

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.

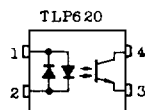
The TLP620-2 offers two isolated channels in an eight lead plastic DIP package, while the TLP620-4 provides four isolated channels in a sixteen plastic DIP package.

. Collector-Emitter Voltage : 55V Min.

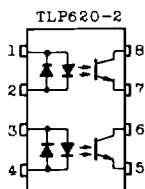
. Current Transfer Ratio : 50% Min.

Rank GB : 100% Min.

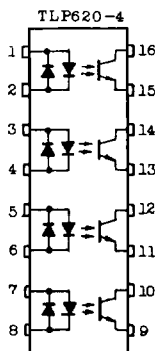
PIN CONFIGURATIONS (TOP VIEW)



1: ANODE
2: CATHODE
3: EMITTER
4: COLLECTOR

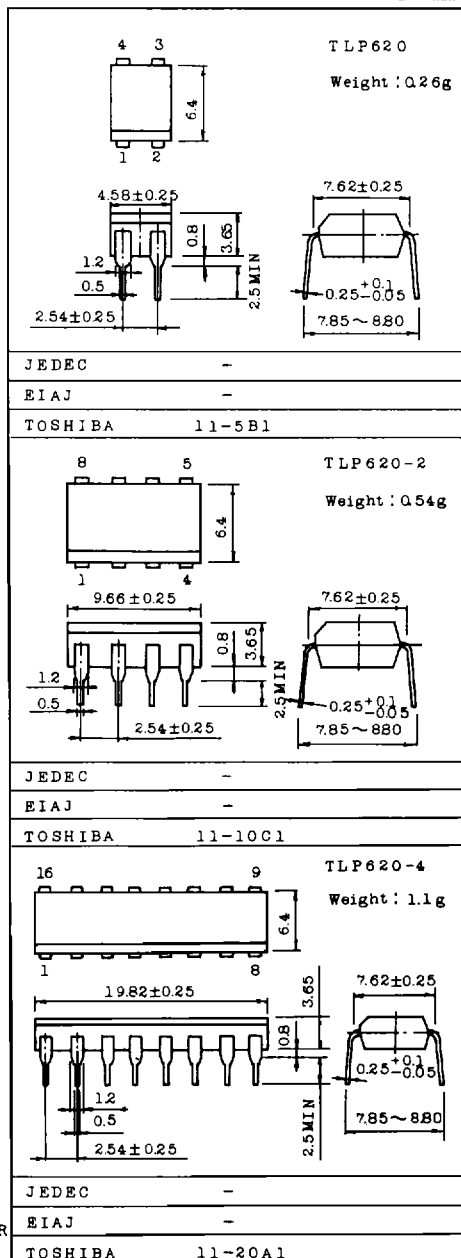


1,3: ANODE
2,4: CATHODE
5,7: EMITTER
6,8: COLLECTOR



1,3,5,7: ANODE
2,4,6,8: CATHODE
3,5,7,9: EMITTER
10,12,14,16: COLLECTOR

Unit in mm



TLP620, -2, -4

. 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	TLP620-2,4	
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 (Ta ≥ 25°C, 1 Circuit)	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 (10 sec.)		°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}

INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC		SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V_F	$I_F=\pm 10\text{mA}$	1.0	1.15	1.3	V
	Forward Current	I_F	$V_F=\pm 0.7\text{V}$	-	2.5	20	μA
	Capacitance	C_T	$V=0, f=1\text{MHz}$	-	60	-	pF
DETECTOR	Collector-Emitter Breakdown Voltage	$V(\text{BR})_{\text{CEO}}$	$I_C=0.5\text{mA}$	55	-	-	V
	Emitter-Collector Breakdown Voltage	$V(\text{BR})_{\text{ECO}}$	$I_E=0.1\text{mA}$	7	-	-	V
	Collector Dark Current	I_{CEO}	$V_{\text{CE}}=24\text{V}$	-	10	100	nA
			$V_{\text{CE}}=24\text{V}, T_a=85^\circ\text{C}$	-	2	50	μA
	Capacitance (Collector to Emitter)	C_{CE}	$V=0, f=1\text{MHz}$	-	10	-	pF

COUPLED ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTICA	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Current Transfer Ratio	I_C/I_F	$I_F=\pm 5\text{mA}, V_{\text{CE}}=5\text{V}$ Rank GB	50	-	600	%
			100	-	600	
Saturated CTR	$I_C/I_F(\text{sat})$	$I_F=\pm 1\text{mA}, V_{\text{CE}}=0.4\text{V}$ Rank GB	-	60	-	%
			30	-	-	
Collector-Emitter Saturation Voltage	$V_{\text{CE}}(\text{sat})$	$I_C=2.4\text{mA}, I_F=\pm 8\text{mA}$	-	-	0.4	V
		$I_C=0.2\text{mA}, I_F=\pm 1\text{mA}$ Rank GB	-	0.2	-	
			-	-	0.4	
Off-State Collector Current	$I_C(\text{off})$	$V_F=\pm 0.7\text{V}, V_{\text{CE}}=24\text{V}$	-	1	10	μA
CTR Symmetry	$I_C(\text{ratio})$	$I_C(I_F=-5\text{mA})/I_C(I_F=+5\text{mA})$	0.33	1	3	-

ISOLATION CHARACTERISTICS (Ta=25°C)

CHARACTERISTICA	SYMBOL	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	$V_S=500\text{V}$	5×10^{10}	10 ¹⁴	-	Ω
Isolation Voltage	BV_S	AC, 1 minute	5000	-	-	V_{rms}
		AC, 1 second	-	10000	-	
		DC, 1 minute	-	10000	-	V_{dc}

SWITCHING CHARACTERISTICS (Ta=25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Rise Time	t_r	$V_{CC} = 10\text{ V}$ $I_C = 2\text{ mA}$ $R_L = 100\ \Omega$	-	2	-	μs
Fall Time	t_f		-	3	-	
Turn-on Time	t_{on}		-	3	-	
Turn-off Time	t_{off}		-	3	-	
Turn-on Time	t_{ON}	$R_L = 1.9\text{ k}\Omega$ (Fig.1) $V_{CC} = 5\text{ V}, I_F = \pm 16\text{ mA}$	-	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	$I_F(\text{RMS})$	-	16	20	mA
Collector Current	I_C	-	1	10	mA
Operating Temperature	T_{opr}	-25	-	85	°C

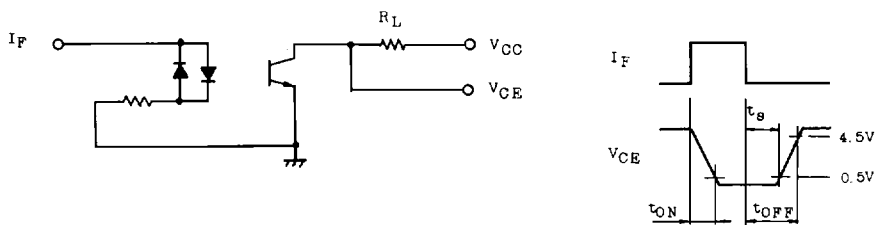


Fig. 1 Switching Time Test Circuit

