

TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-TRANSISTOR

TLP626, TLP626-2, TLP626-4

PROGRAMMABLE CONTROLLERS
AC/DC-INPUT MODULE
TELECOMMUNICATION

The TOSHIBA TLP626, -2 and -4 consist of gallium arsenide infrared emitting diodes connected in inverse parallel, optically coupled to a photo-transistor.

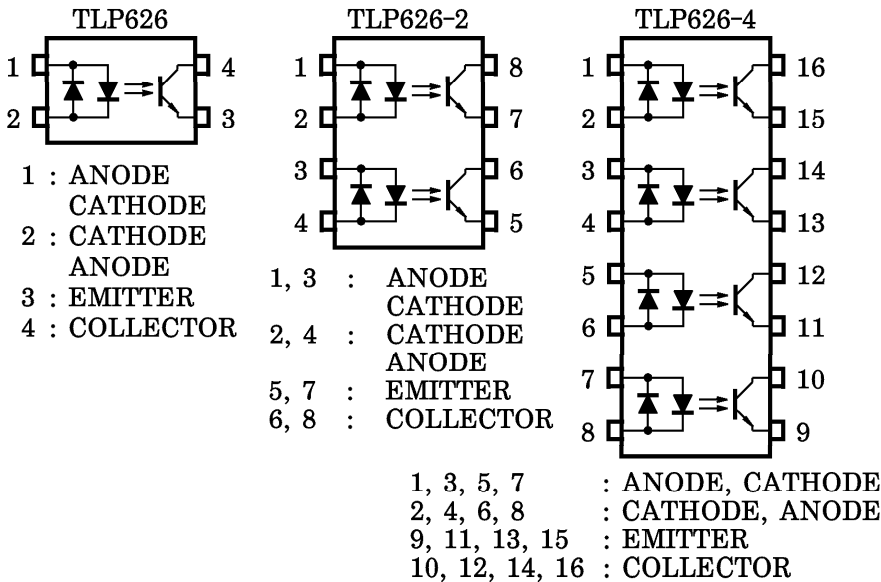
The TLP626-2 offers two isolated channels in an eight lead plastic DIP, while the TLP626-4 provides four isolated channels in a sixteen plastic DIP.

- Collector-Emitter Voltage : 55V (Min.)
- Current Transfer Ratio

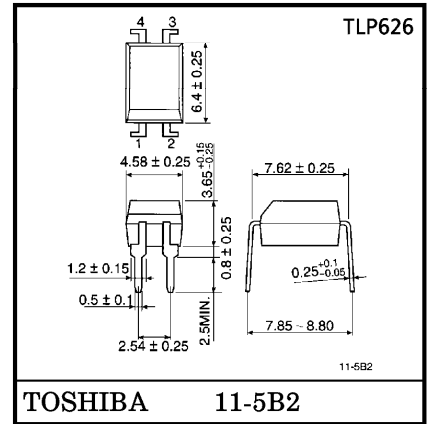
CLASSIFICATION	CURRENT TRANSFER RATIO (Min.)			MARKING OF CLASSIFICATION
	Ta = 25°C		Ta = -25~75°C	
	If = ±1mA VCE = 0.5V	If = ±0.5mA VCE = 1.5V	If = ±1mA VCE = 0.5V	
Rank BV	200%	100%	100%	BV
Standard	100%	50%	50%	BV, Blank

- Isolation Voltage : 5000V_{rms} Min.
- UL Recognized : UL1577, File No. E67349
- BSI Approved : BS EN60065 : 1994 Certificate No.7426
BS EN60950 : 1992 Certificate No.7427
- Note : Application type name for certification test, please use standard product type name, i.e.
TLP626 (BV) : TLP626

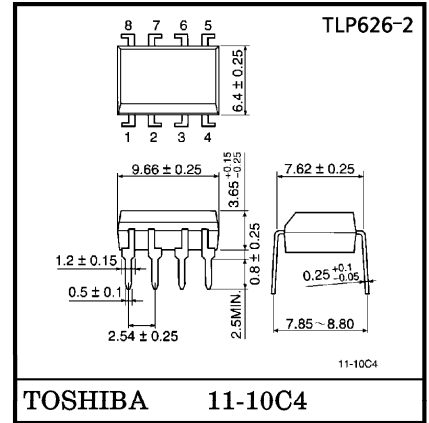
PIN CONFIGURATIONS (TOP VIEW)



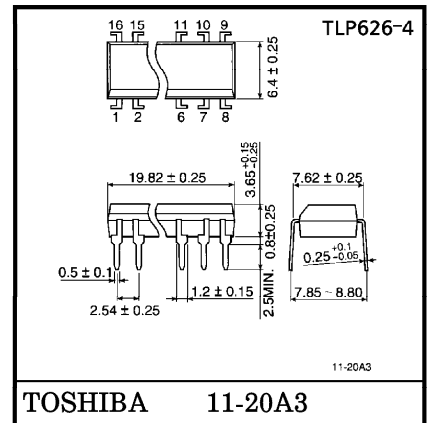
Unit in mm



Weight : 0.26g



Weight : 0.54g



Weight : 1.1g

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING		UNIT
			TLP626	TLP626-2 TLP626-4	
LED	Forward Current	I_F	60	50	mA
	Forward Current Derating	$\Delta I_F / ^\circ C$	-0.7 (Ta \geq 39°C)	-0.5 (Ta \geq 25°C)	mA / °C
	Pulse Forward Current	I_{FP}	1 (100 μ s pulse, 100pps)		A
	Power Dissipation (1 Circuit)	P_D	100	70	mW
	Power Dissipation Derating (Ta \geq 25°C, 1 Circuit)	$\Delta P_D / ^\circ C$	-1.0	-0.7	mW/°C
	Junction Temperature	T_j	125		°C
DETECTOR	Collector-Emitter Voltage	V_{CEO}	55		V
	Emitter-Collector Voltage	V_{ECO}	7		V
	Collector Current	I_C	50		mA
	Collector Power Dissipation (1 Circuit)	P_C	150	100	mW
	Collector Power Dissipation Derating (Ta \geq 25°C, 1 Circuit)	$\Delta P_C / ^\circ C$	-1.5	-1.0	mW/°C
	Junction Temperature	T_j	125		°C
Storage Temperature Range	T_{stg}	-55~125		°C	
Operating Temperature Range	P_{opr}	-55~100		°C	
Lead Soldering Temperature	T_{sol}	260 (10s)		°C	
Total Package Power Dissipation (1 Circuit)	P_T	250	150	mW	
Total Package Power Dissipation Derating (Ta \geq 25°C, 1 Circuit)	$\Delta P_T / ^\circ C$	-2.5	-1.5	mW/°C	
Isolation Voltage (Note 1)	BV_S	5000 (AC, 1min., RH \leq 60%)		Vrms	

(Note 1) Device considered a two terminal : LED side pins shorted together, and DETECTOR side pins shorted together.

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{CC}	—	5	24	V
Forward Current	I_F (RMS)	—	1.6	20	mA
Collector Current	I_C	—	1	10	mA
Operating Temperature	T_{opr}	-25	—	75	°C

INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V _F	I _F = ±10mA	1.0	1.15	1.3	V
	Reverse Current	I _F	V _F = ±0.7V	—	2.5	20	μA
	Capacitance	C _T	V = 0, f = 1MHz	—	60	—	pF
DETECTOR	Collector-Emitter Breakdown Voltage	V _{(BR) CEO}	I _C = 0.5mA	55	—	—	V
	Emitter-Collector Breakdown Voltage	V _{(BR) ECO}	I _E = 0.1mA	7	—	—	V
	Collector Dark Current	I _{CEO}	V _{CE} = 24V	—	10	100	nA
			V _{CE} = 24V, Ta = 85°C	—	2	50	μA
Capacitance Collector to Emitter	C _{CCE}	V = 0, f = 1MHz	—	12	—	pF	

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

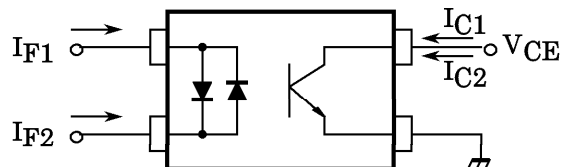
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Current Transfer Ratio	I _C / I _F	I _F = ±1mA, V _{CE} = 0.5V Rank BV	100	—	1200	%
			200	—	1200	
Low Input CTR	I _C / I _F (low)	I _F = ±0.5mA, V _{CE} = 1.5V Rank BV	50	—	—	%
			100	—	—	
Collector-Emitter Saturation Voltage	V _{CE} (sat)	I _C = 0.5mA, I _F = ±1mA I _C = 1mA, I _F = ±1mA Rank BV	—	—	0.4	V
			—	0.2	—	
			—	—	0.4	
Off-State Collector Current	I _C (off)	V _F = ±0.7V, V _{CE} = 24V	—	1	10	μA
CTR Symmetry *1	I _C (ratio)	I _C (I _F = -1mA) / I _C (I _F = 1mA)	0.5	—	2	—

COUPLED ELECTRICAL CHARACTERISTICS (Ta = -25~75°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Current Transfer Ratio	I _C / I _F	I _F = 1mA, V _{CE} = 0.5V Rank BV	50	—	—	%
			100	—	—	
Low Input CTR	I _C / I _F (low)	I _F = 0.5mA, V _{CE} = 1.5V Rank BV	—	50	—	%
			—	100	—	

*1

$$I_C \text{ (ratio)} = \frac{I_{C2} (I_F = I_{F2}, V_{CE} = 5V)}{I_{C1} (I_F = I_{F1}, V_{CE} = 5V)}$$



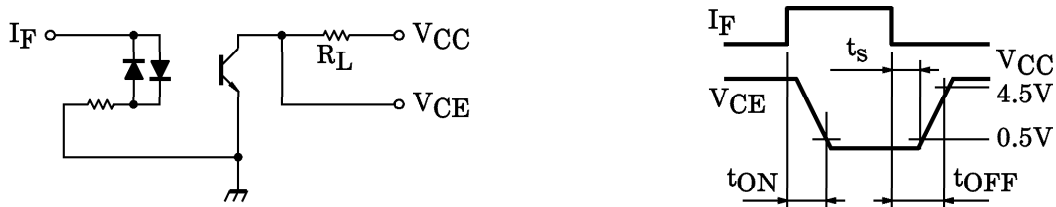
ISOLATION CHARACTERISTICS (Ta = 25°C)

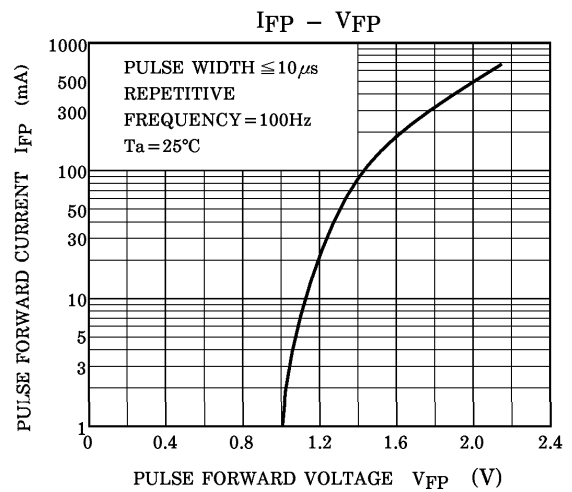
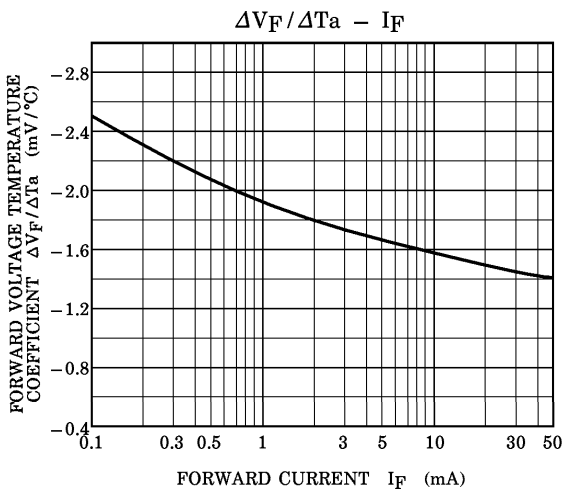
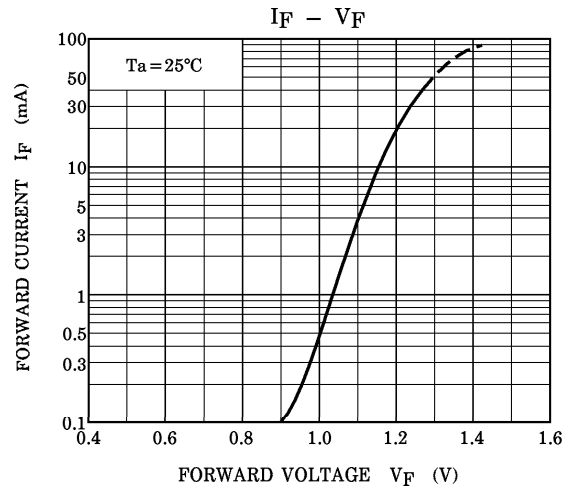
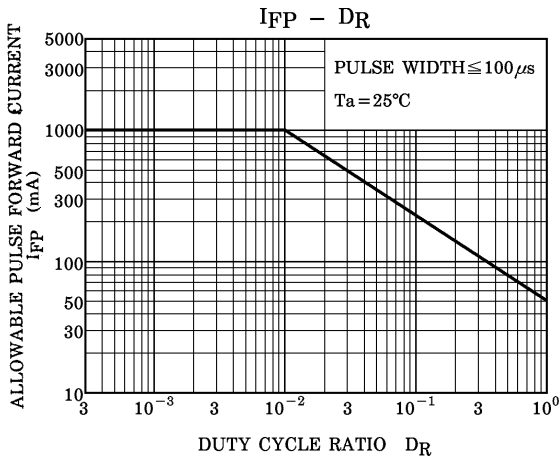
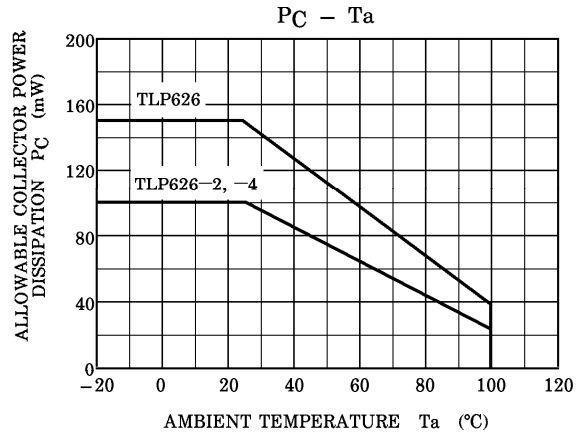
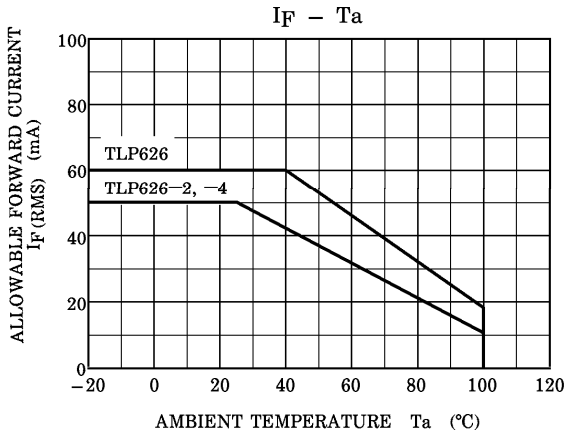
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance Input to Output	C _S	V _S = 0, f = 1MHz	—	0.8	—	pF
Isolation Resistance	R _S	V _S = 500V	5 × 10 ¹⁰	10 ¹⁴	—	Ω
Isolation Voltage	BV _S	AC, 1 minute	5000	—	—	V _{rms}
		AC, 1 second, in oil	—	10000	—	
		DC, 1 minute, in oil	—	10000	—	V _{dc}

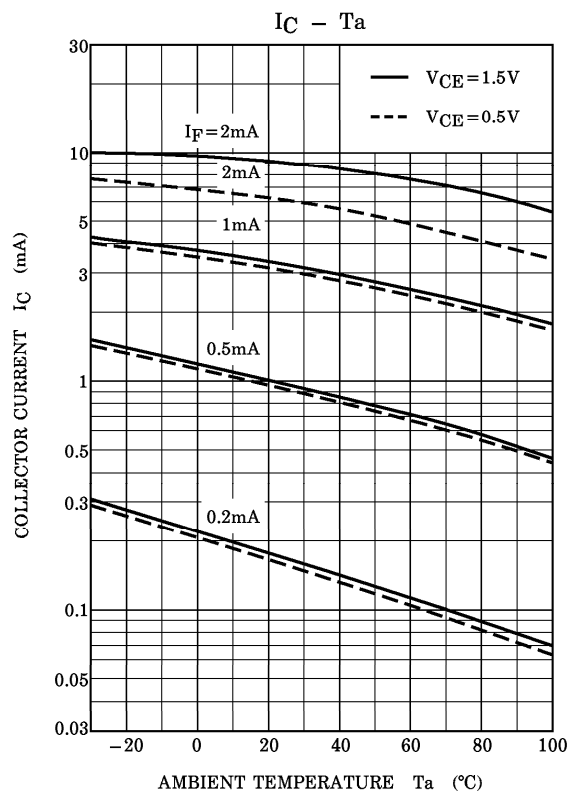
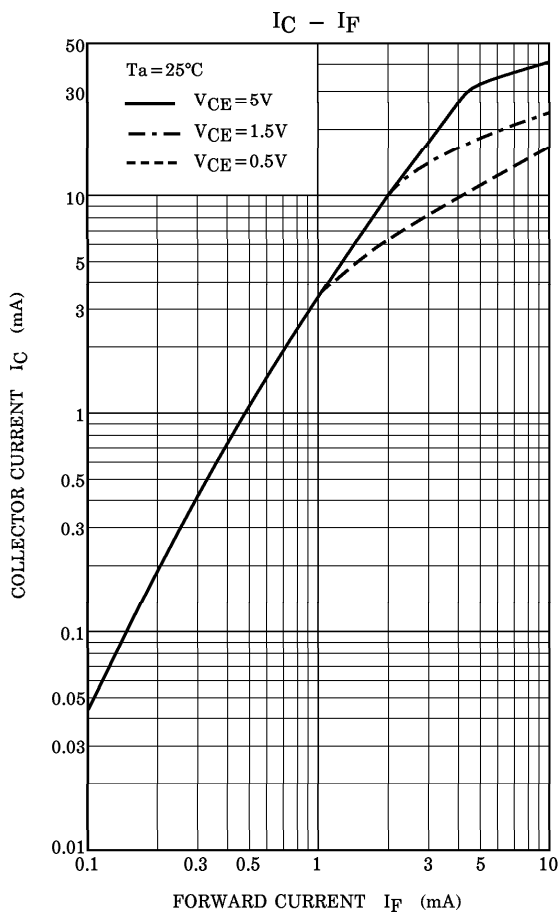
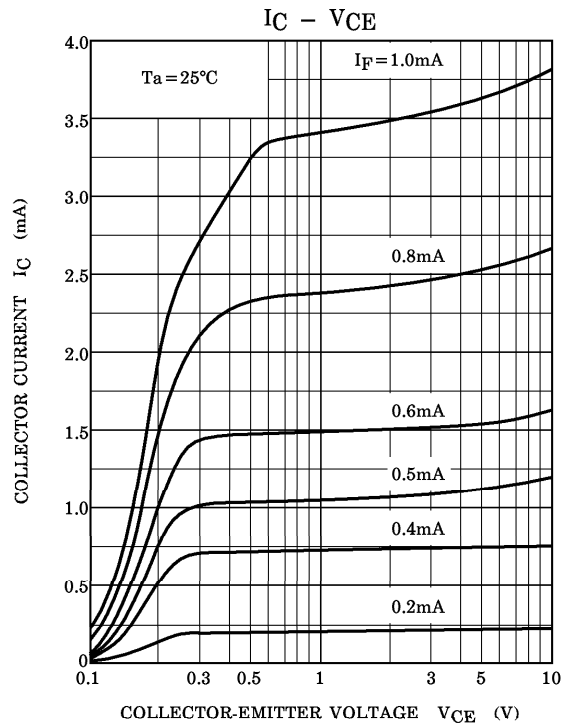
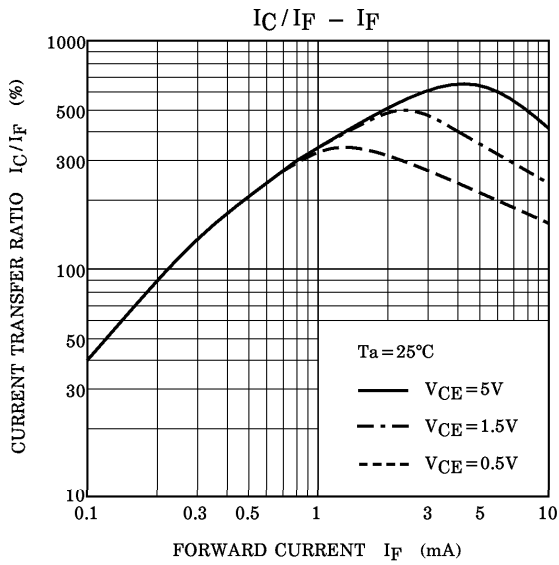
SWITCHING CHARACTERISTICS (Ta = 25°C)

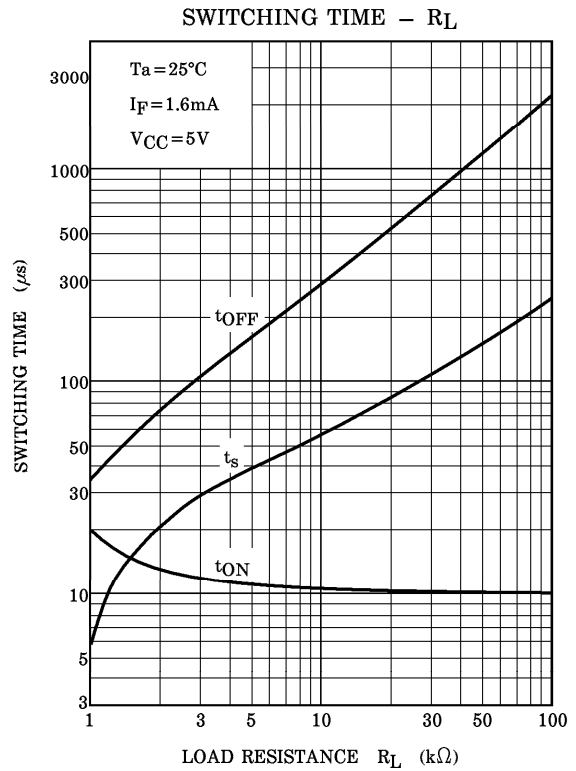
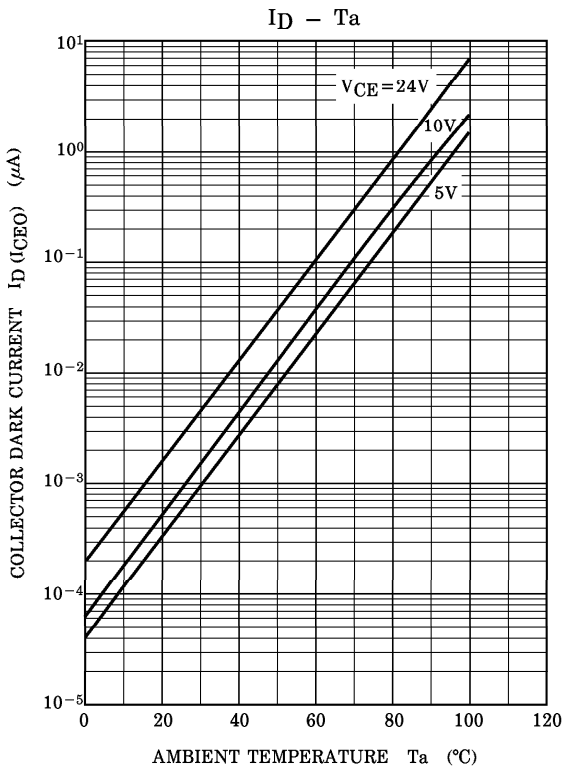
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Rise Time	t _r	V _{CC} = 10V, I _C = 2mA R _L = 100Ω	—	8	—	μs
Fall Time	t _f		—	8	—	
Turn-on Time	t _{on}		—	10	—	
Turn-off Time	t _{off}		—	8	—	
Turn-on Time	t _{ON}	R _L = 4.7kΩ (Fig.1) V _{CC} = 5V, I _F = ± 1.6mA	—	10	—	μs
Storage Time	t _s		—	50	—	
Turn-off Time	T _{OFF}		—	300	—	

Fig. 1 SWITCHING OPERATING CONDITIONS









RESTRICTIONS ON PRODUCT USE

000707EBC

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