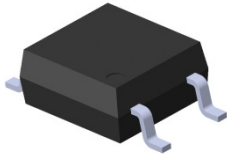
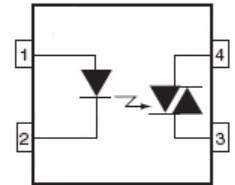


DATASHEET**4 PIN SOP RANDOM-PHASE TRIAC PHOTOCOUPLER**Schematic**Features:**

- Peak breakdown voltage
 - 400V: MOCM302XS
 - 600V: MOCM305XS
- High isolation voltage between input and output (Viso=3750 V rms)
- Compact dual-in-line package
- Pb free and RoHS compliant.

Pin Configuration

1. Anode
2. Cathode
3. Terminal
4. Terminal

Description

The MOCM302XS series and MOCM305XS series are optically isolated triac driver devices. These devices contain a GaAs infrared emitting diode and a light activated silicon bilateral switch, which functions like a triac.

They are designed for interfacing between electronic controls and power triacs to control resistive and inductive loads for 115 to 240 VAC operations.

Applications

- Solenoid/valve controls
- Lamp ballasts
- Static AC power switch
- Interfacing microprocessors to 115 to 240Vac peripherals
- Incandescent lamp dimmers
- Temperature controls
- Motor controls

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4 PIN SOP RANDOM-PHASE TRIAC PHOTOCOUPLER

Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	60	mA
	Reverse voltage	V_R	6	V
	Power Dissipation	P_D	100	mW
Output	Off-state Output Terminal Voltage	V_{DRM}	MOCM302XS 400	V
			MOCM305XS 600	
	On state RMS current	$I_{T(RMS)}$	70	mA(RMS)
	Peak Repetitive Surge Current	I_{TSM}	1	A
	Power dissipation	P_C	300	mW
	Total power dissipation	P_{TOT}	200	mW
Isolation voltage ^{*1}		V_{ISO}	3750	Vrms
Operating temperature		T_{OPR}	-40~+110	°C
Storage temperature		T_{STG}	-55~+150	°C
Soldering Temperature ^{*2}		T_{SOL}	260	°C

Notes:

*1 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.

*2 For 10 seconds

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4 PIN SOP RANDOM-PHASE TRIAC PHOTOCOUPLER

Electro-Optical Characteristics (Ta=25°C unless specified otherwise)

Input

Parameter	Symbol	Min.	Typ.*	Max.	Unit	Condition
Forward Voltage	V _F	-	1.2	1.5	V	I _F = 10mA
Reverse Leakage current	I _R	-	-	10	μA	V _R = 6V

Output

Parameter	Symbol	Min.	Typ.*	Max.	Unit	Condition
Peak Blocking Current	I _{DRM}	-	-	100	nA	V _{DRM} = Rated V _{DRM} I _F = 0mA
Peak On-state Voltage	V _{TM}	-	-	2.5	V	I _{TM} =100mA peak, I _F =Rated I _{FT}
Critical Rate of Rise off-state Voltage	MOCM302XS MOCM305XS dv/dt	- 1000	10 -	- -	V/μs	I _F =0mA, Figure 8

Transfer Characteristics

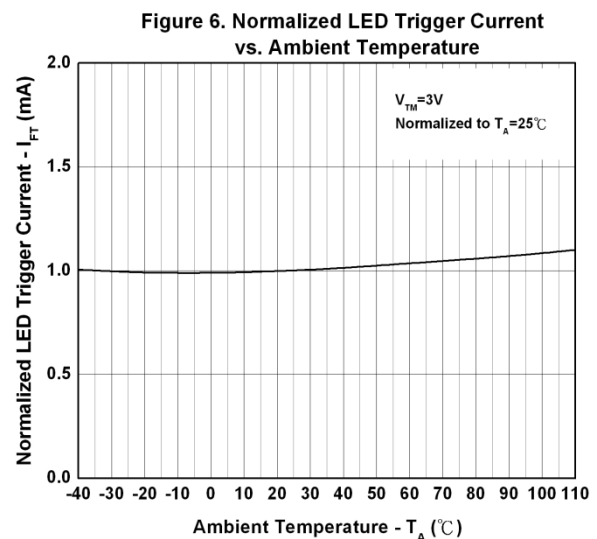
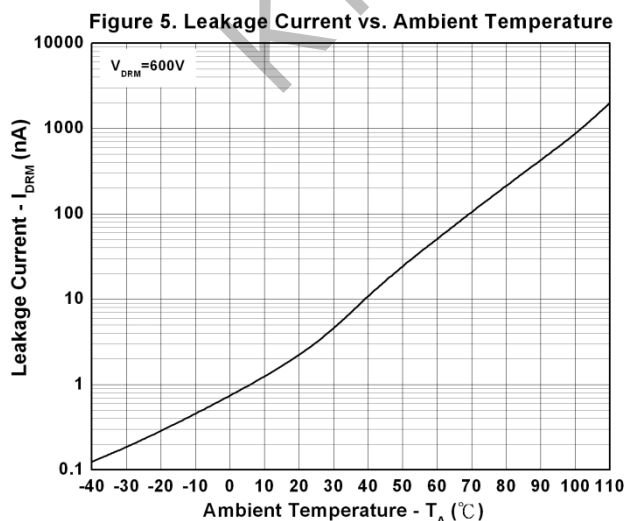
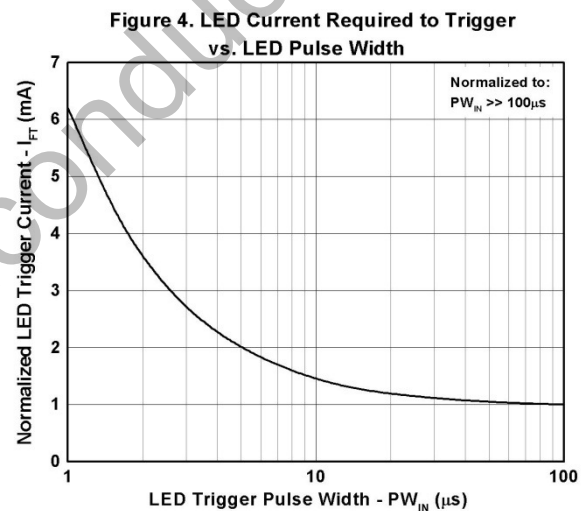
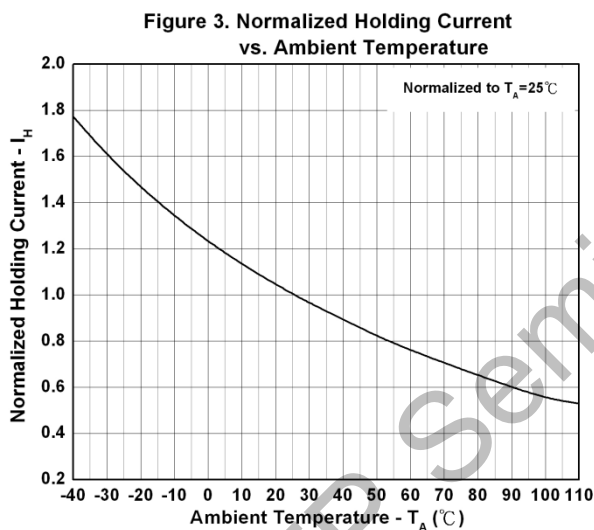
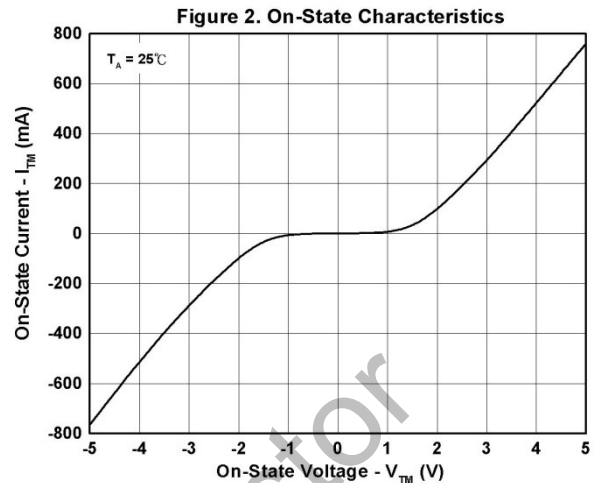
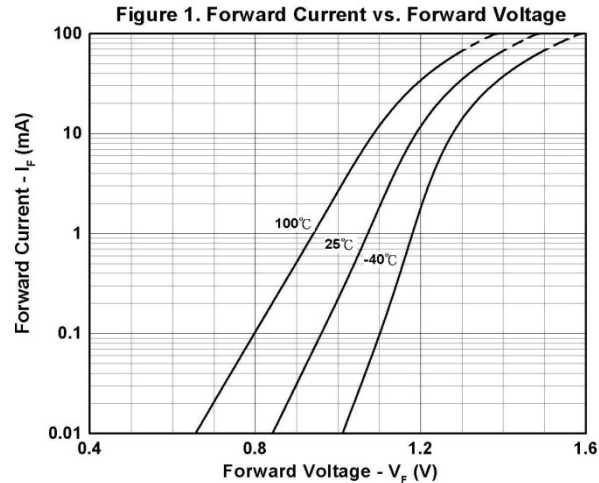
Parameter	Symbol	Min.	Typ.*	Max.	Unit	Condition
LED Trigger Current	3022 3052	-	-	10	mA	Main terminal Voltage=3V
	3023 3053	-	-	5		
	3024 3054	-	-	3		
Holding Current	I _H	-	3	5	mA	
Turn-on time	T _{on}	-	-	100	μS	V _D =6V, R _L =100ohm, I _F =20mA

* Typical values at T_a = 25°C

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4 PIN SOP RANDOM-PHASE TRIAC PHOTOCOUPLER

Typical Electro-Optical Characteristics Curves



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4 PIN SOP RANDOM-PHASE TRIAC PHOTOCOUPLER

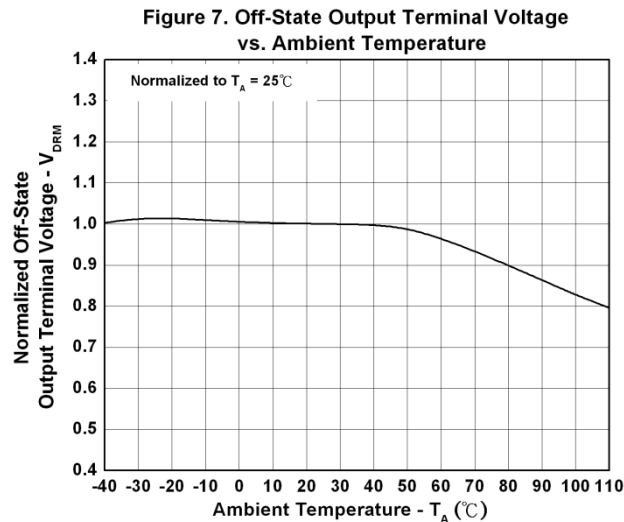
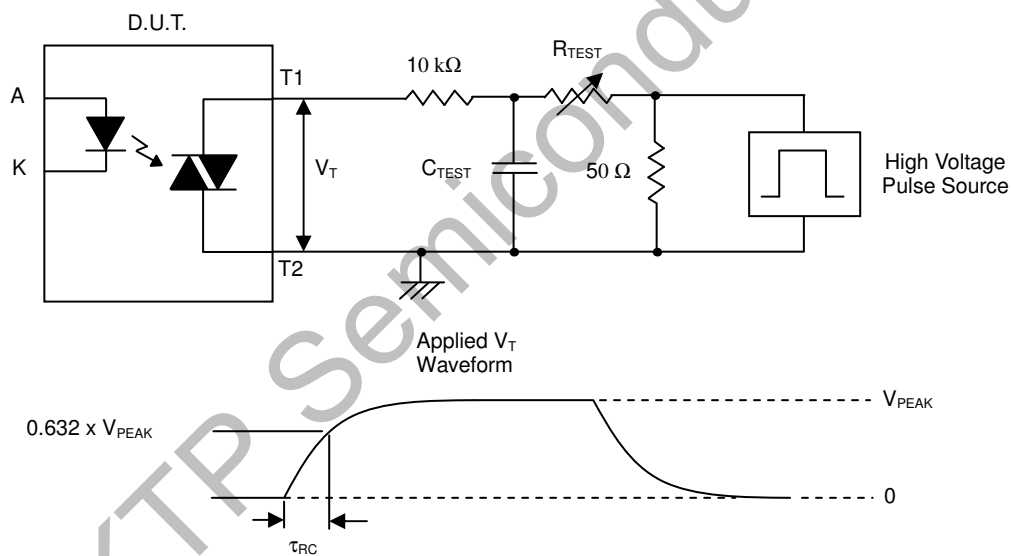


Figure 8. Static dv/dt Test Circuit & Waveform



Measurement Method

The high voltage pulse is set to the required V_{PEAK} value and applied to the D.U.T. output side through the RC circuit above. LED current is not applied. The waveform V_T is monitored using a x100 scope probe. By varying R_{TEST} , the dv/dt (slope) is increased, until the D.U.T. is observed to trigger (waveform collapses). The dv/dt is then decreased until the D.U.T. stops triggering. At this point, τ_{RC} is recorded and the dv/dt calculated.

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

For example, $V_{PEAK} = 400\text{V}$ for MOCM302XS series. The dv/dt value is calculated as follows:

$$dv/dt = \frac{0.63 \times 400}{\tau_{RC}} = \frac{252}{\tau_{RC}}$$

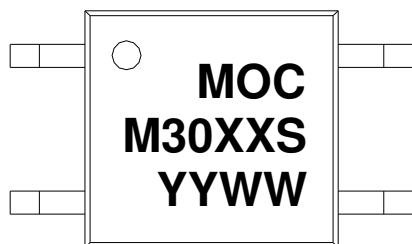
DATASHEET**4 PIN SOP RANDOM-PHASE TRIAC PHOTOCOUPLER**

Product Nomenclature

MOCM30X XS
① ②

Designation:

MOCM30XXS=Product series(① X:2,5, ② X:2,3 or 4)

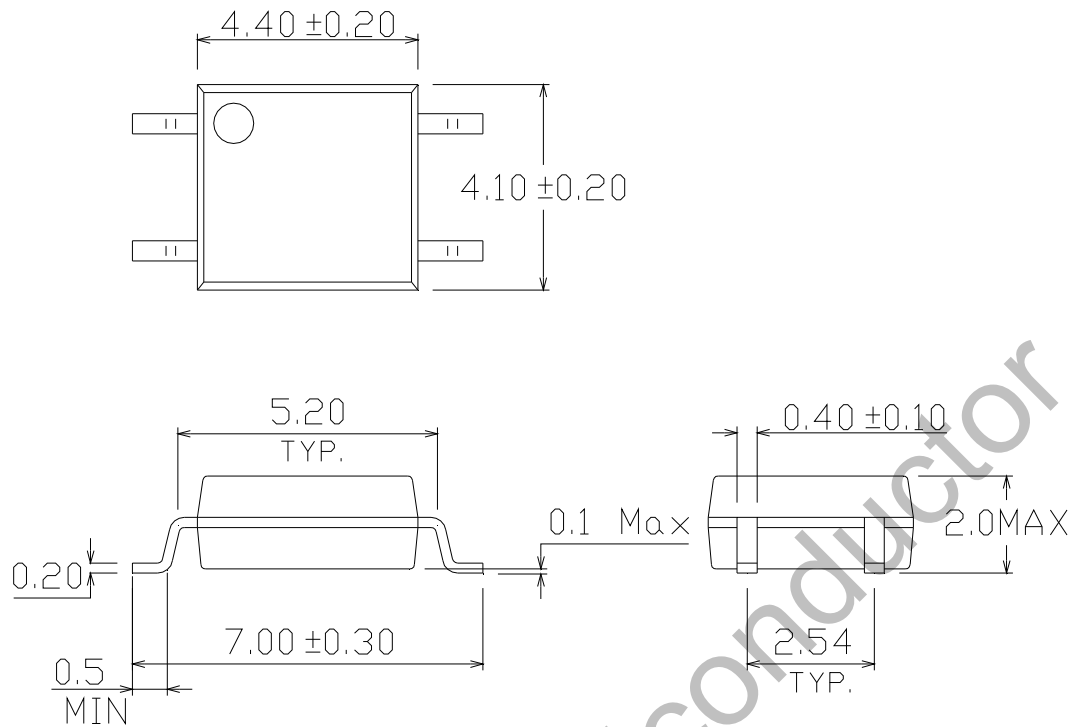
Device Marking**Notes**

MOCM30XXS denotes Device
YY denotes Year code
WW denotes Week code

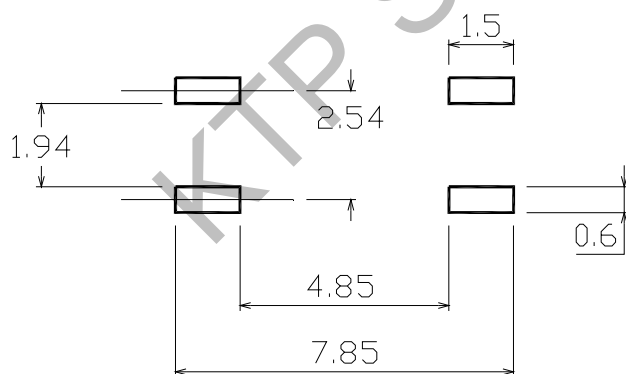
DATASHEET

4 PIN SOP RANDOM-PHASE TRIAC PHOTOCOUPLER

Package Dimension (Dimensions in mm)



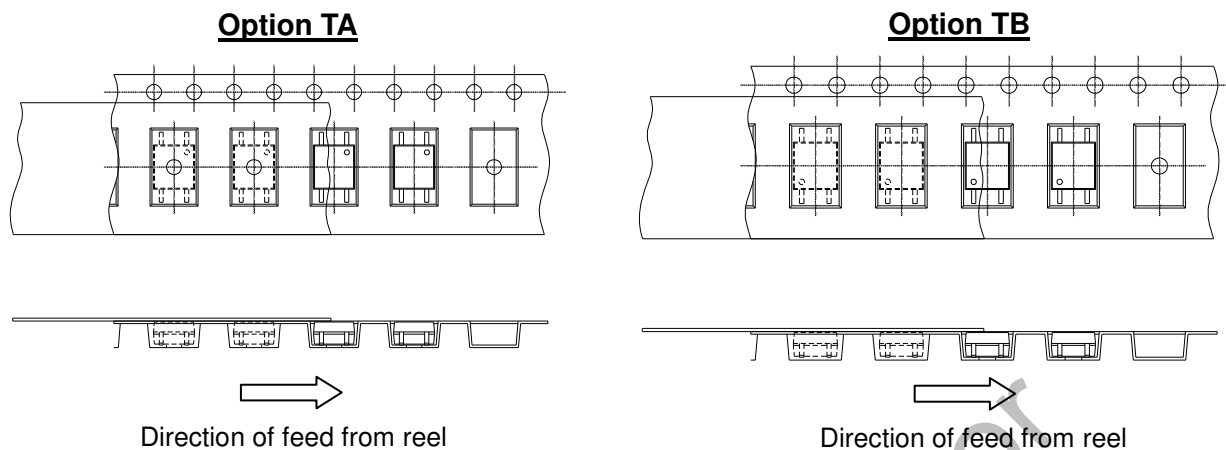
Recommended pad layout for surface mount leadform



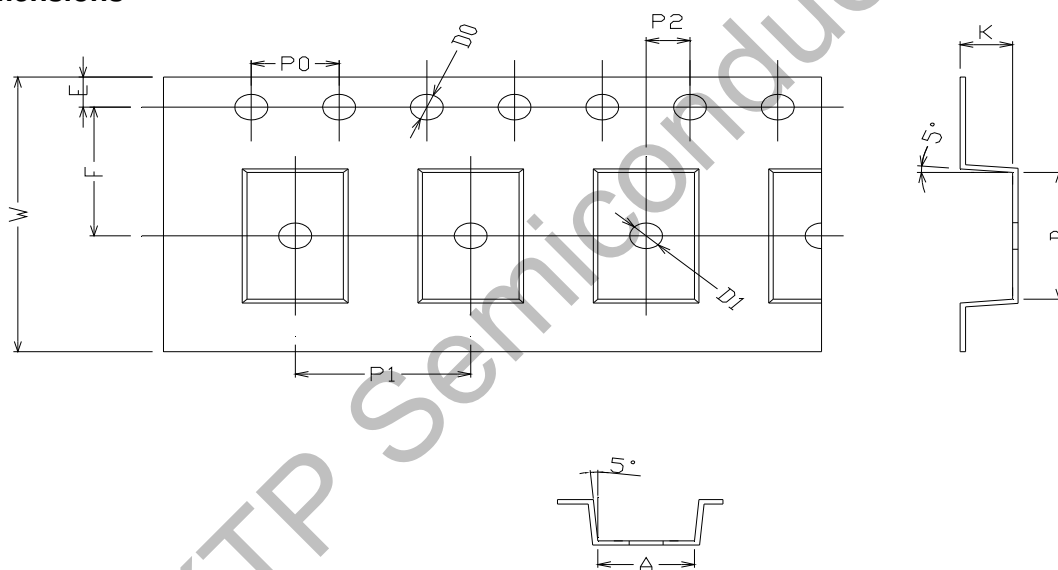
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4 PIN SOP RANDOM-PHASE TRIAC PHOTOCOUPLER

Tape & Reel Packing Specifications



Tape dimensions



Dimension No.	A	B	Do	D1	E	F
Dimension (mm)	4.4 ± 0.1	7.4 ± 0.1	$1.5 + 0.1/-0$	1.5 ± 0.1	1.75 ± 0.1	7.5 ± 0.1

Dimension No.	P0	P1	P2	t	W	K
Dimension (mm)	4.0 ± 0.15	8.0 ± 0.1	2.0 ± 0.1	0.25 ± 0.03	16.0 ± 0.2	2.4 ± 0.1

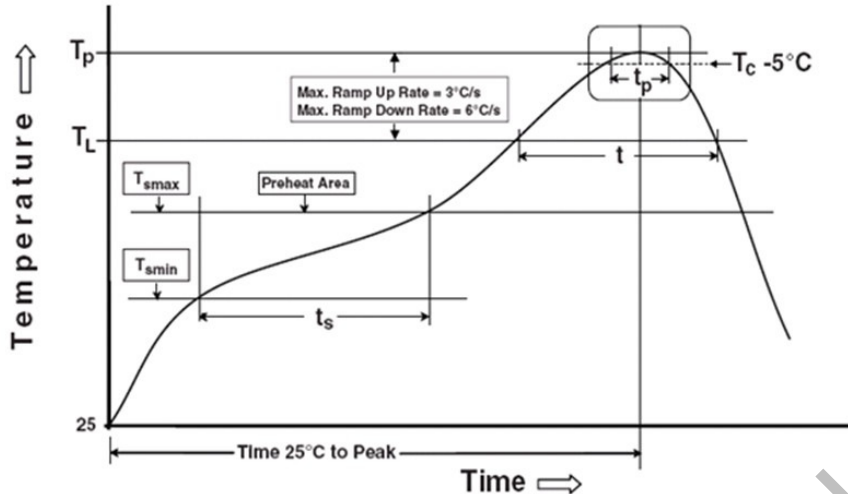
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4 PIN SOP RANDOM-PHASE TRIAC PHOTOCOUPLER

Precautions for Use

1. Soldering Condition

1.1 (A) Maximum Body Case Temperature Profile for evaluation of Reflow Profile



Note:

Reference: IPC/JEDEC J-STD-020D

Preheat

Temperature min (T_{smin})	150 °C
Temperature max (T_{smax})	200 °C
Time (T_{smin} to T_{smax}) (t_s)	60-120 seconds
Average ramp-up rate (T_{smax} to T_p)	3 °C/second max

Other

Liquidus Temperature (T_L)	217 °C
Time above Liquidus Temperature (t_L)	60-100 sec
Peak Temperature (T_p)	260 °C
Time within 5 °C of Actual Peak Temperature: $T_p - 5^\circ\text{C}$	30 s
Ramp- Down Rate from Peak Temperature	6°C /second max.
Time 25°C to peak temperature	8 minutes max.
Reflow times	3 times

DATASHEET**4 PIN SOP RANDOM-PHASE TRIAC PHOTOCOUPLER**

DISCLAIMER

1. Above specification may be changed without notice. KTP will reserve authority on material change for above specification.
2. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. KTP assumes no responsibility for any damage resulting from use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.

KTP Semiconductor