

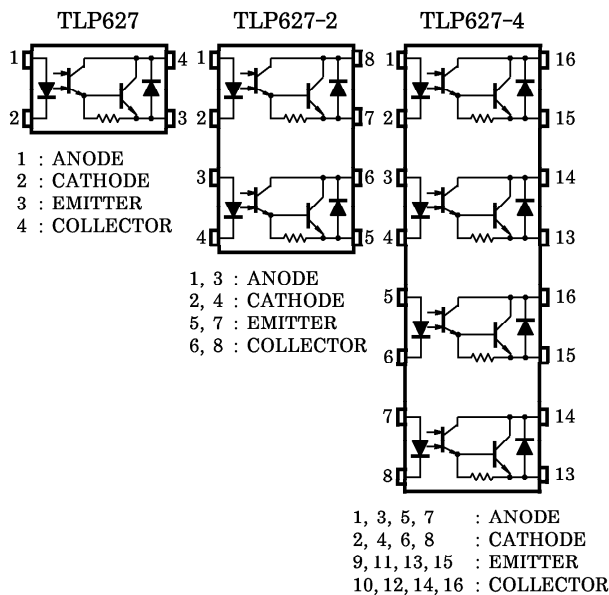
(TLP627)

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 package, 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

PIN CONFIGURATIONS (TOP VIEW)



Unit in mm

		<p>TLP627 Weight : 0.26g</p>
JEDEC	—	
EIAJ	—	
TOSHIBA	11-5B2	
		<p>TLP627-2 Weight : 0.54g</p>
JEDEC	—	
EIAJ	—	
TOSHIBA	11-10C4	
		<p>TLP627-4 Weight : 1.1g</p>
JEDEC	—	
EIAJ	—	
TOSHIBA	11-20A3	

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④

TLP627 - 1

1996 - 4 - 8

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(TLP627)

MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC		SYMBOL	RATING		UNIT
			TLP627	TLP627-2 TLP627-4	
LED	Forward Current	I_F	60	50	mA
	Forward Current Derating	$\Delta I_F / ^\circ\text{C}$	-0.7 ($T_a \geq 39^\circ\text{C}$)	-0.5 ($T_a \geq 25^\circ\text{C}$)	mA/ $^\circ\text{C}$
	Pulse Forward Current	I_{FP}	1 (100 μs pulse, 100pps)		A
	Power Dissipation (1 Circuit)	P_D	100	70	mW
	Power Dissipation Derating ($T_a \geq 25^\circ\text{C}$, 1 Circuit)	$\Delta P_D / ^\circ\text{C}$	-1.0	-0.7	mW/ $^\circ\text{C}$
	Reverse Voltage	V_R	5		V
	Junction Temperature	T_j	125		$^\circ\text{C}$
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 ($T_a \geq 25^\circ\text{C}$, 1 Circuit)	$\Delta P_C / ^\circ\text{C}$	-1.5 (*-3.5)	-1.0	mW/ $^\circ\text{C}$
	Junction Temperature	T_j	125		$^\circ\text{C}$
Storage Temperature Range		T_{stg}	-55~150		$^\circ\text{C}$
Operating Temperature Range		T_{opr}	-55~100		$^\circ\text{C}$
Lead Soldering Temperature		T_{sold}	260 (10sec)		$^\circ\text{C}$
Total Package Power Dissipation (1 Circuit)		P_T	200 (*320)	150	mW
Total Package Power Dissipation Derating ($T_a \geq 25^\circ\text{C}$, 1 Circuit)		$\Delta P_T / ^\circ\text{C}$	-2.0 (*-3.2)	-1.5	mW/ $^\circ\text{C}$
Isolation Voltage		BV_S	5000 (AC, 1min., R.H. \leq 60%)		V _{rms}

* $I_F = 20\text{mA Max}$

TLP627 - 2

1996 - 4 - 8

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(TLP627)

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	$I_C / I_{F(sat)}$	$I_F = 10\text{mA}, V_{CE} = 1\text{V}$	500	—	—	%
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10\text{mA}, I_F = 1\text{mA}$	—	—	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	BV_S	AC, 1 minute	5000	—	—	Vrms
		AC, 1 second, in oil	—	10000	—	
		DC, 1 minute, in oil	—	10000	—	Vdc

TLP627 - 3

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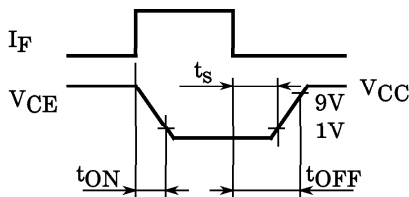
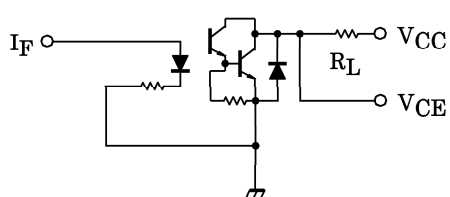
SWITCHING CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	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	—	

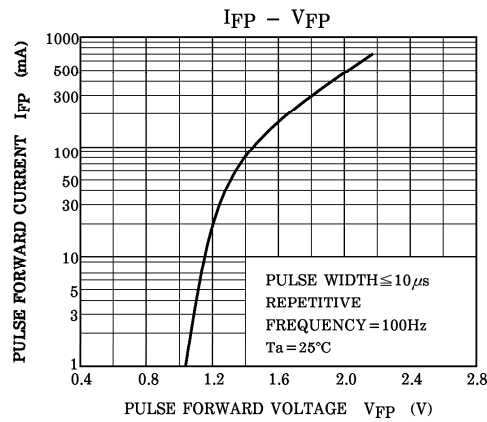
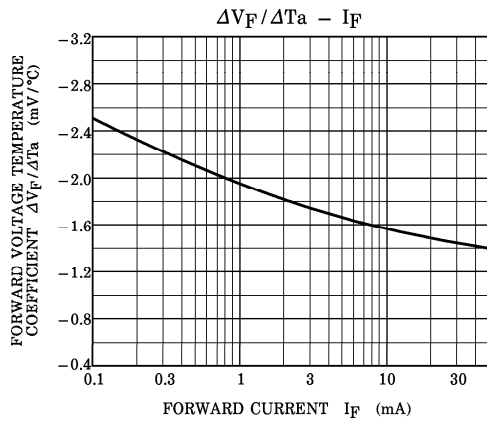
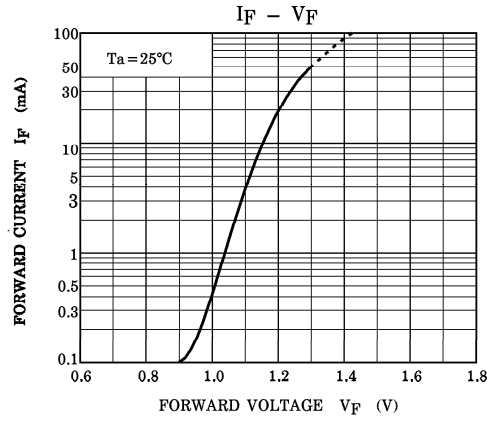
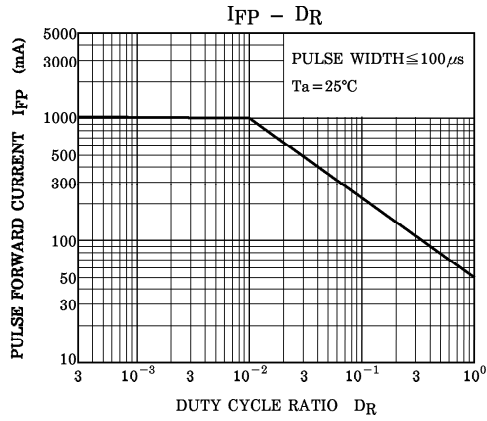
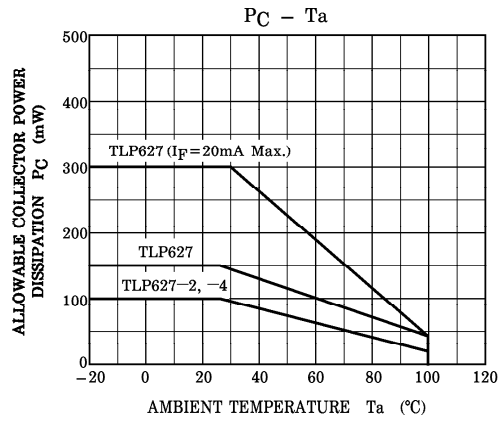
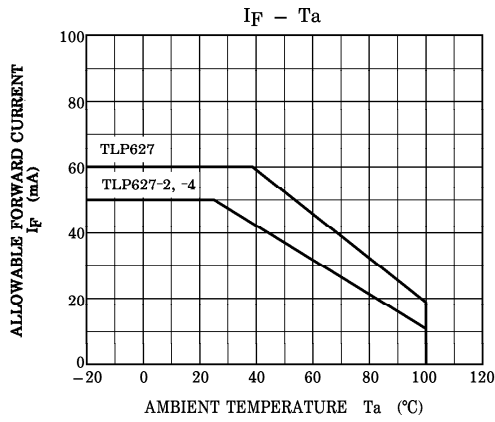
RECOMMENDED OPERATING CONDITIONS

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

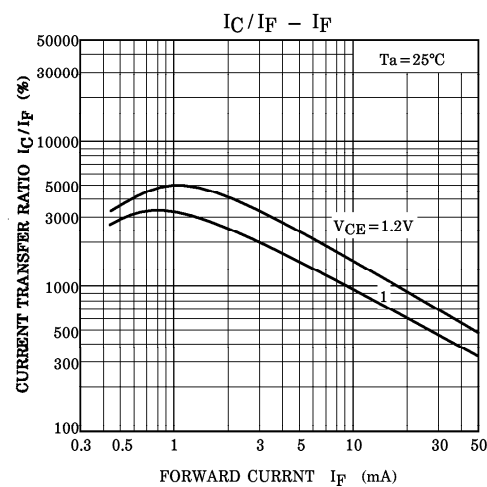
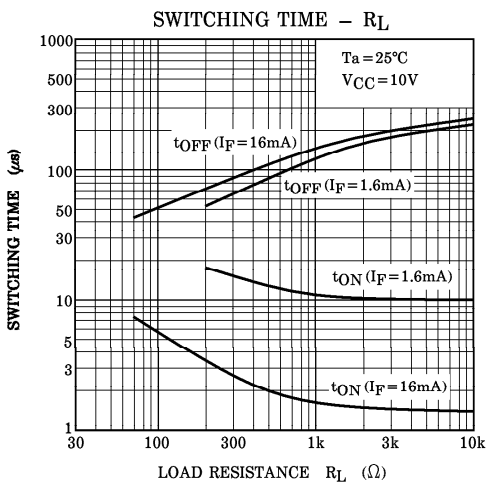
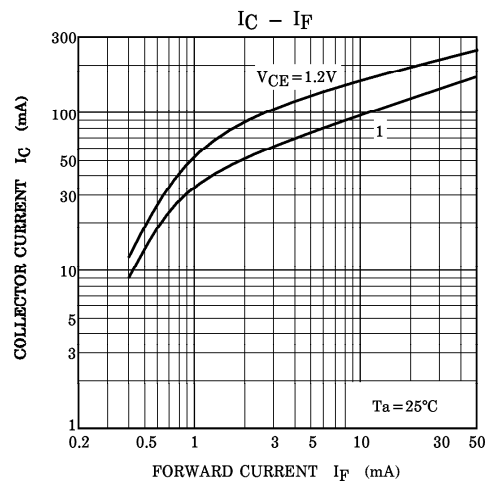
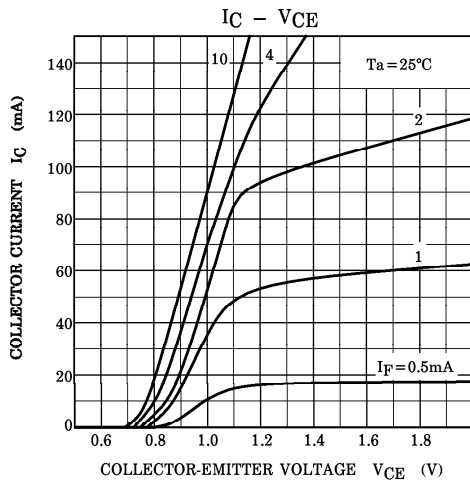
Fig.1 SWITCHING TIME TEST CIRCUIT



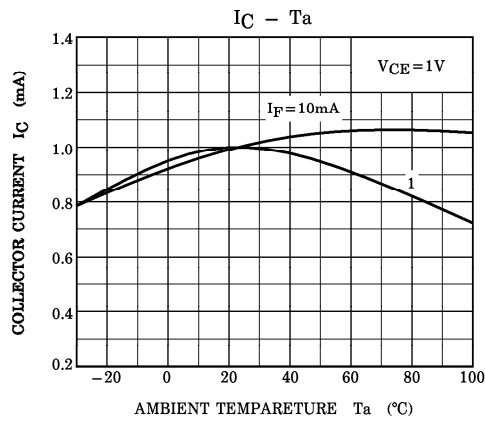
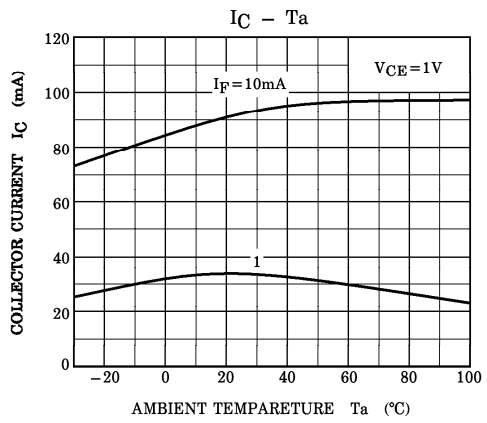
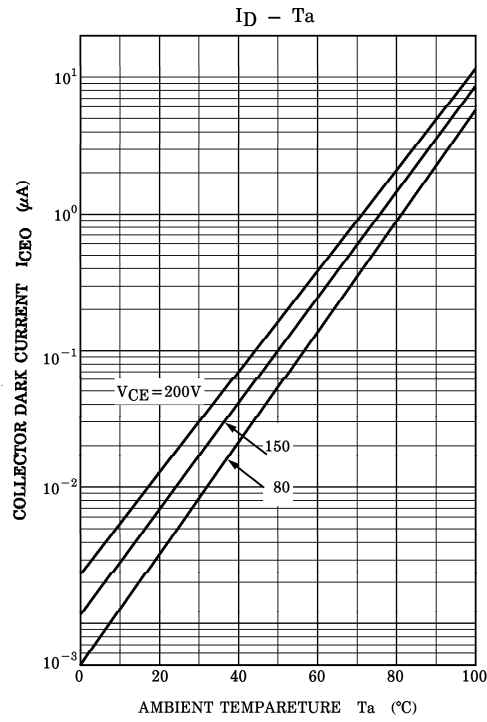
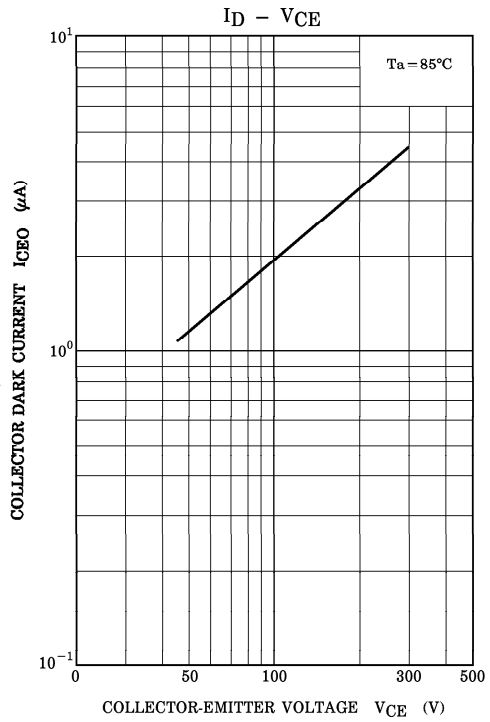
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TLP627 - 7*
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