TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-TRANSISTOR

TLP627, TLP627-2, TLP627-4

PROGRAMMABLE CONTROLLERS. DC - OUTPUT MODULE. TELECOMMUNICATION.

The TOSHIBA TLP627, -2, and -4 consist of a gallium arsenide infreared emitting diode optically coupled to a darlington connected phototransistor which has an integral base-emitter resistor to optimize switching speed and elevated temperature characteristics.

The TLP627-2 offers two isolated channels in a eight lead plastic DIP, while the TLP627-4 provide four isolated channels per package.

Collector-Emitter Voltage: 300V (Min.)
 Current Transfer Ratio: 1000% (Min.)
 Isoration Voltage: 5000Vrms (Min.)

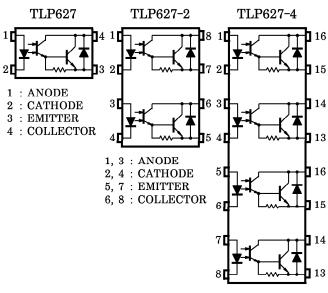
• UL Recognized : UL1577, File No. E67349

	MADE IN JAPAN		MADE IN THA	ILAND
UL Recognized	E67349	*1	E152349	*1
BSI Approved	7426, 7427	*2	7426, 7427	*2

*1 UL1577

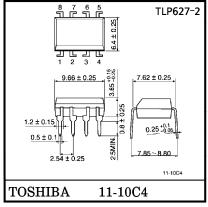
*2 BS EN60065 : 1994, BS EN60950 : 1992

PIN CONFIGURATIONS (TOP VIEW)

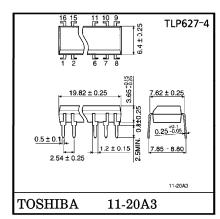


1, 3, 5, 7 : ANODE 2, 4, 6, 8 : CATHODE 9, 11, 13, 15 : EMITTER 10, 12, 14, 16 : COLLECTOR

Weight: 0.26g



Weight: 0.54g



Weight: 1.1g

961001EBC2

● TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.

MAXIMUM RWTINGS (Ta = 25°C)

			RAT	ING	
	CHARACTORISTIC	SYMBOL	TLP627	TLP627-2 TLP627-4 50 -0.5 (Ta≥25°C) se, 100pps) 70 -0.7 5 5 0 3 0 100 -1.0 5 125 100 0sec)	UNIT
	Forward Current	${ m I_F}$	60	50	mA
	Forward Current Darating	⊿I _F /°C	-0.7 (Ta \geq 39°C)	-0.5 (Ta \geq 25°C)	mA/°C
	Pulse Forward Current	$I_{ ext{FP}}$	1 (100µs pu	lse, 100pps)	A
ED	Power Dissipation (1 Circuit)	$P_{\mathbf{D}}$	100	70	mW
	Power Dissipation Derating (Ta≥25°C, 1 Circuit)	△P _D /°C	-1.0	-0.7	mW/°C
	Reverse Voltage	v_{R}		5	V
	Junction Temperature	T_{j}	12	25	$_{\circ}\mathrm{C}$
	Collector-Emitter Voltage	v_{CEO}	30	00	V
R	Emitter-Collector Voltage	v_{ECO}	0	V	
ТО	Collector Current	$I_{\mathbf{C}}$	18	mA	
TEC	Collector Power Dissipation (1 Circuit)	PC	150 (*300)	100	mW
DE	Collector Power Dissipation Derating (Ta≥25°C, 1 Circuit)	ΔP _C /°C	-1.5 (*-3.5)	-1.0	mW/°C
	Junction Temperature	T_{j}	15	25	$^{\circ}\mathrm{C}$
Sto	rage Temperature Range	$\mathrm{T_{stg}}$	-55	-55~125	
Оре	erating Temperature Range	$T_{ m opr}$	-55 ²	~100	$^{\circ}\mathrm{C}$
Lea	d Soldering Temperature	$T_{ m sold}$	260 (10sec)		°C
Total Package Power Dissipation (1 Circuit)		P_{T}	250 (*320)	150	mW
	Total Package Power Dissipation Derating (Ta \ge 25°C, 1 Circuit) ΔP_T /°C -2.5 (*		-2.5 (*-3.2)	-1.5	mW/°C
Isol	ation Voltage	$BV_{\mathbf{S}}$	5000 (AC, 1min	n., R.H.≦60%)	Vrms

* IF=20mA Max

RECOMMENDED OPERATING CONDITIONS

CHARACTERICTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	v_{CC}	_		200	V
Forward Current	$\mathbf{I_F}$	_	16	25	mA
Collector Current	$I_{\mathbf{C}}$		_	120	mA
Operating Temperature	$T_{ m opr}$	-25	_	85	°C

961001EBC2'

Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with domestic garbage.

The products described in this document are subject to foreign exchange and foreign trade control laws.

The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.

The information contained herein is subject to change without notice.

INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

	CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
D	Forward Voltage	$V_{\mathbf{F}}$	$I_{\mathbf{F}} = 10 \text{mA}$	1.0	1.15	1.3	V
囝	Reverse Current	$I_{ m R}$	$V_R = 5V$	1	_	10	μ A
T	Capacitance	C_{T}	V=0, $f=1MHz$		30	_	рF
R	Collector-Emitter Breakdown Voltage	V (BR) CEO	$I_{\text{C}} = 0.1 \text{mA}$	300	_	_	V
сто	Emitter-Collector Breakdown Voltage	V (BR) ECO	$I_{ extbf{E}}\!=\!0.1 ext{mA}$	0.3	_	_	V
T E	Collector Dark Current	ICEO	$V_{\text{CE}} = 200 \text{V}$	_	10	200	nA
田	Conector Dark Current	1CEO	$V_{\text{CE}} = 200\text{V}, \text{Ta} = 85^{\circ}\text{C}$		_	20	μ A
Q	Capacitance Collector to Emitter	CCE	V=0, f=1MHz	_	10	_	pF

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Current Transfer Ratio	I_C/I_F	$I_F=1mA, V_{CE}=1V$	1000	4000	_	%
Saturated CTR	IC/IF(sat)	$I_F=10mA,\ V_{CE}=1V$	500	_	_	%
Collector-Emitter	N ~	$I_{\text{C}}=10\text{mA},\ I_{\text{F}}=1\text{mA}$	1		1.0	\mathbf{v}
Saturation Voltage	VCE (sat)	$I_{C} = 100 \text{mA}, I_{F} = 10 \text{mA}$	0.3	_	1.2	'

ISOLATION CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance Input to Output	$c_{\mathbf{S}}$	$V_S=0, f=1MHz$	_	0.8		pF
Isolation Resistance	R_{S}	Vg=500V R.H.≤60%	5×10^{10}	10^{14}		Ω
		AC, 1 minute	5000	_	_	Vrms
Isolation Voltage	BV_{S}	AC, 1 second, in oil	_	10000	_	V11115
		DC, 1 minute, in oil	_	10000	_	Vdc

SWITCHING CHARACTERISTICS (Ta = 25°C)

CHARACTERICTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Rise Time	t _r	V _{CC} =10V	_	40		
Fall Time	t_f		_	15	_	
Turn-on Time	ton	$I_{\rm C} = 10 { m mA}$	_	50	_	μ s
Turn-off Time	$t_{ m off}$	$R_{\rm L}$ = 100 Ω	_	15	_	
Turn-on Time	ton	$R_{L} = 180\Omega$ (Fig.1)	_	5		
Strage Time	t_s	_	_	40	_	μs
Tuen-off Time	tOFF	$V_{\rm CC}$ =10V, $I_{ m F}$ =16mA	_	80		

Fig.1 SWITCHING TIME TEST CIRCUIT

