

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.

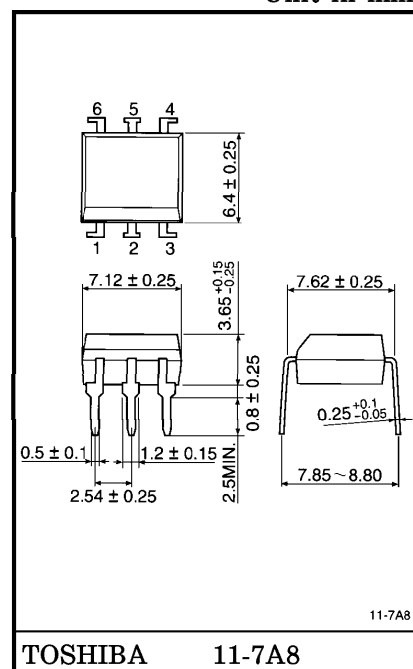
TWISTED PAIR LINE RECEIVER.

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.

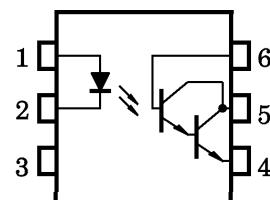
- Switching Time : $100\mu s$ (Max.)
- DC Current Transfer Ratio : 500%
- Isolation Resistance : $10^{11}\Omega$ (Typ.)
- Isolation Voltage : $2500V_{rms}$ (Min.)
- UL Recognized : UL1577, File No. E67349

Unit in mm



Weight : 0.4g

PIN CONFIGURATIONS (Top view)



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

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

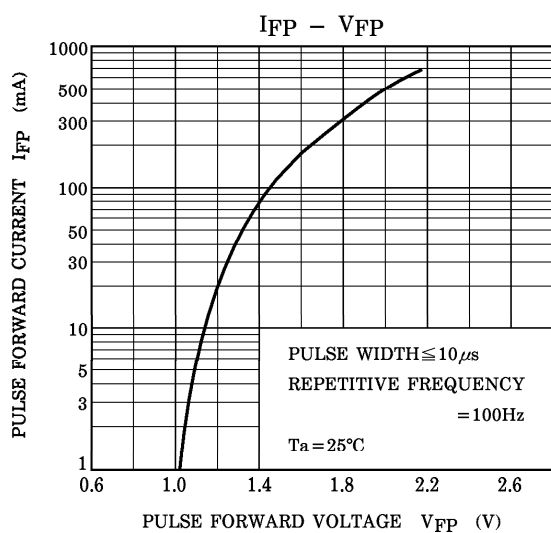
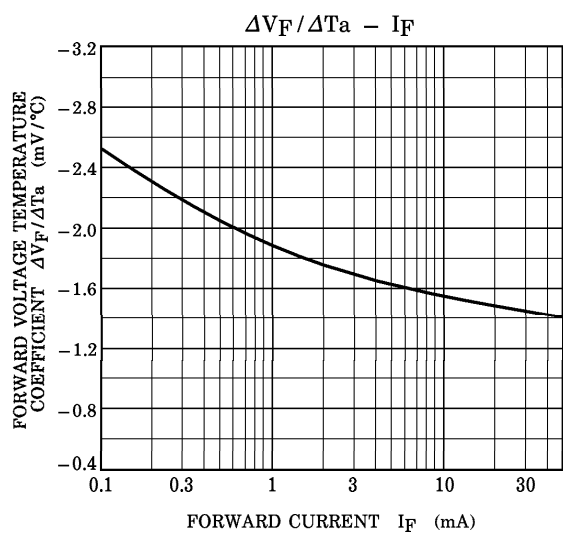
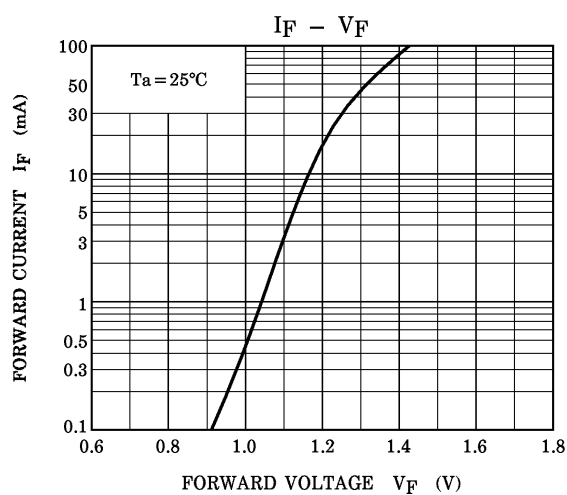
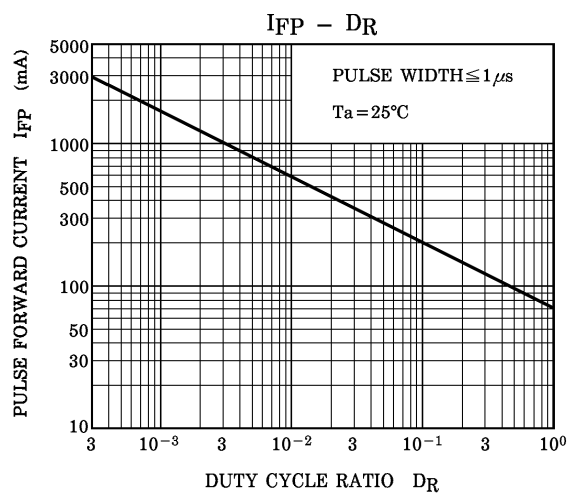
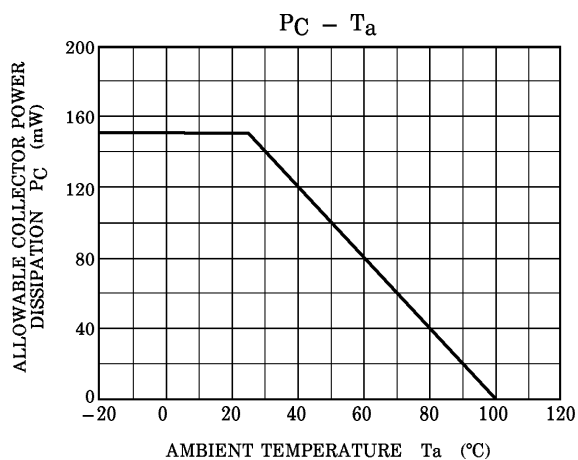
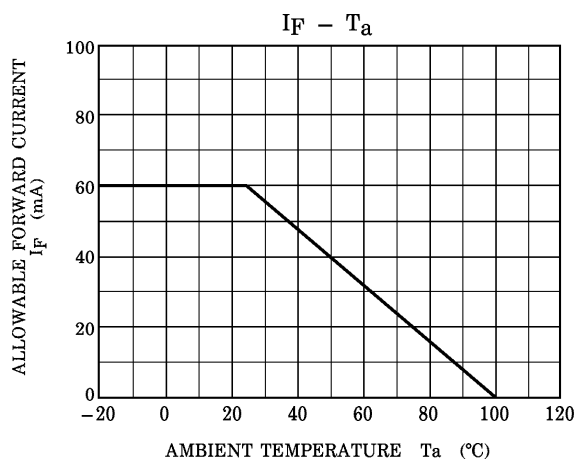
(Note 1) Pulse width 300 μ s, 2% duty cycle.

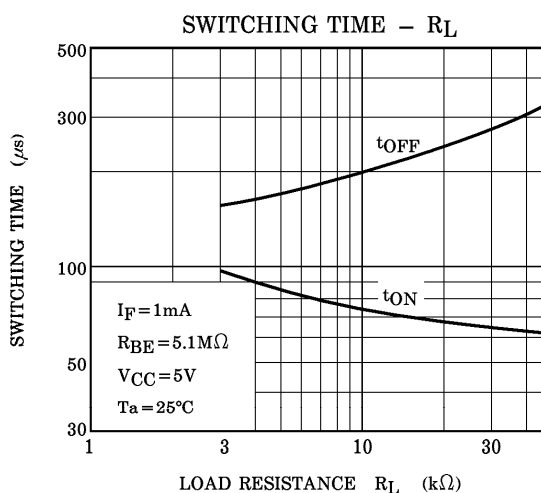
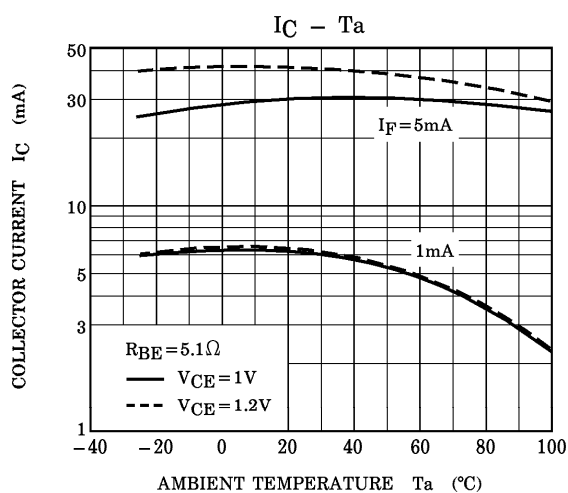
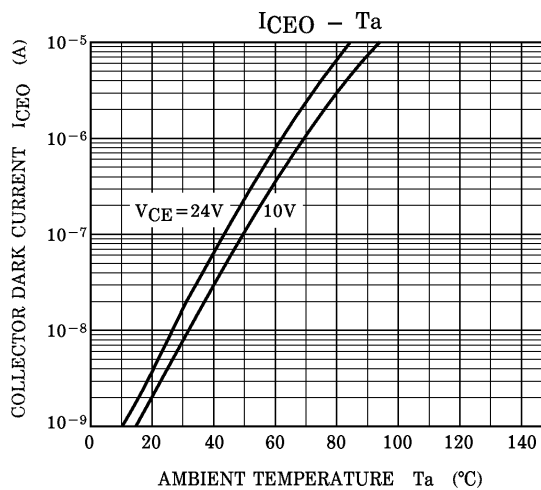
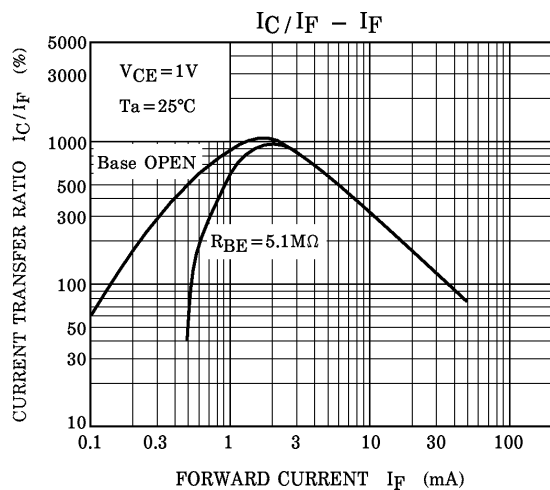
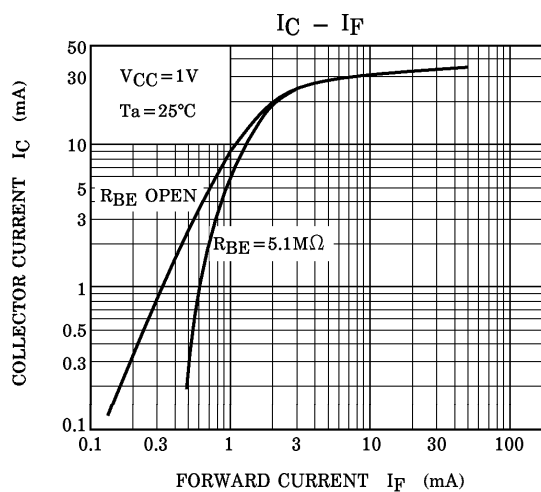
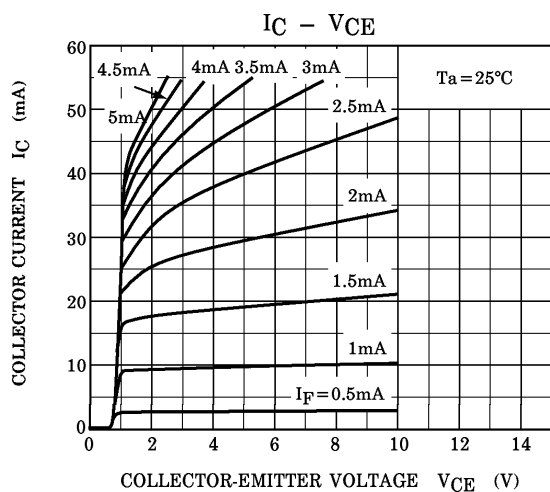
(*) Above 25°C ambient.

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}
			BV _S (*)	AC, peak	2500	—	—	V _{pk}
1500					—	—		
4N29A, 4N32A					AC, 1 second	1775	—	—

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





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