TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-TRANSISTOR

TLP627A,TLP627A-2,TLP627A-4

TELECOMMUNICATION PROGRAMMABLE CONTROLLERS DC-OUTPUT MODULE

The TOSHIBA TLP627A, -2, and -4 consist of a gallium arsenide infrared emitting diode optically coupled to a darlington connected phototransistor which has a 350V high voltage of collector-emitter

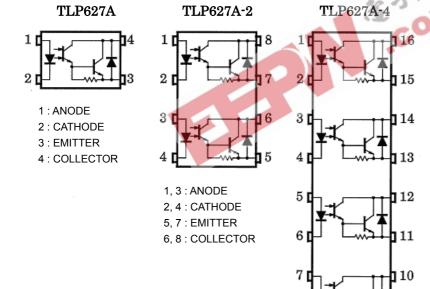
The TLP627A-2 offer two isolated channels in a eight lead plastic DIP package, while the TLP627A-4 provide four isolated channels per package.

単位: mm 7.62 ± 0.25 **TOSHIBA** 11-5B2

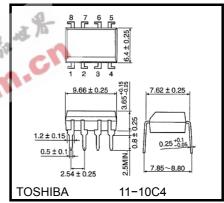
Weight: 0.26 g

Collector-Emitter Voltage : 350V(MIN) Current Transfer Ratio : 1500% (MIN) : 5000Vrms(MIN) **Isolation Voltage**

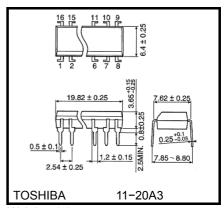
Pin Configuration (top view)



1, 3, 5, 7 : ANODE 2, 4, 6, 8 : CATHODE 9, 11, 13, 15 : EMITTER 10, 12, 14, 16 : COLLECTOR



Weight: 0.54 g



Weight: 1.1 g



Absolute Maximum Ratings (Ta = 25°C)

CHARACTERISTICS			RAT		
		SYMBOL	TLP627A	TLP627A-2 TLP627A-4	UNIT
D	Forward Current	lF	60	50	mA
	Forward Current Derating	ΔI _F /°C	-0.7 (Ta≧39°C)	-0.5 (Ta≧25°C)	mA /°C
LED	Pulse Forward Current	I _{FP}	1 (100 μ s Pu	Α	
	Reverse Voltage	V_{R}		V	
	Collector-Emitter Voltage	V _{CEO}	35	V	
~	Emitter-Collector Voltage	V _{ECO}	0	V	
)TO	Collector Current	I _C	15	mA	
DETECTOR	Collector Power Dissipation (1 circuit)	PC	150 (300) (*)	100	mW
	Collector Power Dissipation Derating (Ta≥25°C, 1 Circuit)	ΔP _C /°C	-1.5 (-3.5) (*)	-1.0	mA /°C
Sto	rage Temperature Range	T _{stg}	-55	°C	
Оре	erating Temperature Range	T _{opr}	-55	°C	
Lead Soldering Temperature		T _{sol}	260 (10 sec)		°C
Total Package Power Dissipation (1 circuit)		P _T	250 (320) (*)	150	mW
Total Package Power Dissipation Derating (Ta≧25°C, 1 circuit)		ΔP _T /°C	-2.5 (-3.2) (*)	-1.5	mW /°C
Isolation Voltage		BVS	50 (AC、1 min、F	Vrms	

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

- * : IF = 20 mA max
- ** : Device considered a two terminal device : LED side pins shorted together and DETECTOR side pins shorted together.

Recommended Operating Conditions

CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V _{CC}	_	_	200	V
Forward Current	lF	_	16	25	mA
Collector Current	IC	_	_	120	mA
Operating Temperature	T _{opr}	-25	_	85	°C

Note: Recommended operating conditions are given as a design guideline to obtain expected performance of the device. Additionally, each item is an independent guideline respectively. In developing designs using this product, please confirm specified characteristics shown in this document.

Individual Electrical Characteristics (Ta = 25°C)

	CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
	Forward Voltage	V _F	I _F = 10 mA	1.0	1.15	1.3	V
ED	Reverse Current	I _R	V _R = 5 V	-	ı	10	μΑ
-	Capacitance	CT	V = 0, f = 1 MHz	_	30	_	pF
	Collector-Emitter Breakdown Voltage	V (BR) CEO	I _C = 0.1 mA	350	_	_	V
DETECTOR	Emitter-Collector Breakdown Voltage	V _{(BR)ECO}	I _E = 0.1 mA	0.3	ı	-	V
	Collector Dark Current	loco	V _{CE} = 300 V	_	10	200	nA
		ICEO	V _{CE} = 300 V, Ta = 85°C	_	_	20	μΑ
	Capacitance Collector to Emitter	C _{CE}	V = 0, f = 1 MHz	-	10	-	pF

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Coupled Electrical Characteristics (Ta = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Current Transfer Ratio	I _C / IF	I _F = 1 mA, V _{CE} = 1 V	1500	4000	_	%
Saturated CTR	I _C / I _{F (sat)}	I _F = 10 mA, V _{CE} = 1 V	500	_	_	%
Collector-Emitter Saturation Voltage	V _{CE} (sat)	I _C = 15 mA, I _F = 1 mA	_	_	1.0	- V
		I _C = 100 mA, I _F = 10 mA	0.3	_	1.2	

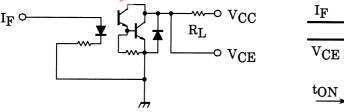
Isolation Characteristics (Ta = 25°C)

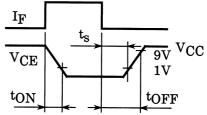
CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance Input to Output	CS	V _S = 0, f = 1 MHz	_	0.8	_	pF
Isolation Resistance	R _S	V _S = 500 V, R.H.≦60%	5×10 ¹²	10 ¹⁴	_	Ω
		AC、1 minite	5000	_	_	Vrms
Isolation Voltage	BV_S	AC、1 second、in oil	_	10000	_	VIIIIS
		DC、1 second、in oil	_	10000	_	Vdc

Switching Characteristics (Ta = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Rise Time	t _r	7 3P	0	40	_	
Fall Time	t _f	V _{CC} = 10 V I _C = 10 mA R _L = 100 Ω	_	15	_	<i>u</i> c
Turn-on Time	t _{on}		_	50	_	μs
Turn-off Time	t _{off}	.60	_	15	_	
Turn-on Time	toN		_	5	_	
Strage Time	ts	$R_L = 180 \Omega$ (Fig.1) $V_{CC} = 10 \text{ V}, I_F = 16 \text{ mA}$	_	40	_	μs
Turn-off Time	toff		_	80	_	

Fig.1: SWITCHING TIME TEST CIRCUIT





RESTRICTIONS ON PRODUCT USE

20070701-EN

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