

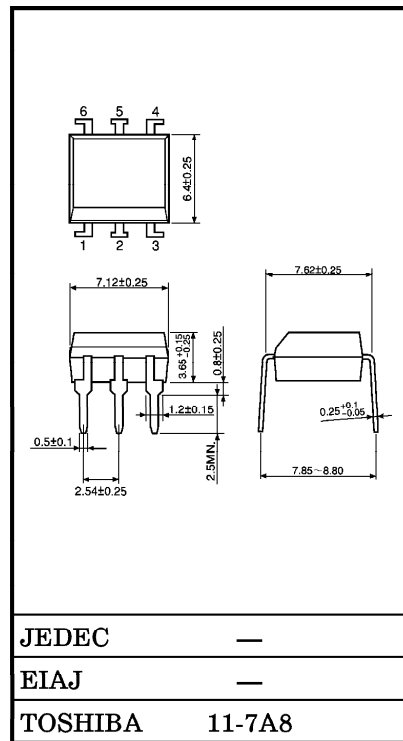
(4N35(Short))

- AC LINE / DIGITAL LOGIC ISOLATOR.
- DIGITAL LOGIC/DIGITAL LOGIC ISOLATOR.
- TELEPHONE LINE RECEIVER.
- TWISTED PAIR LINE RECEIVER.
- HIGH FREQUENCY POWER SUPPLY FEEDBACK CONTROL.
- RELAY CONTACT MONITOR.

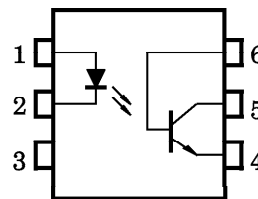
The TOSHIBA 4N35 (Short) through 4N37 (Short) consists of a gallium arsenide infrared emitting diode coupled with a silicon phototransistor in a dual in-line package.

- Switching Speeds : $3\mu\text{s}$ (Typ.)
- DC Current Transfer Ratio : 100% (Min.)
- Isolation Resistance : $10^{11}\Omega$ (Min.)
- Isolation Voltage : 2500Vrms (Min.)
- UL Recognized : UL1577, File No. E67349

Unit in mm



PIN CONFIGURATIONS (TOP VIEW)



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

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(4N35(Short))

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT	
LED	Forward Current (Continuous)	I_F	60	mA	
	Forward Current Derating	$\Delta I_F / ^\circ\text{C}$	0.8*	mA / °C	
	Peak Forward Current (Note)	I_{PF}	3	A	
	Power Dissipation	P_D	100	mW	
	Power Dissipation Derating	$\Delta P_D / ^\circ\text{C}$	1.33*	mW / °C	
	Reverse Voltage	V_R	6	V	
DETECTOR	Collector-Emitter Voltage	BV_{CEO}	30	V	
	Collector-Base Voltage	BV_{CBO}	70	V	
	Emitter-Collector Voltage	BV_{ECO}	7	V	
	Collector Current (Continuous)	I_C	100	mA	
	Power Dissipation	P_C	300	mW	
	Power Dissipation Derating	$\Delta P_C / ^\circ\text{C}$	4.0*	mW / °C	
COUPLED	Storage Temperature	T_{stg}	-55~150	°C	
	Operating Temperature	T_{opr}	-55~100	°C	
	Lead Soldering Temperature (at 10s)	T_{sold}	260	°C	
	Total Package Power Dissipation	P_T	300	mW	
	Total Package Power Dissipation Derating	$\Delta P_T / ^\circ\text{C}$	3.3*	mW / °C	
	Input to Output Isolation Voltage (AC, 1 Minute)		BV_S	2500	Vrms
		4N35	BV_S^{**}	2500 / 3550	Vrms / Vpk
4N36		1750 / 2500			
4N37	1050 / 1500				

Note : Pulse width 1 μ s, 300pps

* Above 25°C ambient.

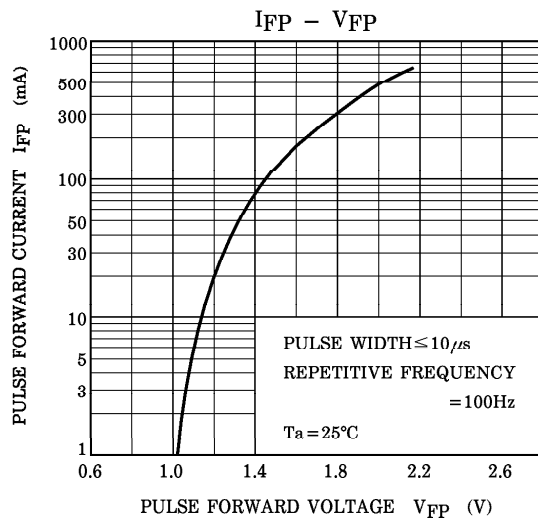
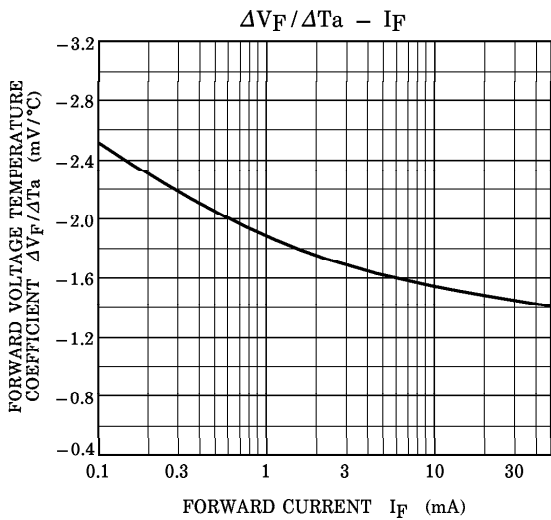
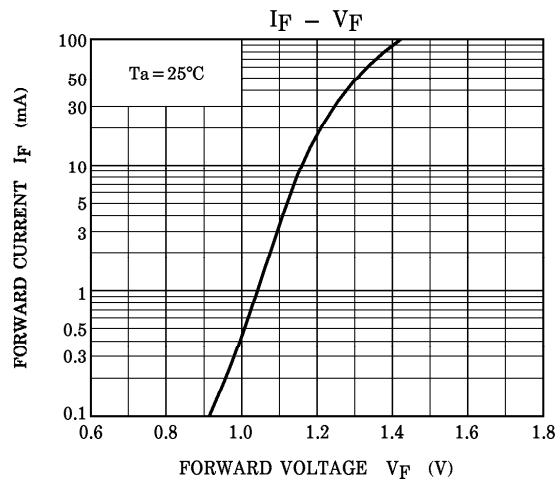
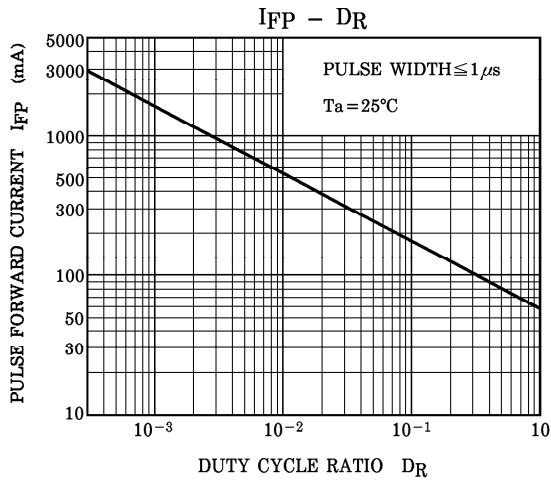
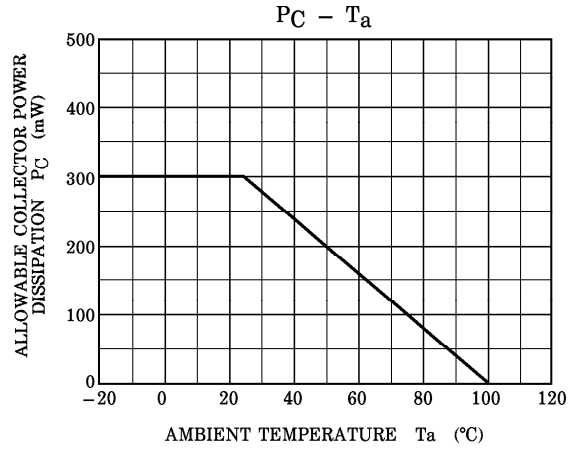
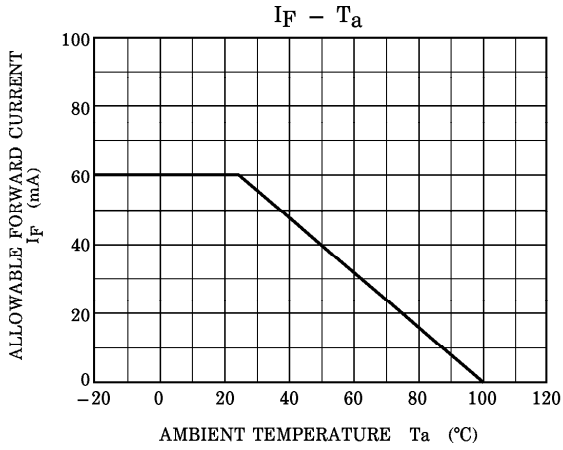
** JEDEC registered maximum BV_S , however, TOSHIBA specifies a maximum BV_S of 2500V_{rms}, 1 minute.

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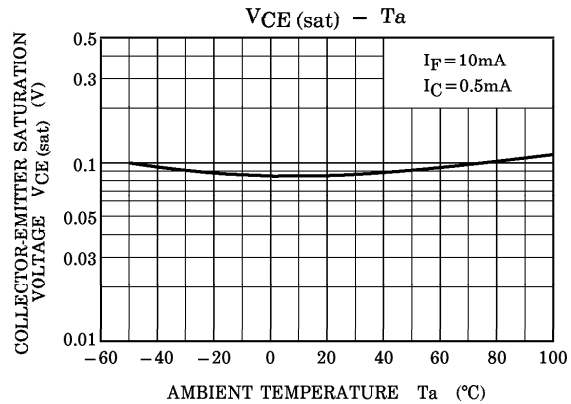
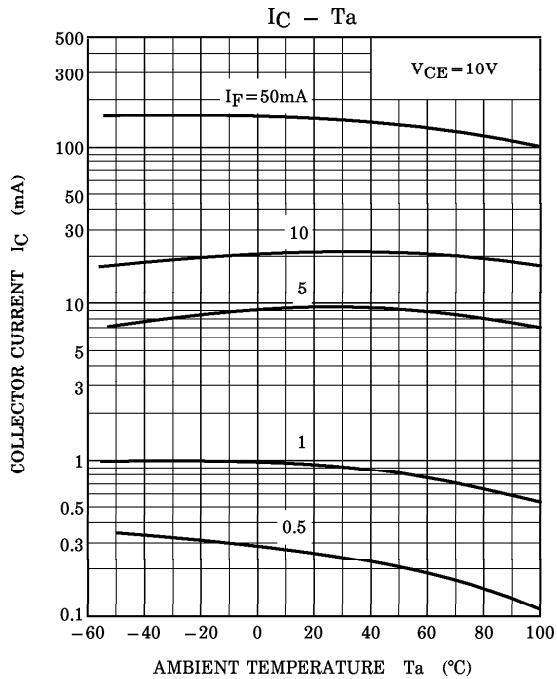
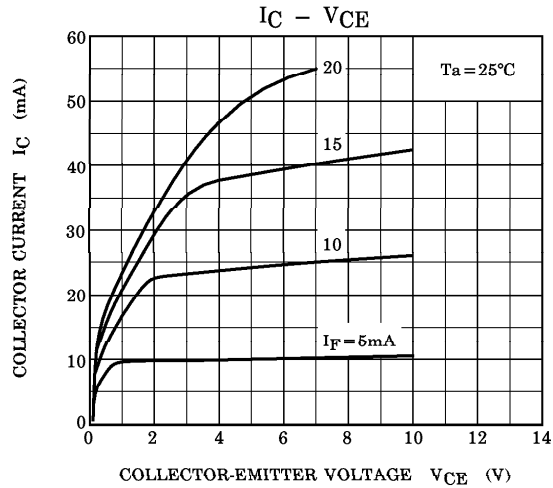
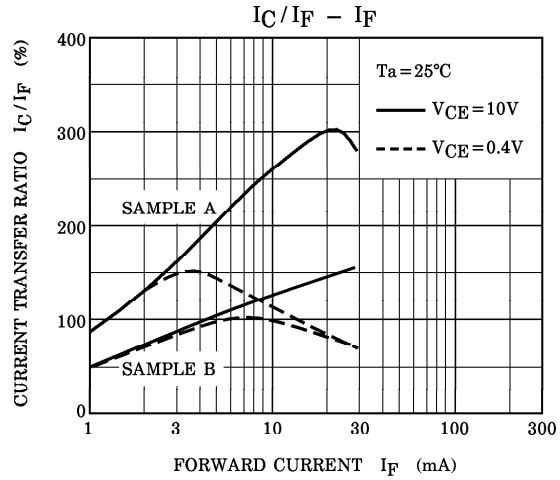
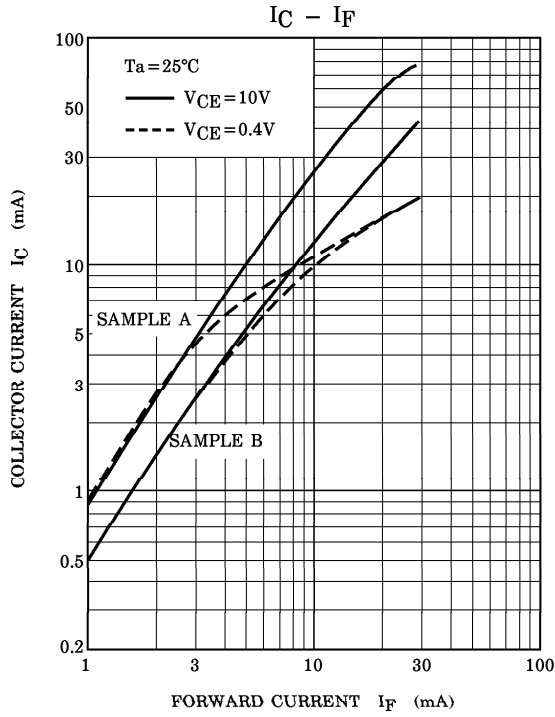
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
LED	Forward Voltage	V _F	I _F = 10mA	0.8	1.15	1.5	V	
			I _F = 10mA, Ta = -55°C	0.9	—	1.7		
			I _F = 10mA, Ta = 100°C	0.7	—	1.4		
Reverse Current	I _R	V _R = 6V	—	—	10	μA		
Capacitance	C _D	V = 0, f = 1MHz	—	30	100	pF		
DETECTOR	DC Forward Current Gain	h _{FE}	V _{CE} = 5V, I _C = 500μA	—	200	—	—	
	Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	I _C = 10mA	30	—	—	V	
	Collector-Base Breakdown Voltage	V _{(BR)CBO}	I _C = 100μA	70	—	—	V	
	Emitter-Collector Breakdown Voltage	V _{(BR)ECO}	I _E = 100μA	7	—	—	V	
	Collector Dark Current	I _{CEO}	V _{CE} = 10V	—	1	50	nA	
	Collector Dark Current	I _{CEO}	V _{CE} = 30V, Ta = 100°C	—	—	500	μA	
	Collector-Emitter Capacitance	C _{CE}	V = 0, f = 1MHz	—	10	—	pF	
COUPLED	Current Transfer Ratio	I _C / I _F	I _F = 10mA, V _{CE} = 10V	100	—	—	%	
			I _F = 10mA, V _{CE} = 10V Ta = -55°C	40	—	—		
			I _F = 10mA, V _{CE} = 10V Ta = 100°C	40	—	—		
	Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _F = 10mA, I _C = 0.5mA	—	0.1	0.3	V	
	Capacitance Input to Output	C _S	V _S = 0, f = 1MHz	—	0.8	2.5	pF	
	Isolation Resistance	R _S	V _S = 500V, R. H. ≤ 60%	10 ¹¹	—	—	Ω	
	Input to Output Isolation Current (Pulse Width = 8ms)	4N35	I _{IO}	V _{io} = 3550Vpk	—	—	100	μA
		4N36		V _{io} = 2500Vpk	—	—	100	
		4N37		V _{io} = 1500Vpk	—	—	100	
	Turn-on Time	t _{on}	V _{CC} = 10V, I _C = 2mA R _L = 100Ω	—	3	10	μs	
Turn-off Time	t _{off}	—		3	10			

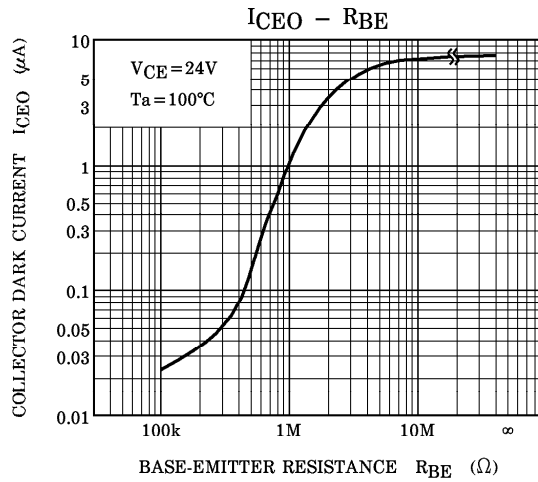
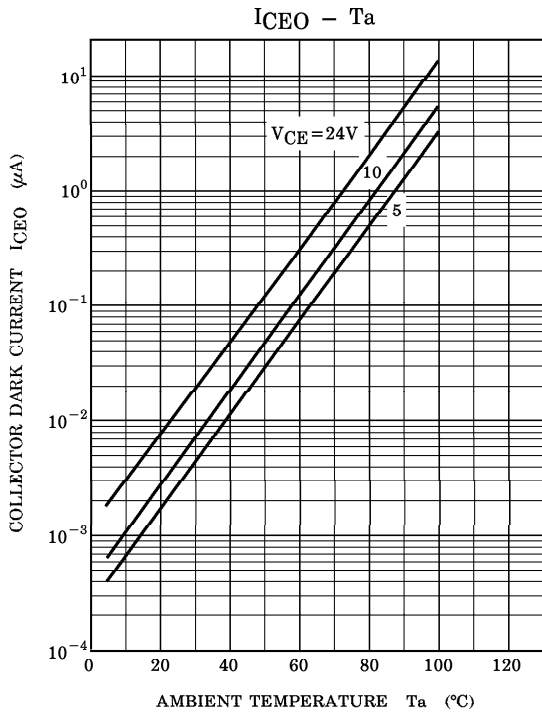
(4N35(Short))



(4N35(Short))



(4N35(Short))



**SWITCHING CHARACTERISTICS - R_{BE}
 (SATURATED OPERATION)**

