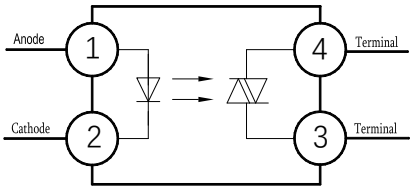
Features

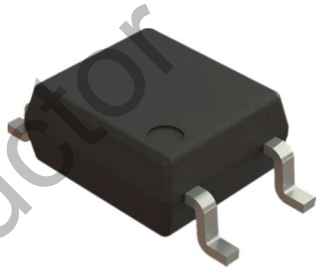
HF

- Peak breakdown voltage: 250V：MOCM301XS；
  400V：MOCM302XS；600V：MOCM305XS
- High isolation voltage between input and output (Viso =3750V rms)
- Operating Temperature: -55℃~110℃



Applications

- Electromagnetic valve controls
- Ballasts
- Static AC power switch
- Interfacing microprocessors to 115 to 240Vac peripherals.
- Incandescent lamp dimmer
- Temperature controls
- Motor controls



Mechanical Data

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

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Maximum Ratings (@ TA = 25°C unless otherwise specified)

Parameter			Symbol	Value	Unit
Input	Forward Current		I_F	60	mA
	Reverse Voltage		V_R	6	V
	Power Dissipation		P_D	100	mW
	Derating factor (above Ta = 85 ℃)			3.8	mW/°C
Output	Power Dissipation		P_C	300	mW
	Derating factor (above Ta = 85 ℃)			7.4	mW/°C
	Off-state Output Terminal Voltage	MOCM301XS	V_{DRM}	250	V
		MOCM302XS		400	
		MOCM305XS		600	
	Peak repetitive surge current (pw=100μs,120pps)		I_{TSM}	1	A
	Turn-on current (root mean square value)		$I_{T(RMS)}$	100	mA

Thermal Characteristics

Parameter	Symbol	Value	Unit
Total Power Dissipation	P_{TOT}	330	mW
Isolation Voltage *1	V_{ISO}	3750	Vrms
Operating Temperature	T_{OPR}	-55 ~ +110	°C
Storage Temperature Range	T_{STG}	-55 ~ +125	°C
Soldering Temperature *2	T_{SOL}	260	°C

Notes：

1. 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.
2. For 10 seconds

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Electrical Characteristics (@ T_A = 25°C unless otherwise specified)

Parameter			Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage		V_F	I_F=20mA	-	1.23	1.5	V
	Reverse Leakage current		I_R	V_R=6V	-	-	10	μA
Output	Peak Blocking Current		I_{DRM}	V_{DRM} =Rated V_{DRM}, I_F= 0mA	-	-	100	nA
	Peak on-state voltage		V_{TM}	I_{TM}=100mA, I_F=Rated I_{FT}	-	-	2.5	V
	Critical Rate of Rise off-state Voltage	MOCM301XS	dv/dt	V_{PEAK} =Rated V_{DRM}, I_F= 0mA	-	100	-	V/μs
		MOCM302XS						
		MOCM305XS		V_{PEAK} =400V, I_F=0	1000	-	-	
Transfer Characteristics	LED trigger current	MOCM3010S	I_{FT}	Main terminal voltage = 3V	-	-	30	mA
		MOCM3020S						
		MOCM3011S			-	-	15	
		MOCM3021S						
		MOCM3051S						
		MOCM3012S			-	-	10	
		MOCM3022S						
		MOCM3052S						
		MOCM3013S			-	-	5	
		MOCM3023S						
		MOCM3053S						
		MOCM3014S			-	-	3	
		MOCM3024S						
		MOCM3054S						
	Holding Current		I_H		-	250		μA

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Ratings and Characteristics Curves (@ T_A = 25°C unless otherwise specified)

Fig.1 LED Positive voltage vs Positive current

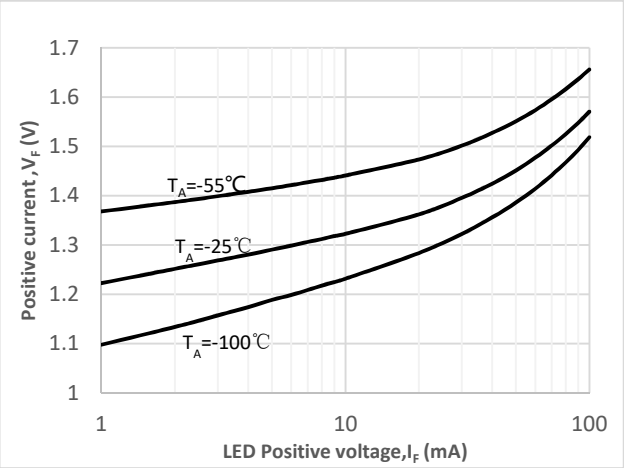

Fig.2 On-state characteristic

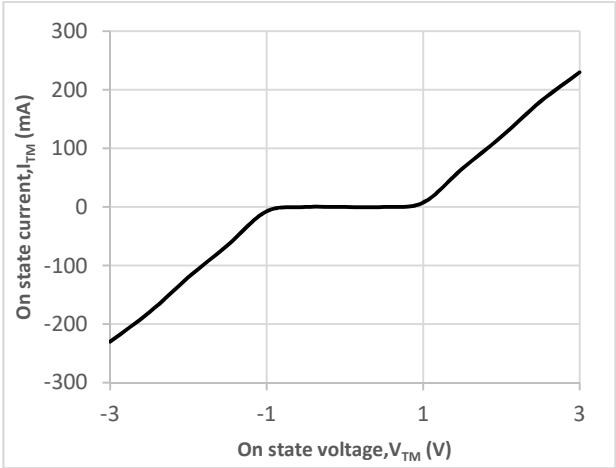

Fig.3 Trigger current vs Ambient temperature

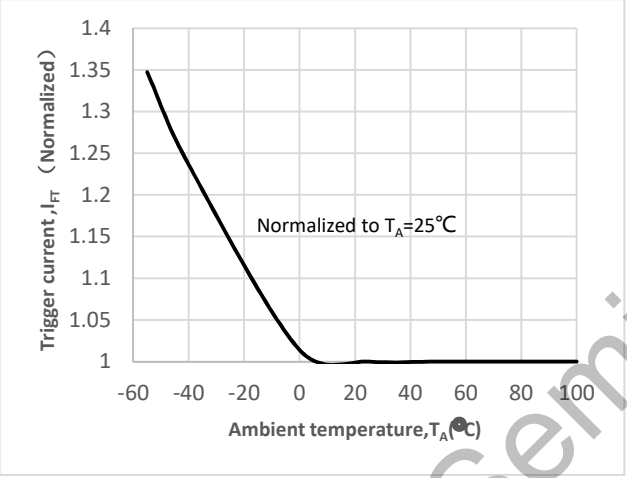

Fig4 LED Trigger current vs LED Pulse Width

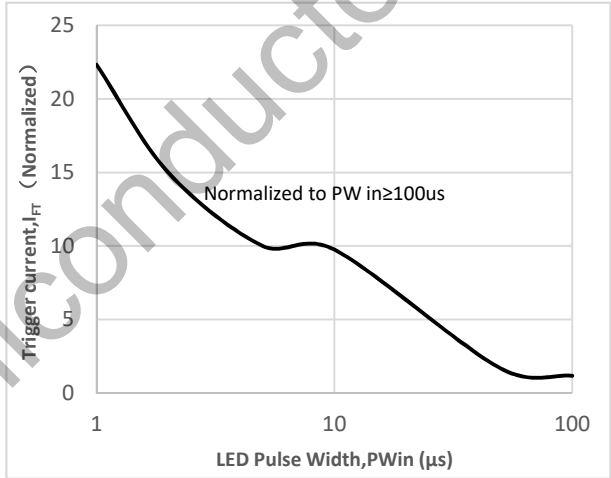

Fig.5 Holding current vs Temperature

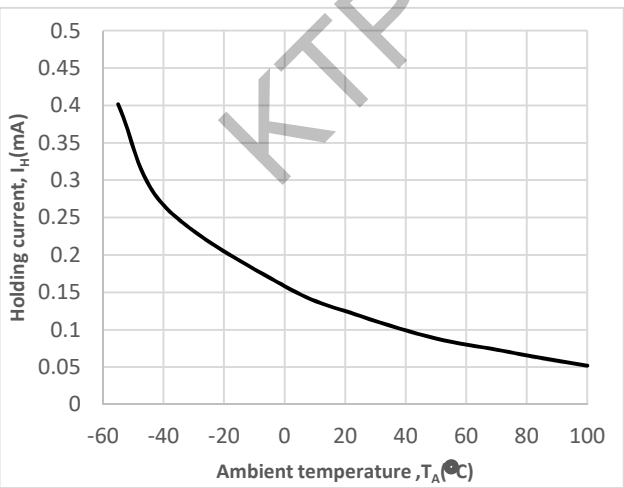

Fig.6 Leakage current vs Temperature

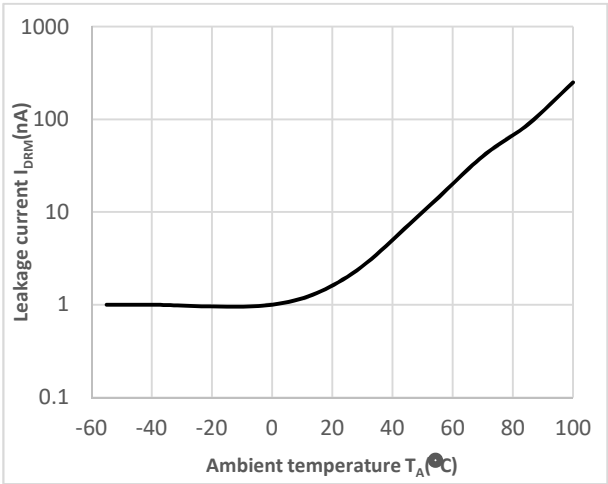

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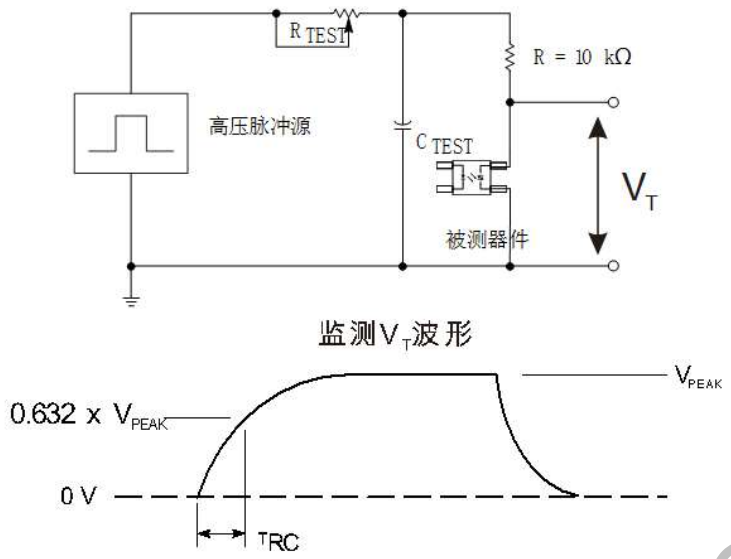
Fig.7 Static dv / dt test circuit and waveform



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, VPEAK = 400V for MOCM302XS series. The dv/dt value is calculated as follows:

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

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Ordering Information

MOCM30 X X S - AW
① ② ③

Product series

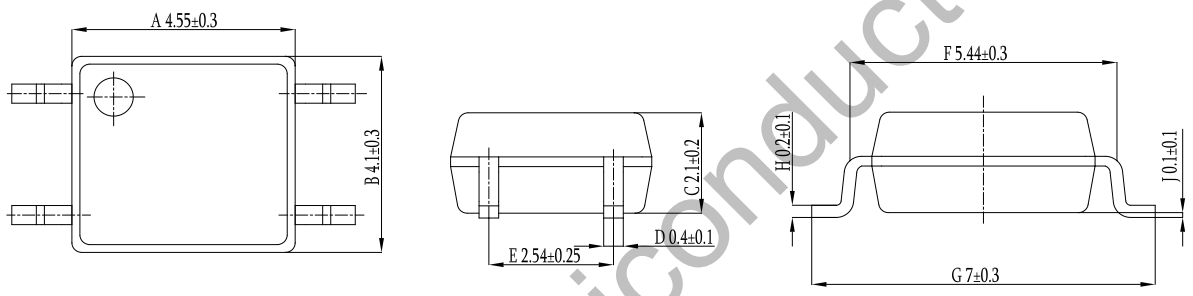
① X:1,2,5;

② X:0,1,2,3,4;

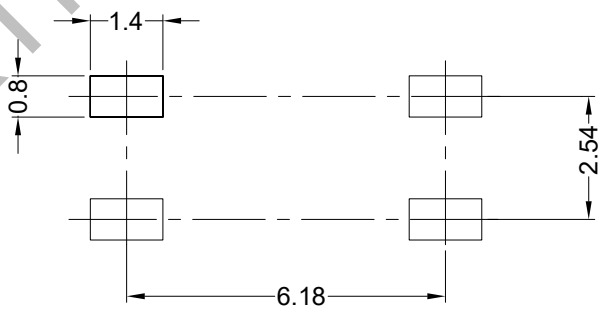
③ AW:Internal Identification code

Package Outline Dimensions (unit: mm)

SOP4



SOLDERING FOOTPRINT (unit: mm)



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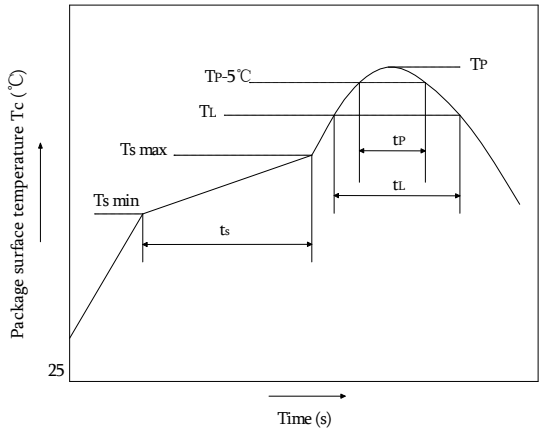
Reflow soldering

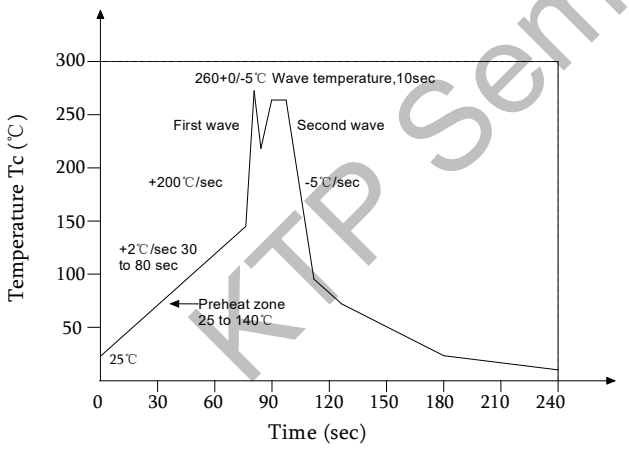


	Symbol	Min	Max	Unit
Preheat temperature	Ts	150	200	℃
Preheat time	ts	60	120	s
Ramp-up rate(T_L to T_P)			3	℃/s
Liquidus temperature	T_L	217		℃
Time above T_L	t_L	60	150	s
Peak temperature	Tp		260	℃
Time during which Tc is between (T_P-5) and T_P	t_p		30	s
Ramp-down rate(T_P to T_L)			6	℃/s

Note:

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

Wave soldering



Profile feature	
Average ramp-up rate	～200℃/s
Heating rate during preheat	1℃/s to 2℃/s typical;4℃/s maximum
Final preheat temperature Ts	～130℃
Preheat time (25℃ to Ts)	＞60s
Peak temperature Tp	260℃
Time within peak temperature tp	10s
Ramp-down rate	5℃/s maximum

Soldering with hand soldering iron

A. Hand soldering iron is only used for product rework or sample testing.

B. Hand soldering iron requirements:Temperature:360 ℃+5℃ within 3s.

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