

4N29, 29A, 30, 31, 4N32, 32A, 33(Short)

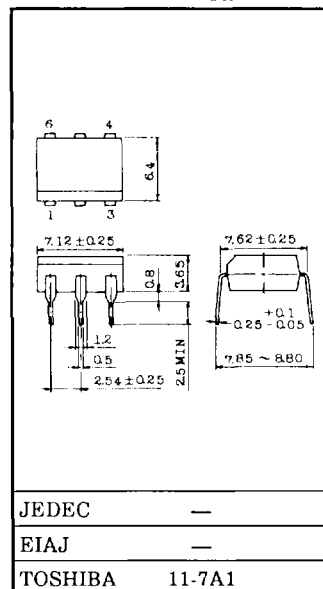
(4N29(Short))

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.

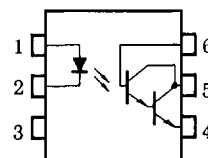
- Switching Time : 100 μ s Max.
- DC Current Transfer Ratio : 500%
- Isolation Resistance : 10¹¹ Ω Typ.
- Isolation Voltage : 2500Vrms Min.
- UL Recognized : UL1577, File No. E67349

Unit in mm



Weight : 0.4g

PIN CONFIGURATIONS (TOP VIEW)



- 1 : ANODE
- 2 : CATHODE
- 3 : NC
- 4 : EMITTER
- 5 : COLLECTOR
- 6 : BASE

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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)	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	V _{CEO}	30	V
	Collector-Base Voltage	V _{CBO}	30	V
	Emitter-Collector Voltage	V _{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 _{slg}	-55~150	°C
	Operating Temperature Range	T _{opr}	-55~100	°C
	Lead Soldering Temperature	T _{sold}	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 : Pulse width 300μs, 2% duty cycle.

※ Above 25°C ambient.

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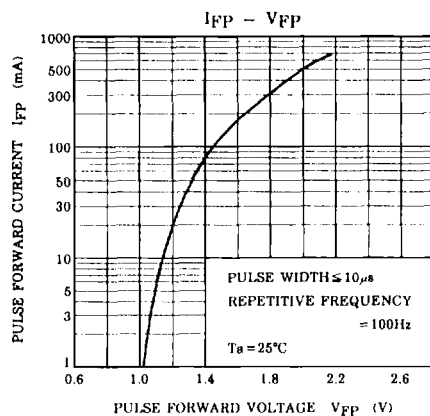
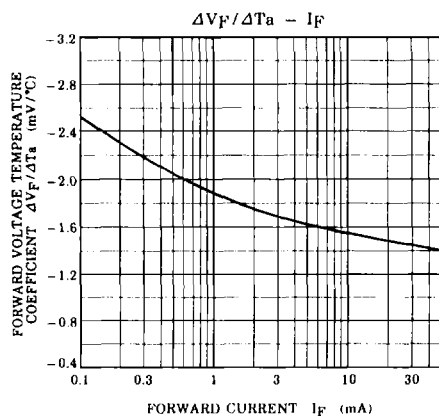
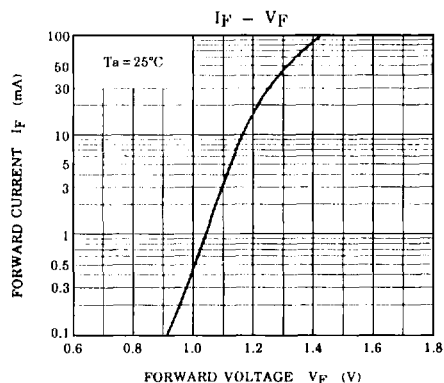
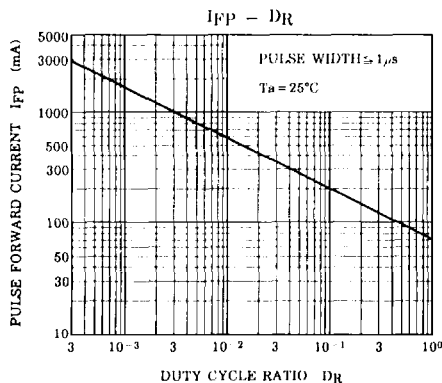
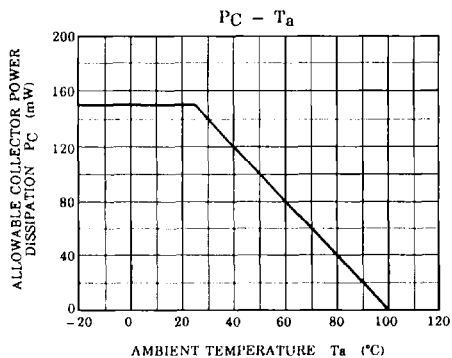
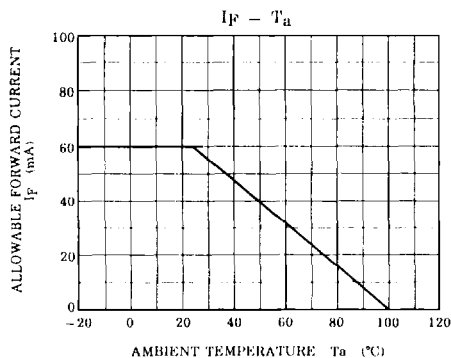
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC			SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage		V_F	$I_F=10\text{mA}$	—	1.15	1.5	V
	Reverse Current		I_R	$V_R=3\text{V}$	—	—	100	μA
	Capacitance		C_D	$V=0, f=1\text{MHz}$	—	30	—	pF
DETECTOR	DC Forward Current Gain		h_{FE}	$V_{CE}=5, I_C=0.5\text{mA}$	—	10K	—	—
	Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	$I_C=1\text{mA}$	30	—	—	V
	Collector-Base Breakdown Voltage		$V_{(BR)CBO}$	$I_C=100\mu\text{A}$	30	—	—	V
	Emitter-Collector Breakdown Voltage		$V_{(BR)ECO}$	$I_E=100\mu\text{A}$	5	—	—	V
Collector Dark Current			I_{CEO}	$V_{CE}=10\text{V}$	—	1.0	100	nA
COUPLED	Collector Output Current	4N32, 4N32A, 4N33	I_C	$I_F=10\text{mA}, V_{CE}=10\text{V}$	50	—	—	mA
		4N29, 4N29A, 4N30			10	—	—	
		4N31			5	—	—	
	Collector-Emitter Saturation Voltage	4N29, 4N29A, 4N30, 4N32, 4N32A, 4N33	$V_{CE(sat)}$	$I_F=8\text{mA}, I_C=2\text{mA}$	—	—	1.0	V
		4N31			—	—	1.2	
	Turn-on Time		t_{on}	$I_F=200\text{mA}, V_{CC}=10\text{V}$ $I_C=50\text{mA}$	—	—	5	μs
	Turn-off Time	4N29, 4N29A 4N30, 4N31	t_{off}		—	—	40	μs
		4N32, 4N32A 4N33					100	
	Capacitance Input to Output		C_S	$V=0, f=1\text{MHz}$	—	0.8	—	pF
	Isolation Resistance		R_S	$V=500\text{V}$	—	10^{11}	—	Ω
	Isolation Voltage			BV_S	AC, 1 Minute R. H. $\leq 60\%$	2500	—	—
4N29, 4N29A, 4N32, 4N32A 4N30, 4N31 4N33 4N29A, 4N32A		BV_S^*	AC, Peak	2500	—	—	Vpk	
				1500	—	—		
			AC, 1 second	1775	—	—	Vrms	

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

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