

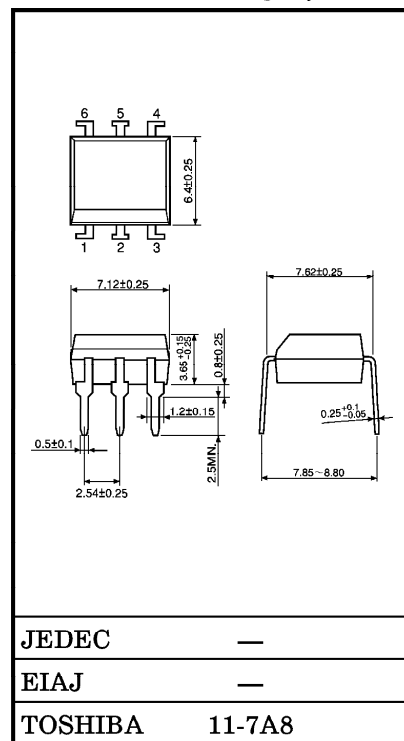
(4N29(Short))

AC LINE / DIGITAL LOGIC ISOLATOR.  
DIGITAL LOGIC/DIGITAL LOGIC ISOLATOR.  
TELEPHONE LINE RECEIVER.  
TWISTED PAIR LINE RECEIVER.  
RELAY CONTACT MONITOR.

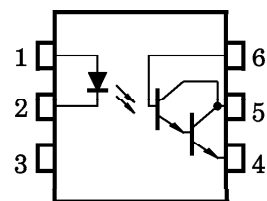
The TOSHIBA 4N29 (Short) through 4N33 (Short) consists arsenide infrared emitting diode coupled with a silicon photo darlington in a dula in-line package.

- Switching Time : 100 $\mu$ s (Max.)
- DC Current Transfer Ratio : 500%
- Isolation Resistance : 10<sup>11</sup> $\Omega$  (Typ.)
- Isolation Voltage : 2500Vrms (Min.)
- UL Recognized : UL1577, File No. E67349

Unit in mm



#### PIN CONFIGURATIONS (TOP VIEW)



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

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MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current (Continuous)	I <sub>F</sub>	80	mA
	Forward Current Derating	ΔI <sub>F</sub> / °C	1.07*	mA / °C
	Peak Forward Current (Note)	I <sub>PF</sub>	3	A
	Power Dissipation	P <sub>D</sub>	150	mW
	Power Dissipation Derating	ΔP <sub>D</sub> / °C	2.0*	mW / °C
	Reverse Voltage	V <sub>R</sub>	3	V
DETECTOR	Collector-Emitter Voltage	BV <sub>CEO</sub>	30	V
	Collector-Base Voltage	BV <sub>CBO</sub>	30	V
	Emitter-Collector Voltage	BV <sub>ECO</sub>	5	V
	Collector Current (Continuous)	I <sub>C</sub>	100	mA
	Power Dissipation	P <sub>C</sub>	150	mW
	Power Dissipation Derating	ΔP <sub>C</sub> / °C	2.0*	mW / °C
COUPLED	Storage Temperature Range	T <sub>stg</sub>	−55~150	°C
	Operating Temperature Range	T <sub>opr</sub>	−55~100	°C
	Lead Soldering Temperature	T <sub>sol</sub>	260	°C
	Total Package Power Dissipation	P <sub>T</sub>	250	mW
	Total Package Power Dissipation Derating	ΔP <sub>T</sub> / °C	3.3*	mW / °C

Note : Pulse width 300μs, 2% duty cycle.

\* Above 25°C ambient.

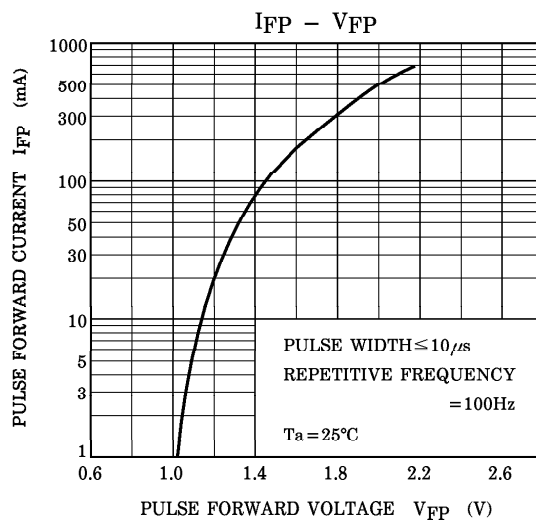
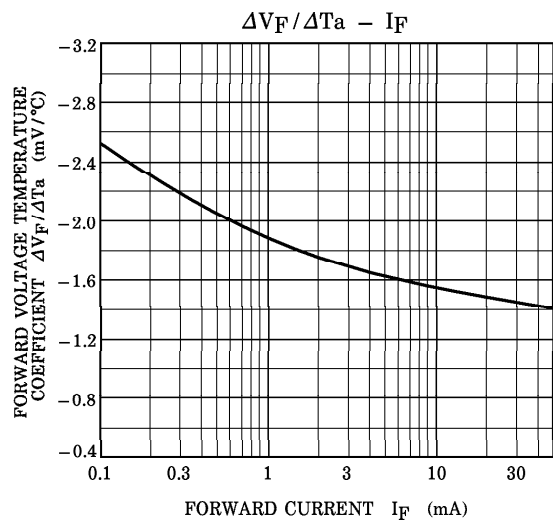
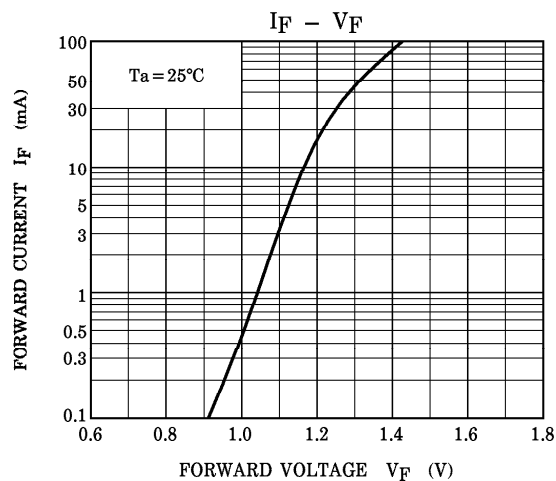
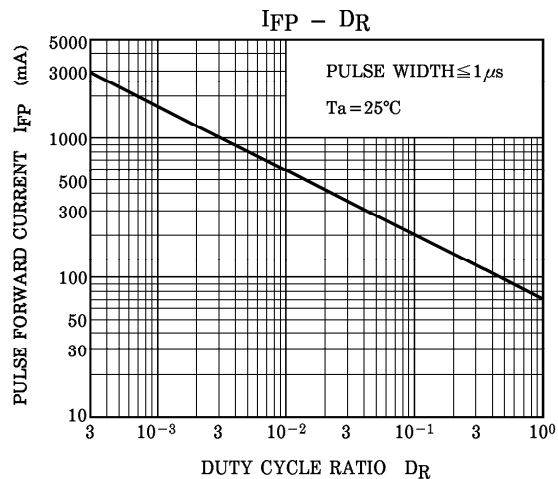
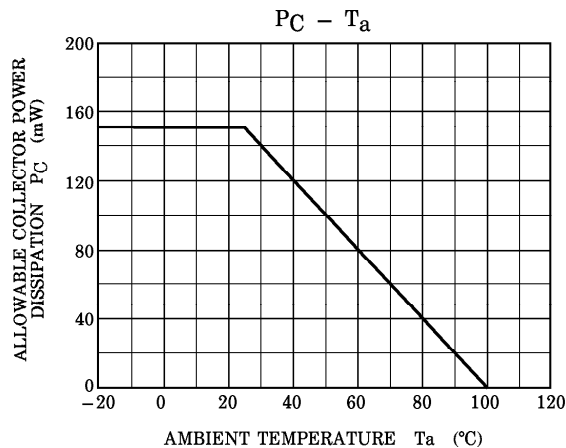
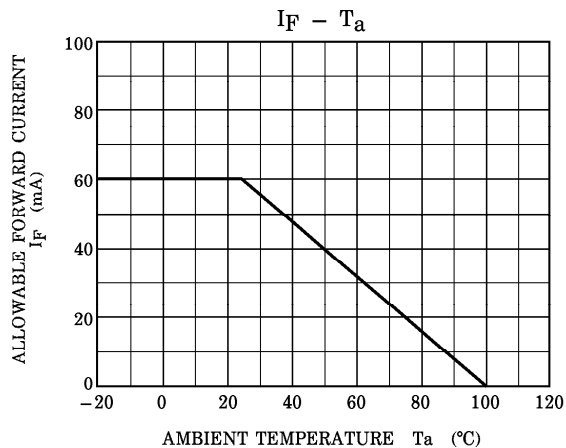
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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC			SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage		V <sub>F</sub>	I <sub>F</sub> = 10mA	—	1.15	1.5	V
	Reverse Current		I <sub>R</sub>	V <sub>R</sub> = 3V	—	—	100	μA
	Capacitance		C <sub>D</sub>	V = 0, f = 1MHz	—	30	—	pF
DETECTOR	DC Forward Current Gain		h <sub>FE</sub>	V <sub>CE</sub> = 5, I <sub>C</sub> = 0.5mA	—	10K	—	—
	Collector-Emitter Breakdown Voltage		V (BR) CEO	I <sub>C</sub> = 1mA	30	—	—	V
	Collector-Base Breakdown Voltage		V (BR) CBO	I <sub>C</sub> = 100μA	30	—	—	V
	Emitter-Collector Breakdown Voltage		V (BR) ECO	I <sub>E</sub> = 100μA	5	—	—	V
	Collector Dark Current		I <sub>CEO</sub>	V <sub>CE</sub> = 10V	—	1.0	100	nA
COUPLED	Collector Output Current	4N32, 4N32A, 4N33	I <sub>C</sub>	I <sub>F</sub> = 10mA, V <sub>CE</sub> = 10V	50	—	—	mA
		4N29, 4N29A, 4N30			10	—	—	
		4N31			5	—	—	
	Collector-Emitter Saturation Voltage	4N29, 4N29A, 4N30, 4N32, 4N32A, 4N33	V <sub>CE</sub> (sat)	I <sub>F</sub> = 8mA, I <sub>C</sub> = 2mA	—	—	1.0	V
		4N31			—	—	1.2	
	Turn-on Time		t <sub>on</sub>	I <sub>F</sub> = 200mA, V <sub>CC</sub> = 10V I <sub>C</sub> = 50mA	—	—	5	μs
	Turn-off Time	4N29, 4N29A 4N30, 4N31	t <sub>off</sub>		—	—	40	μs
		4N32, 4N32A 4N33					100	
	Capacitance Input to Output		C <sub>S</sub>	V = 0, f = 1MHz	—	0.8	—	pF
	Isolation Resistance		R <sub>S</sub>	V = 500V	—	10 <sup>11</sup>	—	Ω
	Isolation Voltage		BV <sub>S</sub>	AC, 1 Minute R. H. ≤ 60%	2500	—	—	V <sub>rms</sub>
			BV <sub>S</sub> *	AC, Peak	2500	—	—	V <sub>pk</sub>
					1500	—	—	
					4N29A, 4N32A	AC, 1 second	1775	

\* JEDEC registered minimum BV<sub>S</sub>, however, Toshiba specifies a minimum BV<sub>S</sub> of 2500V<sub>rms</sub> 1 minute.

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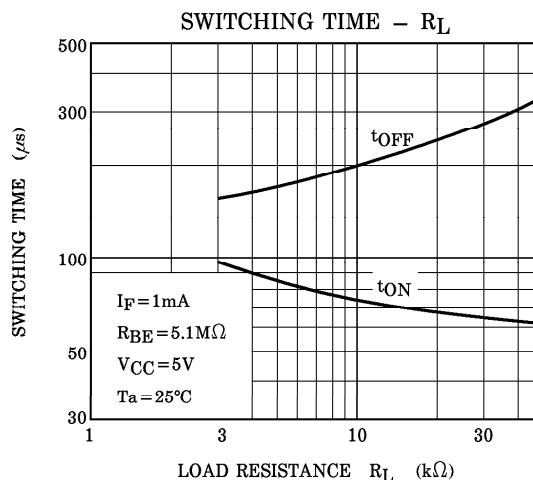
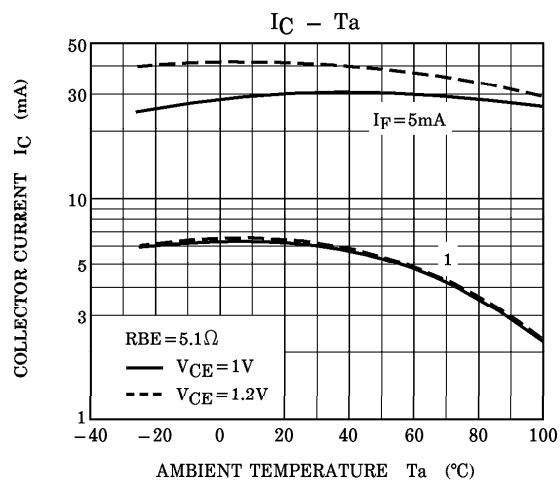
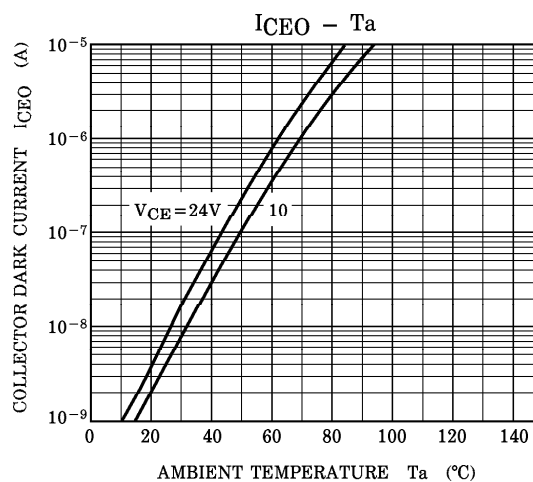
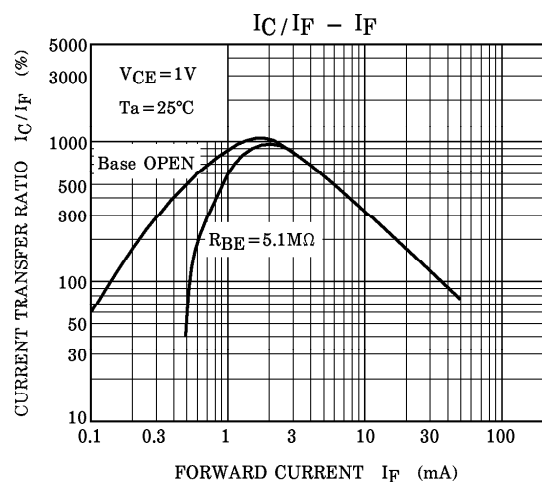
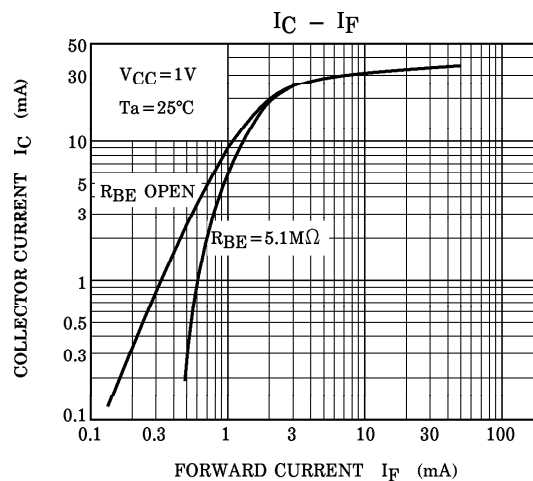
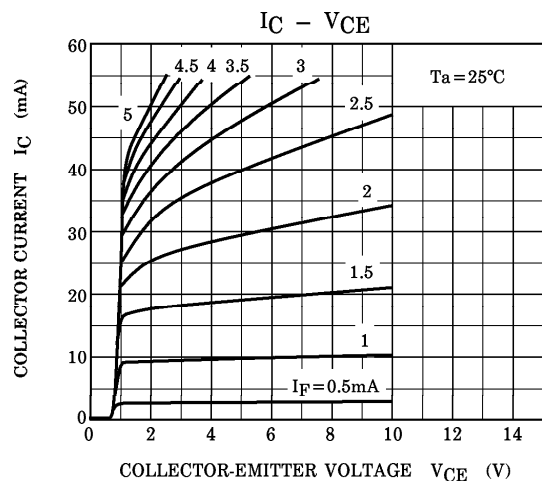


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