



HIGH DENSITY MOUNTING PHOTOTRANSISTOR OPTICALLY COUPLED ISOLATORS



DESCRIPTION

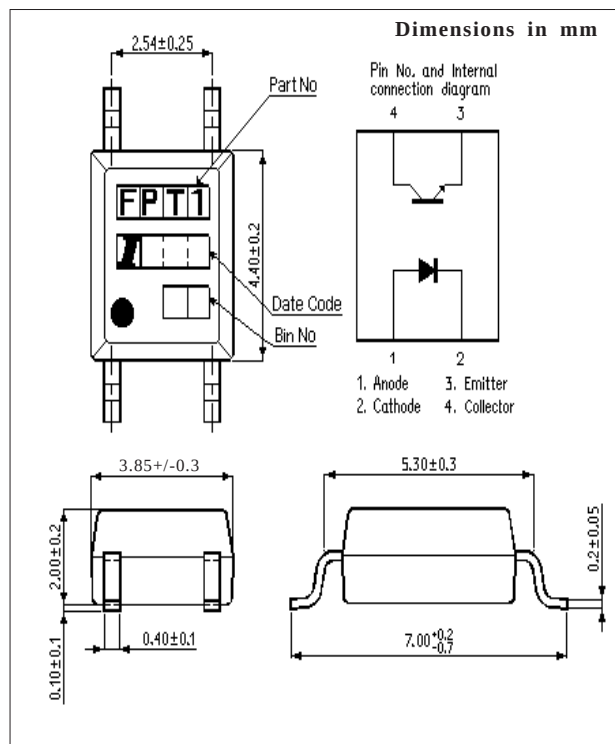
The IS181 is an optically coupled isolator consisting of an infrared light emitting diode and NPN silicon photo transistor in a space efficient dual in line plastic package.

FEATURES

- Marked as FPT1.
- Current Transfer Ratio MIN. 50%
- Isolation Voltage ($3.75kV_{RMS}$, $5.3kV_{PK}$)
- All electrical parameters 100% tested
- Drop in replacement for Toshiba TLP181

APPLICATIONS

- Computer terminals
- Industrial systems controllers
- Measuring instruments
- Signal transmission between systems of different potentials and impedances



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ABSOLUTE MAXIMUM RATINGS
(25°C unless otherwise specified)

Storage Temperature _____ -55°C to + 150°C
Operating Temperature _____ -55°C to + 100°C
Lead Soldering Temperature
(1/16 inch (1.6mm) from case for 10 secs) 260°C

INPUT DIODE

Forward Current _____ 50mA
Reverse Voltage _____ 6V
Power Dissipation _____ 70mW

OUTPUT TRANSISTOR

Collector-emitter Voltage BV_{CEO} _____ 35V
Emitter-collector Voltage BV_{ECO} _____ 6V
Collector Current _____ 50mA
Power Dissipation _____ 150mW

POWER DISSIPATION

Total Power Dissipation _____ 170mW
(derate linearly 2.26mW/°C above 25°C)

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless otherwise noted)

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage (V_F)		1.2	1.4	V	$I_F = 20\text{mA}$
	Reverse Current (I_R)			10	μA	$V_R = 4\text{V}$
Output	Collector-emitter Breakdown (BV_{CEO})	35			V	$I_C = 0.1\text{mA}$
	Emitter-collector Breakdown (BV_{ECO})	6			V	$I_E = 10\mu\text{A}$
	Collector-emitter Dark Current (I_{CEO})			100	nA	$V_{CE} = 20\text{V}$
Coupled	Current Transfer Ratio (CTR)	50		600	%	$5\text{mA } I_F, 5\text{V } V_{CE}$
	Optional CTR Grades: IS181A	80		160	%	$5\text{mA } I_F, 5\text{V } V_{CE}$
	IS181B	130		260	%	$5\text{mA } I_F, 5\text{V } V_{CE}$
	IS181C	200		400	%	$5\text{mA } I_F, 5\text{V } V_{CE}$
	IS181D	300		600	%	$5\text{mA } I_F, 5\text{V } V_{CE}$
	IS181BL	200			%	$5\text{mA } I_F, 5\text{V } V_{CE}$
	Collector-emitter Saturation Voltage $V_{CE(SAT)}$			0.2	V	$20\text{mA } I_F, 1\text{mA } I_C$
	Input to Output Isolation Voltage V_{ISO}	3750			V_{RMS}	See note 1
		5300			V_{PK}	See note 1
	Input-output Isolation Resistance R_{ISO}	5×10^{10}			Ω	$V_{IO} = 500\text{V}$ (note 1)
	Output Rise Time t_r		4	18	μs	$V_{CE} = 2\text{V}$,
	Output Fall Time t_f		3	18	μs	$I_C = 2\text{mA}, R_L = 100\Omega$

Note 1 Measured with input leads shorted together and output leads shorted together.