

TOSHIBA Photocoupler Photorelay

TLP3120

High-Speed Memory Tester

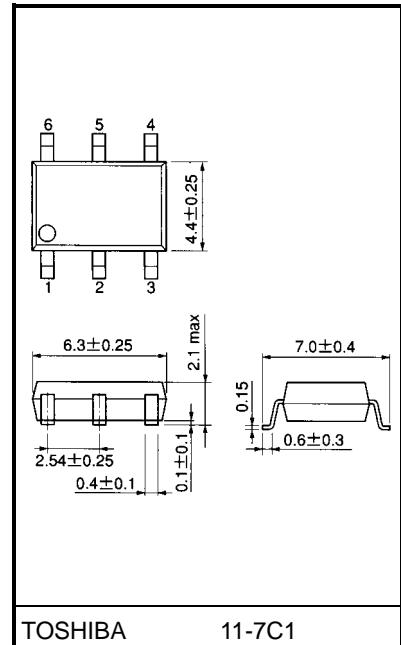
Unit: mm

High-Speed Logic Tester

High-Frequency Measurement Equipment

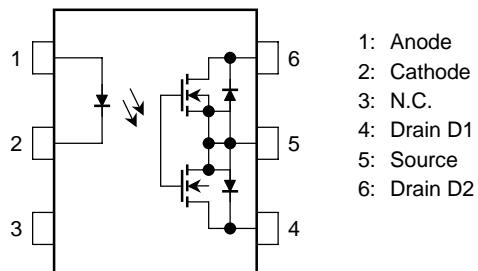
The Toshiba TLP3120 consists of an aluminum gallium arsenide infrared emitting diode optically coupled to a photo-MOSFET in a SOP, which is suitable for surface mount assembly.

- 6-pin SOP (2.54SOP6): 2.1 mm high, 2.54 mm pitch
- Normally opened (form A) device
- Peak OFF-state voltage: 80 V (min)
- Trigger LED current: 5 mA (max)
- ON-state current: 1.25 A (max)
- ON-state resistance: 0.15 Ω (max)
- Capacitance: 1000 pF (max)
- Isolation voltage: 1500 Vrms (min)



TOSHIBA 11-7C1

Weight: 0.13 g (typ.)



Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit
Led	Forward current	I _F	50	mA
	Forward current derating (Ta ≥ 25°C)	ΔI _{F/°C}	-0.5	mA/°C
	Reverse voltage	V _R	5	V
	Junction temperature	T _j	125	°C
Detector	OFF-state output terminal voltage	V _{OFF}	80	V
	ON-state current	I _{ON}	1.25	A
	ON-state current derating (Ta ≥ 25°C)	ΔI _{ON/°C}	-12.5	mA/°C
	Junction temperature	T _j	125	°C
Storage temperature range		T _{stg}	-40~125	°C
Operating temperature range		T _{opr}	-20~85	°C
Lead soldering temperature (10 s)		T _{sol}	260	°C
Isolation voltage (AC, 1 min, R.H. ≤ 60%) (Note 1)		BV _S	1500	Vrms

Note 1: Device is considered as a two-terminal device. LED side pins are shorted together and detector side pins are shorted together.

Recommended Operating Conditions

Characteristics	Symbol	Min	Typ.	Max	Unit
Supply voltage	V _{DD}	—	—	64	V
Forward current	I _F	5	—	30	mA
ON-state current	I _{ON}	—	—	1.25	A
Operating temperature	T _{opr}	25	—	60	°C

Individual Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Led	Forward current	V _F	I _F = 10 mA	1.0	1.15	1.3	V
	Reverse current	I _R	V _R = 5 V	—	—	10	μA
	Capacitance	C _T	V = 0, f = 1 MHz	—	15	—	pF
Detector	OFF-state current	I _{OFF}	V _{OFF} = 20 V, Ta = 50°C	—	1200	1500	pA
	Capacitance	C _{OFF}	V = 0, f = 100 MHz	—	460	1000	pF

Coupled Electrical Characteristics ($T_a = 25^\circ\text{C}$)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Trigger LED current	I_{FT}	$I_{ON} = 1.25 \text{ A}$	—	2	5	mA
Return LED current	I_{FC}	$I_{OFF} = 10 \mu\text{A}$	0.2	—	—	mA
ON-state resistance	R_{ON}	$I_{ON} = 1.25 \text{ A}, I_F = 5 \text{ mA}$	—	0.11	0.15	Ω

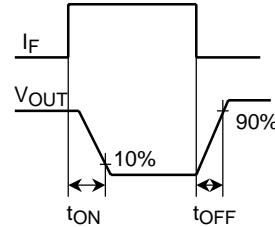
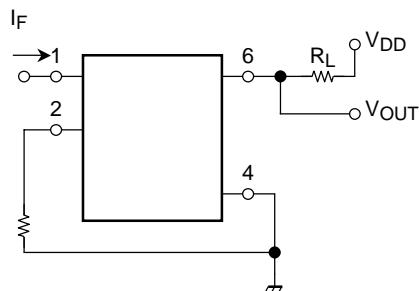
Isolation Characteristics ($T_a = 25^\circ\text{C}$)

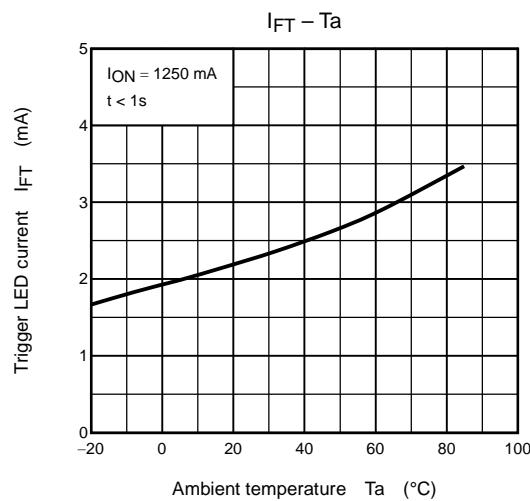
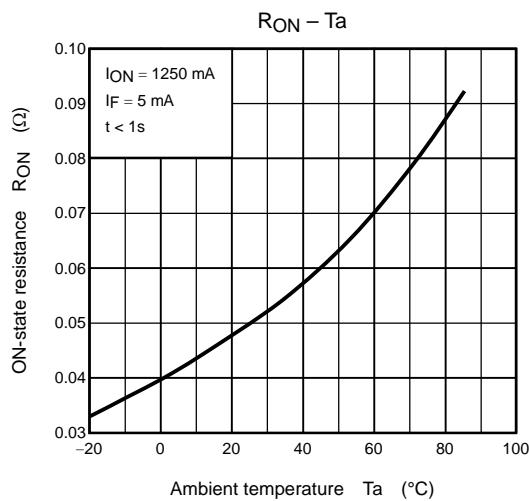
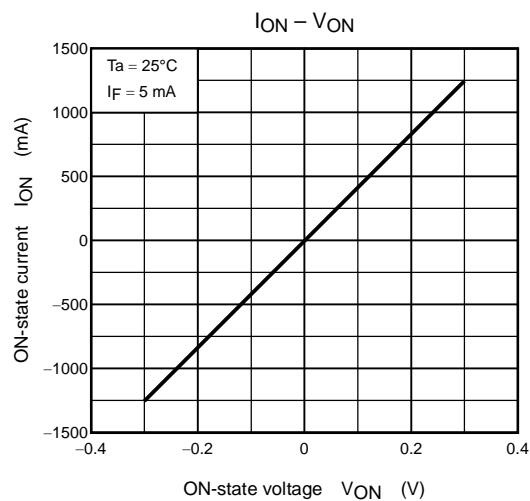
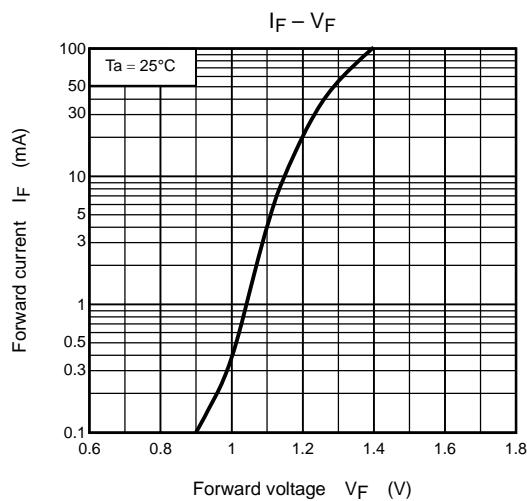
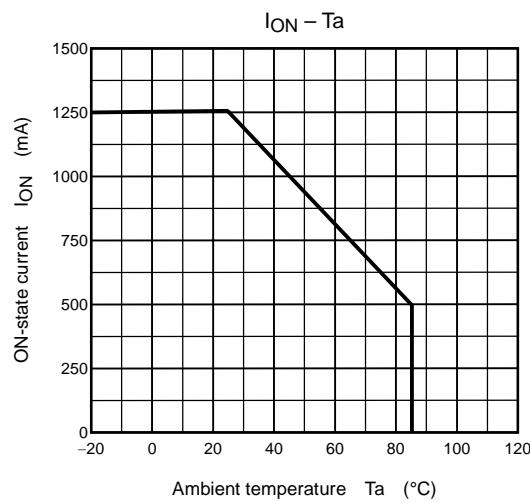
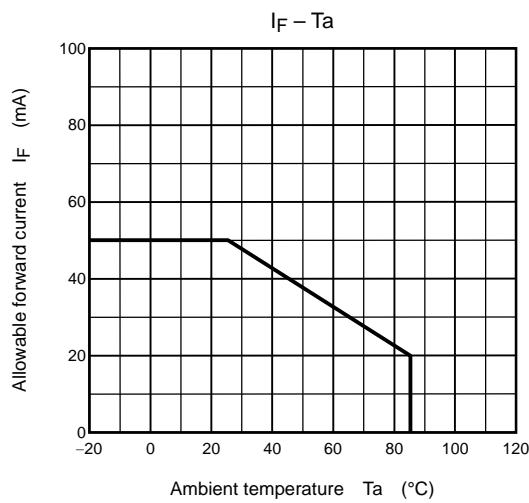
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Capacitance input to output	C_S	$V_S = 0 \text{ V}, f = 1 \text{ MHz}$	—	0.8	—	pF
Isolation resistance	R_S	$V_S = 500 \text{ V}, \text{R.H.} \leq 60\%$	5×10^{10}	10^{14}	—	Ω
Isolation voltage	BV_S	AC, 1 min	1500	—	—	Vrms
		AC, 1 s (in oil)	—	3000	—	
		DC, 1 min (in oil)	—	3000	—	Vdc

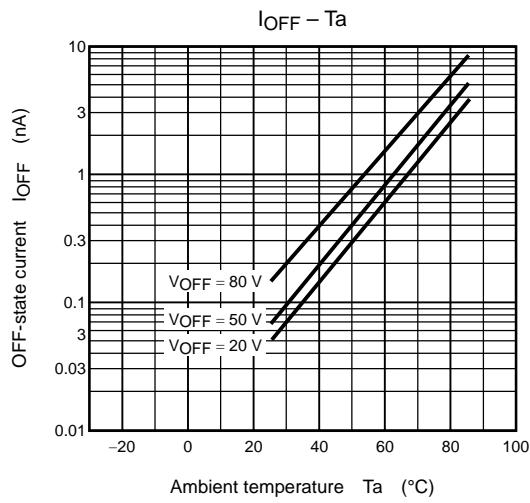
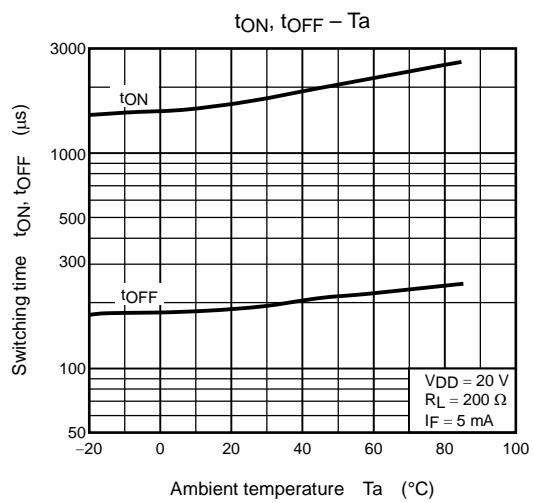
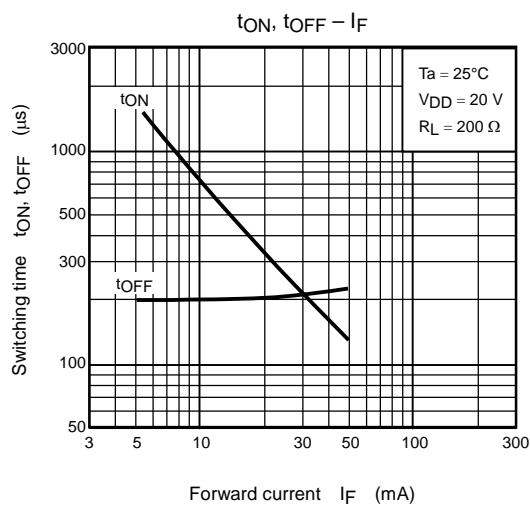
Switching Characteristics ($T_a = 25^\circ\text{C}$)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Turn-ON time	t_{ON}	$R_L = 200 \Omega$ $V_{DD} = 20 \text{ V}, I_F = 5 \text{ mA}$ (Note 2)	—	2.0	3.0	ms
Turn-OFF time	t_{OFF}		—	0.7	1.0	

Note 2: Switching time test circuit







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