TENTATIVE TOSHIBA PHOTOCOUPLER GaAlAs IRED & PHOTO-IC

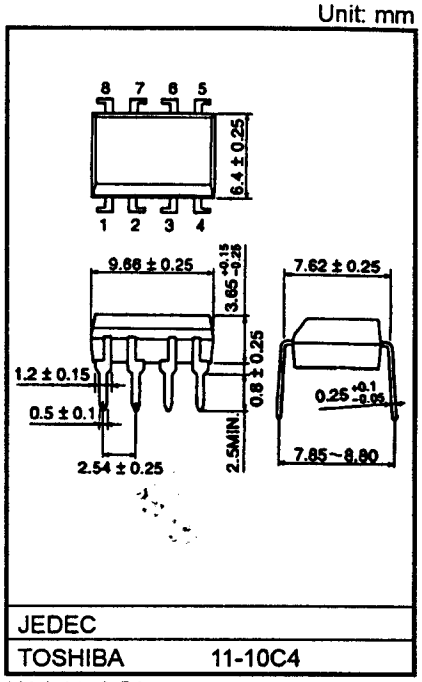
TLP351

INVERTER FOR AIR CONDITIONOR
IGBT/Power MOS FET GATE DRIVE
INDUSTRIAL INVERTER

The TOSHIBA TLP351 consists of a GaAlAs light emitting diode and a integrated photodetector.
This unit is 8-lead DIP package.
TLP351 is suitable for gate driving circuit of IGBT or power MOS FET.Especially TLP351 is capable of "direct" gate drive of lower Power IGBTs.

- Guaranteed PerformanceOverTemperature : -40~100°C
- Power Supply Voltage : 10~30V
- Input Current : IF=5mA(Max.)
- Switching Time (tpLH/tpHL) : 700ns(Max.)
- Common mode transient immunity : 10kV/us
- Isolation Voltage : 3750Vrms

Unit: mm



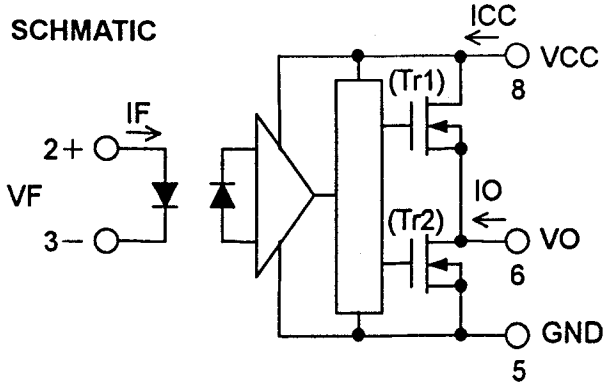
JEDEC	
TOSHIBA	11-10C4

Weight: 0.54 g

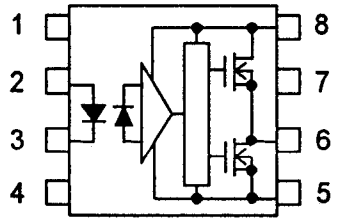
TRUTH TABLE

Input	LED	Tr1	Tr2	Output
H	ON	ON	OFF	H
L	OFF	OFF	ON	L

SCHMATIC



PIN CONFIGURATION (TOP VIEW)



1:NC
2:ANODE
3:CATHODE
4:N.C.
5:GND
6:V_O(OUTPUT)
7:N.C.
8:V_{CC}

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Input Current, ON	$I_{F(ON)}$	7.5	—	10	mA
Input Voltage, OFF	$V_{F(OFF)}$	0	—	0.8	V
Supply Voltage	VCC	10	—	30	V
Peak Output Current	IOPH/IOPL	—	—	±0.15	A
Operating Temperature	Topr	-40	—	100	°C

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I_F	20	mA
	Peak Transient Forward Current (Note 1)	IFPT	1	A
	Reverse Voltage	V_R	5	V
DETECTOR	"H"Peak Output Current	IOPH	-0.6	A
	"L"Peak Output Current	IOPL	0.6	A
	Output Voltage	VO	35	V
	Supply Voltage	V_{cc}	35	V
Storage Temperature Range		T_{stg}	−55~125	°C
Operating Temperature Range		T_{opr}	−40~100	°C
Lead Soldering Temperature (10 s)		T_{sol}	260	°C
Isolation Voltage (AC, 1 minute, R.H.≦ 60%) (Note2)		BV_S	3750	Vrms

(Note 1) : Device considered a two-terminal device : LED side pins shorted together, and DETECTOR side pins shorted together.

(Note 2) : Device considerd a two terminal device : pins 1,2,3 and 4 shorted together, and pins 5,6,7 and 8 shorted together.

ELECTRICAL CHARACTERISTICS (Ta = -40~100°C,Unless otherwise specified)

CHARACTERISTIC		SYMBOL	TEST CONDITION			MIN.	TYP.	MAX.	UNIT
Forward Voltage		V_F	I_F = 5 mA , Ta=25°C				1.55	1.70	V
Temperature Coefficient of Forward Voltage		ΔVF/ΔTa	I_F = 5 mA ,			—	-2.0	—	mV/°C
Input Reverse Current		I_R	V_R=5V, Ta=25°C			—	—	10	μA
Input Capacitance		C_T	V = 0 , f = 1MHz , Ta=25°C			—	45	—	pF
Output Voltrage	"L" Level	VOL	VCC=15V	IO=100mA , VF=0.8V		—	0.4	1.0	V
	"H" Level	VOH		IO=-100mA , IF=5mA		11.0	13.3	—	
Output Current	"L" Level	IOPL1	VCC=15V	IF=0mA	V6-5=2V	0.2	0.35	—	A
		IOPL2			V6-5=10V	0.4	0.63	—	
	"H" Level	IOPH1		IF=5mA	V8-6=4V	-0.2	-0.4	—	
		IOPH2			V8-6=10V	-0.4	-0.67	—	
Supply Current	"L" Level	ICCL	VCC=10~30V VO Open		IF=0mA	—	1.3	2.0	mA
	"H" Level	ICCH			IF=10mA	—	1.4	2.0	
Threshold Input Current	"Output L→H"	IFLH	VCC=15V , VO>1V			—	2.5	5	mA
Threshold Input Voltage	"Output H→L"	VFHL	VCC=15V , VO<1V			0.8	—	—	V
Capacitance (Input-Output)		CS	VS=0 , f=1MHz , Ta=25°C			—	1.0	—	pF
Resistance (Input-Output)		RS	VS=500V , Ta=25°C , R.H.≦60%			10^{12}	10^{14}	—	Ω

*All typical values are at Ta=25°C

SWITCHING CHARACTERISTICS (Ta = -40~100°C,Unless otherwise specified)

CHARACTERISTIC		SYMBOL	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Propagation Delay Time	L→H	tpLH	VCC=30V	IF=0→5mA	100	—	700	ns
	H→L	tpHL	Rg=47Ω,Cg=3nF	IF=5→0mA	100	—	700	
Propagation Delay Difference Between Any Two Parts or Channels		PDD (tpHL-tpLH)	Rg=47Ω,Cg=3nF		-500	—	500	ns
Output Rise Time(10-90%)		tr	IF=5→0/0→5mA,VCC=30V Rg=47Ω,Cg=3nF		—	50	—	ns
Output Fall Time(90-10%)		tf			—	50	—	
Common Mode Transient Immunity at Hight Level Outout		CM_H	VCM=1000Vp-p VCC=30V Ta=25°C	IF=5mA VO(Max)=1.0V	-10000	—	—	V/μs
Common Mode Transient Immunity at Low Level Outout		CM_L		IF=0mA VO(Min)=26V	10000	—	—	

*All typical values are at Ta=25°C

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