

(TLP626)

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.

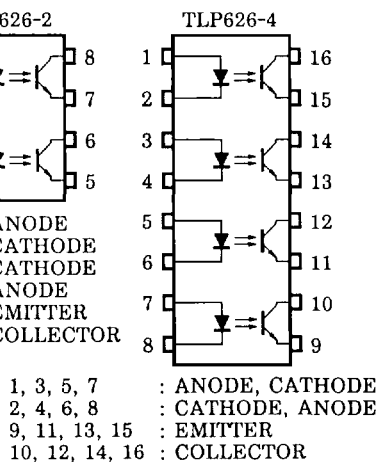
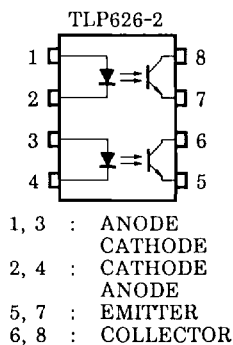
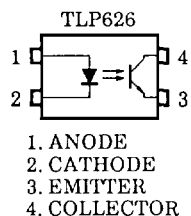
The TLP626-2 offers two isolated channels in an eight lead plastic DIP package, while the TLP626-4 provides four isolated channels in a sixteen plastic DIP package.

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

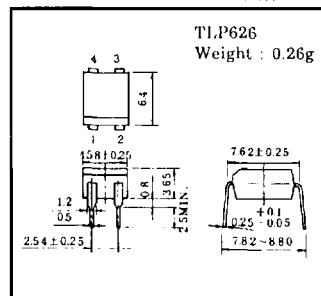
CLASSI- FICATION	CURRENT TRANSFER RATIO (Min.)			MARKING OF CLASSI- FICATION
	Ta = 25°C		Ta = - 25~75°C	
	IF = ± 1mA VCE = 0.5V	IF = ± 0.5mA VCE = 1.5V	IF = ± 1mA VCE = 0.5V	
Rank BV	200%	100%	100%	BV
Standard	100%	50%	50%	BV, Blank

- Isolation Voltage : 500V_{rms} Min.
- UL Recognized : UL1577 File No. E67349
- Note : Application type name for certification test,
please use standard product type name, i.e.
TLP626 (BV) : TLP626

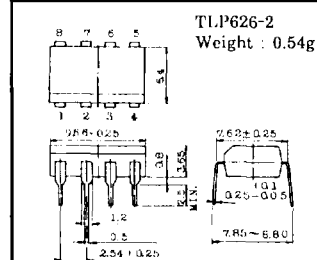
PIN CONFIGURATIONS (TOP VIEW)



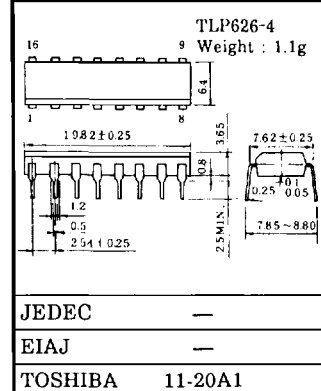
Unit in mm



JEDEC	—
EIAJ	—
TOSHIBA	11-5B1



JEDEC	—
EIAJ	—
TOSHIBA	11-10C1



JEDEC	—
EIAJ	—
TOSHIBA	11-20A1

TLP626, -2, -4

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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	$\Delta I_F / ^\circ\text{C}$	-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)	$\Delta P_D / ^\circ\text{C}$	-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)	$\Delta P_C / ^\circ\text{C}$	-1.5	-1.0	mW / °C
	Junction Temperature	T _j	125		°C
Storage Temperature Range		T _{stg}	-55~150		°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)		$\Delta P_T / ^\circ\text{C}$	-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.

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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, T _a = 85°C	—	2	50	μA
Capacitance Collector to Emitter		C _{CCE}	V = 0, f = 1MHz	—	12	—	pF

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

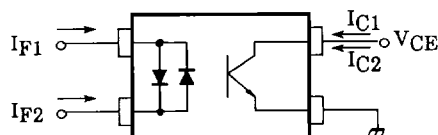
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Current Transfer Ratio	I _C / I _F	I _F = ±1mA, V _{CE} = 0.5V Rank BV	100 200	— —	1200 1200	%
Low Input CTR	I _C / I _F (low)	I _F = ±0.5mA, V _{CE} = 1.5V Rank BV	50 100	— —	— —	%
Collector-Emitter Saturation Voltage	V _{CE} (sat)	I _C = 0.5mA,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

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



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ISOLATION CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance Input to Output	CS	VS=0, f=1MHz	—	0.8	—	pF
Isolation Resistance	RS	VS=500V	5×10 ¹⁰	10 ¹⁴	—	Ω
Isolation Voltage	BVS	AC, 1 minute	5000	—	—	Vrms
		AC, 1 second, in oil	—	10000	—	
		DC, 1 minute, in oil	—	10000	—	Vdc

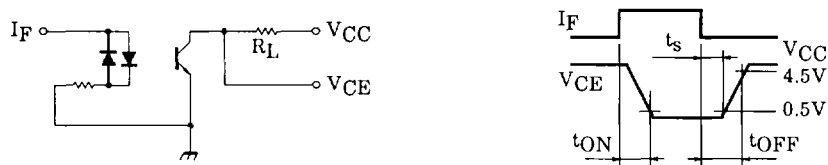
SWITCHING CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Rise Time	tr	VCC=10V, IC=2mA RL=100Ω	—	8	—	μs
Fall Time	tf		—	8	—	
Turn-on Time	ton		—	10	—	
Turn-off Time	toff		—	8	—	
Turn-on Time	tON	RL=4.7kΩ (Fig.1) VCC=5V, IF=±1.6mA	—	10	—	μs
Storage Time	ts		—	50	—	
Turn-off Time	TOFF		—	300	—	

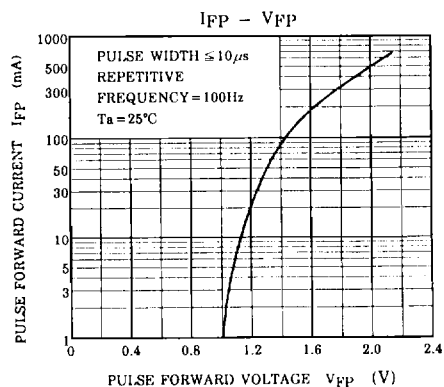
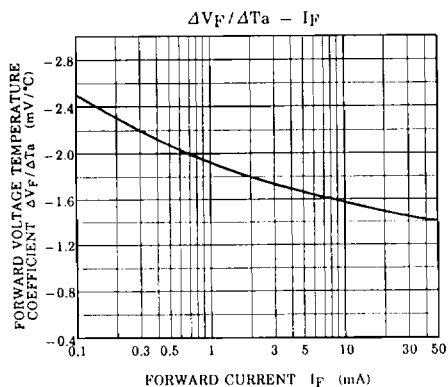
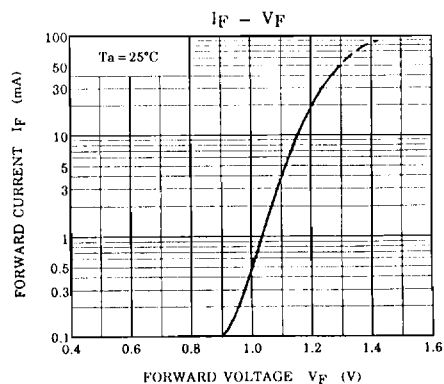
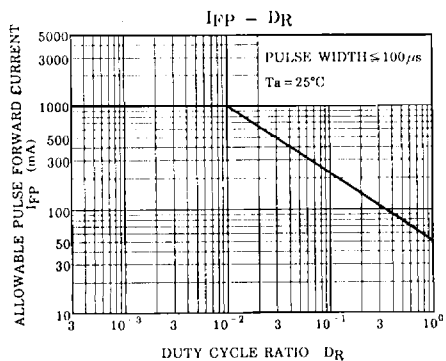
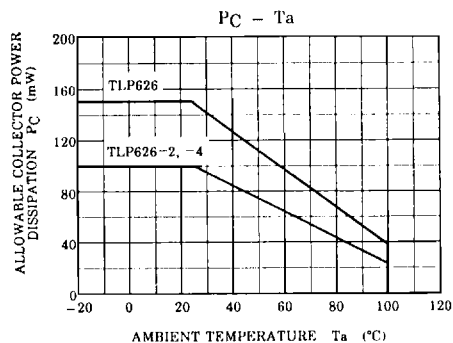
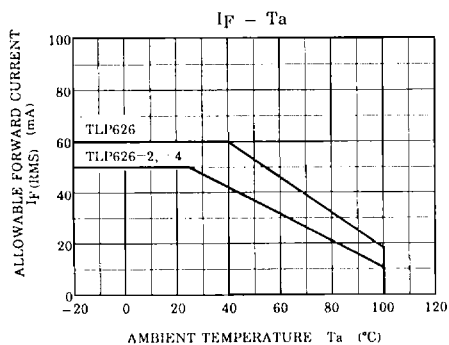
RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	VCC	—	5	24	V
Forward Current	IF (RMS)	—	1.6	20	mA
Collector Current	IC	—	1	10	mA
Operating Temperature	Topr	−25	—	75	°C

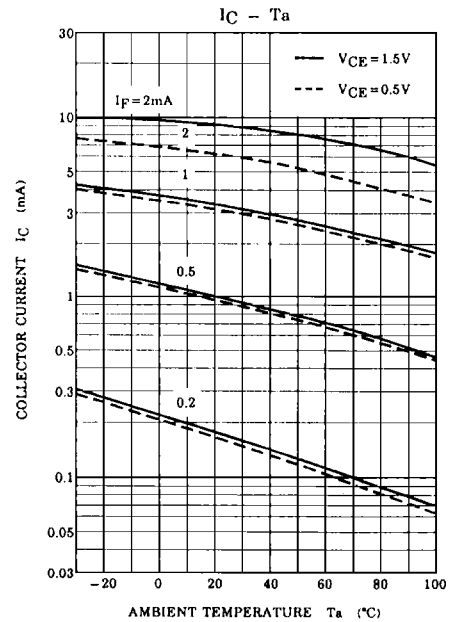
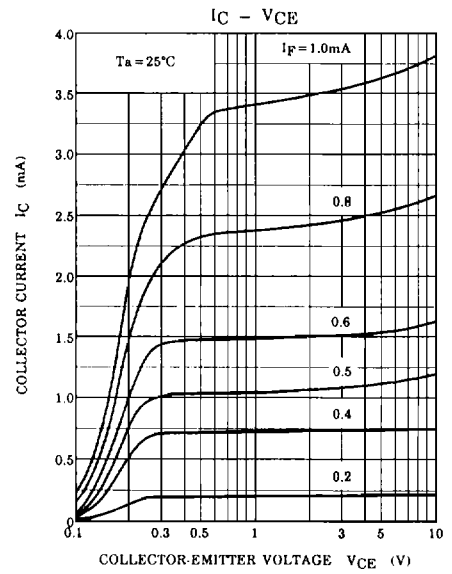
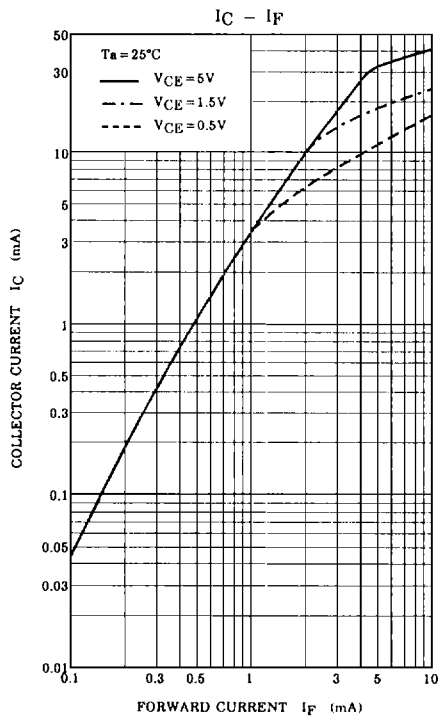
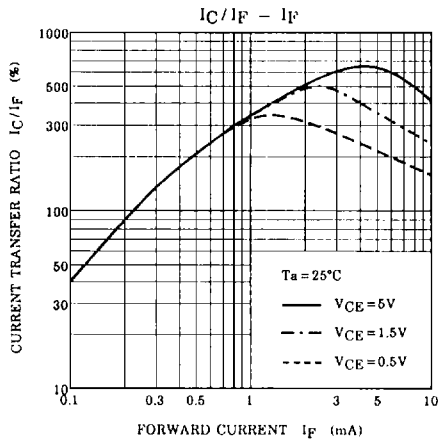
Fig. 1 SWITCHING OPERATING CONDITIONS



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