

Optoelectronic Devices

Order code	Manufacturer code	Description
58-0524	TLP620	TLP620 SINGLE OPTOISOLATOR
58-0526	TLP620-4	TLP620-4 QUAD OPTOISOLATOR

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The enclosed information is believed to be correct, Information may change 'without notice' due to product improvement. Users should ensure that the product is suitable for their use. E. & O. E.	Revision A 04/07/2003

SEMICONDUCTOR
TOSHIBA
 TECHNICAL DATA

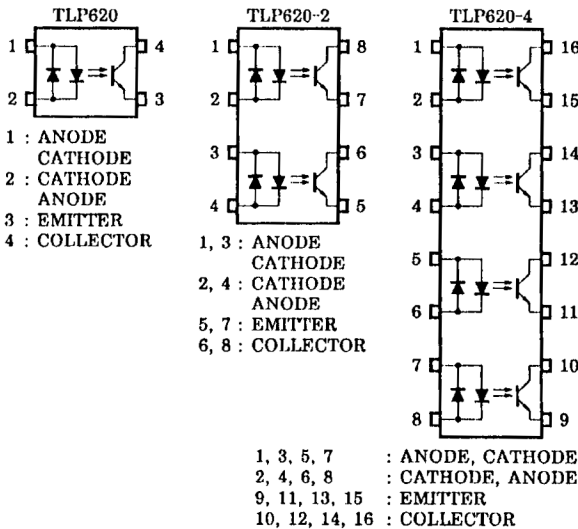
TOSHIBA PHOTOCOUPLER
TLP620, TLP620-2, TLP620-4
 GaAs IRED & PHOTO-TRANSISTOR

(TLP620)
 PROGRAMMABLE CONTROLLERS
 AC/DC-INPUT MODULE
 TELECOMMUNICATION

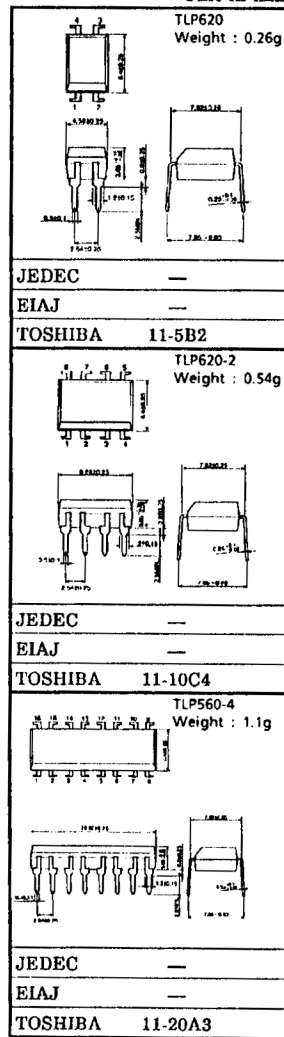
The TOSHIBA TLP620, -2 and -4 consists of a photo-transistor optically coupled to two gallium arsenide infrared emitting diode connected in inverse parallel.
 The TLP620-2 offers two isolated channels in an eight lead plastic DIP package, while the TLP620-4 provides four isolated channels in a sixteen plastic DIP package.

- Collector-Emitter Voltage : 55V (Min.)
 - Current Transfer Ratio : 50% (Min.)
- Rank GB : 100% (Min.)

PIN CONFIGURATIONS (TOP VIEW)



Unit in mm



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(TLP620)

- UL Recognized : UL1577, File No. E67349
- Isolation Voltage : 5000V_{rms} (Min.)
- Option (D4) type
 VDE Approved : DIN VDE0884 / 08.87, Certificate No. 68384
 Maximum Operating Insulation Voltage : 630V_{PK}
 Highest Permissible Over Voltage : 6000V_{PK}

(Note) When a VDE0884 approved type is needed, please designate the "Option (D4)".

- Creepage Distance : 6.4mm (Min.)
- Clearance : 6.4mm (Min.)
- Insulation Thickness : 0.4mm (Min.)

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING		UNIT
			TLP620	TLP620-2 TLP620-4	
LED	Forward Current	I _F (RMS)	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	ΔP _D / °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 (1 Circuit) (Ta ≥ 25°C)	ΔP _C / °C	-1.5	-1.0	mW / °C
	Junction Temperature	T _j	125		°C
Storage Temperature Range	T _{stg}	-55~150		°C	
Operating Temperature Range	T _{opr}	-55~100		°C	
Lead Soldering Temperature	T _{sold}	260 (10s)		°C	
Total Package Power Dissipation	P _T	250	150	mW	
Total Package Power Dissipation Derating (Ta ≥ 25°C, 1 Circuit)	ΔP _T / °C	-2.5	-1.5	mW / °C	
Isolation Voltage	BV _S	5000 (AC, 1 min., RH ≤ 60%)		V _{rms}	

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(TLP620)

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
	Forward 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 _{CE}	V _{CE} = 0, f = 1MHz	—	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 = ±5mA, V _{CE} = 5V Rank GB	50	—	600	%
			100	—	600	
Saturated CTR	I _C / I _F (sat)	I _F = ±1mA, V _{CE} = 0.4V Rank GB	—	60	—	%
			30	—	—	
Collector-Emitter Saturation Voltage	V _{CE} (sat)	I _C = 2.4mA, I _F = ±8mA	—	—	0.4	V
		I _C = 0.2mA, I _F = ±1mA Rank GB	—	0.2	—	
			—	—	0.4	
Off-State Collector Current	I _C (off)	V _F = ±0.7V, V _{CE} = 24V	—	1	10	μA
CTR Symmetry	I _C (ratio)	I _C (I _F = -5mA) / I _C (I _F = +5mA)	0.33	1	3	—

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}

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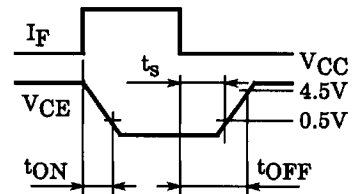
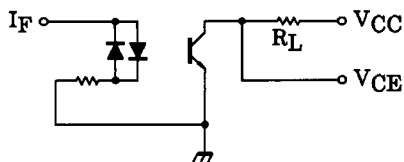
SWITCHING CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Rise Time	t_r	$V_{CC}=10V$ $I_C=2mA$ $R_L=100\Omega$	—	2	—	μs
Fall Time	t_f		—	3	—	
Turn-on Time	t_{on}		—	3	—	
Turn-off Time	t_{off}		—	3	—	
Turn-on Time	t_{ON}	$R_L=1.9k\Omega$ (Fig.1) $V_{CC}=5V, I_F=\pm 16mA$	—	2	—	μs
Storage Time	t_s		—	15	—	
Turn-off Time	t_{OFF}		—	25	—	

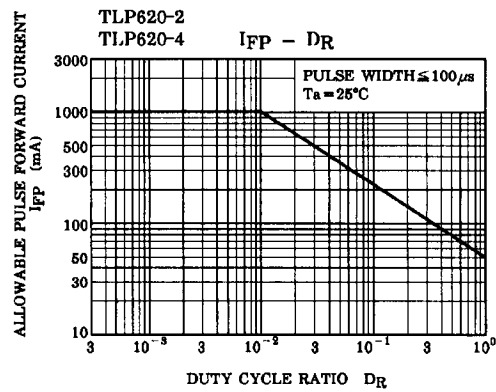
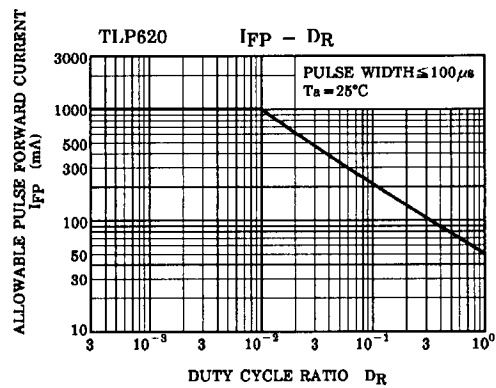
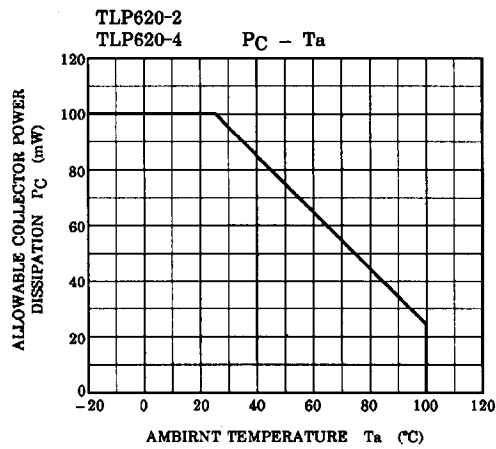
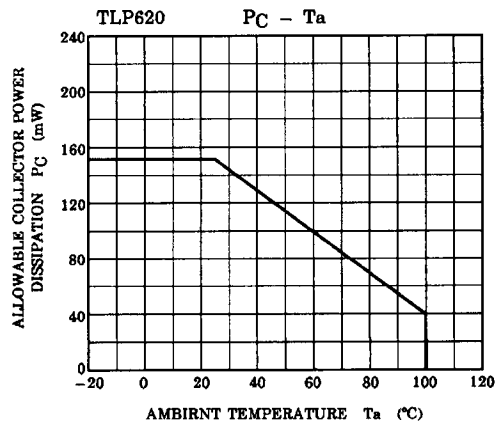
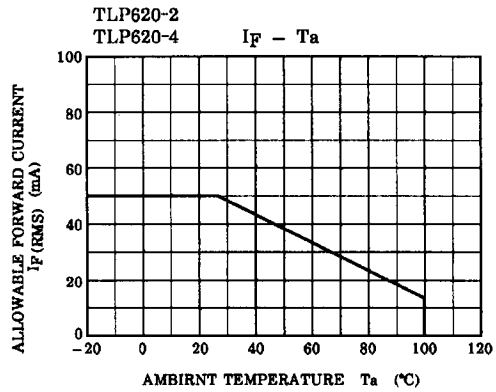
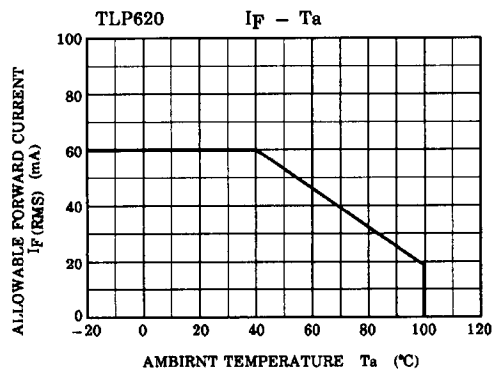
RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{CC}	—	5	24	V
Forward Current	I_F (RMS)	—	16	20	mA
Collector Current	I_C	—	1	10	mA
Operating Temperature	T_{opr}	-25	—	85	°C

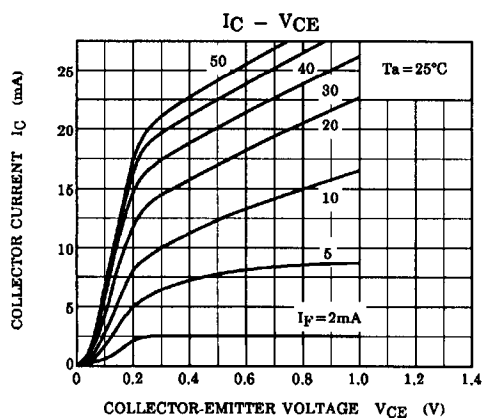
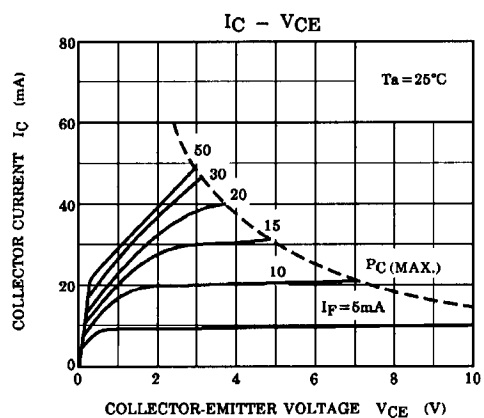
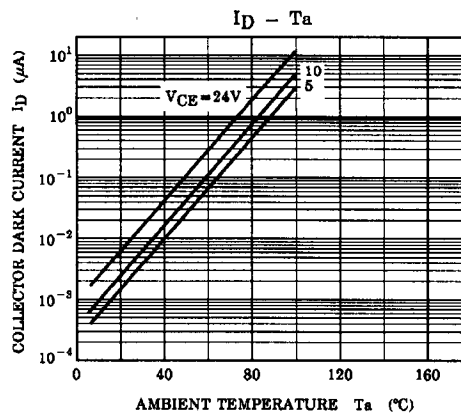
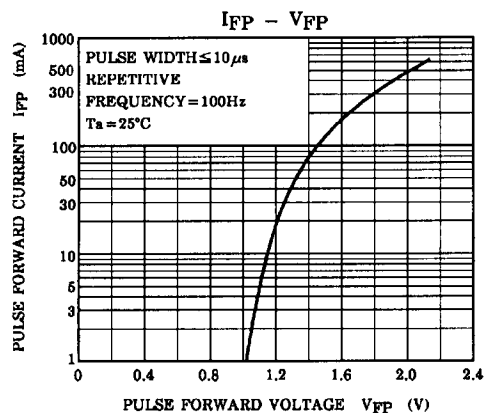
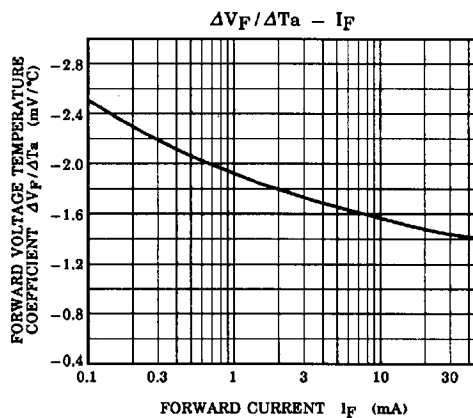
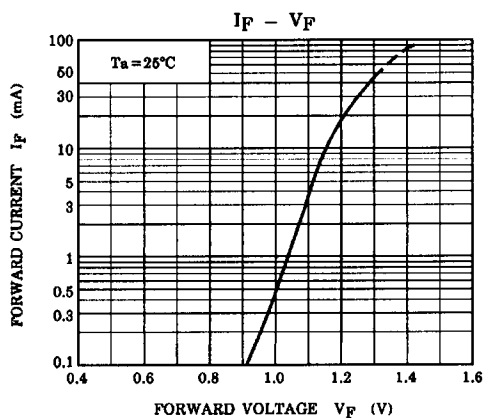
Fig.1 Switching Time Test Circuit



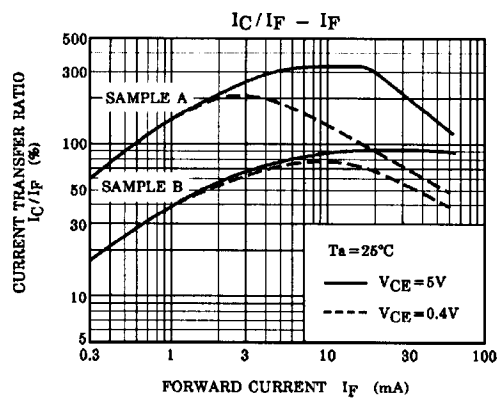
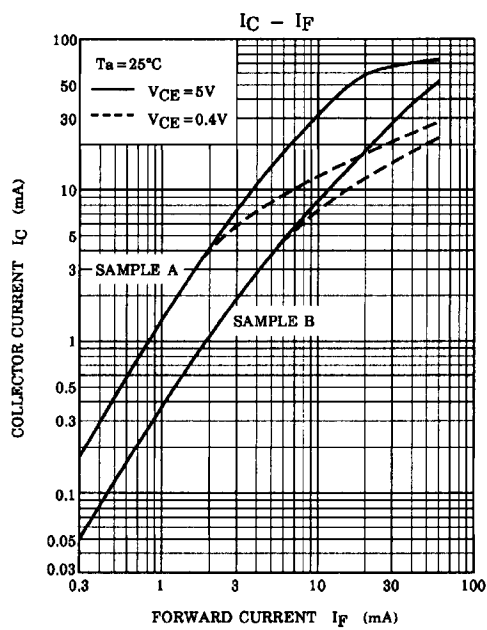
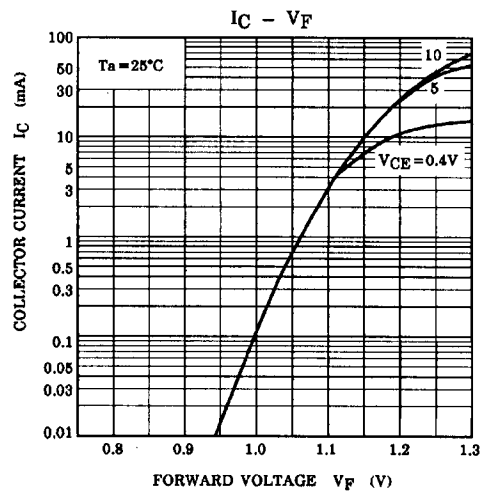
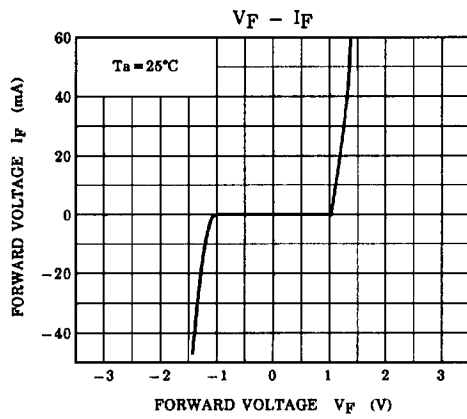
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