

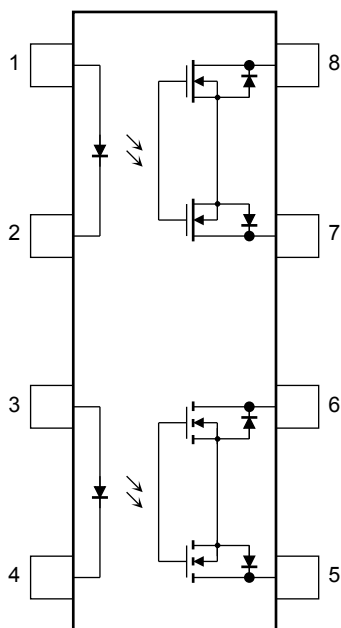
TLP4026G

Telecommunication
 Measuring Equipment
 Security Equipment
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The Toshiba TLP4026G consists of an infrared emitting diode optically coupled to a photo-MOSFET and is the 1-form-A/B photorelay with 350-V withstanding voltage.

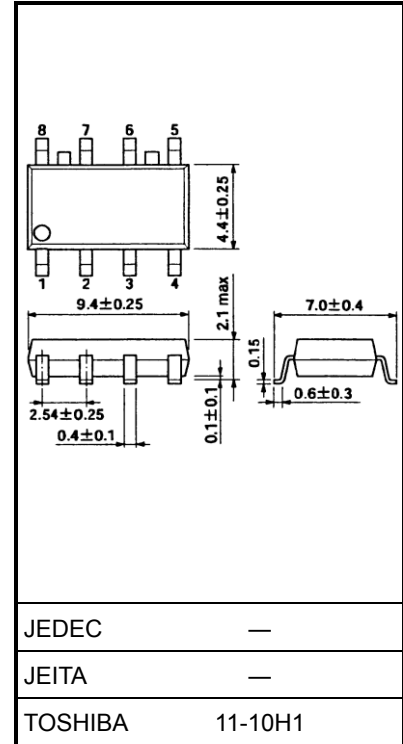
- Normally closed (1-form-B) device, normally opened (1-form-A) device
- Peak off-state voltage: 350 V (min)
- Trigger LED current: 3 mA (max)
- On-state current: 120 mA (max)
- On-state resistance: 25 Ω (max)
- Isolation voltage: 1500 Vrms (min)
- UL-recognized: UL 1577, File No.E67349

Pin Configuration (top view)



- 1: Anode (1b)
- 2: Cathode (1b)
- 3: Anode (1a)
- 4: Cathode (1a)
- 5: Drain D1 (1a)
- 6: Drain D2 (1a)
- 7: Drain D3 (1b)
- 8: Drain D4 (1b)

Unit: mm



Weight: 0.2 g (typ.)

Start of commercial production
 2002-08

Absolute Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit	
LED	Forward current	IF	50	mA	
	Forward current derating (Ta ≥ 25°C)	ΔIF/°C	-0.5	mA/°C	
	Peak forward current	IFP	1	A	
	Reverse voltage	VR	5	V	
	Diode power dissipation	PD	50	mW	
	Diode power dissipation derating (Ta ≥ 25°C)	ΔPD / °C	-0.5	mW/°C	
	Junction temperature	Tj	125	°C	
Detector	Off-state output terminal voltage	VOFF	350	V	
	On-state current	One channel operation	ION	120	mA
		Two channel operations (1a1b simultaneous operation)			
	On-state current derating (Ta ≥ 25°C)	One channel operation	ΔION/°C	-1.2	mA/°C
		Two channel operations (1a1b simultaneous operation)			
	Output power dissipation	PO	370	mW	
	Output power dissipation derating (Ta ≥ 25°C)	ΔPO / °C	-3.7	mW / °C	
Junction temperature	Tj	125	°C		
Storage temperature range	Tstg	-55 to 125	°C		
Operating temperature range	Topr	-40 to 85	°C		
Lead soldering temperature (10 s)	Tsol	260	°C		
Isolation voltage (AC, 60 s, R.H. ≤ 60 %)	(Note 1) BV _S	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: Pins 1, 2, 3 and 4 are shorted together, and pins 5, 6, 7 and 8 are shorted together.

Recommended Operating Conditions

Characteristics	Symbol	Min	Typ.	Max	Unit
Supply voltage	V _{DD}	—	—	280	V
Forward current	IF	5	—	25	mA
On-state current	ION	—	—	120	mA
Operating temperature	Topr	-20	—	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)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
LED	Forward voltage	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 _F = 0 V, f = 1 MHz	—	30	—	pF
Detector	Off-state current	I _{OFF}	V _{OFF} = 350 V	—	—	1	μA
	Capacitance (1b)	C _{OFF}	V = 0 V, f = 1 MHz, I _F = 5 mA	—	65	—	pF
	Capacitance (1a)		V = 0 V, f = 1 MHz, I _F = 0 mA				

Coupled Electrical Characteristics (Ta = 25°C)

Characteristics	Form	Symbol	Test Condition	Min	Typ.	Max	Unit
Trigger LED current	1a	I _{FT}	I _{ON} = 120 mA	—	1	3	mA
	1b	I _{FC}	I _{OFF} = 10 μA				
Return LED current	1a	I _{FC}	I _{OFF} = 10 μA	0.1	—	—	mA
	1b	I _{FT}	I _{ON} = 120 mA				
On-state resistance	—	R _{ON}	I _{ON} = 120 mA (Note 2)	—	15	25	Ω

Note 2: 1-form-A: I_F = 5 mA, 1-form-B: I_F = 0 mA

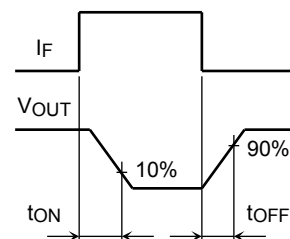
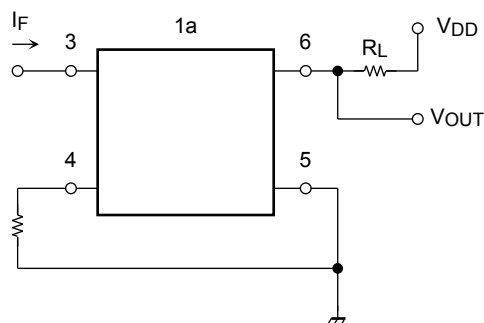
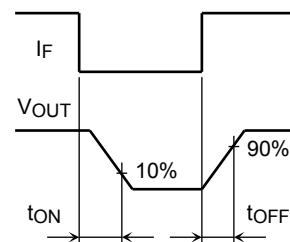
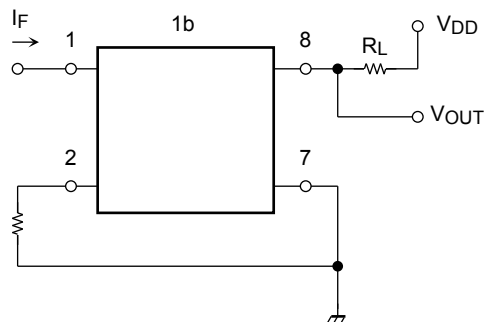
Isolation Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Capacitance input to output	C _S	V _S = 0 V, f = 1 MHz	—	0.8	—	pF
Isolation resistance	R _S	V _S = 500 V, R.H. ≤ 60 %	5 × 10 ¹⁰	10 ¹⁴	—	Ω
Isolation voltage	BV _S	AC, 60 s	1500	—	—	V _{rms}

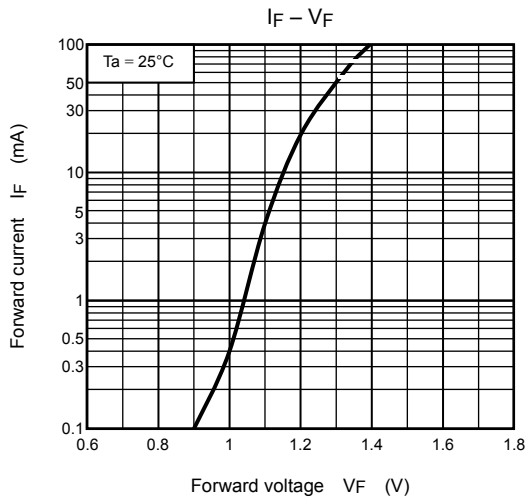
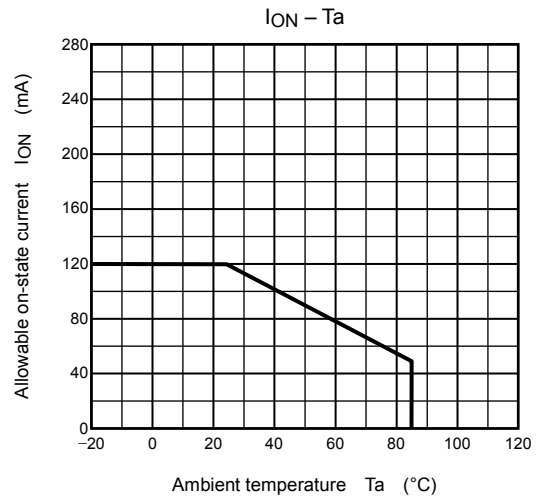
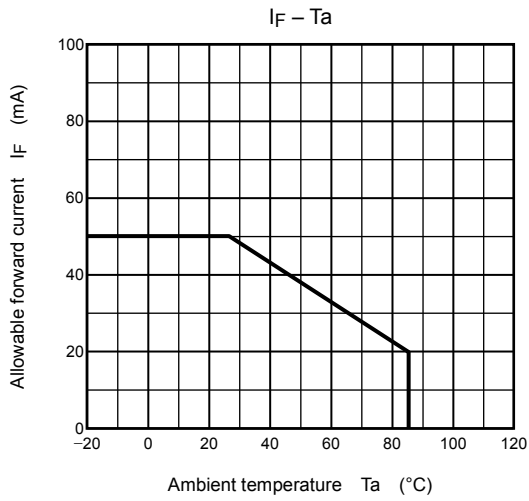
Switching Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
1b	Turn-on time	t _{ON}	R _L = 200 Ω V _{DD} = 20 V, I _F = 5 mA (Note 3)	—	—	1	ms
	Turn-off time	t _{OFF}		—	—	3	
1a	Turn-on time	t _{ON}	R _L = 200 Ω V _{DD} = 20 V, I _F = 5 mA (Note 3)	—	—	1	ms
	Turn-off time	t _{OFF}		—	—	1	

Note 3: Switching time test circuit

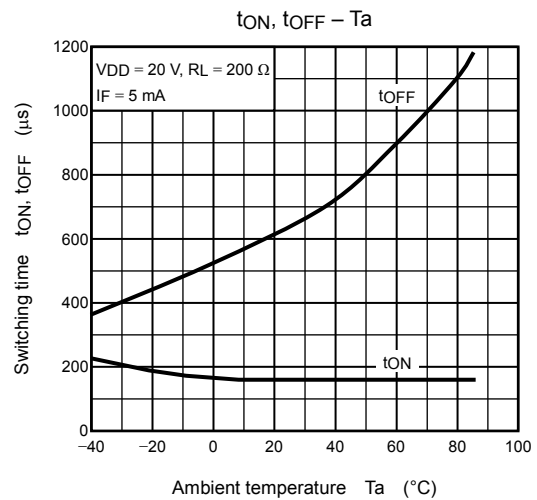
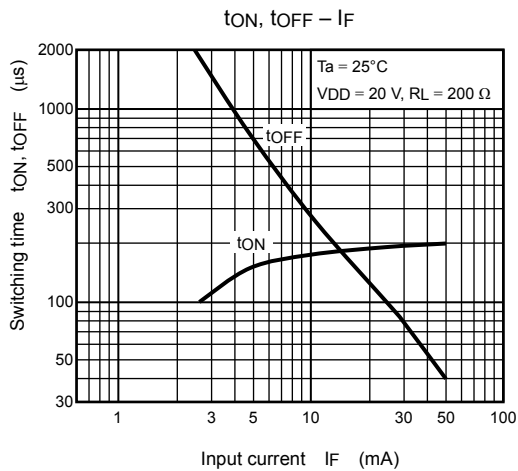
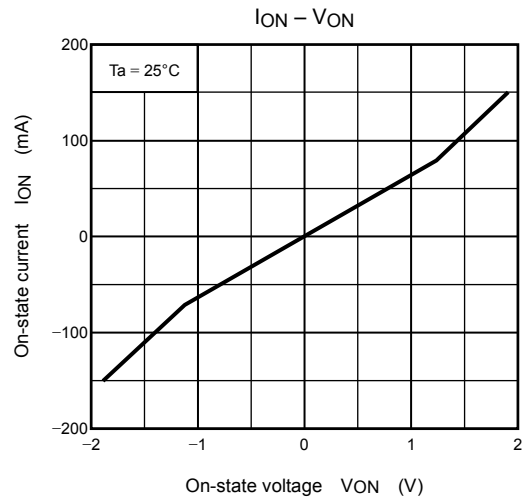
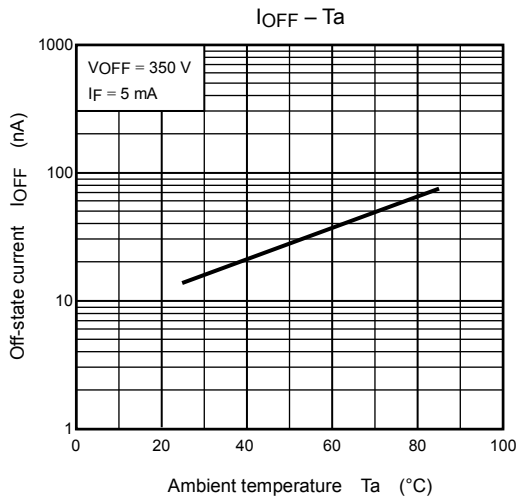
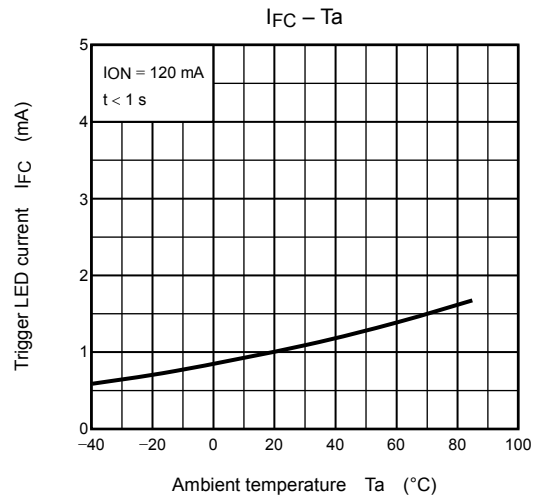
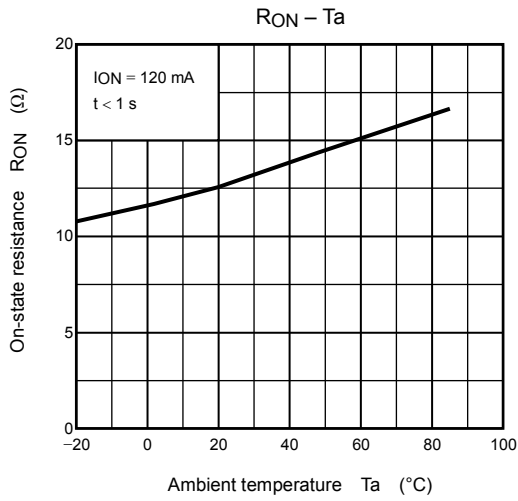


Characteristics curves for 1-form-A/B



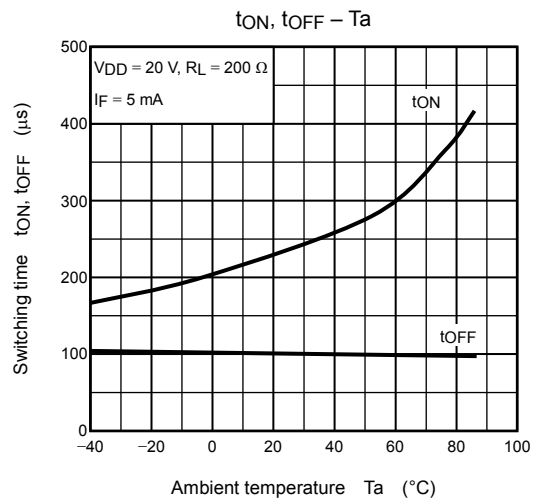
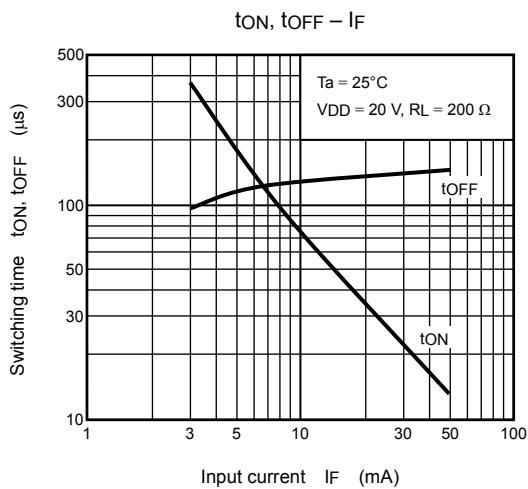
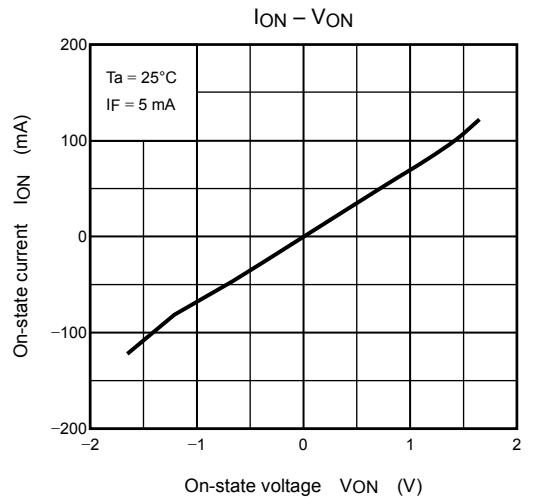
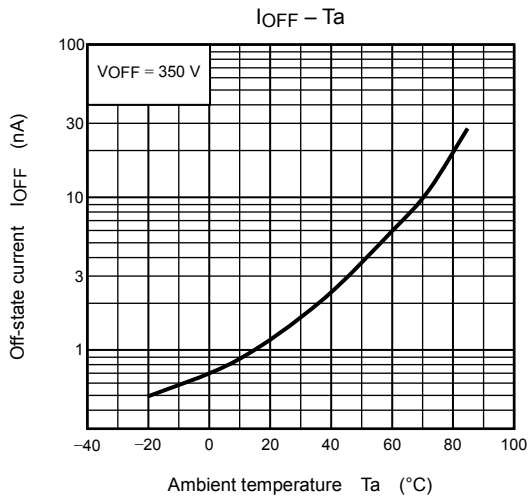
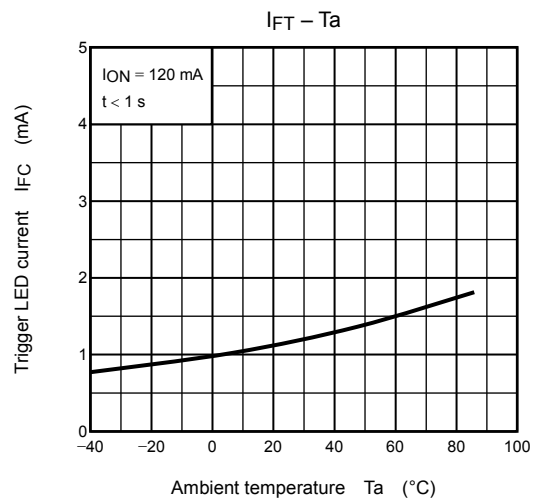
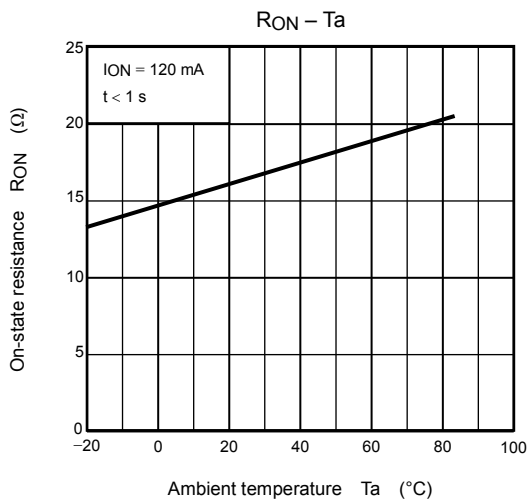
NOTE: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.

Characteristics curves for 1-form-B



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Characteristics curves for 1-form-A



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