TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-TRANSISTOR

TLP281,TLP281-4

PROGRAMMABLE CONTROLLERS **AC/DC-INPUT MODULE** PC CARD MODEM(PCMCIA)

TLP281 and TLP281-4 is a very small and thin coupler, suitable for surface mount assembly in applications such as PCMCIA Fax modem, programmable controllers.

TLP281 and TLP281-4 consist of photo transistor, optically coupled to a gallium arsenide infrared emitting diode.

 Collector-Emitter Voltage : 80 V (MIN) **Current Transfer Ratio** : 50% (MIN) Rank GB : 100% (MIN) Isolation Voltage : 2500 Vrms (MIN)

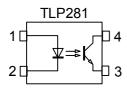
UL Recognized : UL1577, File No. E67349 **BSI** Approved : BS EN 60065: 1994,

> : BS EN 41003: 1997 Certificate No. 8143, 8144

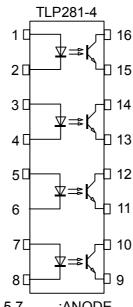
Unit in mm **TLP281** 7.0 ± 0.4 Half Pitch Mini Flat 4 pin **TOSHIBA**

Weight: 0.05 g

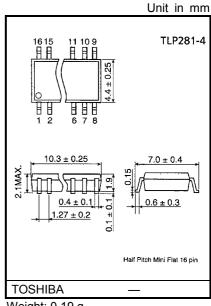
PIN CONFIGURATION(Top view)



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



1,3,5,7 :ANODE :CATHODE 2,4,6,8 9,11,13,15 :EMITTER 10,12,14,16 :COLLECTOR



Weight: 0.19 g



MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RAT	UNIT	
	CHARACTERISTIC	STIVIBUL	TLP281	TLP281-4	UNIT
	Forward Current	I _F	50		mA
	Forward Current Derating	ΔI _F /°C	-0.7 (Ta≥53°C)	-0.5 (Ta≥25°C)	mA /°C
LED	Pulse Forward Current	I _{FP}	1		Α
	Reverse Voltage	V _R	Ę	V	
	Junction Temperature	Tj	125		°C
	Collector-Emitter Voltage	V _{CEO}	8	V	
	Emitter-Collector Voltage	V _{ECO}	7	V	
S S	Collector Current	Ic	50		mA
DETECTOR	Collector Power Dissipation (1 Circuit)	P _C	150	100	mW
ă	Collector Power Dissipation Derating(Ta≥25°C) (1 Circuit)	ΔP _C /°C	-1.5	-1.0	mW /°C
	Junction Temperature	Tj	125		°C
Оре	erating Temperature Range	T _{opr}	-55	°C	
Sto	rage Temperature Range	T _{stg}	-55	°C	
Lead Soldering Temperature		T _{sol}	260 (10s)		°C
Total Package Power Dissipation (1 Circuit)		PT	200	170	mW
Total Package Power Dissipation Derating (Ta≥25°C) (1 Circuit)		ΔP _T /°C	-2.0	-1.7	mW /°C
Isol	ation Voltage (Note1)	BV _S	2500(AC,1min,R.H.≤60%)		Vrms

(Note1)Device considered a two terminal device : LED side pins shorted together and DETECTOR side pins shorted together.

INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V_{F}	I _F = 10 mA	1.0	1.15	1.3	V
	Reverse Current	I _R	V _R = 5 V	_	_	10	μA
	Capacitance	C _T	V = 0, f = 1 MHz	_	30	_	pF
DETECTOR	Collector-Emitter Breakdown Voltage	V _(BR) CEO	I _C = 0.5 mA	80	_	_	V
	Emitter-Collector Breakdown Voltage	V _(BR) ECO	I _E = 0.1 mA	7	_	_	V
	Collector Dark Current	lara	V _{CE} = 48 V, Ambient Light Below (100 ℓx)	_	0.01 (2)	0.1 (10)	μA
	(Note2)	I _{CEO}	V _{CE} = 48 V, Ta = 85°C Ambient Light Below (100 ℓx)		2 (4)	50 (50)	μΑ
	Capacitance (Collector to Emitter)	C _{CE}	V = 0, f = 1 MHz	_	10	_	pF

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(Note 2) Because of the construction,leak current might be increased by ambient light.

Please use photocoupler with less ambient light.

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Current Transfer Ratio	I _C / I _F	I _F = 5 mA, V _{CE} = 5 V	50	_	600	- %
Current Transfer Natio		Rank GB	100	_	600	
Saturated CTR	la / la	IF = 1 mA, VCE = 0.4 V	_	60	_	%
Saturated OTIX	I _C / I _{F (sat)}	Rank GB	30	_	_	70
Collector-Emitter		I _C = 2.4 mA, I _F = 8 mA	_	_	0.4	
Saturation Voltage	V _{CE} (sat)	I _C = 0.2 mA, I _F = 1 mA	_	0.2	_	V
Saturation voltage		Rank GB	_	_	0.4	
Off-State Collector Current	I _{C (off)}	V _F = 0.7 V, V _{CE} = 48 V	_	_	10	μΑ

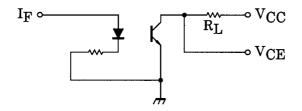
ISOLATION CHARACTERISTICS (Ta = 25°C)

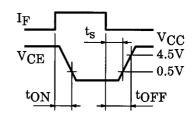
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance (Input to Output)	C _S	V _S = 0 V, f = 1 MHz	_	0.8	_	pF
Isolation Resistance	R_S	V _S = 500 V, R.H.≤60%	5×10 ¹⁰	10 ¹⁴	_	Ω
	BV_S	AC , 1 minute	2500	_	_	Vrms
Isolation Voltage		AC , 1 second,in OIL	_	5000	_	
		DC , 1 minute, in OIL	_	5000	_	Vdc

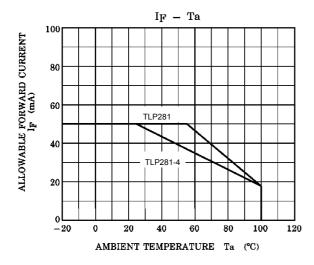
SWITCHING CHARACTERISTICS (Ta = 25°C)

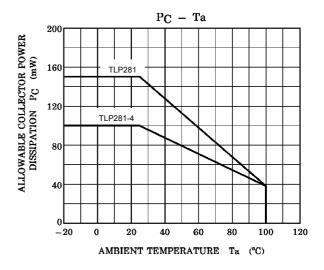
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Rise Time	t _r	$V_{CC} = 10 \text{ V, } I_{C} = 2 \text{ mA}$ $R_{L} = 100\Omega$	_	2	_	
Fall Time	t _f		_	3	_	ue
Turn-On Time	t _{on}		-	3	_	μs
Turn-Off Time	t _{off}		_	3	_	
Turn-On Time	toN	R_L = 1.9 kΩ (Fig.1) V_{CC} = 5 V, I_F = 16 mA	1	2	_	
Storage Time	ts		l	25		μs
Turn-Off Time	toff		_	40	_	

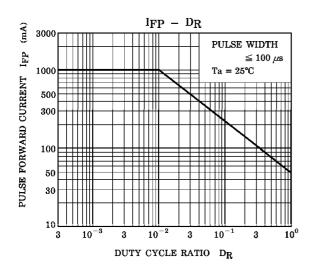
(Fig.1)SWITCHING TIME TEST CIRCUIT

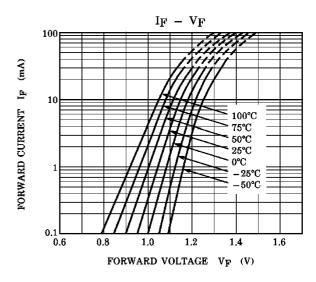


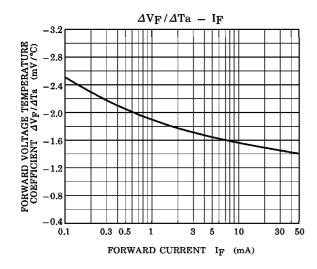


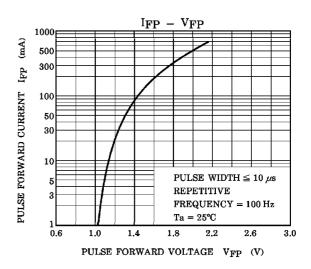




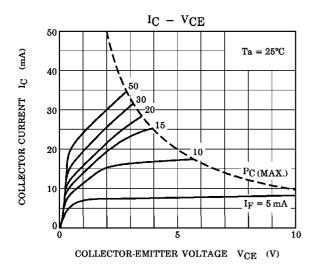


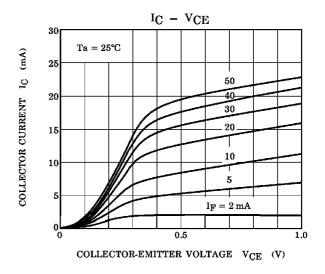


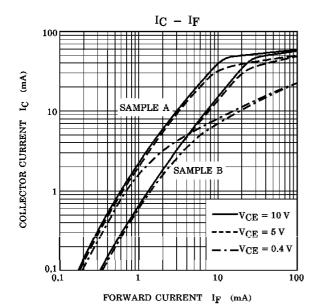


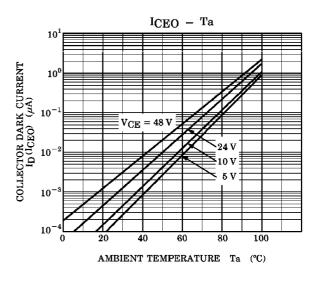


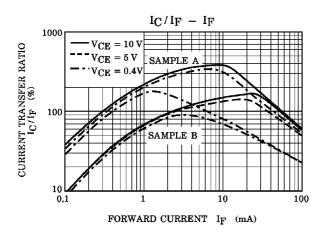
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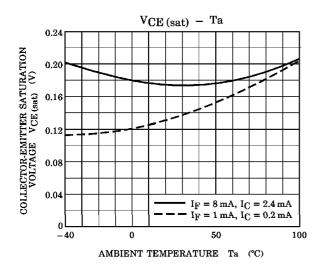


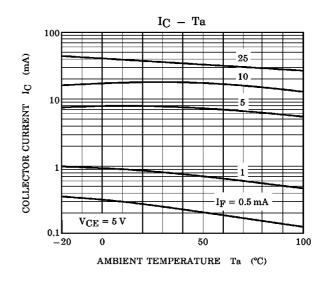


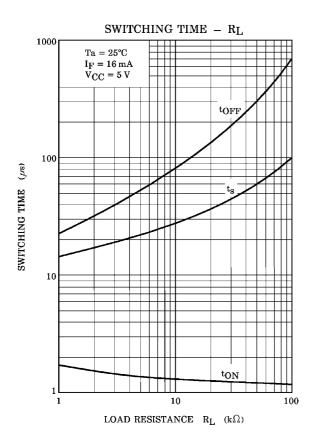


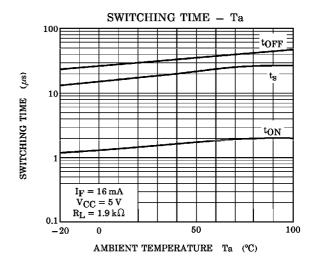


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