TENTATIVE

TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-TRANSISTOR

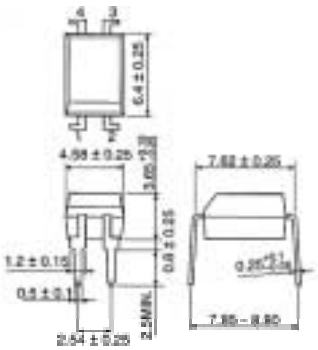
TLP627A,TLP627A-2,TLP627A-4

TELECOMMUNICATION
PROGRAMMABLE CONTROLLERS
DC-OUTPUT MODULE

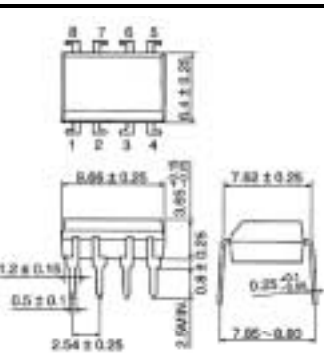
The TOSHIBA TLP627A, -2, and -4 consist of a gallium arsenide infrared emitting diode optically coupled to a darlington connected phototransistor which has a 350V high voltage of collector-emitter breakdown voltage.
The TLP627A-2 offer two isolated channels in a eight lead plastic DIP package, while the TLP627A-4 provide four isolated channels per package.

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

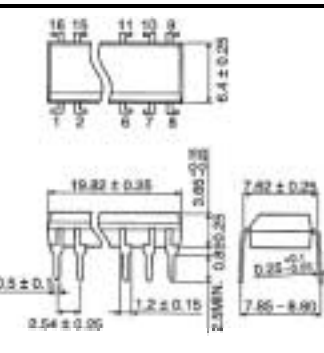
単位: mm



TOSHIBA 11−5B2
Weight : 0.26 g



TOSHIBA 11−10C4
Weight : 0.54 g



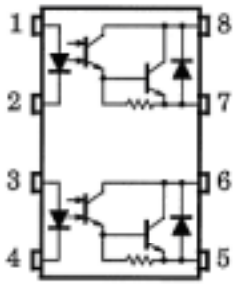
TOSHIBA 11−20A3
Weight : 1.1 g

PIN CONFIGURATION (TOP VIEW)

TLP627A

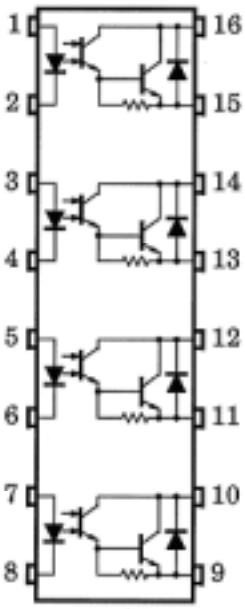
1 : ANODE
2 : CATHODE
3 : EMITTER
4 : COLLECTOR

TLP627A-2



1, 3 : ANODE
2, 4 : CATHODE
5, 7 : EMITTER
6, 8 : COLLECTOR

TLP627A-4



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

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTICS		SYMBOL	RATING		UNIT
			TLP627A	TLP627A−2 TLP627A−4	
LED	Forward Current	I_F	60	50	mA
	Forward Current Derating	ΔI_F /℃	−0.7 (Ta≧39℃)	−0.5 (Ta≧25℃)	mA /℃
	Pulse Forward Current	I_{FP}	1 (100 μs Pulse、100 pps)		A
	Reverse Voltage	V_R	5		V
DETECTOR	Collector-Emitter Voltage	V_{CEO}	350		V
	Emitter-Collector Voltage	V_{ECO}	0.3		V
	Collector Current	I_C	150		mA
	Collector Power Dissipation (1 circuit)	P_C	150 (300) (*)	100	mW
	Collector Power Dissipation Derating (Ta≧25℃, 1 Circuit)	ΔP_C /℃	−1.5 (−3.5) (*)	−1.0	mA /℃
Storage Temperature Range		T_{stg}	−55～125		℃
Operating Temperature Range		T_{opr}	−55～100		℃
Lead Soldering Temperature		T_{sol}	260 (10 sec)		℃
Total Package Power Dissipation (1 circuit)		P_T	250 (320) (*)	150	mW
Total Package Power Dissipation Derating (Ta≧25℃, 1 circuit)		ΔP_T /℃	−2.5 (−3.2) (*)	−1.5	mW /℃
Isolation Voltage		BV_S	5000 (AC、1 min、R.H.≦60%) (**)		Vrms

* : IF = 20 mA max

** : Device considered a two terminal device : LED side pins shorted together and DETECTOR side pins shorted together.

RECOMMENDED OPERATING CONDISIONS

CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{CC}	—	—	200	V
Forward Current	I_F	—	16	25	mA
Collector Current	I_C	—	—	120	mA
Operating Temperature	T_{opr}	−25	—	85	℃

INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTICS		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V_F	I_F = 10 mA	1.0	1.15	1.3	V
	Reverse Current	I_R	V_R = 5 V	—	—	10	μA
	Capacitance	C_T	V = 0, f = 1 MHz	—	30	—	pF
DETECTOR	Collector-Emitter Breakdown Voltage	$V_{(BR)\ CEO}$	I_C = 0.1 mA	350	—	—	V
	Emitter-Collector Breakdown Voltage	$V_{(BR)\ ECO}$	I_E = 0.1 mA	0.3	—	—	V
	Collector Dark Current	I_{CEO}	V_{CE} = 300 V	—	10	200	nA
			V_{CE} = 300 V, Ta = 85℃	—	—	20	μA
	Capacitance Collector to Emitter	C_{CE}	V = 0, f = 1 MHz	—	10	—	pF

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Current Transfer Ratio	I_C / I_F	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	

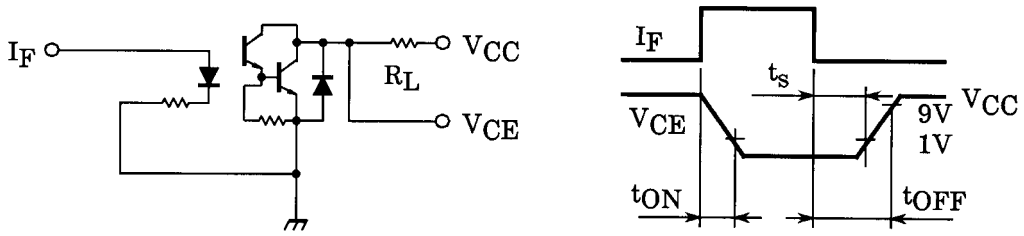
ISOLATION CHARACTERISTICS (Ta = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance Input to Output	C_S	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
Isolation Voltage	BV_S	AC、1 minite	5000	—	—	Vrms
		AC、1 second、in oil	—	10000	—	
		DC、1 second、in oil	—	10000	—	Vdc

SWITCHING CHARACTERISTICS (Ta = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Rise Time	t_r	V_{CC} = 10 V I_C = 10 mA R_L = 100 Ω	—	40	—	μs
Fall Time	t_f		—	15	—	
Turn-on Time	t_{on}		—	50	—	
Turn-off Time	t_{off}		—	15	—	
Turn-on Time	t_{ON}	R_L = 180 Ω (Fig.1) V_{CC} = 10 V, I_F = 16 mA	—	5	—	μs
Strage Time	t_s		—	40	—	
Turn-off Time	t_{OFF}		—	80	—	

Fig.1: SWITCHING TIME TEST CIRCUIT



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