

IS181



**ISOCOM**  
COMPONENTS

**HIGH DENSITY MOUNTING  
PHOTOTRANSISTOR  
OPTICALLY COUPLED ISOLATORS**



**DESCRIPTION**

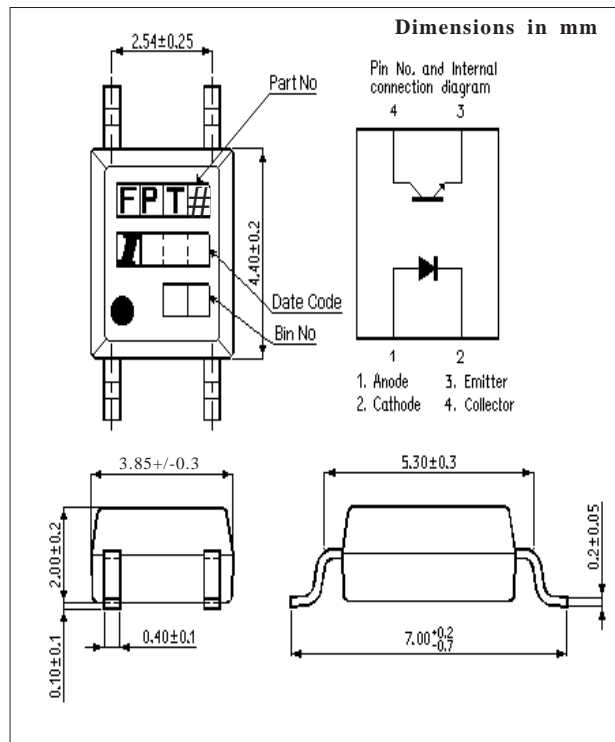
The IS181 is an optically coupled isolator consisting of an infrared light emitting diode and NPN silicon photo transistor in a space efficient dual in line plastic package.

**FEATURES**

- Marked as FPT# (# = Internal Identifier)
- Current Transfer Ratio MIN. 50%
- Isolation Voltage ( $3.75kV_{RMS}$ ,  $5.3kV_{PK}$ )
- All electrical parameters 100% tested
- Drop in replacement for Toshiba TLP181
- UL Approved File Number E91231

**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  $BV_{CEO}$  \_\_\_\_\_ 80V  
 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	$\mu\text{A}$	$V_R = 4\text{V}$
Output	Collector-emitter Breakdown ( $BV_{CEO}$ )	80			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	%	$5\text{mA} I_F, 5\text{V} V_{CE}$
	IS181GB	100		600	%	$5\text{mA} I_F, 5\text{V} V_{CE}$
	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 $R_{ISO}$		$5 \times 10^{10}$			$\Omega$	$V_{IO} = 500\text{V}$ (note 1)
Output Rise Time tr			4	18	$\mu\text{s}$	$V_{CE} = 2\text{V}$ ,
Output Fall Time tf			3	18	$\mu\text{s}$	$I_C = 2\text{mA}, R_L = 100\Omega$

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

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