Cycle = 0.1%

*2. A connection: 100ms (1 shot), $V_L = \text{DC}$

*3. AC for 1 minute, R.H. = 40 ~ 60% R.H. In this test, pins 1, 2 are shorted together, and pins 3, 4 are shorted together.

*4. For 10 seconds

5. Opto-electronic Characteristics

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	
Input	Forward Voltage	V_F	$I_F = 10\text{mA}$	---	1.18	1.5	V	
	Reverse Current	I_R	$V_R = 5\text{V}$	---	---	1	μA	
Output	Off State leakage Current	I_{leak}	$I_F = 0\text{mA}, V_L = \text{Max.}$	---	-	1	μA	
	On Resistance	OR-M440A	$R_d(\text{ON})$	$I_F = 10\text{mA}, I_L = \text{Max}, t = 1\text{s}$	---	20	30	Ω
		OR-M460A			---	40	70	
	Output Capacitance	OR-M440A	$C(\text{out})$	$V_L = 0\text{V}, f = 1\text{MHz}$	---	45	---	pF
OR-M460A		---			30	---		
Transfer Characteristics	LED turn on Current	OR-M440A	$I_F(\text{on})$	$I_L = \text{Max.}$	---	1	5	mA
		OR-M460A						
	LED turn off Current	OR-M440A	$I_F(\text{off})$	$I_L = 1\mu\text{A.}$	0.2	0.6	---	mA
		OR-M460A						
	Turn On Time	OR-M440A	Ton	$I_F = 10\text{mA}, I_L = \text{Max}, R_L = 200\Omega$	---	0.1	0.5	ms
		OR-M460A						
	Turn Off Time	OR-M440A	Toff					
OR-M460A		---						
Isolation Resistance		R_{I-O}	$V_{I-O} = 500\text{V DC}$	5×10^{10}	---	---	Ω	
Isolation Capacitance		C_{I-O}	$V = 0\text{V}, f = 1\text{MHz}$	---	1.5	---	pF	

6. Order Information

Part Number

OR-M4XXA-W-Y-Z

Note

M4XXA = Part Number (XX for 40 or 60)

W = Tape and reel option (TP or TP1).

Y = 'V' code for VDE safety (This options is not necessary).

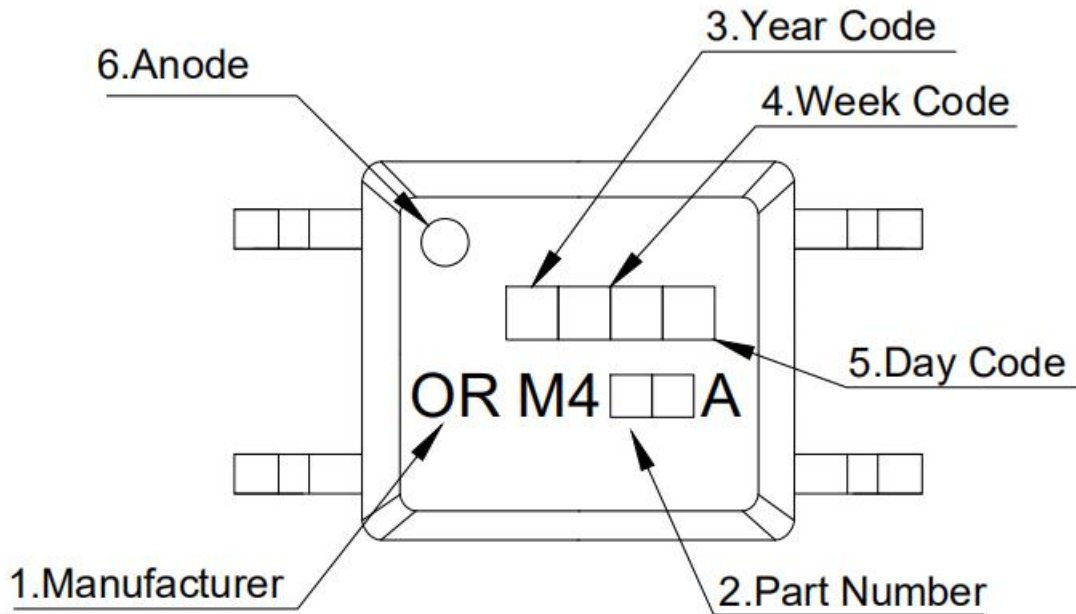
Z = 'G' code for Halogen free (This options is not necessary).

* VDE Code can be selected.

* Halogen Free 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

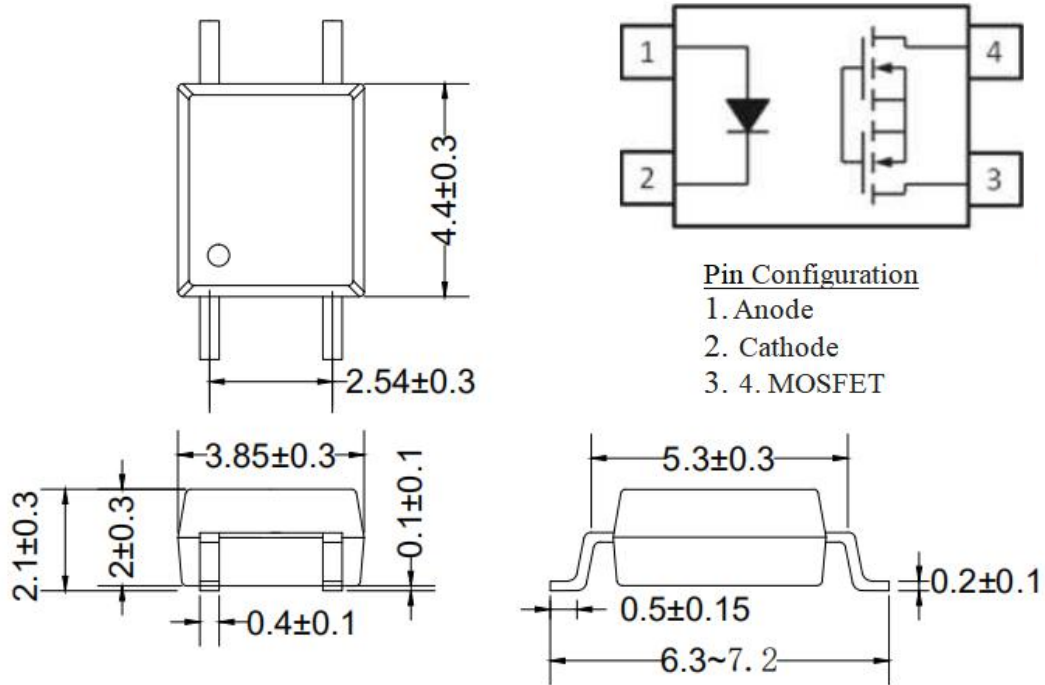


- (1) ORIENT .
- (2) M4XXA denotes Part Number. ("XX" = " 40 or 60 ")
- (3) [] denotes Year Code.
- (4) [] [] denotes Week Code.
- (5) [] denotes Day Code.
- (6) Anode.

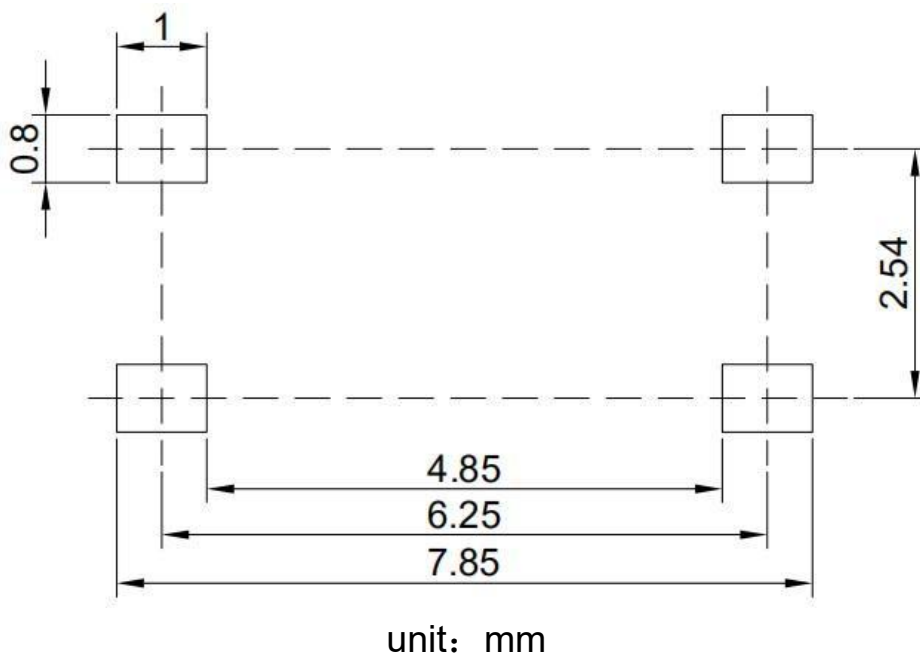
* Halogen Free Mark can be selected.

* VDE Mark can be selected.

8. Outer Dimension

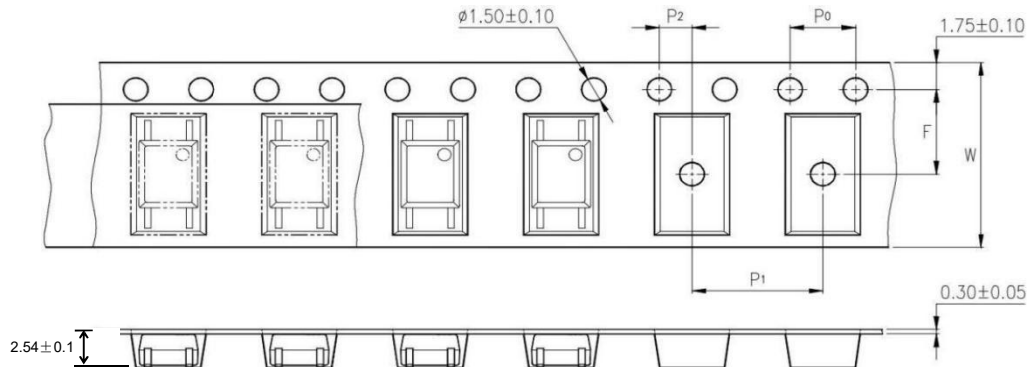


9. Recommended Foot Print Patterns (Mount Pad)

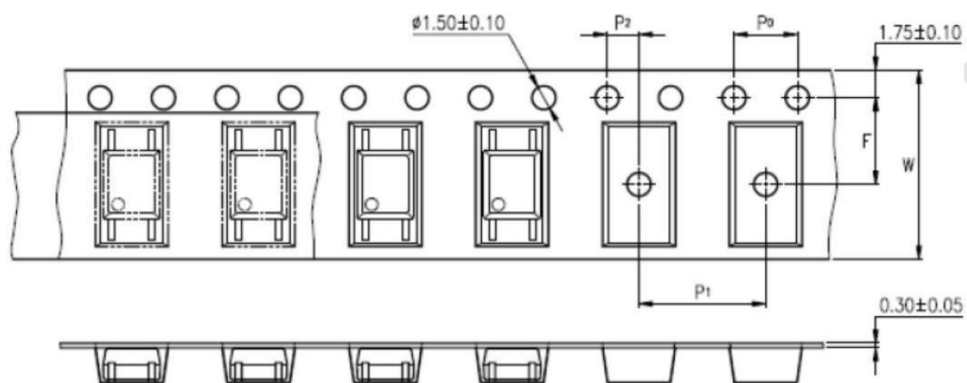


10. Taping Dimensions

(1) OR-M4XXA-TP



(2) OR-M4XXA-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 Information	
Packing type	Reel type
Tape Width	12mm
Qty per Reel	3,000
Small box (inner) Dimension	345*345*45mm
Max qty per small box	6,000
Large box (Outer) Dimension	480x360x360mm
Max qty per large box	60,000

(2) Packing Label Sample



1. MTL NO:Contents with "Order Information" in the specification.
2. LOT NO:The production cycle of the product.
3. BATCH:The CTR RANK of the product.
4. Quantity:Product packaging quantity.
5. Product Data: The data when product be made.

12. Reliability Test

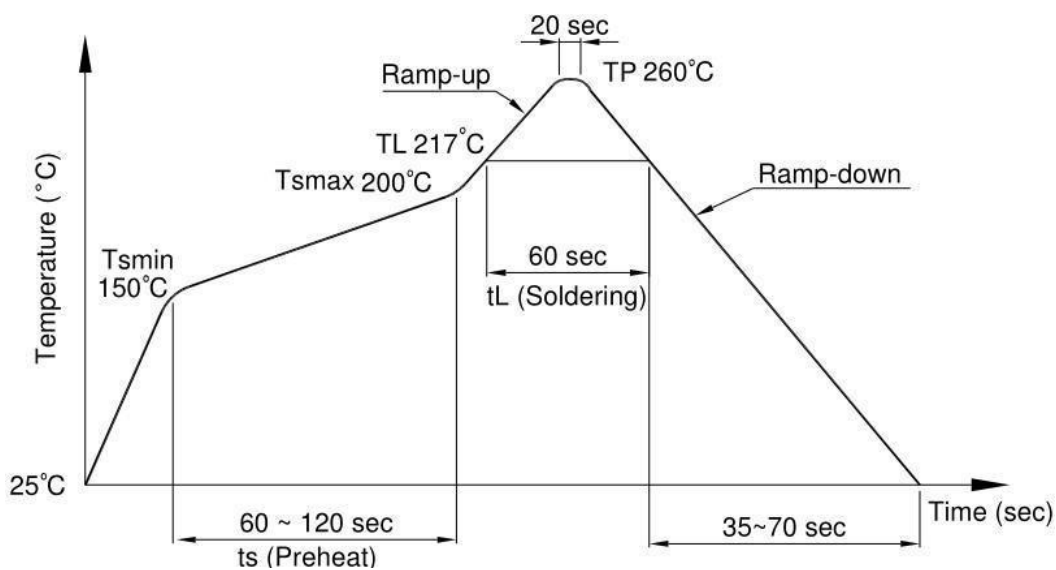
NO.	Item	Condition	Quantity	Cycle	Reference Standards
1	RSH, Resistance to Solder Heat	260±5°C, 20s/cycle	22	3 cycles	JESC22A-106
2	SD, Solderability	260±5°C, 10s/cycle	22	1 cycle	JESD22-B102
3	TC, Temperature Cycle	H: 125°C 15min ∫ 5min L: -55°C 15min	77	300cycles	JESC22A-104
4	TS, Thermal Shock	H: 100°C 5min ∫ 15s L: -10°C 5min	77	300cycles	JESC22A-106
5	LTSL, Low Temperature Storage	T: -55°C	77	1000h	JESD22-A119
6	HTSL, High Temperature Storage	T: 125°C	77	1000h	JESC22A-103
7	THB, High Temperature High Humidity	T: 85°C RH: 85%	77	1000h	JESC22A-101
8	HTOL DC Operating Life	T: 110°C IF=10mA VCC=5V	77	1000h	MIL-STD-750 Method 1037
9	ESD-HBM Human Body Model ESD	Ta=25°C, Reference JESD22-A114	6	1 cycle	JESD22-A114

13. Temperature Profile Of Soldering

(1) IR Reflow soldering (JEDEC-STD-020C compliant)

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

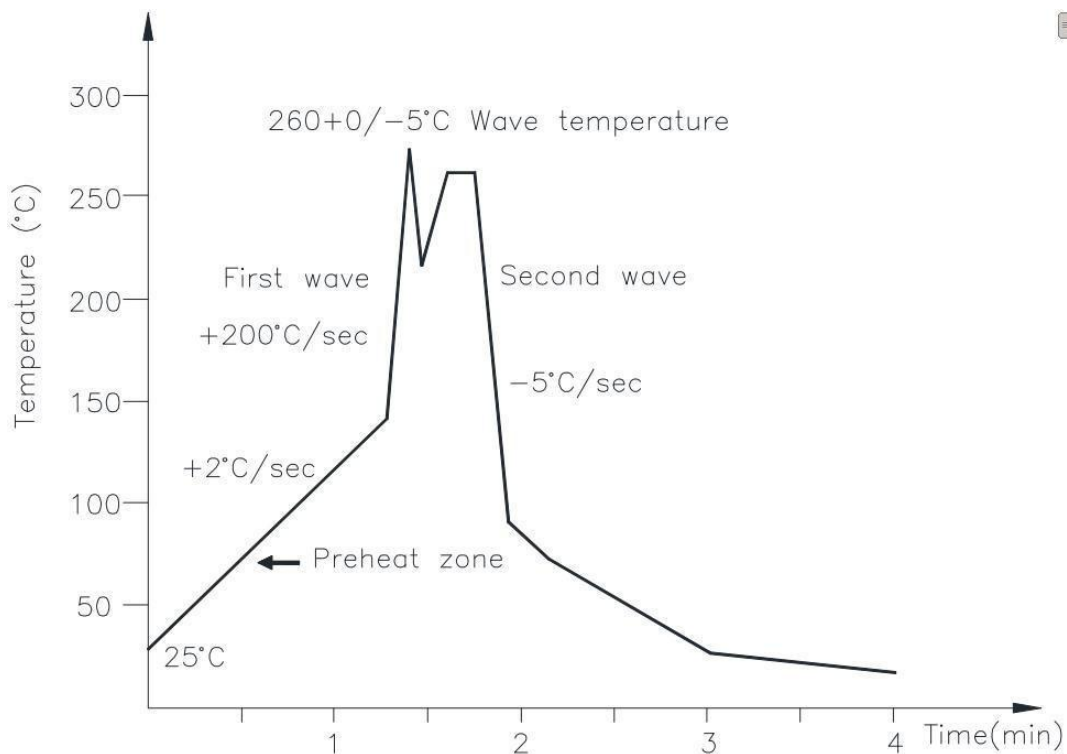
Profile item	Conditions
Preheat	
- Temperature Min (T Smin)	150°C
- Temperature Max (T Smax)	200°C
- Time (min to max) (ts)	90±30 sec
Soldering zone	
- Temperature (TL)	217°C
- Time (t L)	60 sec
Peak Temperature	260°C
Peak Temperature time	20 sec
Ramp-up rate	3°C / sec max.
Ramp-down rate from peak temperature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



(2) Wave soldering (JEDEC22A111 compliant)

One time soldering is recommended within the condition of temperature.

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



(3) Hand soldering by soldering iron

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

Temperature	380+0/-5°C
Time	3 sec max

14. Characteristics Curve

Figure 1. Load current vs Ambient temperature

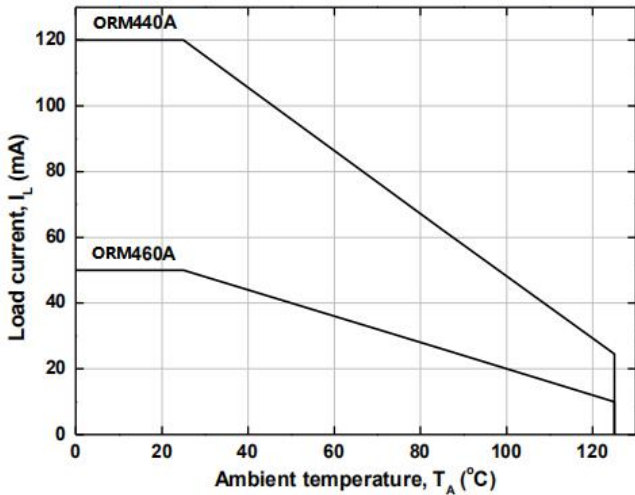


Figure 2. On Resistance vs Ambient Temperature

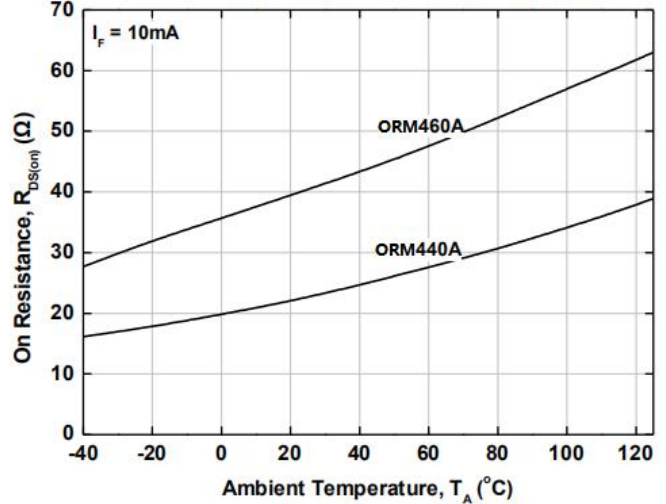


Figure 3. Switching Time vs Ambient Temperature

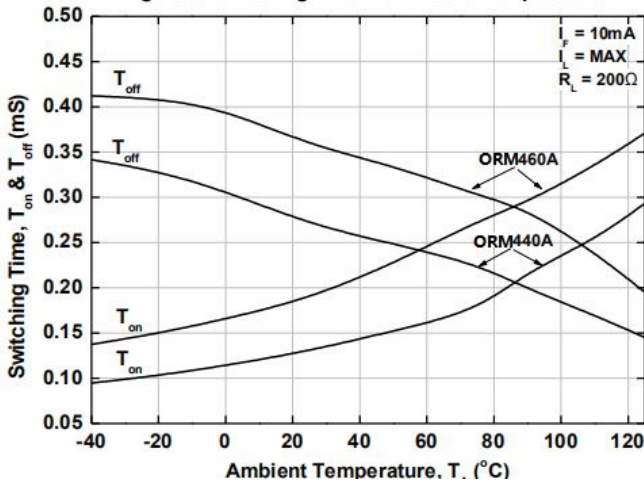


Figure 4. Switching time vs LED forward current

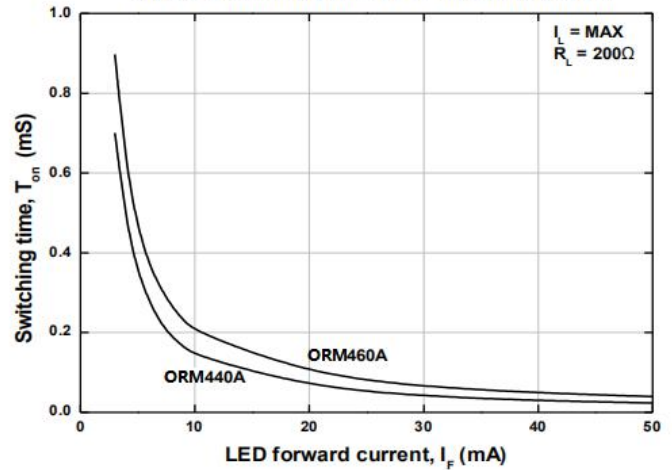


Figure 5. Switching time vs LED forward current

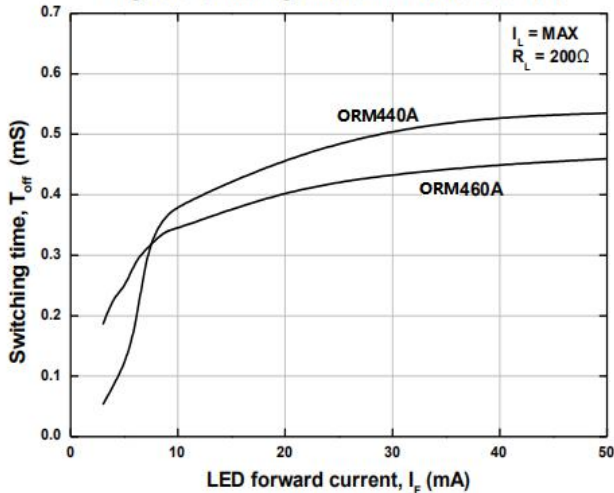


Figure 6. Normalized LED Operate on Current vs Ambient Temperature

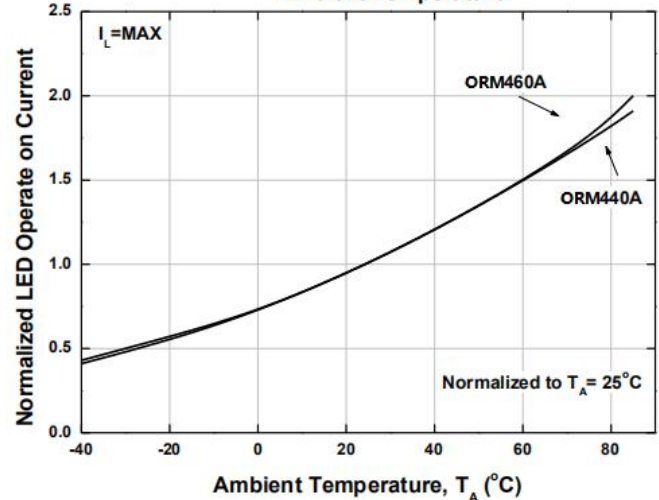


Figure 7. Normalized LED Operate off Current vs Ambient Temperature

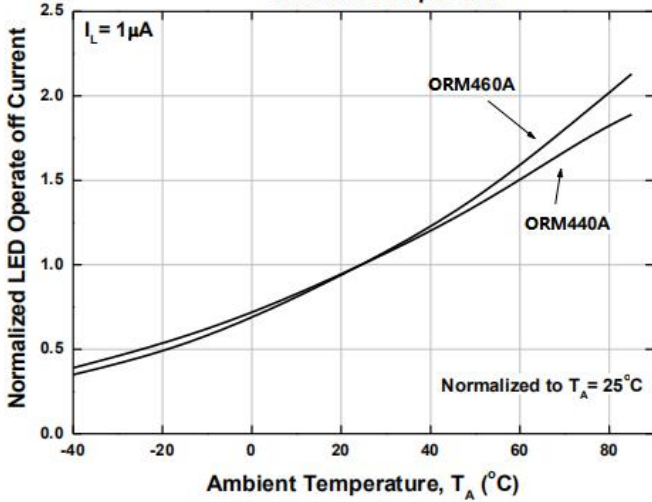


Figure 8. LED Dropout Voltage vs Ambient Temperature

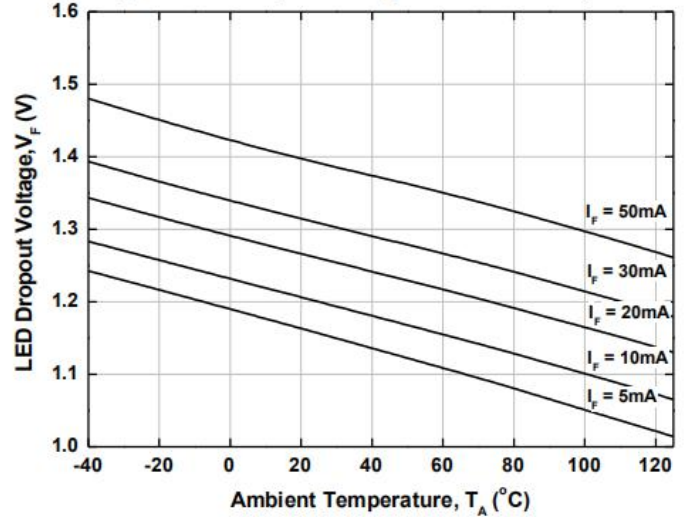


Figure 9. Load voltage vs Load current

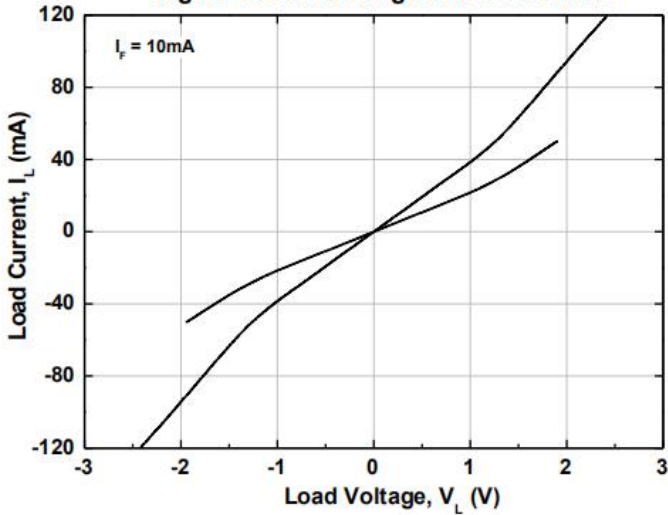


Figure 10. Off state leakage Current vs Load voltage

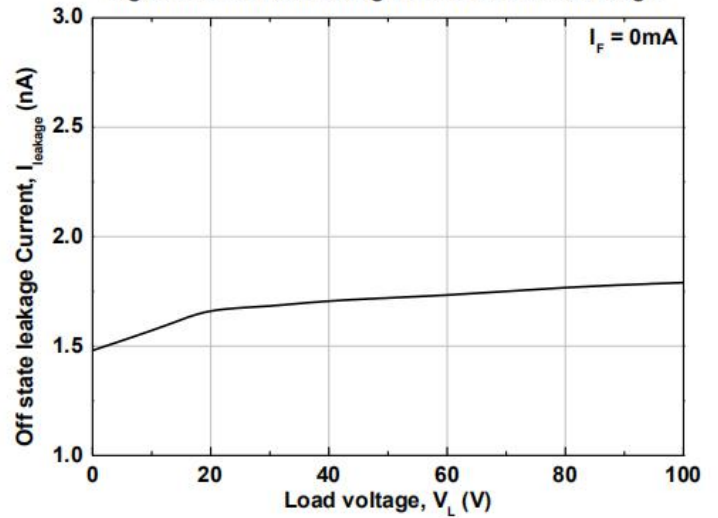
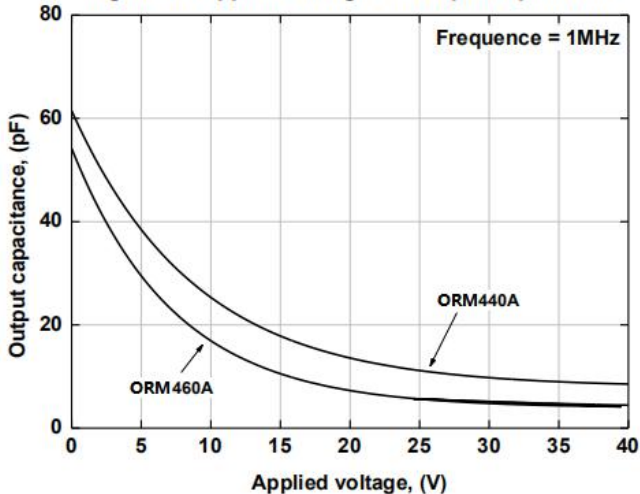
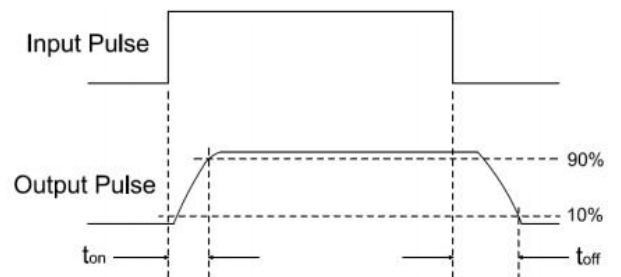


Figure 11. Applied voltage VS Output capacitance



Turn on/Turn off Time



单击下面可查看定价，库存，交付和生命周期等信息

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