

TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-TRANSISTOR

**4N29(Short), 4N29A(Short), 4N30(Short), 4N31(Short)
4N32(Short), 4N32A(Short), 4N33(Short)**

AC LINE / DIGITAL LOGIC ISOLATOR.

DIGITAL LOGIC/DIGITAL LOGIC ISOLATOR.

TELEPHONE LINE RECEIVER.

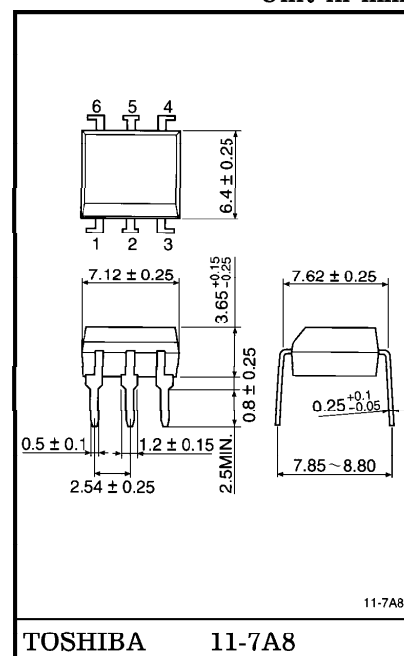
TWISTED PAIR LINE RECEIVER.

RELAY CONTACT MONITOR.

The TOSHIBA 4N29 (Short) through 4N33 (Short) consists arsenide infrared emitting diode coupled with a silicon photo darlington in a dual in-line package.

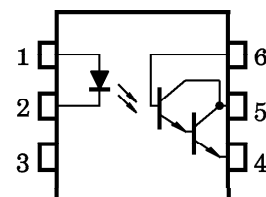
- Switching Time : 100 μ s (Max.)
- DC Current Transfer Ratio : 500%
- Isolation Resistance : 10¹¹ Ω (Typ.)
- Isolation Voltage : 2500V_{rms} (Min.)
- UL Recognized : UL1577, File No. E67349

Unit in mm



Weight : 0.4g

PIN CONFIGURATIONS (Top view)



- 1 : ANODE
- 2 : CATHODE
- 3 : N.C.
- 4 : EMITTER
- 5 : COLLECTOR
- 6 : BASE

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- 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.
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MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current (Continuous)	I_F	80	mA
	Forward Current Derating	$\Delta I_F / ^\circ\text{C}$	1.07(*)	mA / °C
	Peak Forward Current (Note 1)	I_{PF}	3	A
	Power Dissipation	P_D	150	mW
	Power Dissipation Derating	$\Delta P_D / ^\circ\text{C}$	2.0(*)	mW / °C
	Reverse Voltage	V_R	3	V
DETECTOR	Collector-Emitter Voltage	BV_{CEO}	30	V
	Collector-Base Voltage	BV_{CBO}	30	V
	Emitter-Collector Voltage	BV_{ECO}	5	V
	Collector Current (Continuous)	I_C	100	mA
	Power Dissipation	P_C	150	mW
	Power Dissipation Derating	$\Delta P_C / ^\circ\text{C}$	2.0(*)	mW / °C
COUPLED	Storage Temperature Range	T_{stg}	-55~150	°C
	Operating Temperature Range	T_{opr}	-55~100	°C
	Lead Soldering Temperature	T_{sol}	260	°C
	Total Package Power Dissipation	P_T	250	mW
	Total Package Power Dissipation Derating	$\Delta P_T / ^\circ\text{C}$	3.3(*)	mW / °C

(Note 1) Pulse width 300 μ s, 2% duty cycle.

(*) Above 25°C ambient.

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC			SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
LED	Forward Voltage		V _F	I _F = 10mA	—	1.15	1.5	V	
	Reverse Current		I _R	V _R = 3V	—	—	100	μA	
	Capacitance		C _D	V = 0, f = 1MHz	—	30	—	pF	
DETECTOR	DC Forward Current Gain		h _{FE}	V _{CE} = 5, I _C = 0.5mA	—	10k	—	—	
	Collector-Emitter Breakdown Voltage		V (BR) CEO	I _C = 1mA	30	—	—	V	
	Collector-Base Breakdown Voltage		V (BR) CBO	I _C = 100μA	30	—	—	V	
	Emitter-Collector Breakdown Voltage		V (BR) ECO	I _E = 100μA	5	—	—	V	
	Collector Dark Current		I _{CEO}	V _{CE} = 10V	—	1.0	100	nA	
COUPLED	Collector Output Current	4N32, 4N32A 4N33	I _C	I _F = 10mA, V _{CE} = 10V	50	—	—	mA	
		4N29, 4N29A 4N30			10	—	—		
		4N31			5	—	—		
	Collector-Emitter Saturation Voltage	4N29, 4N29A 4N30, 4N32 4N32A, 4N33	V _{CE (sat)}	I _F = 8mA, I _C = 2mA	—	—	1.0	V	
		4N31			—	—	1.2		
	Turn-on Time		t _{ON}	I _F = 200mA, V _{CC} = 10V I _C = 50mA	—	—	5	μs	
	Turn-off Time	4N29, 4N29A 4N30, 4N31	t _{OFF}		—	—	40	μs	
		4N32, 4N32A 4N33					100		
	Capacitance Input to Output			C _S	V = 0, f = 1MHz	—	0.8	—	pF
	Isolation Resistance			R _S	V = 500V	—	10 ¹¹	—	Ω
	Isolation Voltage			BV _S	AC, 1 minute R. H. ≤ 60%	2500	—	—	V _{rms}
		4N29, 4N29A 4N32, 4N32A 4N30, 4N31 4N33 4N29A, 4N32A	BV _S (*)	AC, peak	2500	—	—	V _{pk}	
1500					—	—			
AC, 1 second				1775	—	—	V _{rms}		

(*) JEDEC registered minimum BV_S , however, Toshiba specifies a minimum BV_S of $2500V_{rms}$ 1 minute.

