

(TLP550)

- DEGITAL LOGIC ISOLATION
- LINE RECEIVER FEEDBACK CONTROL
- POWER SUPPLY CONTROL
- SWITCHING POWER SUPPLY
- TRANSISTOR INVERTOR

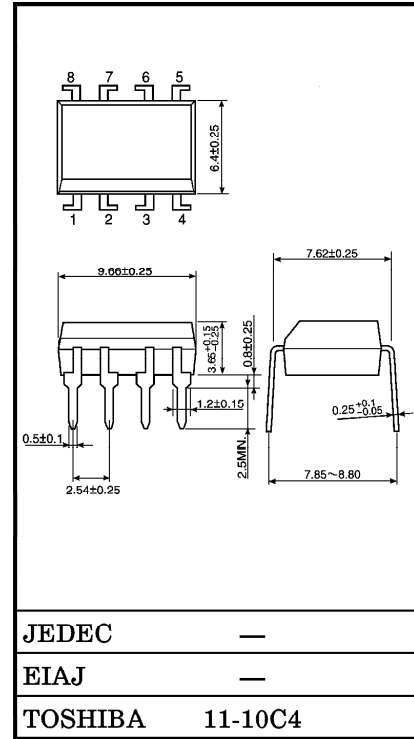
TLP550 constructs a high emitting diode and a one chip photo diode-transistor.

TLP550 has no base connection, and is suitable for application at noisy environmental condition.

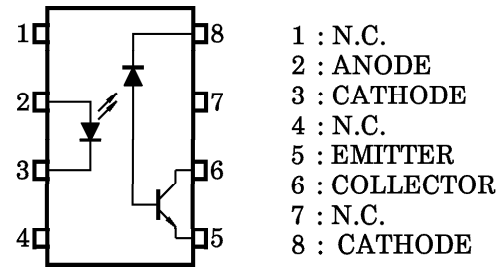
This unit is 8-lead DIP package.

- Isolation Voltage : 2500Vrms (MIN.)
- Switching Speed : $t_{pHL}, t_{pLH} = 0.5\mu s$ (TYP.) ($R_L = 1.9k\Omega$)
- TTL Compatible
- UL Recognized : File No. E67349

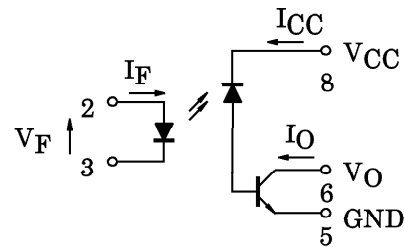
Unit in mm



PIN CONFIGURATION (TOP VIEW)



SCHEMATIC



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MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current (Note 1)	I _F	25	mA
	Pulse Forward Current (Note 2)	I _{FP}	50	mA
	Peak Transient Forward Current (Note 3)	I _{FPT}	1	A
	Reverse Voltage	V _R	5	V
	Diode Power Dissipation (Note 4)	P _D	45	mW
DETECTOR	Output Current	I _O	8	mA
	Peak Output Current	I _{OP}	16	mA
	Supply Voltage	V _{CC}	-0.5~15	V
	Output Voltage	V _O	-0.5~15	V
	Output Power Dissipation (Note 5)	P _O	100	mW
Operating Temperature Range		T _{opr}	-55~100	°C
Storage Temperature Range		T _{stg}	-55~125	°C
Lead Solder Temperature (10s)		T _{sol}	260	°C
Isolation Voltage (AC, 1min., R.H=40~60%) (Note 6)		BV _S	2500	V _{rms}

- Note 1 : Derate 0.8mA above 70°C.
 Note 2 : 50% duty cycle, 1ms pulse width.
 Derate 1.6mA/°C above 70°C.
 Note 3 : Pulse width 1μs, 300pps.
 Note 4 : Derate 0.9mW/°C above 70°C.
 Note 5 : Derate 2mW/°C above 70°C.

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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
LED	Forward Voltage	V _F	I _F = 16mA	1.45	1.65	1.85	V	
	Forward Voltage Temperature Coefficient	ΔV _F /ΔTa	I _F = 16mA	—	-2	—	mV/°C	
	Reverse Current	I _R	V _R = 5V	—	—	10	μA	
	Capacitance Between Terminal	C _T	V _F = 0, f = 1MHz	—	60	—	pF	
DETECTOR	High Level Output Current	I _{OH} (1)	I _F = 0mA, V _{CC} = V _O = 5.5V	—	3	500	nA	
		I _{OH} (2)	I _F = 0mA, V _{CC} = V _O = 15V	—	—	5	μA	
		I _{OH}	I _F = 0mA, V _{CC} = V _O = 15V Ta = 70°C	—	—	50	μA	
	High Level Supply Voltage	I _{CCH}	I _F = 0mA, V _{CC} = 15V	—	0.01	1	μA	
COUPLED	Current Transfer Ratio	I _O /I _F	I _F = 16 mA V _{CC} = 4.5V V _O = 0.4V	Ta = 25°C	10	30	—	%
				Rank : 0	19	30	—	
				Ta = 0~70°C	5	—	—	
	Rank : 0	15	—	—				
	Low Level Output Voltage	V _{OL}	I _F = 16mA, V _{CC} = 4.5V, I _O = 1.1mA (Rank 0 : I _O = 2.4mA)	—	—	0.4	V	
Isolation Resistance	R _S	R.H. = 40~60%, V = 1kV DC (Note 6)	—	10 ¹²	—	Ω		
Stray Capacitance Between Input to Output	C _S	V = 0, f = 1MHz	—	0.8	—	pF		

SWITCHING CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Propagation Delay Time (H→L)	t _{pHL}	I _F = 0→16mA, V _{CC} = 5V, R _L = 4.1kΩ	—	0.3	0.8	μs
		(Note 7) Rank 0 : R _L = 1.9kΩ	—	0.5	0.8	
Propagation Delay Time (L→H)	t _{pLH}	I _F = 16→0mA, V _{CC} = 5V, R _L = 4.1kΩ	—	1.0	2.0	μs
		(Note 7) Rank 0 : R _L = 1.9kΩ	—	0.6	1.2	
Common Mode Transient Immunity at High Output Level	C _{MH}	I _F = 0mA, V _{CM} = 200Vp-p R _L = 4.1kΩ (Rank 0 : R _L = 1.9kΩ) (Note 8)	—	1500	—	V / μs
Common Mode Transient Immunity at Low Output Level	C _{ML}	I _F = 16mA, V _{CM} = 200Vp-p R _L = 4.1kΩ (Rank 0 : R _L = 1.9kΩ) (Note 8)	—	-1500	—	V / μs

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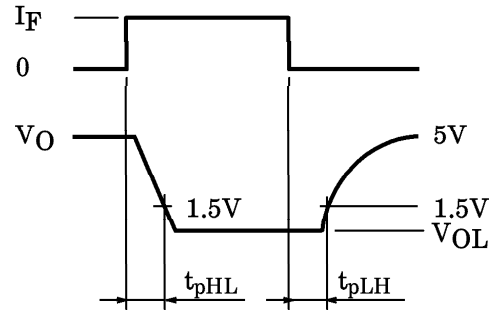
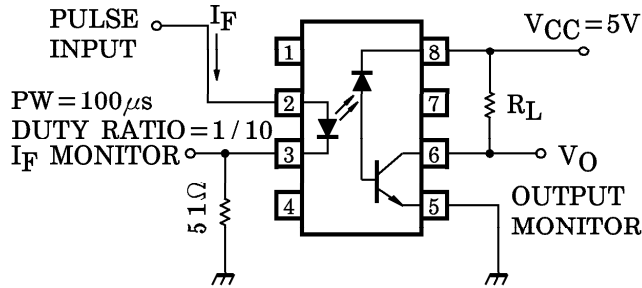
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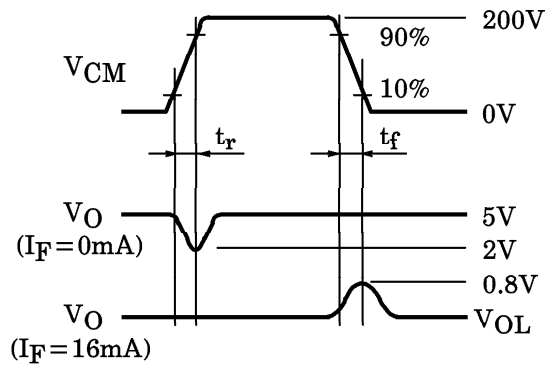
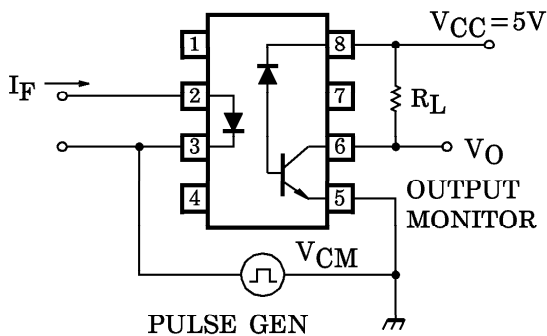
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Note 6 : Device considered a two-terminal device : Pins 1, 2, 3 and 4 shorted together and Pin 5, 6, 7 and 8 shorted together.

Note 7. : Switching time test circuit.



Note 8 : Common mode transient immunity test circuit.

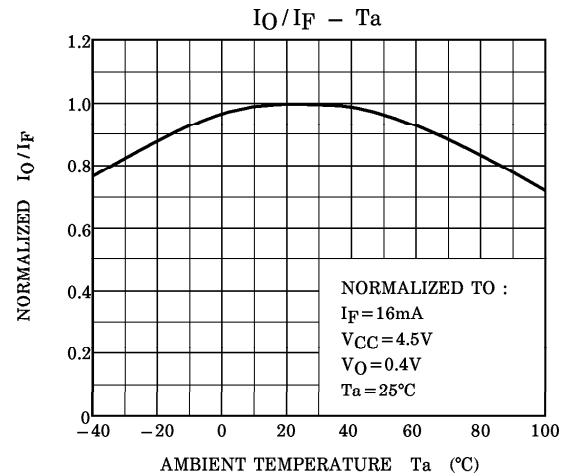
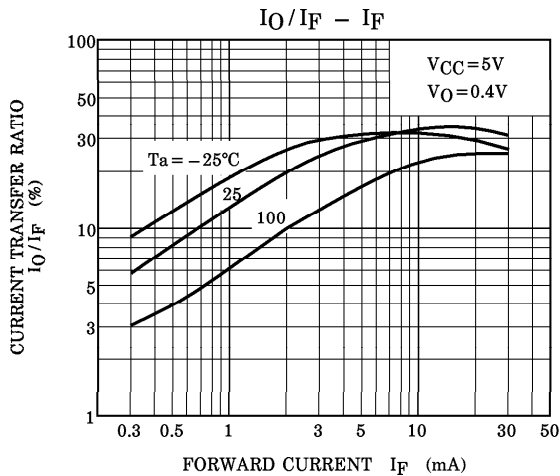
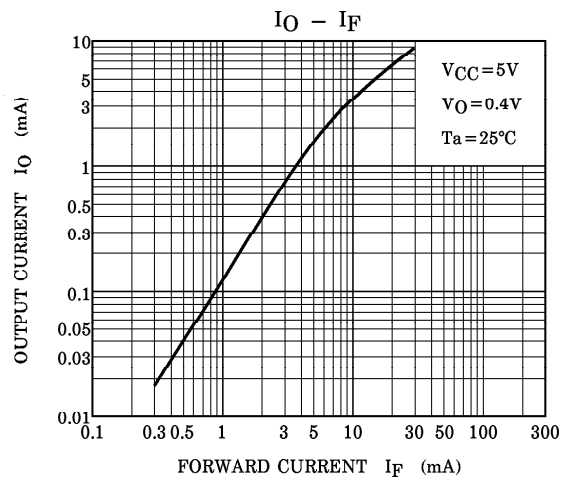
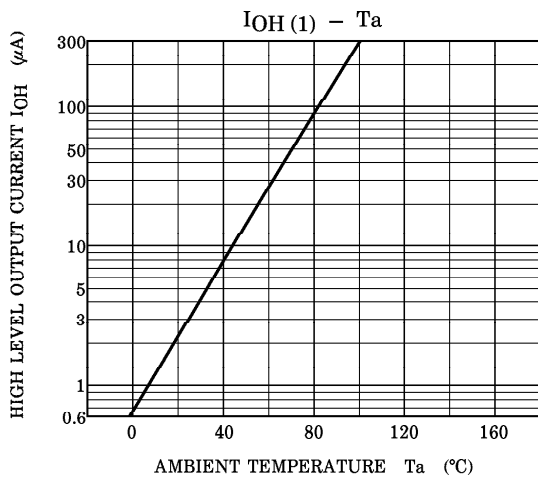
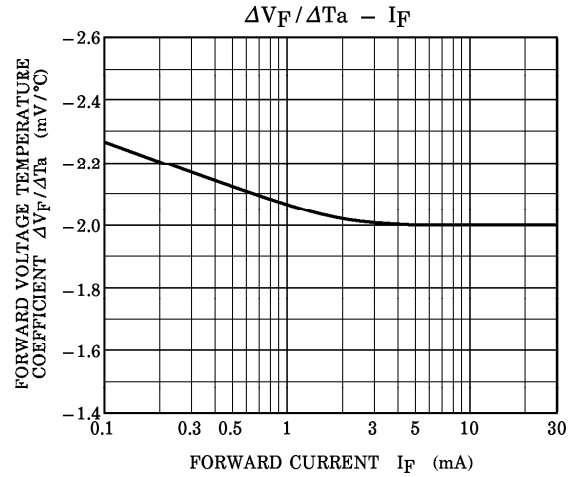
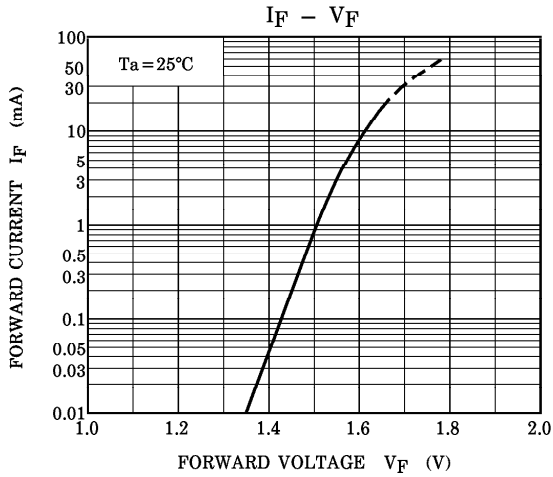


$Z_0 = 50\Omega$

$$CM_H = \frac{160(V)}{t_r(\mu s)}, CM_L = \frac{160(V)}{t_f(\mu s)}$$

Note 9 : Maximum electrostatic discharge voltage for any pins : 100V (C=200pF, R=0)

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