

TOSHIBA PHOTOCOUPLER IRED & PHOTO-DIODE ARRAY

TLP3914

TELECOMMUNICATION
PROGRAMMABLE CONTROLLERS
MOSFET GATE DRIVER

The TOSHIBA SSOP coupler TLP3914 is a small outline coupler, suitable for surface mount assembly.

The TLP3914 consists of an infrared emitting diode, optically coupled to a series connected photo diode array which is suitable for MOSFET gate drive.

Features

• 4 pin SSOP (SSOP4) : 1.8 mm high, 1.27 mm pitch

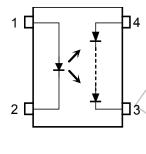
Open Voltage : 7 V (min)
 Short Current : 20 µA (min)
 Isolation Voltage : 1500 Vrms (min)

• UL-recognized : UL 1577, File No.E67349

Unit: mm 3.85 1.2 There is a detail drawing in P6.

Weight: 0.03 g (typ.)

Pin Configuration (top view)



- 1. ANODE
- 2. CATHODE
- 3. CATHODE
- 4. ANODE



Absolute Maximum Ratings (Ta = 25°C)

	Characteristic	Symbol	Rating	Unit
LED	Forward Current	lF	30	mA
	Forward Current Derating (Ta ≥ 25°C)	ΔIF / °C	-0.3	mA / °C
	Reverse Voltage	VR	5	V
	Diode power dissipation	PD	50	mW
	Diode power dissipation derating (Ta ≥ 25°C)	ΔP _D /°C	-0.5	mW/°C
	Junction Temperature	Tj	125	7)\\ °C
	Forward Current	lFD	50	<i>)</i> µА
DETECTOR	Reverse Voltage	V _{RD}	10	V
DETECTOR	Output power dissipation	Po	0.5	mW
	Junction Temperature	Tj	125	°C
Storage Temperature Range		T _{stg}	-55 to 125	°C
Operating Temperature Range		T _{opr}	-40 to 85	(°E)
Lead Soldering Temperature (10 s)		T _{sol}	260	C //
Isolation Voltage (AC, 60 s, R.H. ≤ 60 %) (Note 1)		BVs	1500	Vrms

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Note 1: Device considered a two terminal device: Pins 1 and 2 shorted together and pins 3 and 4 shorted together.

Caution

This device is sensitive to electrostatic discharge. When using this device, please ensure that all tools and equipment are earthed.

Recommended Operating Conditions

Characteristic	Symbol	Min	Тур.	Max	Unit
Forward Current	l _F	7	_	20	mA
Operating Temperature	Topr	-25	1	65	°C

Note: Recommended operating conditions are given as a design guideline to obtain expected performance of the device. Additionally, each item is an independent guideline respectively. In developing designs using this product, please confirm specified characteristics shown in this document.

Electrical Characteristics (Ta = 25°C)

	Characteristic	Symbol	Test Condition	Min	Тур.	Max	Unit
LED	Forward Voltage	VF	I _F = 10 mA	1.15	1.30	1.45	V
	Reverse Current	lR	V _R = 5 V	_	_	10	μА
	Capacitance	Ст	V = 0 V, f = 1 MHz	_	30	_	pF
DETECTOR	Forward Voltage	V _{FD}	I _{FD} = 10 μA	_	9.6	_	V
	Reverse Current	I _{RD}	V _{RD} = 10 V	_	1	_	nA
	Capacitance (Anode to Cathode)	Стр	V = 0 V, f = 1 MHz	_	2.5	_	pF



Coupled Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min	Тур.	Max	Unit
Open-Circuit Voltage	Voc	I _F = 10 mA	7	_	_	V
Short-Circuit Current	Isc	I _F = 10 mA	20		_	μΑ

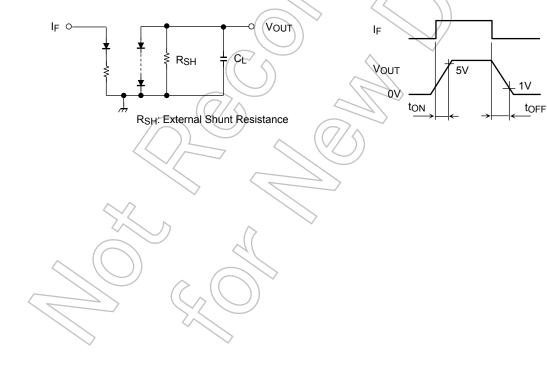
Isolation Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition Mir	Тур.	Max	Unit
Capacitance Input to Output	Cs	V _S = 0 V, f = 1 MHz	0.8	_	pF
Isolation Resistance	Rs	V _S = 500 V, R.H. ≤ 60 % 5×10	10 ¹⁴	_	Ω
Isolation Voltage	BVS	AC, 60 s		1	Vrms

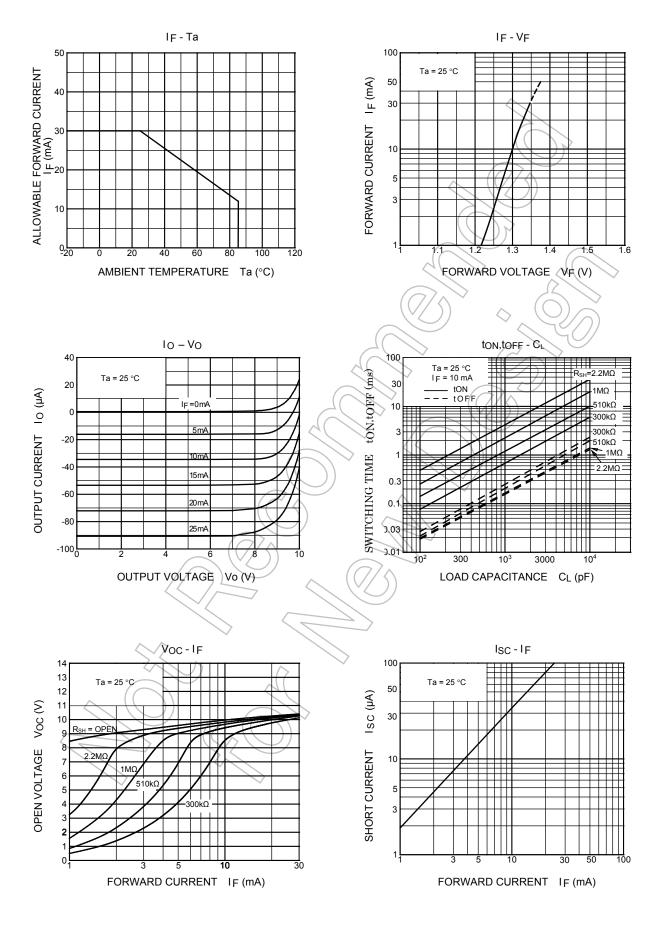
Switching Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition Min	Тур.	Max	Unit
Turn-on Time	ton	IF = 10 mA, R _{SH} = 300 kΩ	0.6	_	ms
Turn-off Time	toff	CL = 1000 pF (Note 1)	0.3	_	ms

Note 1: SWITCHING TIME TEST CIRCUIT

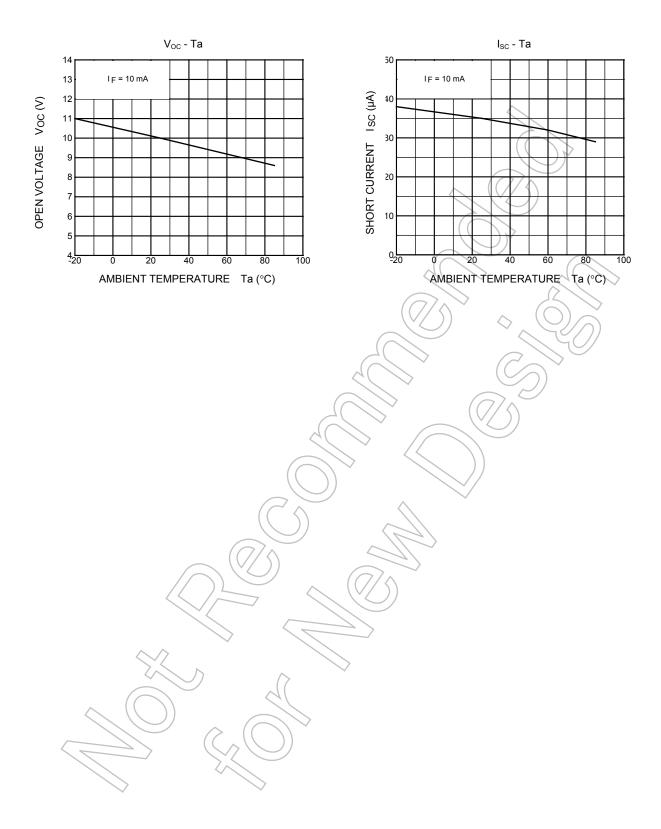






NOTE: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.

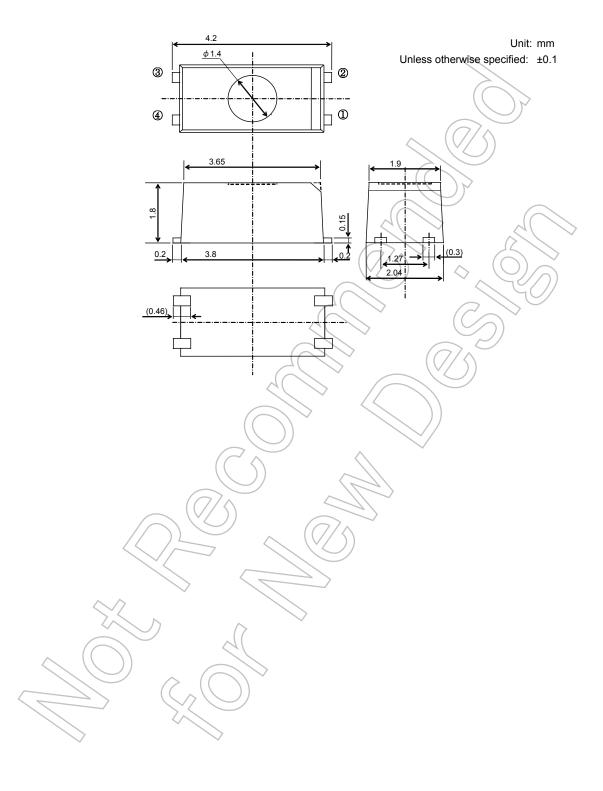




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OUTLINE DRAWING





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