

TENTATIVE

TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-TRANSISTOR

TLP627A, TLP627A-2, TLP627A-4

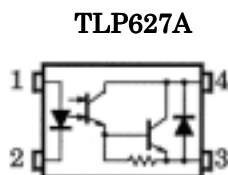
TELECOMMUNICATION
PROGRAMMABLE CONTROLLERS
DC-OUTPUT MODULE

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.

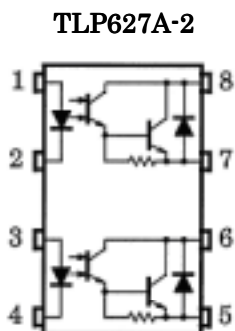
The TLP627A-2 offer two isolated channels in a eight lead plastic DIP package, while the TLP627A-4 provide four isolated channels per package.

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

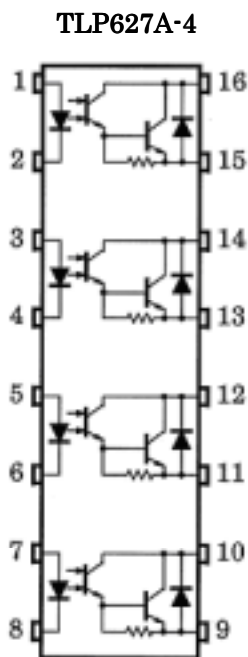
PIN CONFIGURATION (TOP VIEW)



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

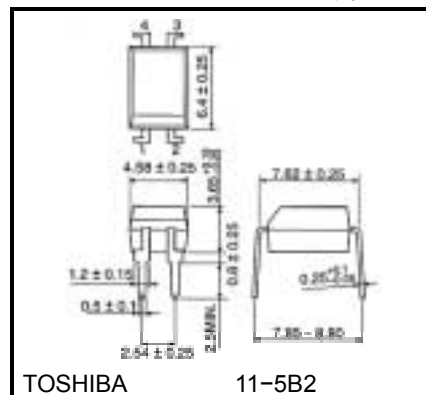


1, 3 : ANODE
2, 4 : CATHODE
5, 7 : EMITTER
6, 8 : COLLECTOR

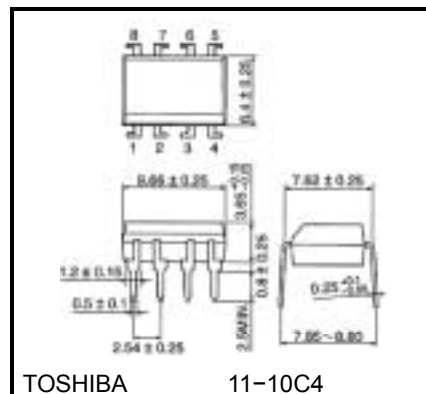


1, 3, 5, 7 : ANODE
2, 4, 6, 8 : CATHODE
9, 11, 13, 15 : EMITTER
10, 12, 14, 16 : COLLECTOR

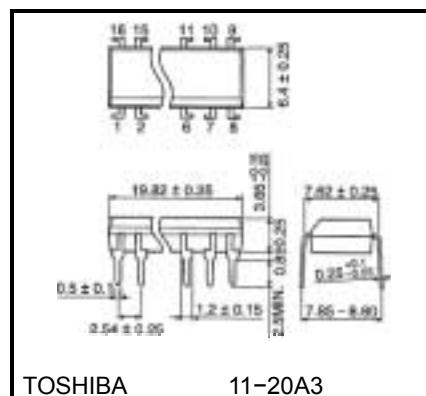
単位: mm



Weight : 0.26 g



Weight : 0.54 g



Weight : 1.1 g

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	$\Delta I_F / ^\circ\text{C}$	-0.7 (Ta $\geq 39^\circ\text{C}$)	-0.5 (Ta $\geq 25^\circ\text{C}$)	mA / $^\circ\text{C}$
	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 $\geq 25^\circ\text{C}$, 1 Circuit)	$\Delta P_C / ^\circ\text{C}$	-1.5 (-3.5) (*)	-1.0	mW / $^\circ\text{C}$
Storage Temperature Range		T_{stg}	-55 ~ 125		$^\circ\text{C}$
Operating Temperature Range		T_{opr}	-55 ~ 100		$^\circ\text{C}$
Lead Soldering Temperature		T_{sol}	260 (10 sec)		$^\circ\text{C}$
Total Package Power Dissipation (1 circuit)		P_T	250 (320) (*)	150	mW
Total Package Power Dissipation Derating (Ta $\geq 25^\circ\text{C}$, 1 circuit)		$\Delta P_T / ^\circ\text{C}$	-2.5 (-3.2) (*)	-1.5	mW / $^\circ\text{C}$
Isolation Voltage		BV_S	5000 (AC, 1 min, R.H. $\leq 60\%$) (**)		Vrms

* : $I_F = 20\text{ mA max}$

** : 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	I_F	—	16	25	mA
Collector Current	I_C	—	—	120	mA
Operating Temperature	T_{opr}	-25	—	85	$^\circ\text{C}$

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	μ A
	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°C	—	—	20	μ A
	Capacitance Collector to Emitter	C _{CCE}	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	$I_F = 1 \text{ mA}$, $V_{CE} = 1 \text{ V}$	1500	4000	—	%
Saturated CTR	$I_C / I_F (\text{sat})$	$I_F = 10 \text{ mA}$, $V_{CE} = 1 \text{ V}$	500	—	—	%
Collector-Emitter Saturation Voltage	$V_{CE (\text{sat})}$	$I_C = 15 \text{ mA}$, $I_F = 1 \text{ mA}$	—	—	1.0	V
		$I_C = 100 \text{ mA}$, $I_F = 10 \text{ mA}$	0.3	—	1.2	

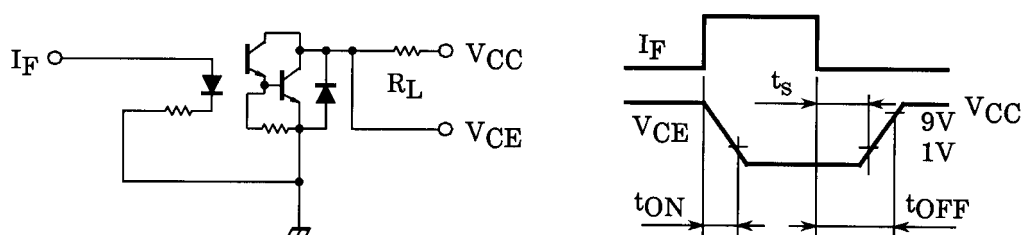
ISOLATION CHARACTERISTICS (Ta = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance Input to Output	C_S	$V_S = 0$, $f = 1 \text{ MHz}$	—	0.8	—	pF
Isolation Resistance	R_S	$V_S = 500 \text{ V}$, R.H. $\leq 60\%$	5×10^{12}	10^{14}	—	Ω
Isolation Voltage	BV_S	AC, 1 minute	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	$V_{CC} = 10 \text{ V}$ $I_C = 10 \text{ mA}$ $R_L = 100 \Omega$	—	40	—	μs
Fall Time	t_f		—	15	—	
Turn-on Time	t_{on}		—	50	—	
Turn-off Time	t_{off}		—	15	—	
Turn-on Time	t_{ON}	$R_L = 180 \Omega$ $V_{CC} = 10 \text{ V}$, $I_F = 16 \text{ mA}$ (Fig.1)	—	5	—	μs
Storage Time	t_s		—	40	—	
Turn-off Time	t_{OFF}		—	80	—	

Fig.1: SWITCHING TIME TEST CIRCUIT



RESTRICTIONS ON PRODUCT USE

000707EBC

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