

TLP3554

1. Applications

- Mechanical relay replacements
- Security Systems
- Measuring Equipment
- Factory Automation (FA)
- Amusement Equipment

2. General

The TLP3554 photorelay consists of a photo MOSFET optically coupled to an infrared light emitting diode. It is housed in a 4-pin DIP package. The low ON-state resistance and the high permissible ON-state current of the the TLP3554 make it suitable for power line control applications.

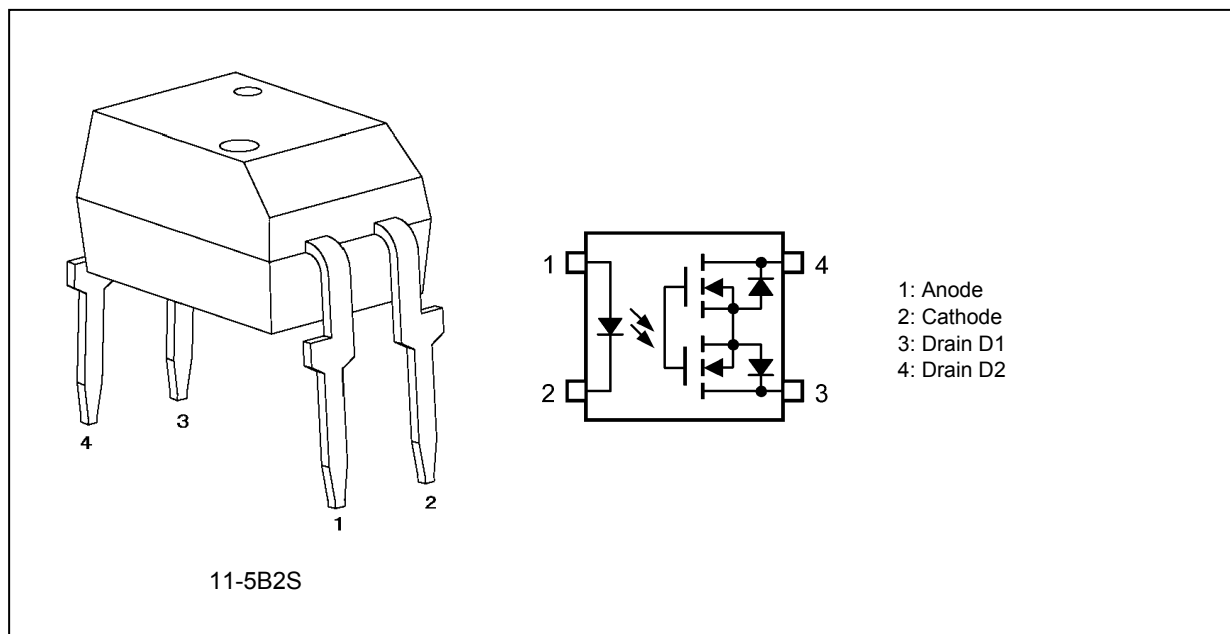
3. Features

- (1) Normally open (1-Form-A)
- (2) OFF-state output terminal voltage: 40 V (min)
- (3) Trigger LED current: 3 mA (max)
- (4) ON-state current: 2.5 A (max)
- (5) ON-state resistance: 150 mΩ (max)
- (6) Isolation voltage: 2500 Vrms (min)
- (7) Safety standards

UL-under application: UL1577 File No.E67349

cUL-under application: CSA Component Acceptance Service No.5A, File No.E67349

4. Packaging and Pin Configuration



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

	Characteristics	Symbol	Note	Test Condition	Min	Typ.	Max	Unit
LED	Input forward voltage	V_F		$I_F = 10\text{ mA}$	1.18	1.33	1.48	V
	Input reverse current	I_R		$V_R = 5\text{ V}$	—	—	10	μA
	Input capacitance	C_t		$V = 0\text{ V}, f = 1\text{ MHz}$	—	70	—	pF
Detector	OFF-state current	I_{OFF}		$V_{\text{OFF}} = 40\text{ V}$	—	—	1	μA
	Output capacitance	C_{OFF}		$V = 0\text{ V}, f = 1\text{ MHz}$	—	300	—	pF

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

Characteristics	Symbol	Note	Test Condition	Min	Typ.	Max	Unit
Trigger LED current	I_{FT}		$I_{\text{ON}} = 1.0\text{ A}$	—	0.5	3	mA
Return LED current	I_{FC}		$I_{\text{OFF}} = 10\text{ }\mu\text{A}$	0.1	—	—	mA
ON-state resistance	R_{ON}		$I_{\text{ON}} = 2.0\text{ A}, I_F = 5\text{ mA}, t < 1\text{ s}$	—	50	150	m Ω

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

Characteristics	Symbol	Note	Test Condition	Min	Typ.	Max	Unit
Total capacitance (input to output)	C_S	(Note 1)	$V_S = 0\text{ V}, f = 1\text{ MHz}$	—	0.8	—	pF
Isolation resistance	R_S	(Note 1)	$V_S = 500\text{ V}, \text{R.H.} \leq 60\%$	5×10^{10}	10^{14}	—	Ω
Isolation voltage	BV_S		AC, 1 min	2500	—	—	Vrms
			AC, 1s in oil	—	5000	—	
			DC, 1 min, in oil	—	5000	—	Vdc

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, $T_a = 25^\circ\text{C}$)

Characteristics	Symbol	Note	Test Condition	Min	Typ	Max	Unit
Turn-on time	t_{ON}		See Fig. 11.1. $R_L = 200\text{ }\Omega, V_{\text{DD}} = 20\text{ V}, I_F = 5\text{ mA}$	—	0.8	5	ms
Turn-off time	t_{OFF}			—	0.3	1	
Turn-on time	t_{ON}		See Fig. 11.1. $R_L = 200\text{ }\Omega, V_{\text{DD}} = 20\text{ V}, I_F = 10\text{ mA}$	—	0.4	3	
Turn-off time	t_{OFF}			—	0.3	1	

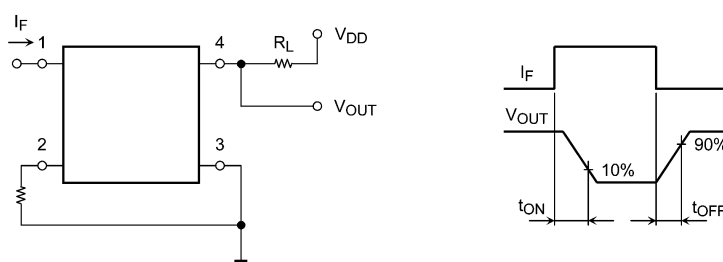


Fig. 11.1 Switching Time Test Circuit

12. Characteristics Curves and Circuit Connections

12.1. Characteristics Curves (Note)

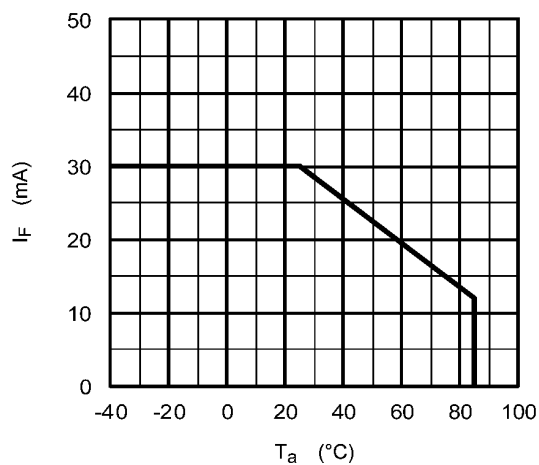


Fig. 12.1.1 $I_F - T_a$

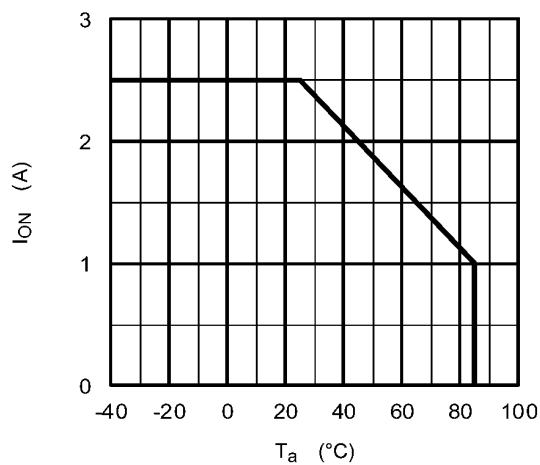


Fig. 12.1.2 $I_{ON} - T_a$

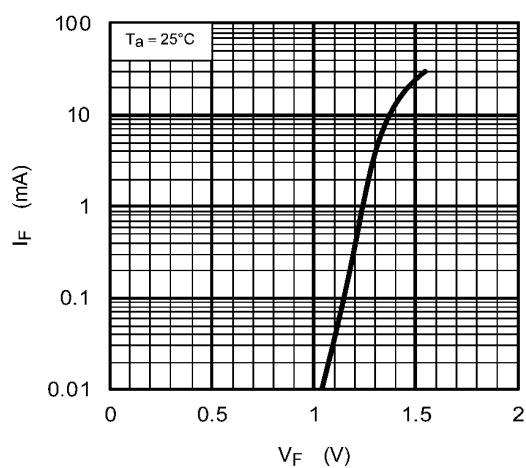


Fig. 12.1.3 $I_F - V_F$

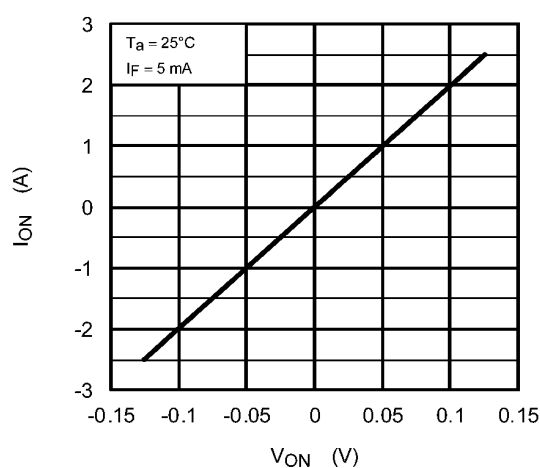


Fig. 12.1.4 $I_{ON} - V_{ON}$

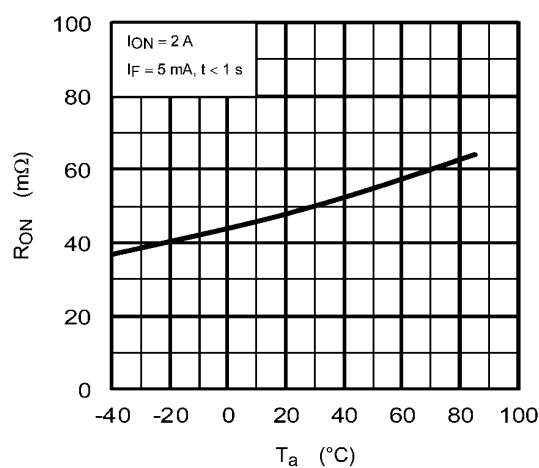


Fig. 12.1.5 $R_{ON} - T_a$

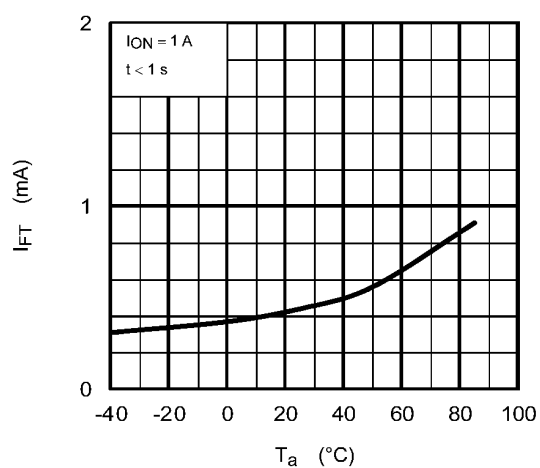


Fig. 12.1.6 $I_{FT} - T_a$

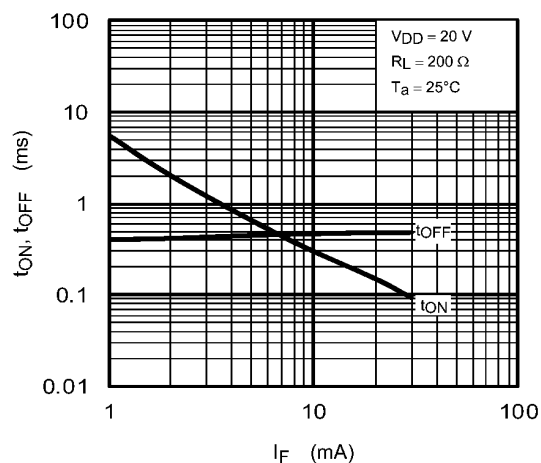


Fig. 12.1.7 $t_{on}, t_{off} - I_F$

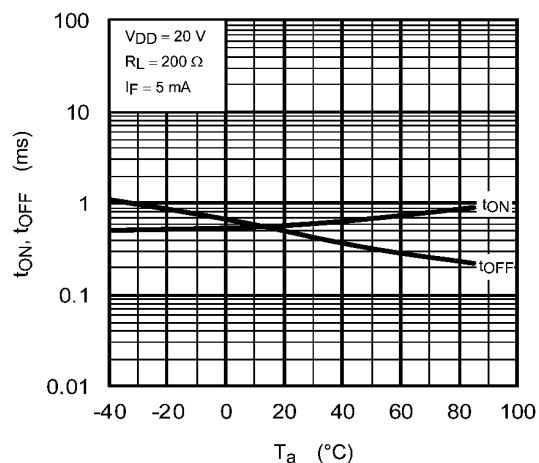


Fig. 12.1.8 $t_{on}, t_{off} - T_a$

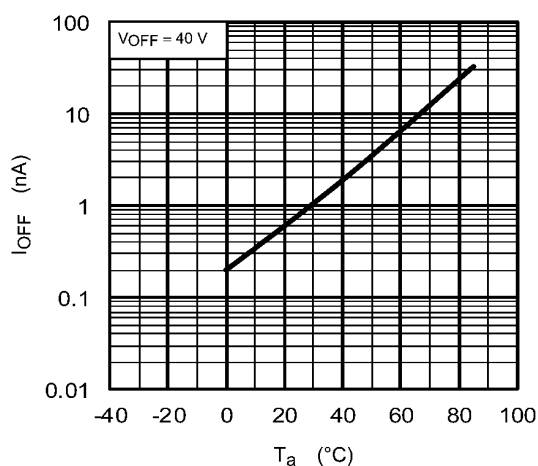
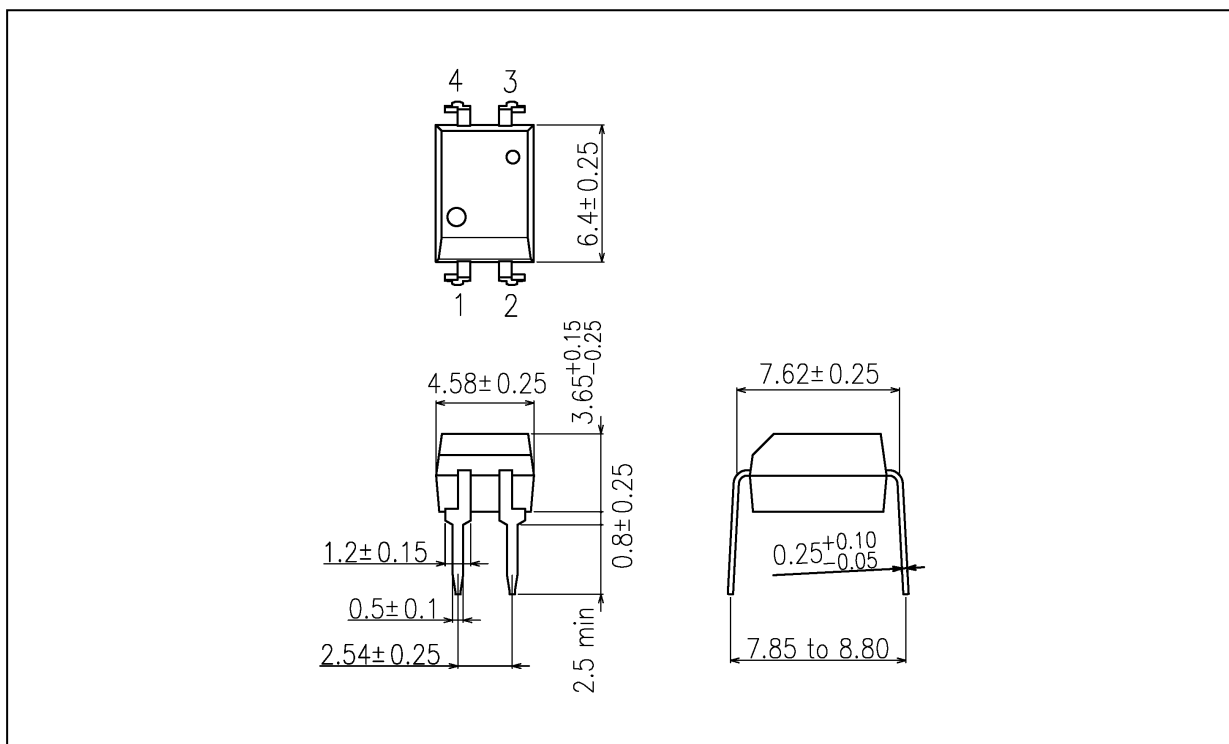


Fig. 12.1.9 $I_{OFF} - T_a$

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

Package Dimensions

Unit: mm



Weight: 0.26 g (typ.)

Package Name(s)
TOSHIBA: 11-5B2S

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