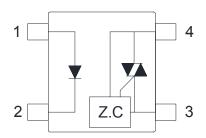


4PIN MINI-FLAT ZERO-CROSS TRIAC DRIVER PHOTOCOUPLER

Description

The KTLP166J series consist of a GaAs infrared emitting diode optically coupled to a monolithic silicon detector performing the function of a zero voltage crossing bilateral TRIAC driver. They are designed for use with a TRIAC in the interface of logic systems to equipment powered from 115/240 VAC lines, such as solid-state relays, industrial controls, motors, solenoids and consumer appliances, etc.

Schematic



- 1. Anode
- 2. Cathode
- 3. Main terminal
- 4. Main terminal

Features

- 1. Pb free and RoHS compliant
- 2. 600V peak blocking voltage
- 3. Subminiature type (The volume is smaller than that of our conventional DIP type by as far as 30%)
- 4. Simplifies logic control of 115/240 VAC power
- 5. Zero voltage crossing
- 6. Isolation voltage between input and output (Viso: 3750Vms)
- 7. MSL class 1
- 8. Agency Approvals:
 - UL Approved (No. E169586): UL1577
 - c-UL Approved (No. E169586)
 - VDE Approved (No. 40009235): DIN EN60747-5-5
 - CQC Approved: GB8898-2011, GB4943.1-2011

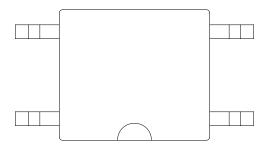
Applications

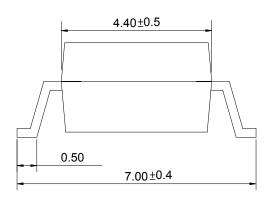
- Solenoid/Valve controls
- · Lighting controls
- · Static power switches
- AC motor drives
- Temperature controls
- E.M contactors
- AC motor contactors
- · Solid state relay
- Programmable controllers

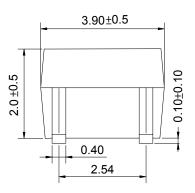
4PIN MINI-FLAT ZERO-CROSS TRIAC DRIVER PHOTOCOUPLER

Outside Dimension

Unit: mm







TOLERANCE: ±0.2mm

Device Marking



Notes:

cosmo 166J

YWW Y: Year code / W: Week code



4PIN MINI-FLAT ZERO-CROSS TRIAC DRIVER PHOTOCOUPLER

Absolute Maximum Ratings

(Ta=25°℃)

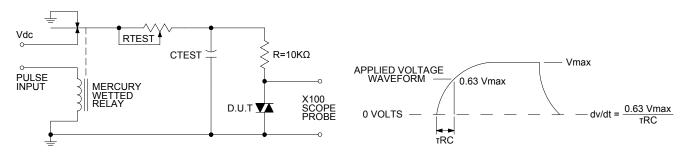
Parameter		Symbol	Rating	Unit
Input	Forward current	I _F	50	mA
	Peak forward current	I _{FM}	1	Α
	Reverse voltage	V _R	6	V
	Power dissipation	P _D	70	mW
Output	Off-state output terminal voltage	V_{DRM}	600	V_{PEAK}
	On-state R.M.S. current	I _{T(RMS)}	70	mA
	Peak repetitive surge current (PW=10ms.DC 10%)	I _{TSM}	1	Α
	Power dissipation	P _D	150	mW
Total power dissipation		P _{tot}	200	mW
	Isolation voltage 1 minute	V _{iso}	3750	Vrms
	Operating temperature	T _{opr}	-40 to +115	$^{\circ}\!\mathbb{C}$
	Storage temperature		-50 to +125	$^{\circ}\!\mathbb{C}$
Soldering temperature 10 seconds		T _{sol}	260	$^{\circ}$

Electro-optical Characteristics

(Ta=25°℃)

Parameter		Symbol	Conditions	Min.	Тур.	Max.	Unit
Input	Forward voltage	V _F	I _F =10mA	-	1.2	1.4	V
	Reverse current	I _R	V _R =4V	-	-	10	μΑ
Output	Peak blocking current	I _{DRM}	V _{DRM} Rated	-	-	1	μΑ
	On-state voltage	V_{TM}	I _{TM} =70mA	-	1.8	3	V
Transfer charac- teristics	Holding current	I _H		-	0.1	-	mA
	Critical rate of rise of off-state voltage	dv/dt	V_{DRM} =(1/ $\sqrt{2}$)*Rated	1000	1	-	V/µs
	Inhibit Voltage (MT1-MT2 Voltage above which device will not trigger)	V _{INH}	I _F = Rated I _{FT}	-	-	20	V
	Leakage in inhibited state	I _{DRM2}	I _F =Rated I _{FT} , Rated V _{DRM} ,	-	1	600	μΑ
	Isolation resistance	R _{iso}	DC500V	5x10 ¹⁰	10 ¹¹	_	Ω
	Minimum trigger current	I _{FT}	Main terminal voltage=3V	-	1	10	mA

• Static dv/dt Test Circuit



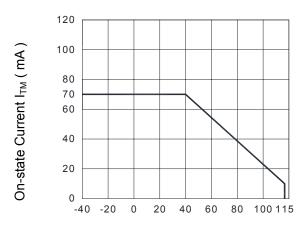


4PIN MINI-FLAT ZERO-CROSS TRIAC DRIVER PHOTOCOUPLER

Fig.1 Forward Current vs. Ambient Temperature

Oward Current In the second of the second of

Fig.3 On-state R.M.S. Current vs. Ambient Temperature



Ambient Temperature Ta (°C)

Fig.5 Peak Forward Current vs. Duty Ratio

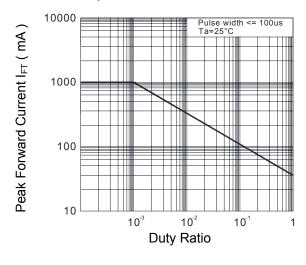


Fig.2 Diode Power Dissipation vs. Ambient Temperature

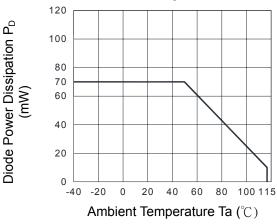
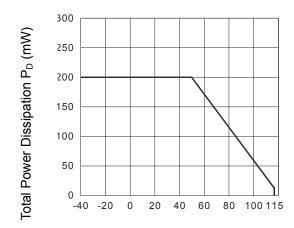
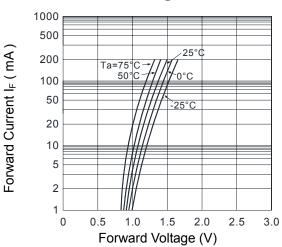


Fig.4 Total Power Dissipation vs. Ambient Temperature



Ambient Temperature Ta (°C)

Fig.6 Forward Current vs. Forward Voltage



4PIN MINI-FLAT ZERO-CROSS TRIAC DRIVER PHOTOCOUPLER

Fig.7 On-state Characteristics

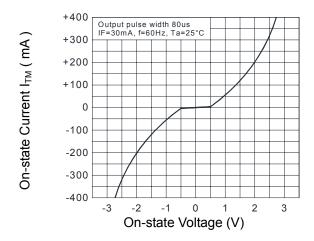


Fig.9 Leakage with LED off vs. Ambient Temperature

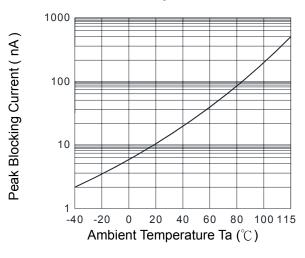


Fig.11 Trigger Current vs. Ambient Temperature

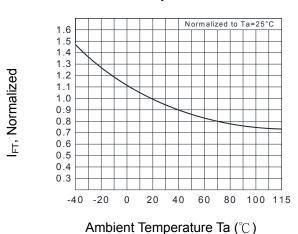


Fig.8 Inhibit Voltage vs. Ambient Temperature

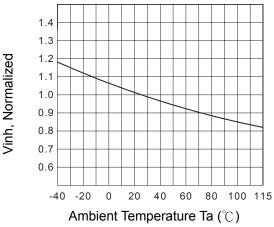
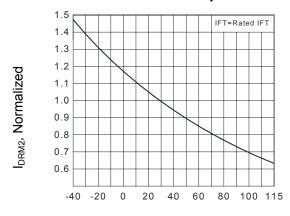


Fig.10 I_{DRM2} ,Leakage in Inhibited State vs. Ambient Temperature



Ambient Temperature Ta (°C)



4PIN MINI-FLAT ZERO-CROSS TRIAC DRIVER PHOTOCOUPLER

Recommended Soldering Conditions

(a) Infrared reflow soldering:

■ Peak reflow soldering : 260°C or below (package surface temperature)

■ Time of peak reflow temperature : 10 sec
■ Time of temperature higher than 230°C : 30-60 sec
■ Time to preheat temperature from 180~190°C : 60-120 sec

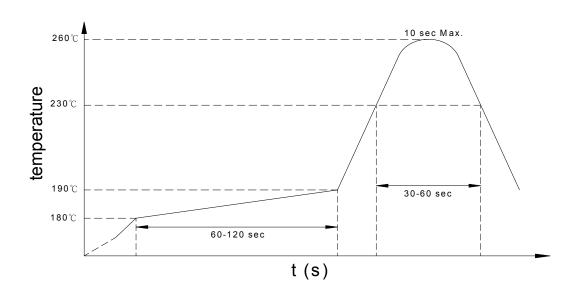
■ Time(s) of reflow: Two

■ Flux : Rosin flux containing small amount of chlorine (The

flux with a maximum chlorine content of 0.2 Wt% is

recommended.)

Recommended Temperature Profile of Infrared Reflow



(b) Wave soldering:

■ Temperature : 260°C or below (molten solder temperature)

■ Time : 10 seconds or less

■ Preheating conditions : 120°C or below (package surface temperature)

■ Time(s) of reflow : One

■ Flux : Rosin flux containing small amount of chlorine (The flux with a maximum

chlorine content of 0.2 Wt% is recommended.)

(c) Cautions:

■ Fluxes : Avoid removing the residual flux with freon-based and chlorine-based

cleaning solvent.

Avoid shorting between portion of frame and leads.

4PIN MINI-FLAT ZERO-CROSS TRIAC DRIVER PHOTOCOUPLER

Numbering System

KTLP166J(X)

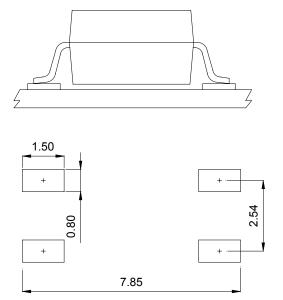
Notes:

KTLP166J = Part No.

X = Tape and reel option (TLD \ TRU)

Option	Description	Packing quantity		
TLD	surface mount type package + TLD tape & reel option	3000 units per reel		
TRU	surface mount type package + TRU tape & reel option	3000 units per reel		

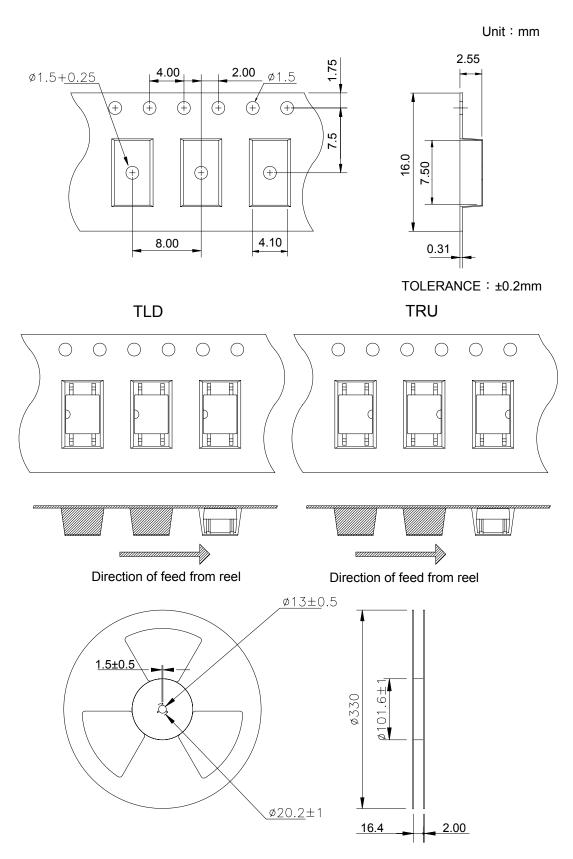
• Recommended Pad Layout for Surface Mount Lead Form



Unit: mm

4PIN MINI-FLAT ZERO-CROSS TRIAC DRIVER PHOTOCOUPLER

4-pin Mini-Flat TLD/TRU Carrier Tape & Reel



cosmo

KTLP166J Series

4PIN MINI-FLAT ZERO-CROSS TRIAC DRIVER PHOTOCOUPLER

Application Notice

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