

TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-TRANSISTOR

TLP627, TLP627-2, TLP627-4

PROGRAMMABLE CONTROLLERS.
DC - OUTPUT MODULE.
TELECOMMUNICATION.

The TOSHIBA TLP627, -2, and -4 consist of a gallium arsenide infrared emitting diode optically coupled to a darlington connected phototransistor which has an integral base-emitter resistor to optimize switching speed and elevated temperature characteristics.

The TLP627-2 offers two isolated channels in a eight lead plastic DIP, while the TLP627-4 provide four isolated channels per package.

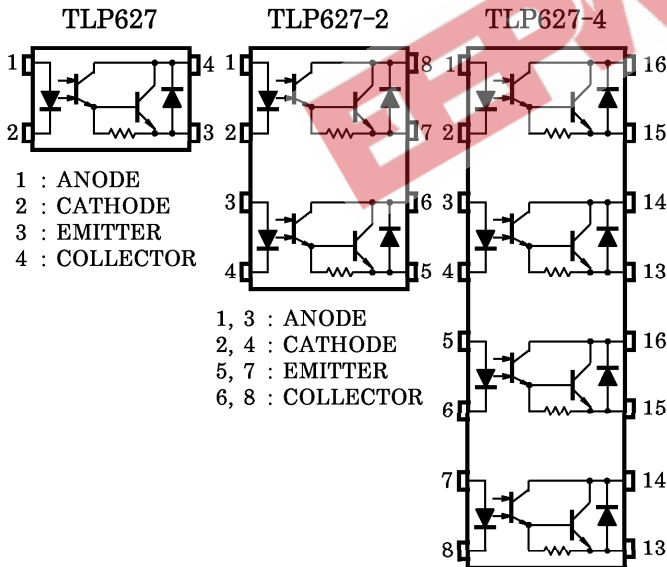
- Collector-Emitter Voltage : 300V (Min.)
- Current Transfer Ratio : 1000% (Min.)
- Isolation Voltage : 5000Vrms (Min.)
- UL Recognized : UL1577, File No. E67349

	MADE IN JAPAN		MADE IN THAILAND	
UL Recognized	E67349	*1	E152349	*1
BSI Approved	7426, 7427	*2	7426, 7427	*2

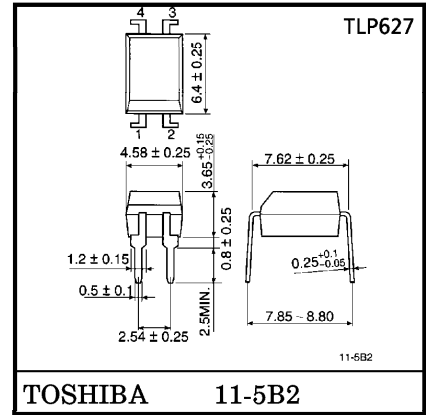
*1 UL1577

*2 BS EN60065 : 1994, BS EN60950 : 1992

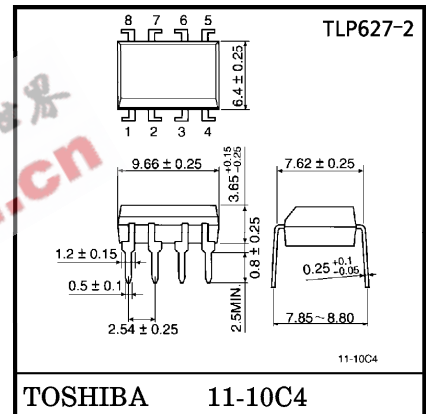
PIN CONFIGURATIONS (TOP VIEW)



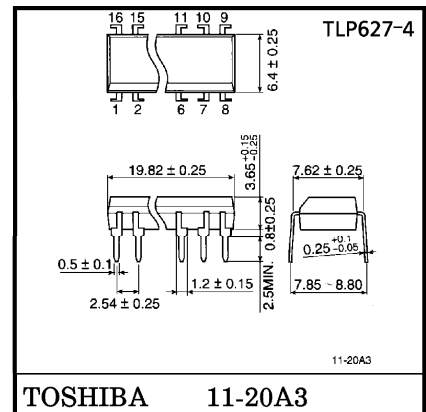
Unit in mm



Weight : 0.26g



Weight : 0.54g



Weight : 1.1g

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING		UNIT
			TLP627	TLP627-2 TLP627-4	
LED	Forward Current	I _F	60	50	mA
	Forward Current Derating	ΔI _F /°C	-0.7 (Ta ≥ 39°C)	-0.5 (Ta ≥ 25°C)	mA/°C
	Pulse Forward Current	I _{FP}	1 (100μs pulse, 100pps)		A
	Power Dissipation (1 Circuit)	P _D	100	70	mW
	Power Dissipation Derating (Ta ≥ 25°C, 1 Circuit)	ΔP _D /°C	-1.0	-0.7	mW/°C
	Reverse Voltage	V _R	5		V
	Junction Temperature	T _j	125		°C
DETECTOR	Collector-Emitter Voltage	V _{CEO}	300		V
	Emitter-Collector Voltage	V _{ECO}	0.3		V
	Collector Current	I _C	150		mA
	Collector Power Dissipation (1 Circuit)	P _C	150 (*300)	100	mW
	Collector Power Dissipation Derating (Ta ≥ 25°C, 1 Circuit)	ΔP _C /°C	-1.5 (*-3.5)	-1.0	mW/°C
	Junction Temperature	T _j	125		°C
Storage Temperature Range		T _{stg}	-55~125		°C
Operating Temperature Range		T _{opr}	-55~100		°C
Lead Soldering Temperature		T _{sold}	260 (10sec)		°C
Total Package Power Dissipation (1 Circuit)		P _T	250 (*320)	150	mW
Total Package Power Dissipation Derating (Ta ≥ 25°C, 1 Circuit)		ΔP _T /°C	-2.5 (*-3.2)	-1.5	mW/°C
Isolation Voltage		BV _S	5000 (AC, 1min., R.H. ≤ 60%)		V _{rms}

* I_F = 20mA Max

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V _{CC}	—	—	200	V
Forward Current	I _F	—	16	25	mA
Collector Current	I _C	—	—	120	mA
Operating Temperature	T _{opr}	-25	—	85	°C

INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V_F	$I_F = 10\text{mA}$	1.0	1.15	1.3	V
	Reverse Current	I_R	$V_R = 5\text{V}$	—	—	10	μA
	Capacitance	C_T	$V = 0, f = 1\text{MHz}$	—	30	—	pF
DETECTOR	Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 0.1\text{mA}$	300	—	—	V
	Emitter-Collector Breakdown Voltage	$V_{(BR)ECO}$	$I_E = 0.1\text{mA}$	0.3	—	—	V
	Collector Dark Current	I_{CEO}	$V_{CE} = 200\text{V}$	—	10	200	nA
			$V_{CE} = 200\text{V}, T_a = 85^\circ\text{C}$	—	—	20	μA
Capacitance Collector to Emitter	C_{CE}	$V = 0, f = 1\text{MHz}$	—	10	—	pF	

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Current Transfer Ratio	I_C / I_F	$I_F = 1\text{mA}, V_{CE} = 1\text{V}$	1000	4000	—	%
Saturated CTR	$I_C / I_F(\text{sat})$	$I_F = 10\text{mA}, V_{CE} = 1\text{V}$	500	—	—	%
Collector-Emitter Saturation Voltage	$V_{CE(\text{sat})}$	$I_C = 10\text{mA}, I_F = 1\text{mA}$	—	—	1.0	V
		$I_C = 100\text{mA}, I_F = 10\text{mA}$	0.3	—	1.2	

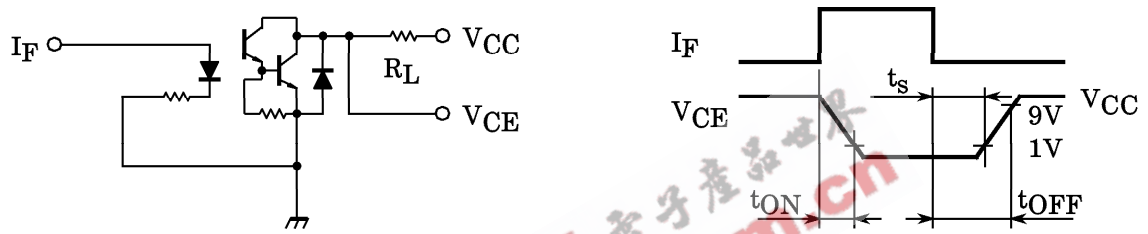
ISOLATION CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance Input to Output	C_S	$V_S = 0, f = 1\text{MHz}$	—	0.8	—	pF
Isolation Resistance	R_S	$V_S = 500\text{V R.H.} \leq 60\%$	5×10^{10}	10^{14}	—	Ω
Isolation Voltage	B_V	AC, 1 minute	5000	—	—	V_{rms}
		AC, 1 second, in oil	—	10000	—	
		DC, 1 minute, in oil	—	10000	—	Vdc

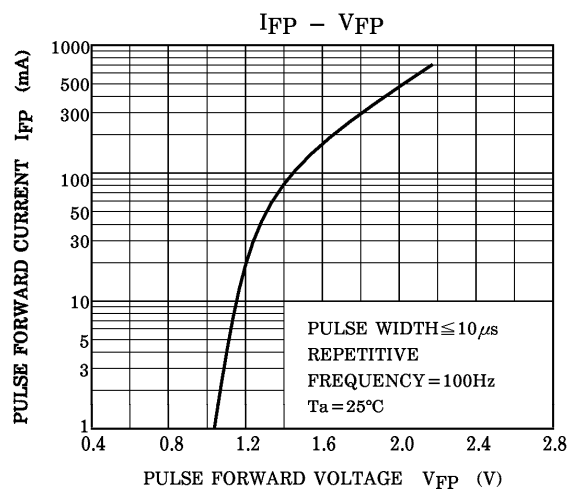
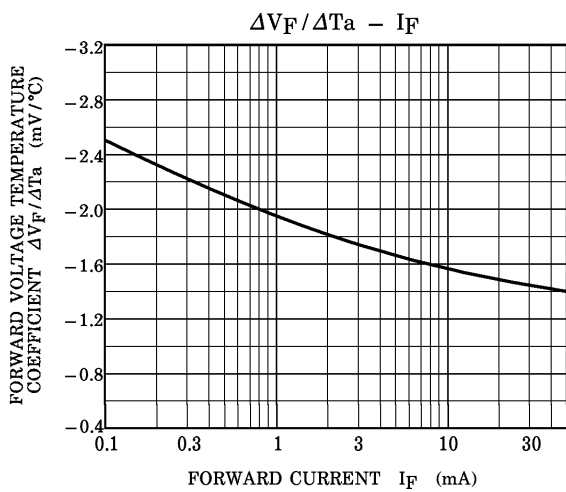
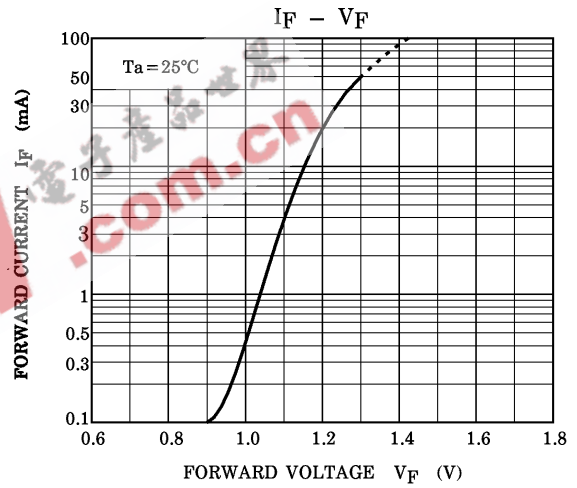
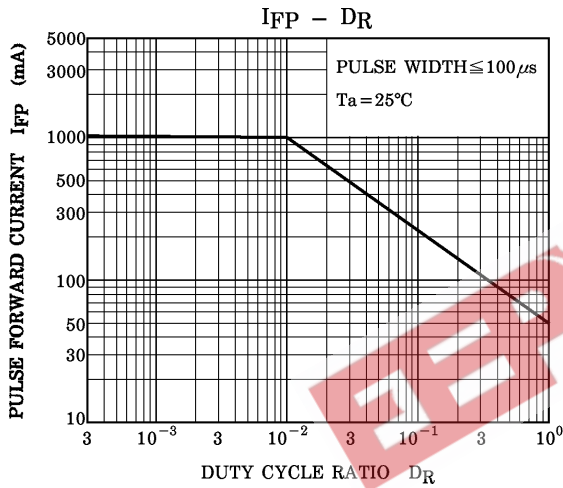
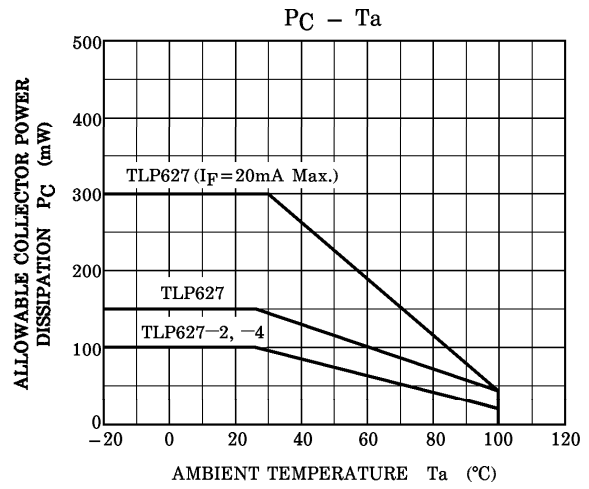
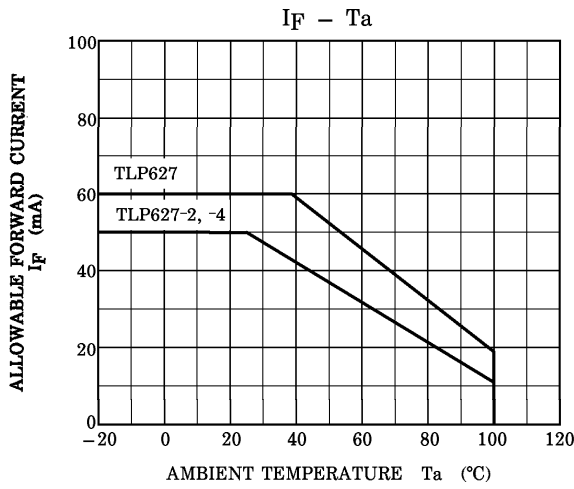
SWITCHING CHARACTERISTICS (Ta = 25°C)

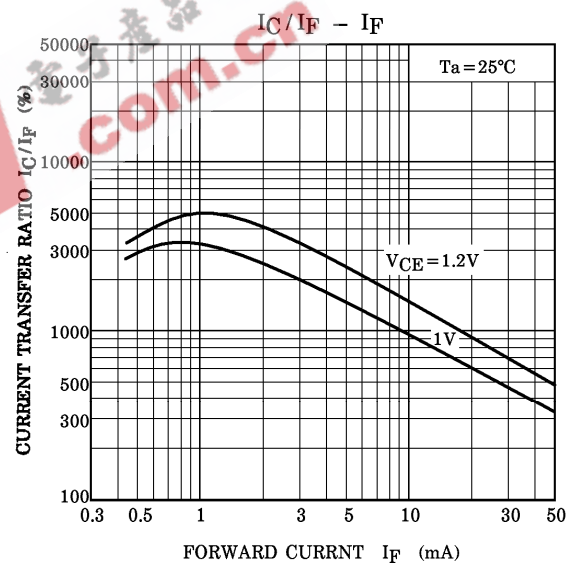
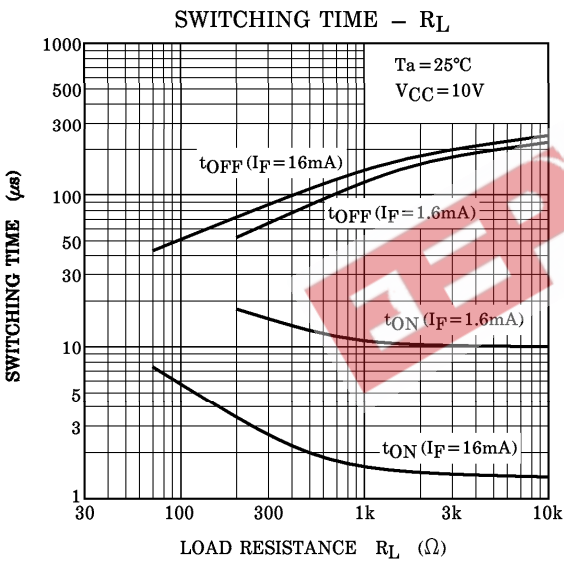
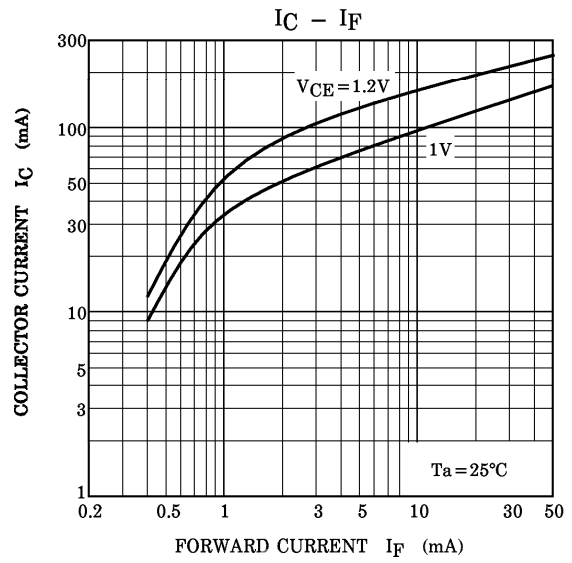
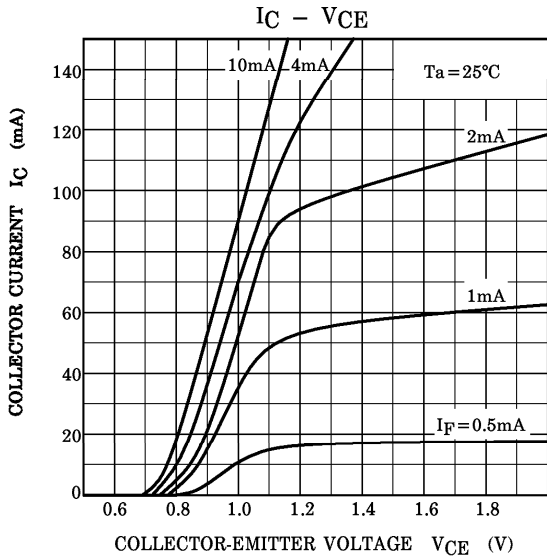
CHARACTERICTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Rise Time	t_r	$V_{CC} = 10V$ $I_C = 10mA$ $R_L = 100\Omega$	—	40	—	μS
Fall Time	t_f		—	15	—	
Turn-on Time	t_{on}		—	50	—	
Turn-off Time	t_{off}		—	15	—	
Turn-on Time	t_{ON}	$R_L = 180\Omega$ (Fig.1) $V_{CC} = 10V, I_F = 16mA$	—	5	—	μS
Strage Time	t_s		—	40	—	
Tuen-off Time	t_{OFF}		—	80	—	

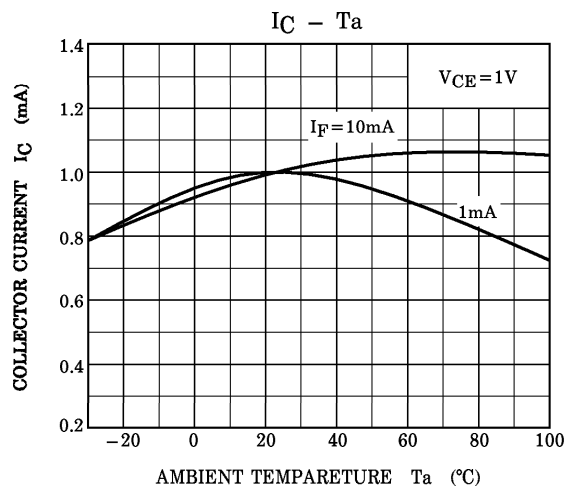
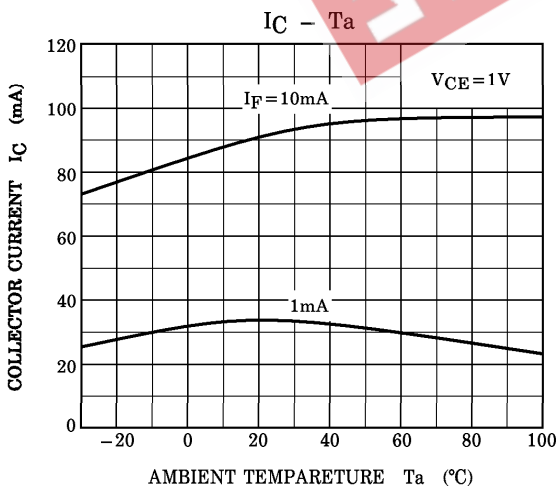
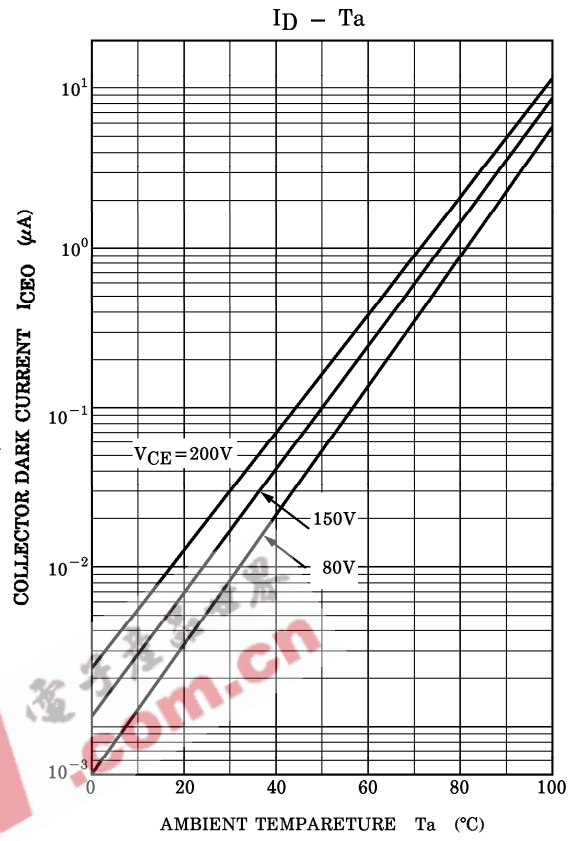
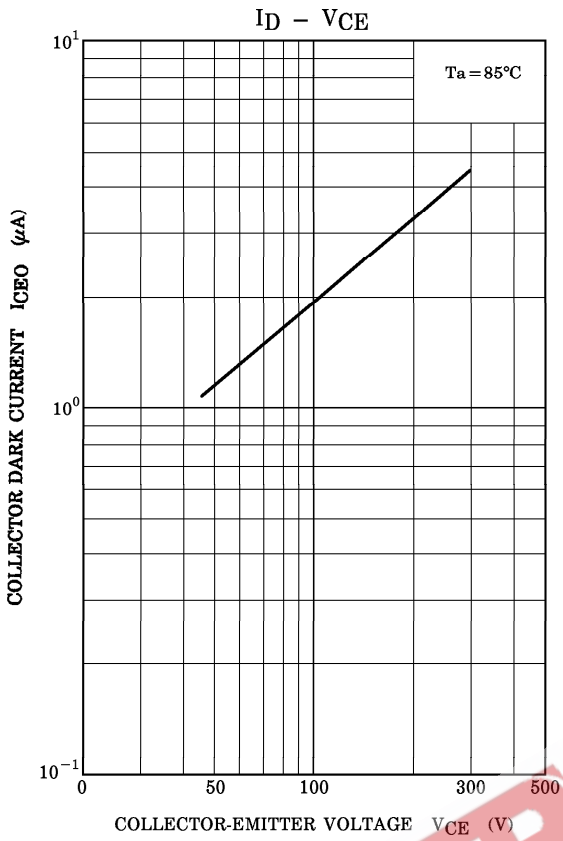
Fig.1 SWITCHING TIME TEST CIRCUIT



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