


PRODUCT SPECIFICATION

DATE:08/25/2006

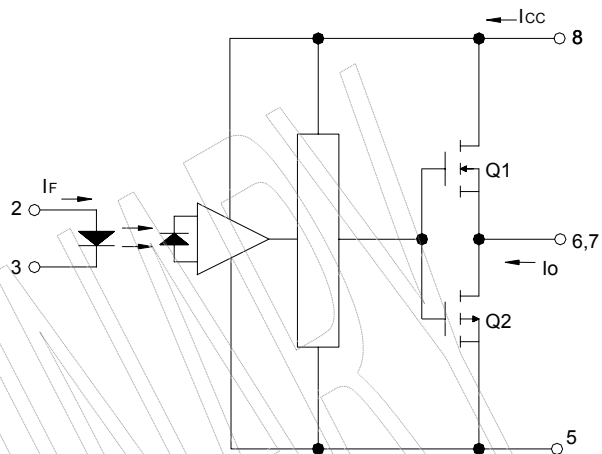
	Photocoupler: <h2>KTLP350</h2>	No.60P32002	Preliminary
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※THE KTLP250 BUILT- IN DIRECT DRIVE CIRCUIT FOR GATE DRIVING CIRCUIT OF IGBT OR POWER MOSFET.

• Feature:

- 1.This unit is 8.lead DIP package.
- 2.Input threshold current: $I_F=5\text{mA}(\text{max.})$
- 3.Supply current (I_{CC}): $2\text{mA}(\text{max.})$
- 4.Supply voltage (V_{CC}): $10 - 30\text{V}$
- 5.Output current (I_O): $\pm 2.5\text{A}(\text{max.})$
- 6.Switching time (t_{pLH}/t_{pHL}): $0.5\mu\text{s}(\text{max.})$
- 7.Isolation voltage: $3750\text{Vrms}(\text{min.})$

■ Functional Diagram



• Applications:

- 1.Transistor Inverter
- 2.Inverter For Air Conditionor
- 3.IGBT Gate Drive
- 4.Power MOS FET Gate Drive
- 5.IH(Induction Heating)

■ Truth Table

LED	OUTPUT	Q1	Q2
ON	HIGH LEVEL	ON	OFF
OFF	LOW LEVEL	OFF	ON

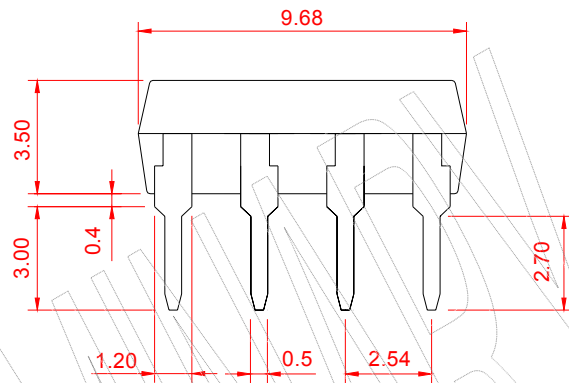
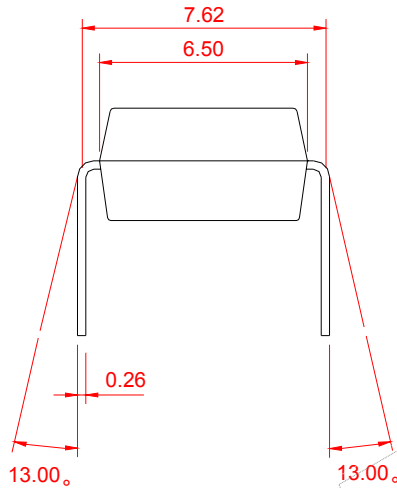
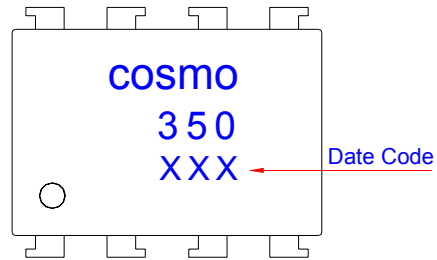
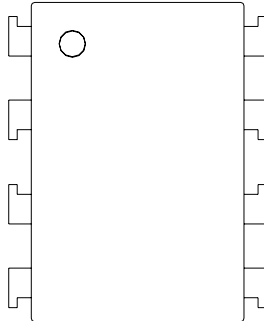
* The use of a $0.1\mu\text{F}$ bypass capacitor must be connected between pins 8 and 5 is recommended.

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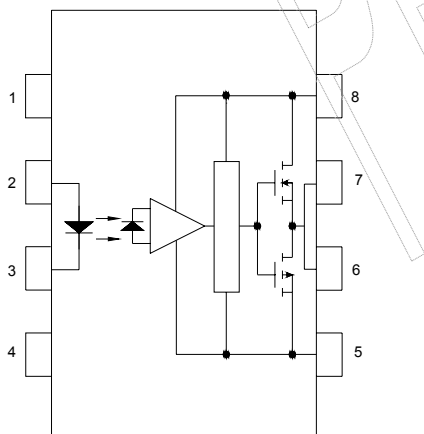
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1. Output Dimensions : Unit (mm)



TOLERANCE : ± 0.2 mm

2. KTLP350 Top View:



Pin 1:	N.C.
Pin 2:	Anode
Pin 3:	Cathode
Pin 4:	N.C.
Pin 5:	GND
Pin 6:	Vo (Voltage Output)
Pin 7:	Vo (Voltage Output)
Pin 8:	Vcc

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Absolute Maximum Ratings (Ta = 25°C)

Parameter		Symbol	Rating	Unit	
Input	Forward Current	I_F	20	mA	
	Forward Current Derating(Ta \geq 70°C)	$\Delta I_F / \Delta T_a$	-0.54	mA / °C	
	Peak Transient Forward Current (*Note 1)	I_{FPT}	1	A	
	Reverse Voltage	V_R	5	V	
	Junction Temperature	T_j	125	°C	
Output	"H"Peak Output Current(Pw \leq 2.5 μ s,f \leq 15kHz) (*Note 2)		I_{OPH}	\leq 2.5	A
	"L"Peak Output Current(Pw \leq 2.5 μ s,f \leq 15kHz) (*Note 2)		I_{OPL}	+2.5	A
	Output Voltage	(Ta < 95°C)	V_O	35	V
	Supply Voltage	(Ta < 95°C)	V_{CC}	35	V
	Output Voltage Derating (Ta \geq 95°C)		$\Delta V_O / \Delta T_a$	-1.0	V / °C
	Supply Voltage Derating(Ta \geq 95°C)		$\Delta V_{CC} / \Delta T_a$	-1.0	V / °C
	Junction Temperature		T_j	125	°C
Operating Frequency (*Note 3)		f	50	KhZ	
Operating Temperature Range		T_{opr}	-40~100	°C	
Storage Temperature Range		T_{stg}	-55~125	°C	
Lead Soldering Temperature(10s) (*Note 4)		T_{sol}	260	°C	
Isolation Voltage (AC,1min.,R.H \leq 60%) (*Note 5)		BVs	3750	Vrms	

*Note1:Pulse width Pw \leq 1 μ s,300pps.

*Note2:Exponential waveform pulse width Pw \leq 0.3 μ s,f \leq 15kHz.

*Note3:Exponential waveform, $I_{OPH} \geq -2.0A (\leq 0.3\mu s)$, $I_{OPL} \leq +2.0A (\leq 0.3\mu s)$.

*Note4:It IS 2 mm or more from a lead root.

*Note5:Device considered a two terminal device: Pin1,2,3 and 4 shorted together,
and pins 5,6,7 and 8 shorted together.

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Electrical Characteristics (Ta = -40~100°C, unless otherwise specified)

Parameter	Symbol	Test Circuit	Test Condition	Min.	Typ.	Max.	Unit	
Input forward voltage	V_F	—	IF=10mA, Ta=25°C	—	1.6	1.8	V	
Temperature coefficient of forward voltage	$\Delta V_F / \Delta Ta$	—	IF=10mA	—	-2.0	—	mV/°C	
Input reverse current	I_R	—	VR=5V, Ta=25°C	—	—	10	μA	
Input capacitance	C_T	—	V=0, f=1MHz, Ta=25°C	—	45	250	pF	
Output current (*A)	“H” level	I_{OPH}	3	VCC=30V IF=5mA Vb=-3.5V	—	-1.6	-1.0	A
				VCC=15V IF=5mA Vb=-7.0V	—	—	-2.0	
	“L” level	I_{OPL}	2	VCC=30V IF=0mA Va=2.5V	1.0	1.6	—	
				VCC=15V IF=0mA Vb=7.0V	2.0	—	—	
Output voltage	“H” level	V_{OH}	4	VCC1=15V, VEE1=-15V RL=200Ω, IF=5mA	11	13.7	—	V
	“L” level	V_{OL}	5	VCC1=15V, VEE1=-15V RL=200Ω, VF=0.8V	—	-14.9	-12.5	
Supply current	“H” level	I_{CCH}	—	VCC=30V, IF=10mA, Ta=25°C	—	1.3	2.0	mA
	“L” level	I_{CCL}	—	VCC=30V, IF=0mA, Ta=25°C	—	1.3	2.0	
Threshold input current	“Output L→H”	I_{FLH}	—	VCC=15V, Vo>1V, Io=0mA	—	1.8	5	mA
Threshold input voltage	“Output H→L”	V_{FHL}	—	VCC=15V, Vo>1V, Io=0mA	0.8	—	—	V
Supply voltage	V_{CC}	—	—	10	—	30	V	
Capacitance (input-output)	C_S	—	Vs=0, f=1MHz, Ta=25°C	—	1.0	2.0	pF	
Resistance (input-output)	R_S	—	Vs=500V, Ta=25°C, R.H. ≤60%	1×10^{12}	10^{14}	—	Ω	

* All typical values are at Ta=25°C (*A): Duration of Io time ≤ 50μs(1 Pulse)

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■ Switching Characteristics (Ta = -20~70°C, unless otherwise specified)

Parameter	Symbol	Test Circuit	Test Condition	Min.	Typ.	Max.	Unit
Propagation delay time	"L→H"	t_{pLH}	IF=5mA (Note8) VCC1=+15V, VEE1=-15V RL=20Ω	50	260	500	μs
	"H→L"	t_{pHL}		50	260	500	
Output rise time	t_r	6		—	15	—	
Output fall time	t_f			—	8	—	
Common mode transient immunity at high level output	C_{MH}	7	V _{CM} =600V, I _F =8mA V _{CC} =30V, Ta=25°C	-5	—	—	KV / μs
Common mode transient immunity at low level output	C_{ML}	7	V _{CM} =600V, I _F =0 V _{CC} =30V, Ta=25°C	5	—	—	KV / μs

* All typical values are at Ta=25°C.

*Note 8: Input signal rise time (fall time) < 0.5μs.

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■ Test Circuit:

Fig.1 : Top View

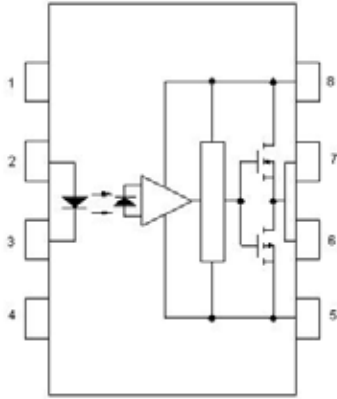


Fig.2 : I_{OPL} Measure.

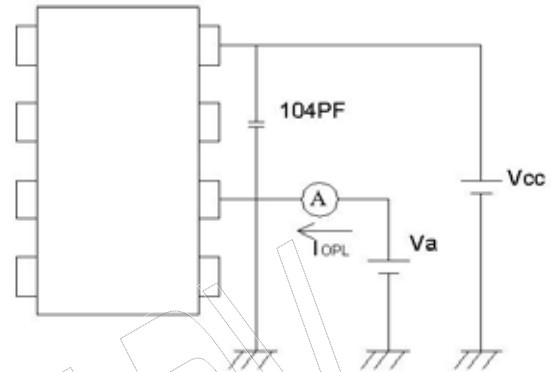


Fig.3 : I_{OPH} Measure.

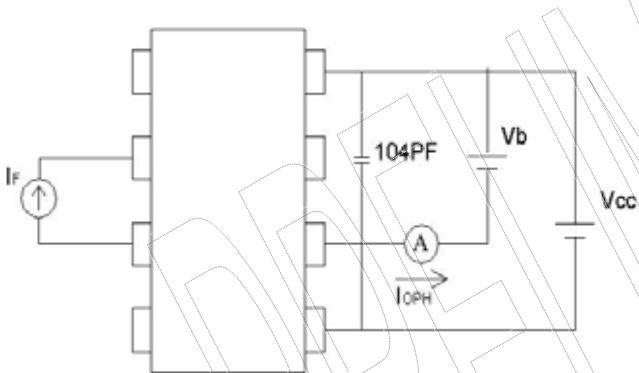


Fig.4 : V_{OH} Measure.

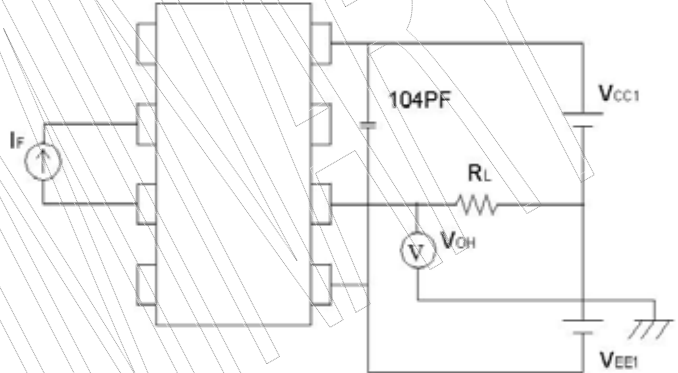
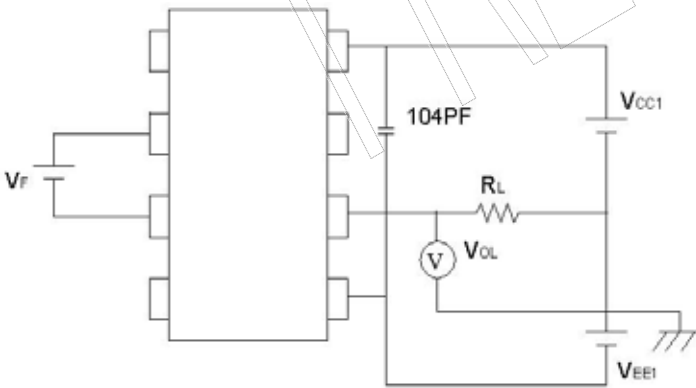


Fig.5 : V_{OL} Measure.



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Fig.6: t_{pLH} , t_{pHL} , t_r , t_f Measure.

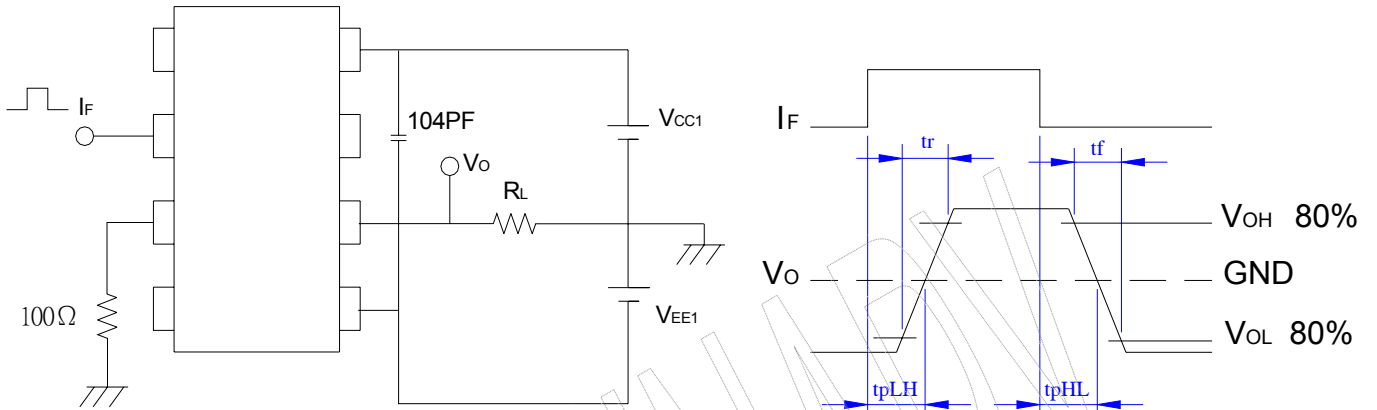
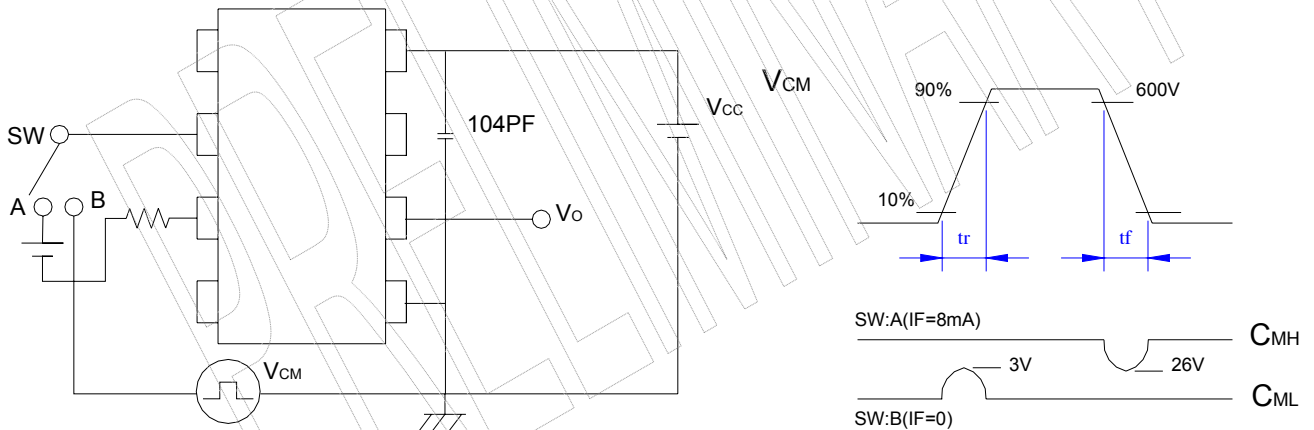


Fig.7: C_{MH} , C_{ML} .



$$C_{ML} = \frac{480(V)}{t_r (\mu s)} ; C_{MH} = \frac{480(V)}{t_f (\mu s)}$$

* C_{ML} (C_{MH}) is the maximum rate of rise (fall) of the common mode voltage that can be sustained with the output voltage in the low (high) state.

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