

# TLP3303

## 1. Applications

- High-Speed Memory Testers
- High-Speed Logic IC Testers
- Board Testers
- ATE (Automatic Test Equipment)

## 2. General

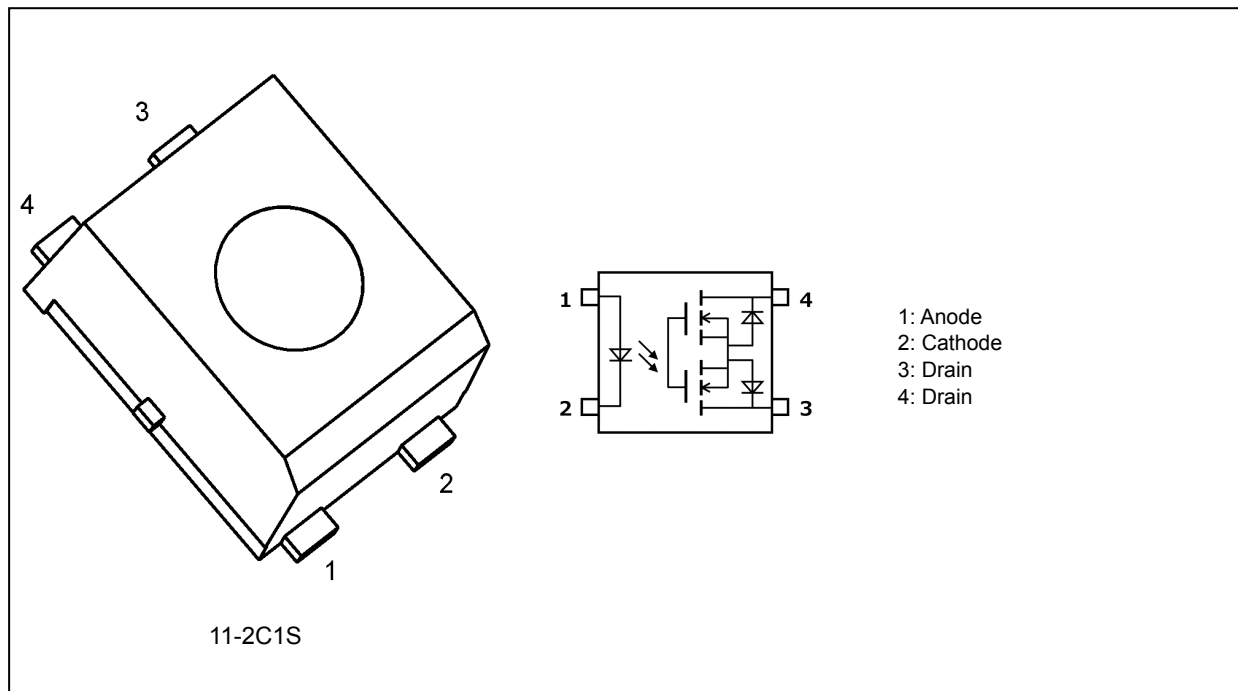
The TLP3303 is a photorelay in a 4-pin USOP that consists of a photo MOSFET optically coupled with an infrared LED. The TLP3303 features a very small on-resistance and on/off switching of current as high as 0.9 A, making it ideal for switching applications in high-speed testers.

## 3. Features

- (1) Normally opened (1-Form-A)
- (2) OFF-state output terminal voltage: 20 V (min)
- (3) Trigger LED current: 3 mA (max)
- (4) ON-state current: 900 mA (max)
- (5) ON-state resistance: 0.18  $\Omega$  (typ.), 0.22  $\Omega$  (max)
- (6) OFF-state Capacitance: 40 pF (typ.)
- (7) Isolation voltage: 1000 Vrms (min)
- (8) Safety standards

UL-recognized: UL 1577, File No.E67349

## 4. Packaging and Pin Configuration



Start of commercial production  
 2011-09



## 8. Electrical Characteristics (Unless otherwise specified, $T_a = 25\text{ }^\circ\text{C}$ )

	Characteristics	Symbol	Note	Test Condition	Min	Typ.	Max	Unit
LED	Input forward voltage	$V_F$		$I_F = 10\text{ mA}$	1.0	1.15	1.3	V
	Input reverse current	$I_R$		$V_R = 5\text{ V}$	—	—	10	$\mu\text{A}$
	Input capacitance	$C_t$		$V = 0\text{ V}, f = 1\text{ MHz}$	—	15	—	pF
Detector	OFF-state current	$I_{OFF}$		$V_{OFF} = 20\text{ V}$	—	—	1	nA
	Output capacitance	$C_{OFF}$		$V = 0\text{ V}, f = 100\text{ MHz}, t < 1\text{ s}$	—	40	—	pF

## 9. Coupled Electrical Characteristics (Unless otherwise specified, $T_a = 25\text{ }^\circ\text{C}$ )

Characteristics	Symbol	Note	Test Condition	Min	Typ.	Max	Unit
Trigger LED current	$I_{FT}$		$I_{ON} = 100\text{ mA}$	—	0.6	3	mA
Return LED current	$I_{FC}$		$I_{OFF} = 10\text{ }\mu\text{A}$	0.1	—	—	mA
ON-state resistance	$R_{ON}$		$I_{ON} = 900\text{ mA}, I_F = 5\text{ mA}, t < 1\text{ s}$	—	0.18	0.22	$\Omega$

## 10. Isolation Characteristics (Unless otherwise specified, $T_a = 25\text{ }^\circ\text{C}$ )

Characteristics	Symbol	Note	Test Condition	Min	Typ.	Max	Unit
Total capacitance (input to output)	$C_S$	(Note 1)	$V_S = 0\text{ V}, f = 1\text{ MHz}$	—	0.4	—	pF
Isolation resistance	$R_S$	(Note 1)	$V_S = 500\text{ V}, \text{R.H.} \leq 60\%$	$5 \times 10^{10}$	$10^{14}$	—	$\Omega$
Isolation voltage	$BV_S$	(Note 1)	AC, 60 s	1000	—	—	Vrms

Note 1: This device is considered as a two-terminal device: Pins 1 and 2 are shorted together, and pins 3 and 4 are shorted together.

## 11. Switching Characteristics (Unless otherwise specified, $T_a = 25\text{ }^\circ\text{C}$ )

Characteristics	Symbol	Note	Test Condition	Min	Typ.	Max	Unit
Turn-on time	$t_{ON}$		See Fig. 11.1 $R_L = 200\text{ }\Omega, V_{DD} = 10\text{ V}, I_F = 5\text{ mA}$	—	0.5	2	ms
Turn-off time	$t_{OFF}$			—	0.1	1	

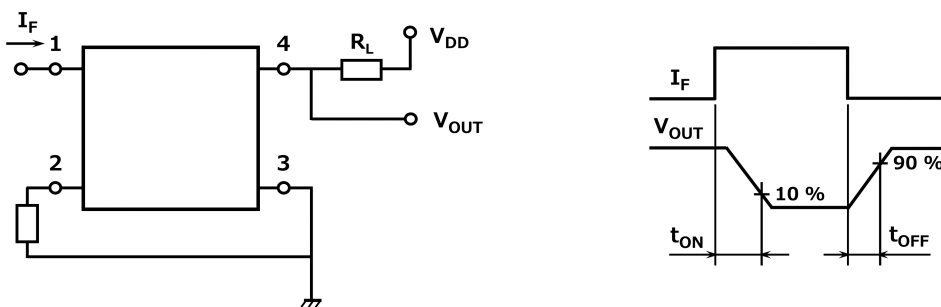


Fig. 11.1 Switching Time Test Circuit and Waveform

## 12. Characteristics Curves

### 12.1. Characteristics Curves (Note)

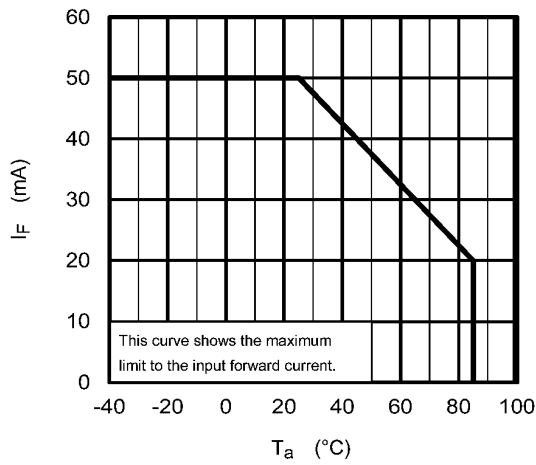


Fig. 12.1.1  $I_F - T_a$

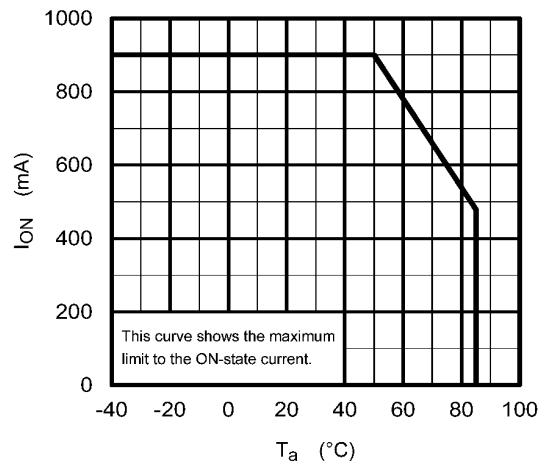


Fig. 12.1.2  $I_{ON} - T_a$

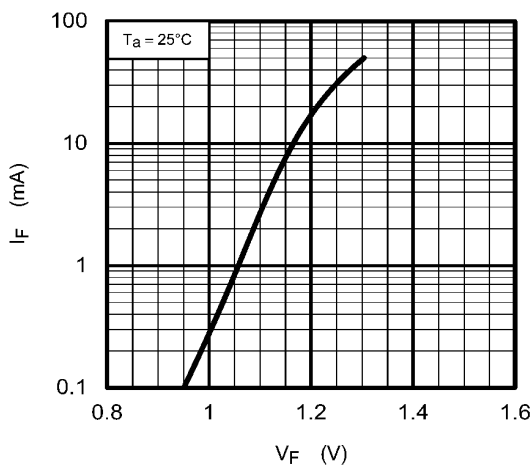


Fig. 12.1.3  $I_F - V_F$

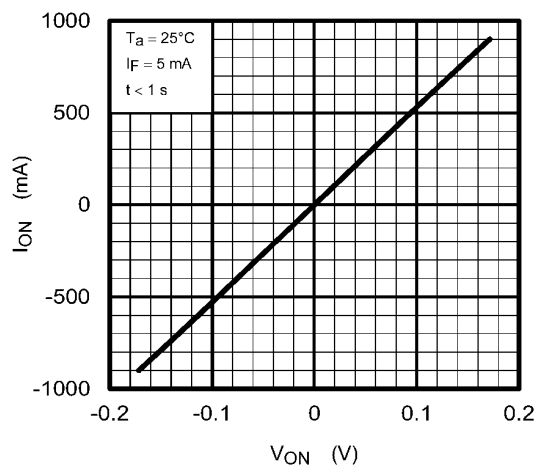


Fig. 12.1.4  $I_{ON} - V_{ON}$

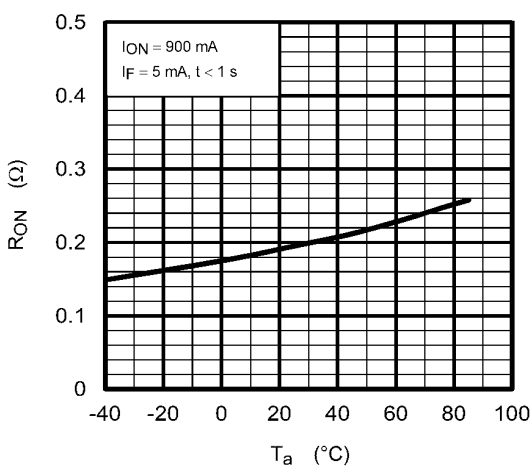


Fig. 12.1.5  $R_{ON} - T_a$

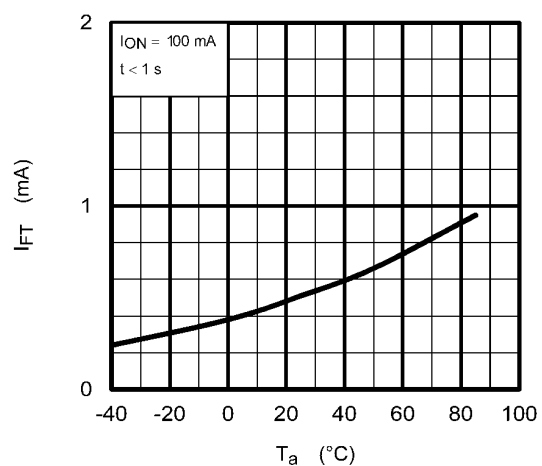


Fig. 12.1.6  $I_{FT} - T_a$

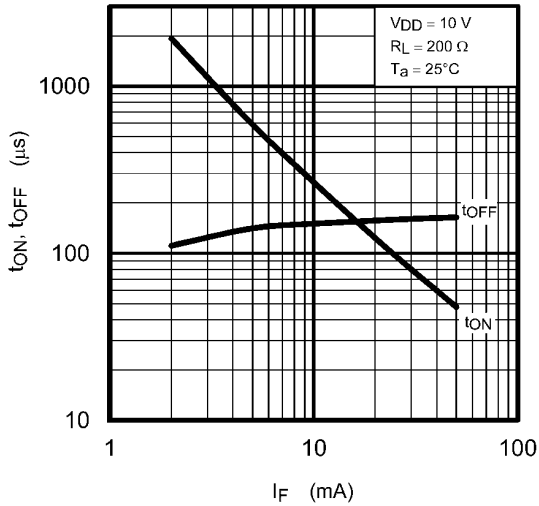


Fig. 12.1.7  $t_{ON}, t_{OFF} - I_F$

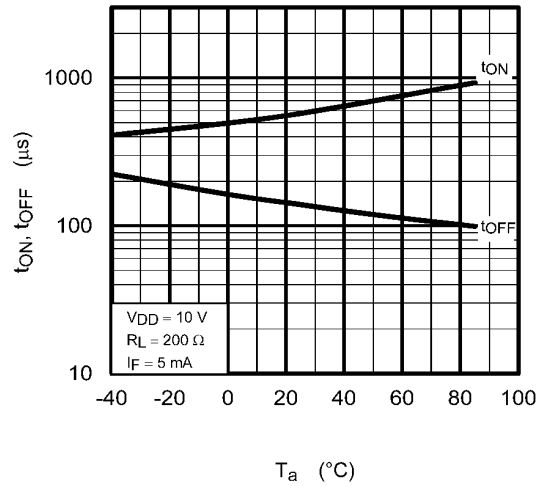


Fig. 12.1.8  $t_{ON}, t_{OFF} - T_a$

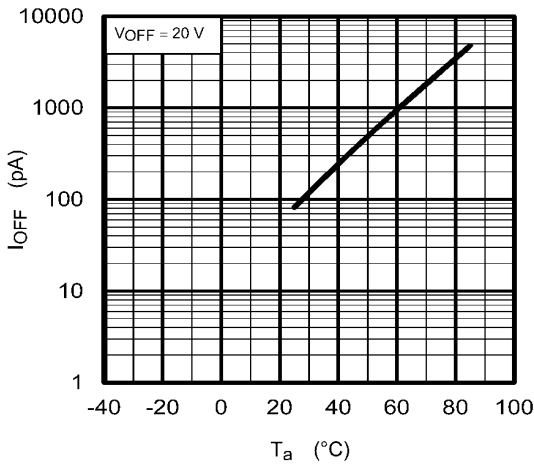


Fig. 12.1.9  $I_{OFF} - T_a$

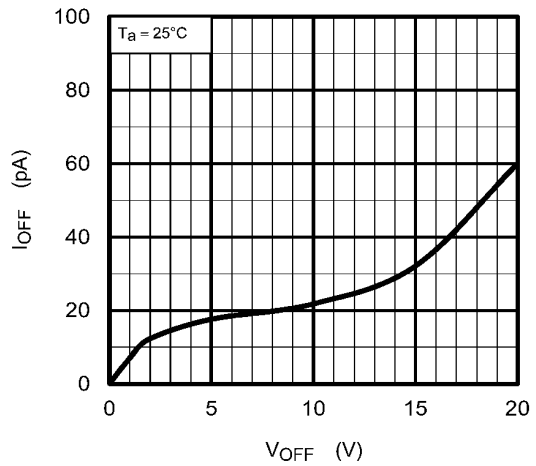


Fig. 12.1.10  $I_{OFF} - V_{OFF}$

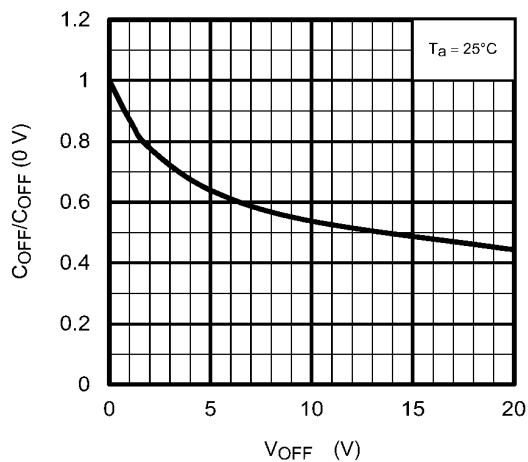


Fig. 12.1.11  $C_{OFF}/C_{OFF}(0V) - V_{OFF}$

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

## Package Dimensions

Unit: mm



Weight: 0.03 g (typ.)

Package Name(s)
TOSHIBA: 11-2C1S

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