

### Features

- Peak breakdown voltage:  
250V: BLM303X; 400V: BLM304X;  
600V: BLM306X; 800V: BLM308X
- High isolation voltage between input and output (Viso =3750V rms )
- Operating Temperature: -55°C~110°C

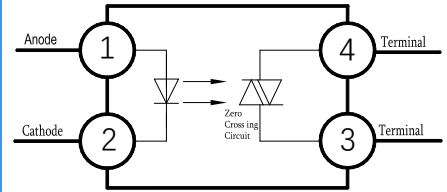
HF

### Applications

- Electromagnetic valve controls
- Light controls
- Static power switch
- AC Motor Drive
- Electromagnetic contact switch
- Solid state relay

### Mechanical Data

- Case: SOP4
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



### Ordering Information

BL    M30VX    (M)    (G)    -    (U)    (N)    (Y)

①            ②            ③            ④                            ⑤            ⑥            ⑦

- ① Brand(BL)
- ② Product series(V:3,4,6,8;X:0,1,2,3)
- ③ Package type(None:SOP4)
- ④ Halogen option(None :Halogen free)
- ⑤ Lead frame (None: Copper)
- ⑥ Customer option 1 (0-9 or A-Z or none)
- ⑦ Customer option 2 (0-9 or A-Z or none)

Part Number	Package	Shipping Quantity	Marking Code
BLM30V <sup>1</sup> X <sup>2</sup>	SOP4	3000 pcs / Tape & Reel	BLM30V <sup>1</sup> X <sup>2</sup>

Notes:

- 1. V denotes  $V_{DRM}$  digits: 3, 4, 6, 8
- 2. X denotes  $I_{FT}$  digits: 0, 1, 2, 3

### Marking Information

- "BL" denotes brand
- "V" denotes  $V_{DRM}$  digits: 3, 4, 6, 8
- "X" denotes  $I_{FT}$  digits: 0, 1, 2, 3
- "Y" denotes Year : A(2024), B(2025), C(2026) .....
- "WW" denotes Week's number
- "N" denotes the day of Week



### Maximum Ratings (@ T<sub>A</sub> = 25°C unless otherwise specified)

Parameter		Symbol	Value	Unit	
Input	Forward Current	I <sub>F</sub>	60	mA	
	Reverse Voltage	V <sub>R</sub>	6	V	
	Power Dissipation	P <sub>D</sub>	100	mW	
	Derating factor (above Ta = 85 °C)		3.8	mW/°C	
Output	Power Dissipation	P <sub>C</sub>	300	mW	
	Derating factor (above Ta = 85 °C)		7.6	mW/°C	
	Off-state Output Terminal Voltage	BLM303X	V <sub>DRM</sub>	250	V
		BLM304X		400	
		BLM306X		600	
		BLM308X		800	
	Peak repetitive surge current (pw=100μs,120pps)		I <sub>TSM</sub>	1	A
Turn-on current (root mean square value)		I <sub>T(RMS)</sub>	100	mA	

### Thermal Characteristics

Parameter	Symbol	Value	Unit
Total Power Dissipation	P <sub>TOT</sub>	330	mW
Isolation Voltage *1	V <sub>ISO</sub>	3750	V <sub>rms</sub>
Operating Temperature	T <sub>OPR</sub>	-55 ~ +110	°C
Storage Temperature Range	T <sub>STG</sub>	-55 ~ +125	°C
Soldering Temperature *2	T <sub>SOL</sub>	260	°C

Notes:

- 40 to 60% RH, AC for 1 minute. At this time, pins 1, 2 & 3 are shorted, and pins 4, 5 & 6 are shorted together.
- For 10 seconds

### Electrical Characteristics (@ T<sub>A</sub> = 25°C unless otherwise specified)

Parameter		Symbol	Test Condition	Min.	Typ.	Max.	Unit	
Input	Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =20mA	-	1.23	1.5	V	
	Reverse Leakage current	I <sub>R</sub>	V <sub>R</sub> =6V	-	-	10	μA	
Peak Blocking Current	BLM303X	I <sub>DRM</sub>	V <sub>DRM</sub> =Rated V <sub>DRM</sub> , I <sub>F</sub> = 0mA	-	-	100	nA	
	BLM304X			-	-	500		
	BLM306X			-	-	500		
	BLM308X			-	-	500		
Peak on-state voltage		V <sub>TM</sub>	I <sub>TM</sub> =100mA, I <sub>F</sub> =Rated I <sub>FT</sub>	-	-	3	V	
Output	Critical Rate of Rise off-state Voltag	BLM303X	V <sub>PEAK</sub> =Rated V <sub>DRM</sub> , I <sub>F</sub> = 0mA	1000	-	-	V/μs	
		BLM304X						
		BLM306X		600	-	-		
		BLM308X						
Inhibition voltage (MT1-MT2 voltage above which device will not trigger)		V <sub>Inh</sub>	I <sub>F</sub> = Rated I <sub>FT</sub>	-	-	20	V	
Leakage in Inhibited State		I <sub>DRM2</sub>	I <sub>F</sub> = Rated I <sub>FT</sub> V <sub>DRM</sub> =Rated V <sub>DRM</sub> off state	-	-	500	μA	
Transfer Characteristics	LED trigger current	BLM3031	I <sub>FT</sub>	Main terminal voltage = 3V	-	-	15	mA
		BLM3041						
		BLM3061						
		BLM3081						
		BLM3032						
		BLM3042			-	-	10	
		BLM3062						
		BLM3082						
		BLM3033			-	-	5	
		BLM3043						
		BLM3063						
	BLM3083							
Holding Current		I <sub>H</sub>		-	250		μA	

### Ratings and Characteristics Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Fig.1 LED Positive voltage vs Positive current

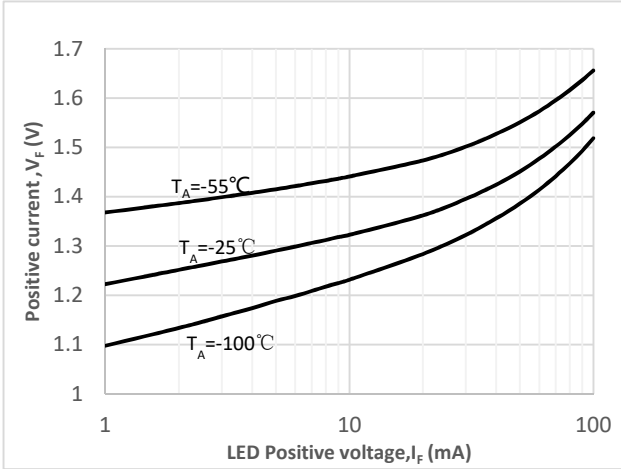


Fig.2 On-state characteristic

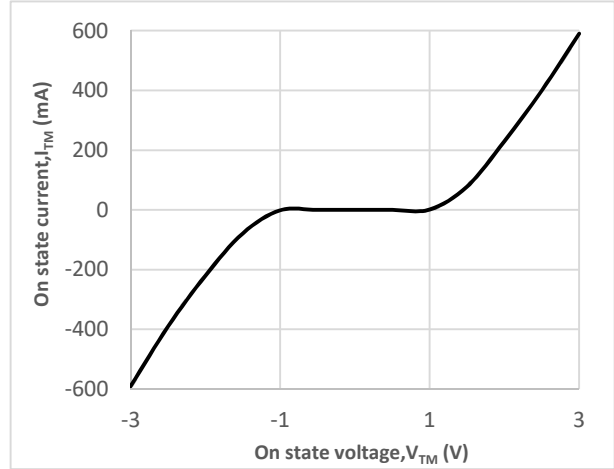


Fig.3 Trigger current vs Ambient temperature

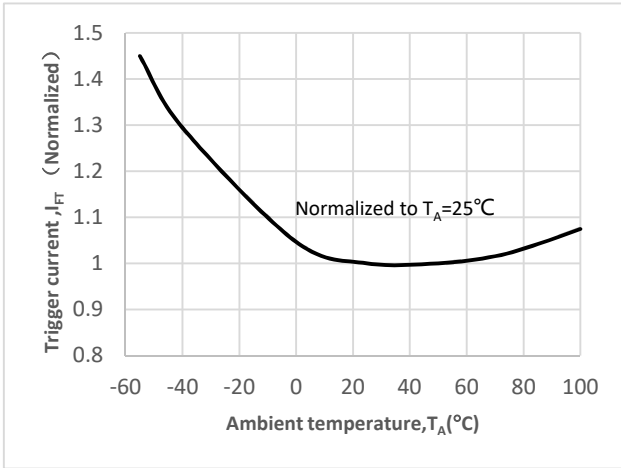


Fig.4 LED Trigger current vs LED Pulse Width

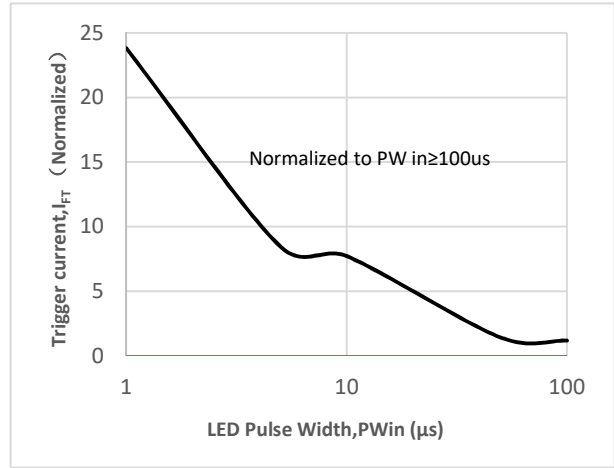


Fig.5 Holding current vs Temperature

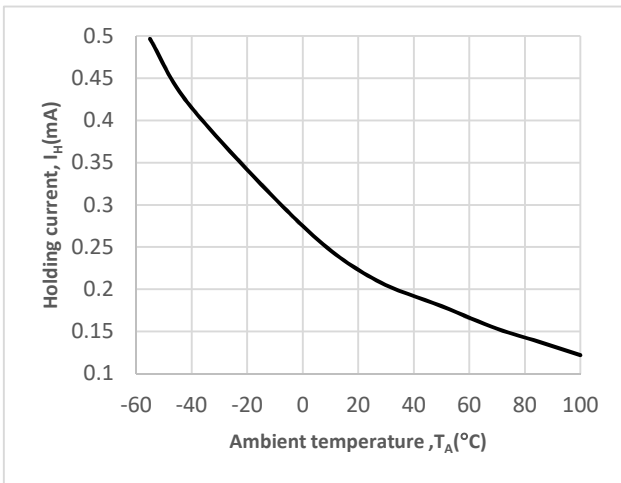


Fig.6 Leakage current vs Temperature

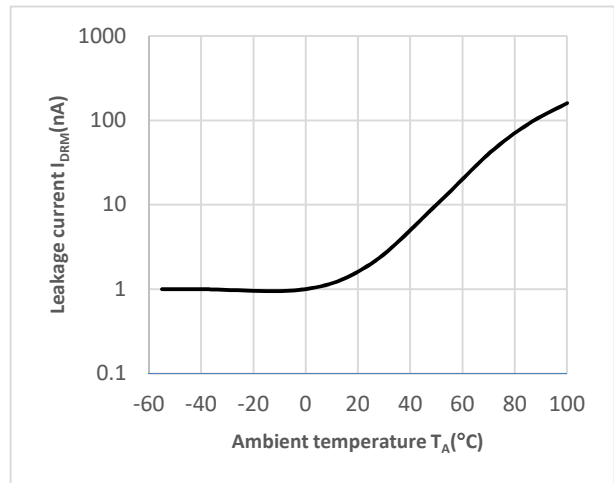


Fig.7 Inhibit state leakage current vs Ambient temperature

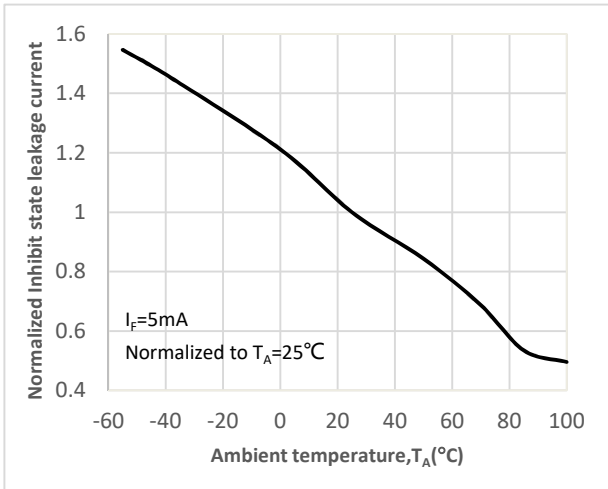


Fig.8 Inhibition voltage vs Ambient temperature

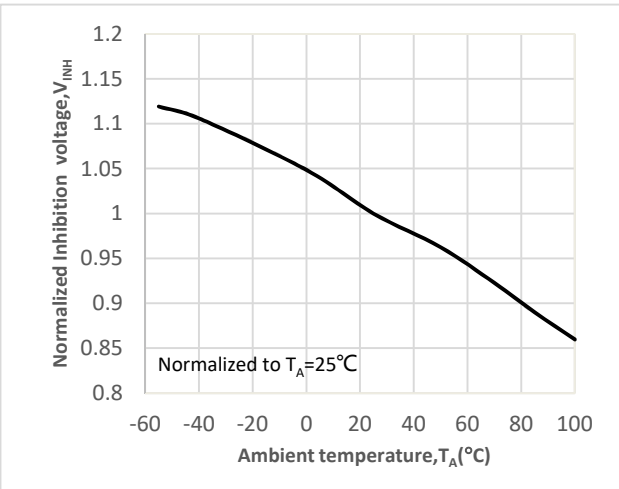
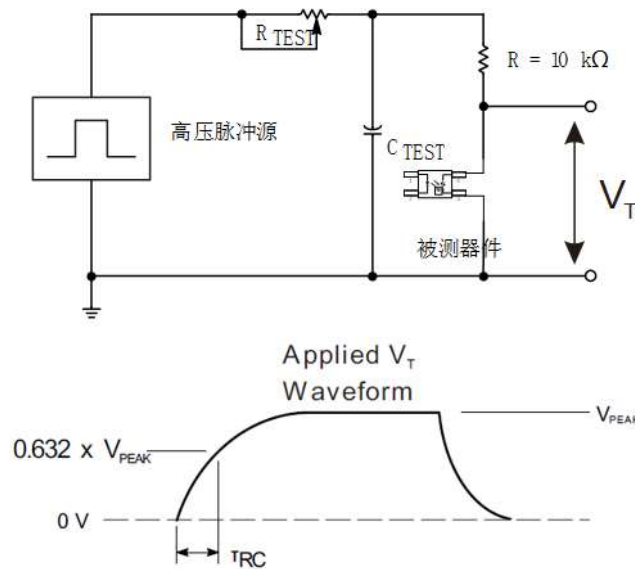


Fig.9 Static dv / dt test circuit and waveform



The high voltage pulse applied to the output of the device under test through the RC circuit is set to the required  $V_{PEAK}$  value. LED current is not applied. The waveform  $V_T$  is monitored with X100 probe. By adjusting the  $R_{TEST}$  value, the  $dv/dt$  (slope) increases until the device under test is observed to be triggered (waveform collapse). Then  $dv/dt$  drops until the device under test stops being triggered. At this point, RC is recorded and the  $dv/dt$  calculated.

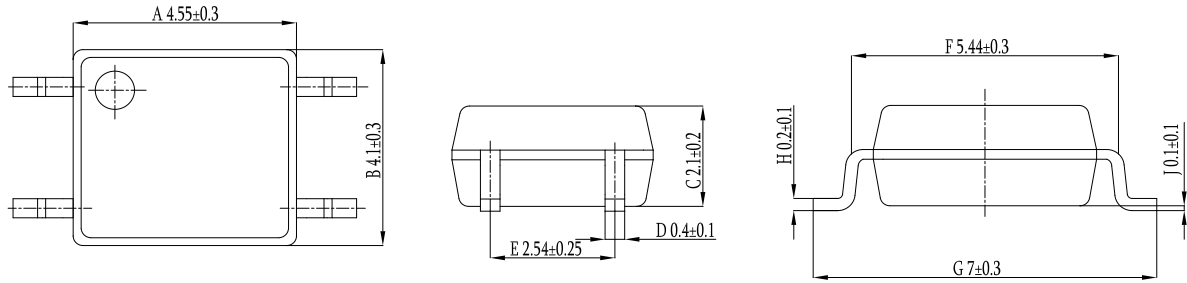
$$dv/dt = \frac{0.632 \times V_{PEAK}}{\tau_{RC}}$$

For example,  $V_{PEAK} = 400V$  for QX302X series. The  $dv/dt$  value is calculated as follows:

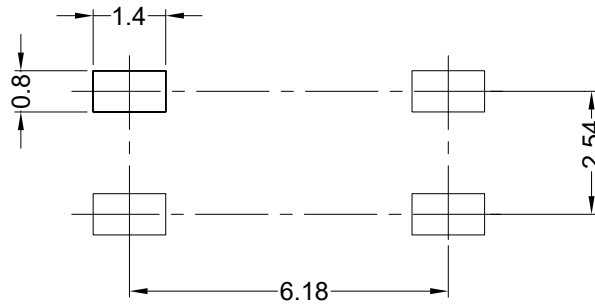
$$dv/dt = \frac{0.632 \times 400}{\tau_{RC}} = \frac{252}{\tau_{RC}}$$

**Package Outline Dimensions** (unit: mm)

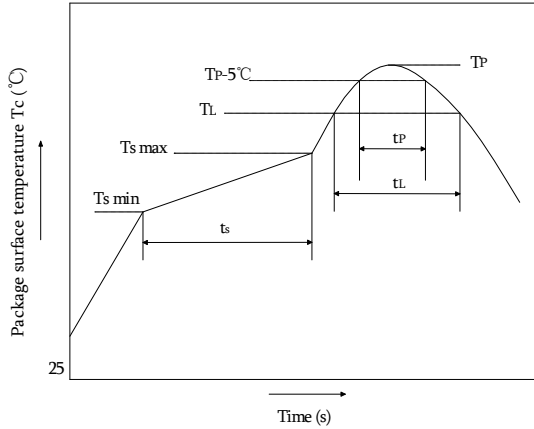
**SOP4**



**SOLDERING FOOTPRINT** (unit: mm)



### Reflow soldering

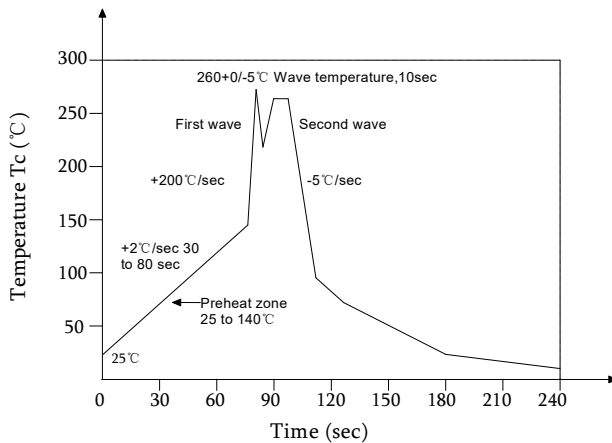


	Symbol	Min	Max	Unit
Preheat temperature	$T_s$	150	200	$^\circ\text{C}$
Preheat time	$t_s$	60	120	s
Ramp-up rate( $T_L$ to $T_P$ )			3	$^\circ\text{C/s}$
Liquidus temperature	$T_L$	217		$^\circ\text{C}$
Time above $T_L$	$t_L$	60	150	s
Peak temperature	$T_P$		260	$^\circ\text{C}$
Time during which $T_c$ is between ( $T_P - 5$ ) and $T_P$	$t_p$		30	s
Ramp-down rate( $T_P$ to $T_L$ )			6	$^\circ\text{C/s}$

#### Note:

Reflow soldering is recommended at the temperatures and times shown, no more than three times.

### Wave soldering



Profile feature	
Average ramp-up rate	$\sim 200^\circ\text{C/s}$
Heating rate during preheat	$1^\circ\text{C/s}$ to $2^\circ\text{C/s}$ typical; $4^\circ\text{C/s}$ maximum
Final preheat temperature $T_s$	$\sim 130^\circ\text{C}$
Preheat time (25 $^\circ\text{C}$ to $T_s$ )	$> 60\text{s}$
Peak temperature $T_p$	$260^\circ\text{C}$
Time within peak temperature $t_p$	10s
Ramp-down rate	$5^\circ\text{C/s}$ maximum

#### Soldering with hand soldering iron

- Hand soldering iron is only used for product rework or sample testing.
- Hand soldering iron requirements: Temperature:  $360^\circ\text{C} \pm 5^\circ\text{C}$  within 3s.



### Pcaking

Package Type	Packing Form	Quantity per Tube &Reel	Quantity per Box	Quantity per Carton	Antistatic Bag Specification	Box Specification	Carton Specification	Note
SOP4	Reel(φ330mm)	3000 pcs/reel	2 reels /box	5 boxes /ctn	380*420mm	350*340*60mm	365*330*370mm	Guard band 200mm /min.

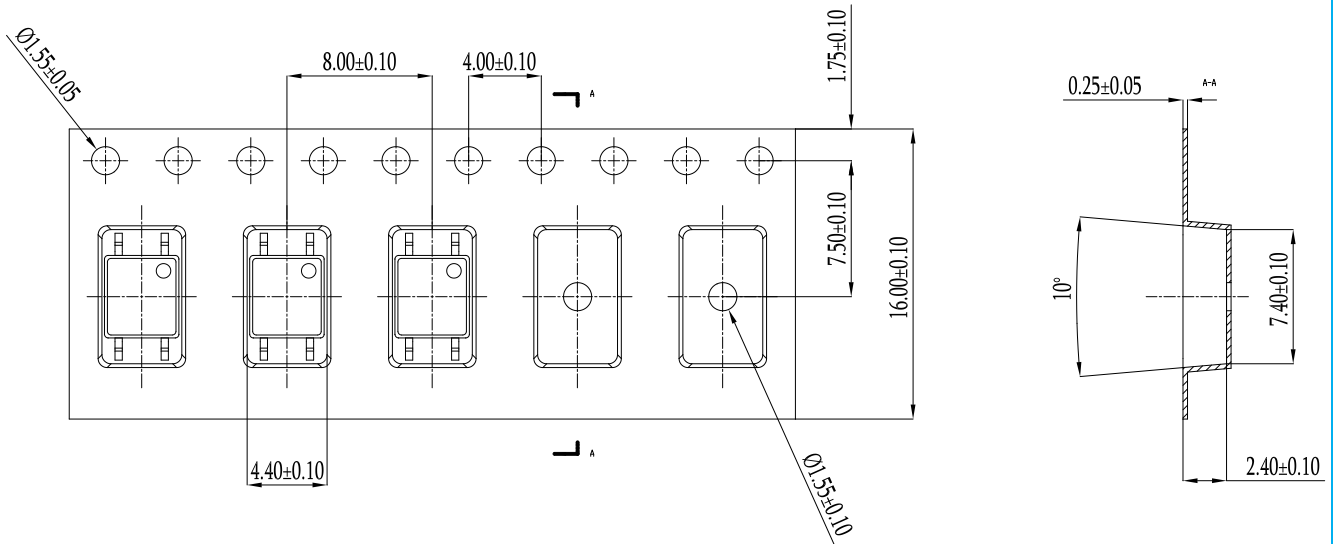
■ Summary table

■ SOP4 (Reel)

Qty/reel: 3000 pcs. Qty/box: 6000 pcs.

Qty/ctn : 30000 pcs.

Schematic: (unit:mm)



### IMPORTANT NOTICE

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