PRODUCT SPECIFICATION

DATE:08/25/2006

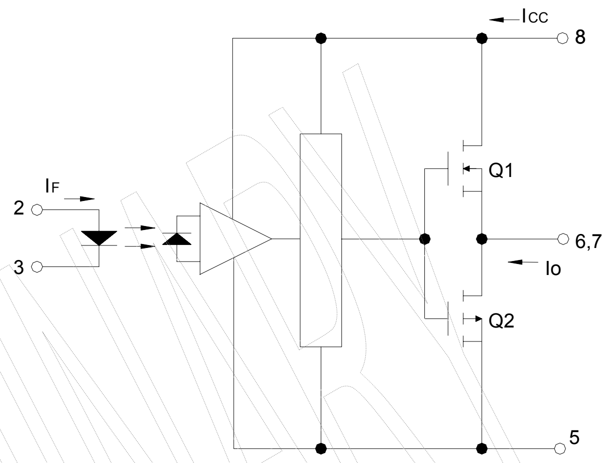
cosmo ELECTRONICS CORPORATION	Photocoupler: **KTLP350**	No.60P32002	Preliminary
		SHEET 1 OF 8	

※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: IF=5mA(max.)
3. Supply current (I_{CC}): 2mA(max.)
4. Supply voltage (V_{CC}): 10 – 30V
5. Output current (I_O): ±2.5A (max.)
6. Switching time (t_{pLH}/t_{pHL}): 0.5μs(max.)
7. Isolation voltage: 3750Vrms(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 0.1μF bypass capacitor must be connected between pins 8 and 5 is recommended.

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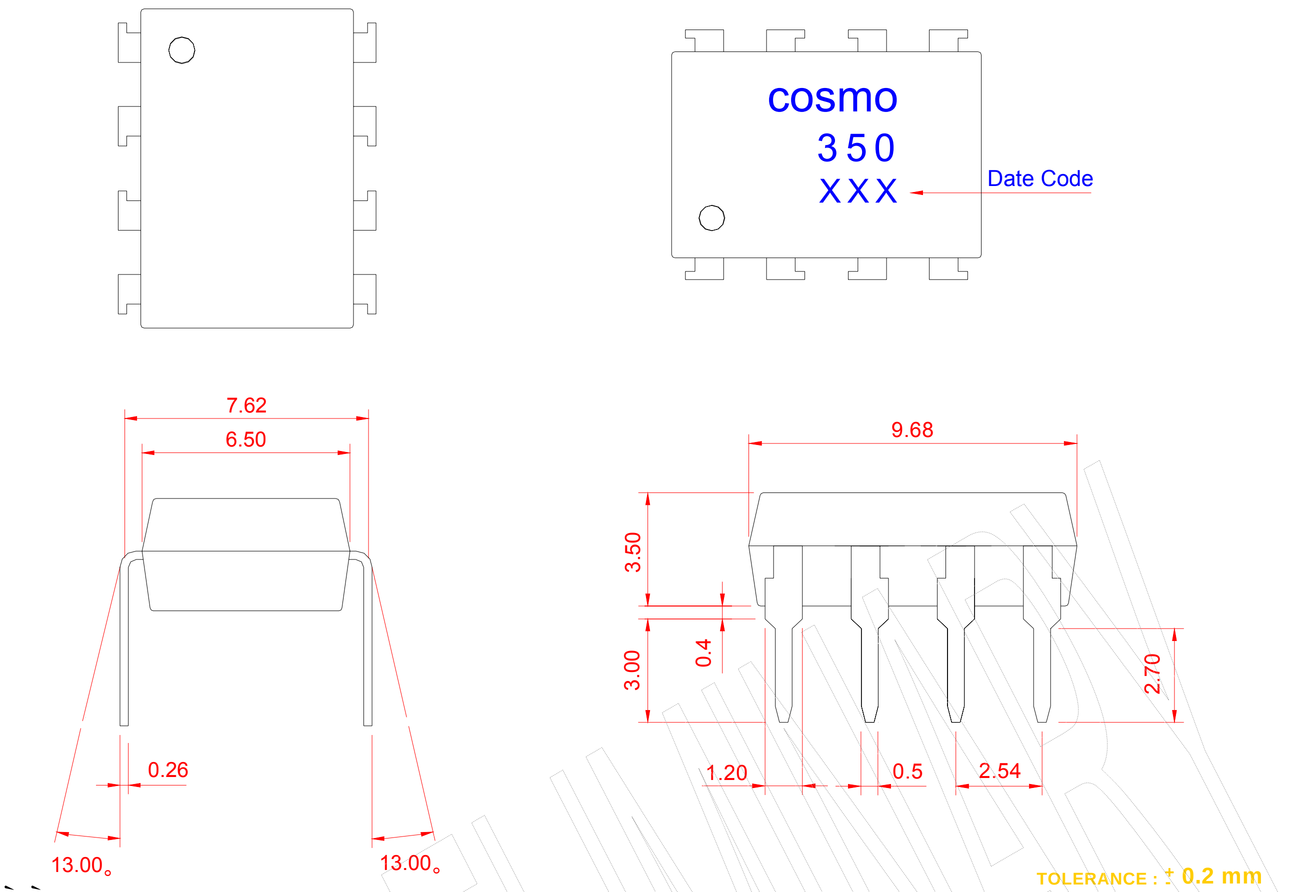
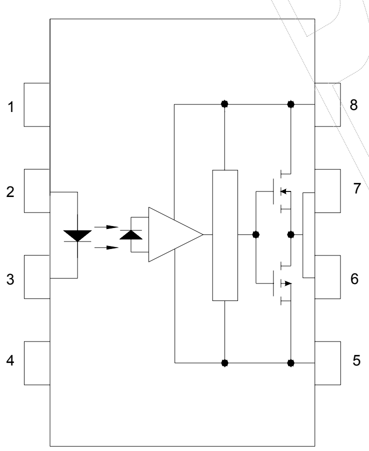
1.Output Dimensions : Unit (mm)



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≧70℃)		$\Delta I_F / \Delta Ta$	-0.54	mA /℃
	Peak Transient Forward Current	(*Note 1)	I_{FPT}	1	A
	Reverse Voltage		V_R	5	V
	Junction Temperature		Tj	125	℃
Output	"H"Peak Output Current(Pw≦2.5μs,f≦15kHz)	(*Note 2)	I_{OPH}	-2.5	A
	"L"Peak Output Current(Pw≦2.5μs,f≦15kHz)	(*Note 2)	I_{OPL}	+2.5	A
	Output Voltage	(Ta< 95℃)	V_O	35	V
	Supply Voltage	(Ta< 95℃)	Vcc	35	V
	Output Voltage Derating (Ta≧95℃)		$\Delta V_O / \Delta Ta$	-1.0	V / ℃
	Supply Voltage Derating(Ta≧95℃)		$\Delta V_{CC} / \Delta Ta$	-1.0	V / ℃
	Junction Temperature		Tj	125	℃
Operating Frequency		(*Note 3)	f	50	KhZ
Operating Temperature Range			Topr	-40~100	℃
Storage Temperature Range			Tstg	-55~125	℃
Lead Soldering Temperature(10s)		(*Note 4)	Tsol	260	℃
Isolation Voltage (AC,1min.,R.H≦60%)		(*Note 5)	BVs	3750	Vrms

*Note1:Pulse width Pw ≦ 1μs,300pps.

*Note2:Exporenential waveform pulse width Pw≦0.3u S,f≦15kHz.

*Note3:Exporenential waveform,IOPH ≧ -2.0A (≦0.3μs),IOPL ≦ +2.0A (≦0.3μs).

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

*Note5:Device considerd 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℃,unless otherwise specified)

Parameter		Symbol	Test Circuit	Test Condition	Min.	Typ.	Max.	Unit
Input forward voltage		V_F	—	IF=10mA,Ta=25℃	—	1.6	1.8	V
Temperature coefficient of forward voltage		$\triangle V_F/\triangle Ta$	—	IF=10mA	—	-2.0	—	mV/℃
Input reverse current		I_R	—	VR=5V,Ta=25℃	—	—	10	μA
Input capacitance		C_T	—	V=0,f=1MHz,Ta=25℃	—	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℃	—	1.3	2.0	mA
	"L" level	I_{CCL}	—	VCC=30V,IF=0mA, Ta=25℃	—	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℃	—	1.0	2.0	pF
Resistance (input-output)		R_S	—	Vs=500V,Ta=25℃, R.H. ≦60%	$1*10^{12}$	10^{14}	—	Ω

∗All typical values are at Ta=25℃ (*A):Duration of I_O time ≦ 50μs(1 Pulse)

PRODUCT SPECIFICATION

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

Parameter		Symbol	Test Circuit	Test Condition	Min.	Typ.	Max.	Unit
Propagation delay time	"L→H"	t_{pLH}	6	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			—	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℃	-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℃	5	—	—	KV / μs

∗All typical values are at Ta=25℃.

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

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■ Test Circuit:

Fig.1 : Top View

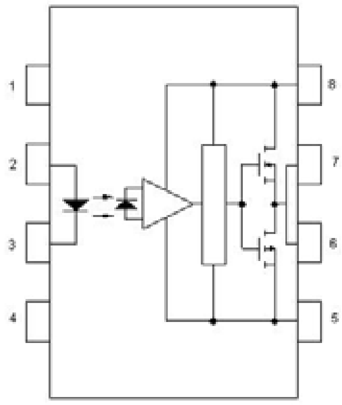


Fig.2 : I_{OPL} Measure.

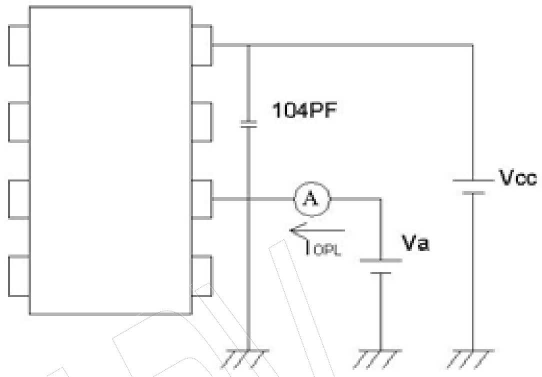


Fig.3 :I_{OPH} Measure.

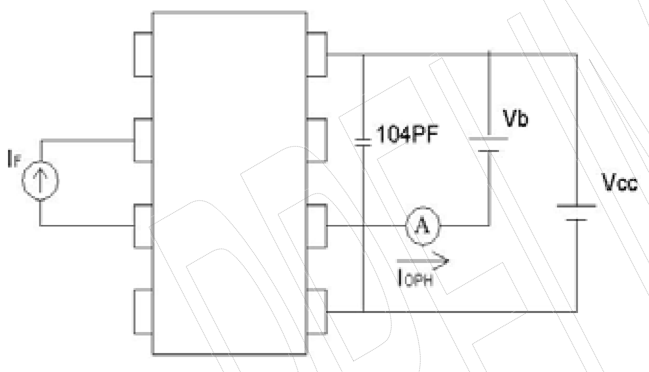


Fig.4 :V_{OH} Measure.

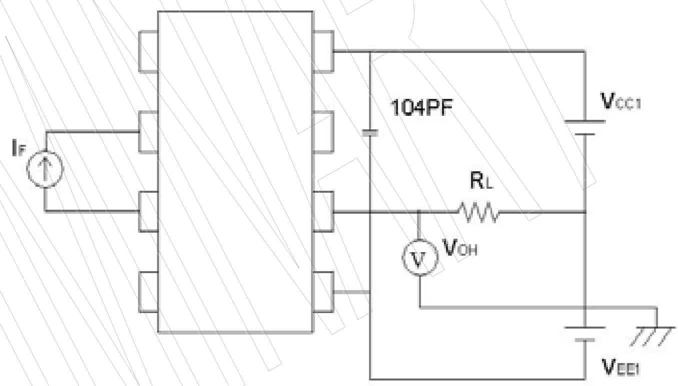


Fig.5 :V_{OL} Measure.

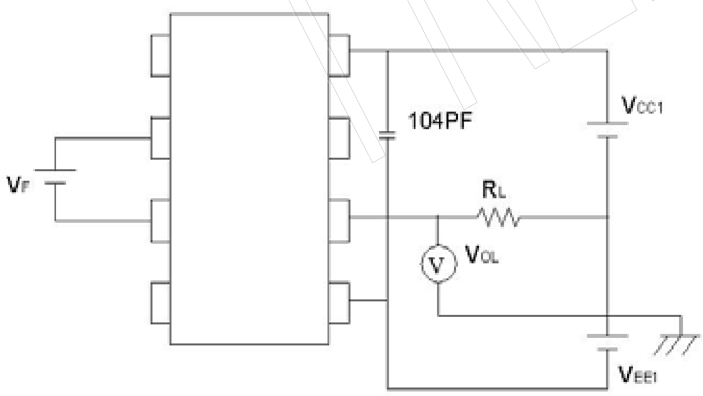


Fig.6: tp_{LH}, tp_{HL}, t_r, t_f Measure.

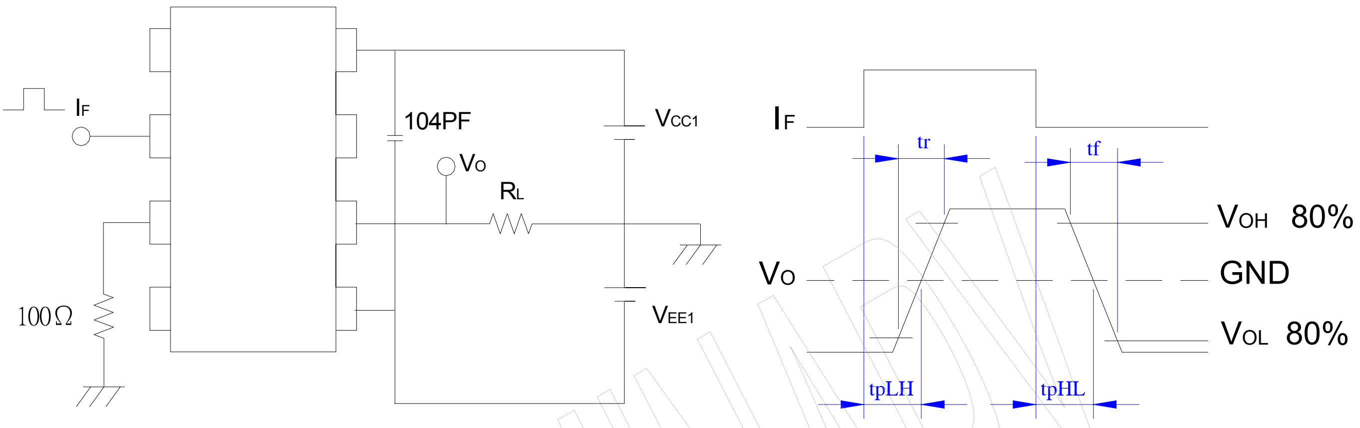
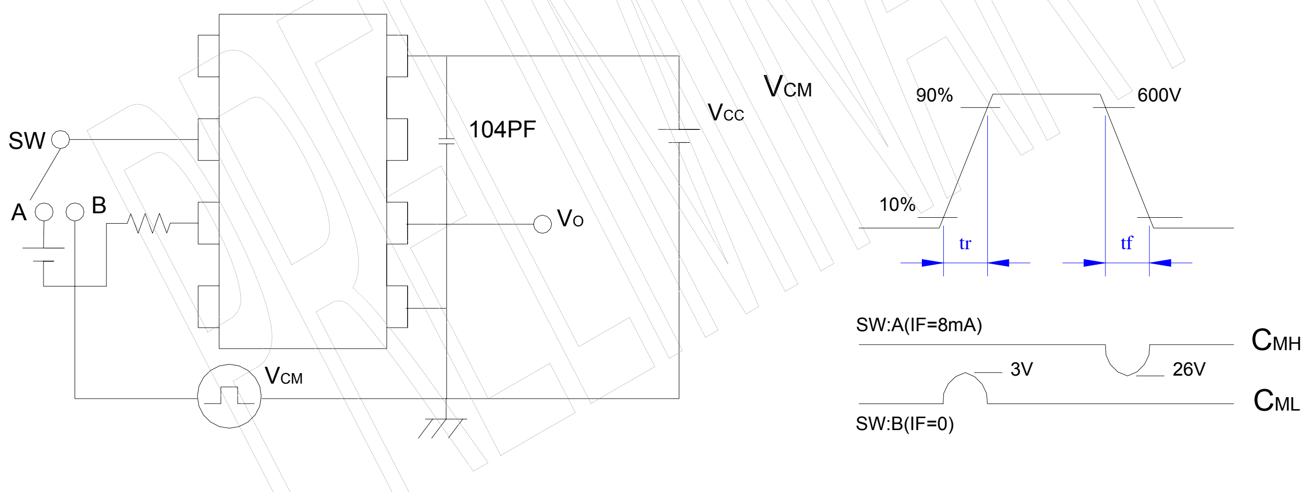


Fig.7: C_{MH}, C_{ML}.



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

*CML(CMH) 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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