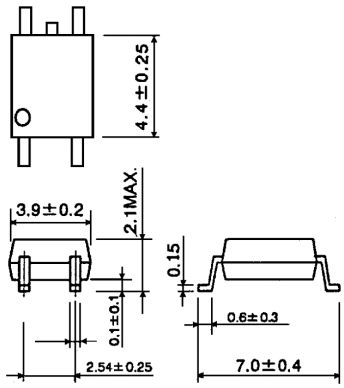
TOSHIBA Photocoupler GaAs Ired & Photo−MOS FET

TLP176G

Modems In PC
Modem−Fax Cards
Telecommunictions

Unit in mm



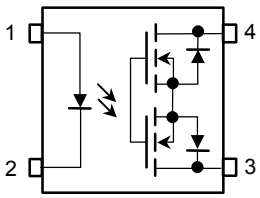
JEDEC	—
EIAJ	—
TOSHIBA	

Weight: 0.1 g

The TOSHIBA TLP176G consists of gallium arsenide infared emitting diode optically coupled to a photo−MOS FET in a SOP, which is suitable for surface mount assembly.
The TLP176G is suitable for the modem applications which require space savings.

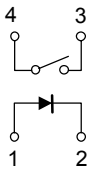
- Peak off−state voltage: 350V (min)
- Trigger LED current: 3mA (max)
- On−state resistance: 35Ω (max)
- Isolation voltage: 1500Vrms (min)
- UL recognized: UL1577, file No. E67349
- BSI approved
  : BS EN60065: 1994,certificate No.8273
  BS EN60950: 1992,certificate No.8274
- SEMKO approved: SS EN60065
  SS EN60950
- Option(V4)type
  TUV approved: DIN VDE0884 / 06.92,
  Certificate No.R9850580

Pin Configuration (top view)

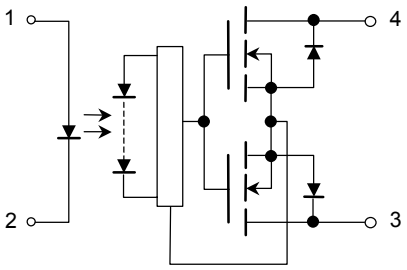


1. : Anode
2. : Cathode
3. : Drain
4. : Drain

1-Form-A



Schematic



Maximum Ratings (Ta = 25°C)

Characteristic		Symbol	Rating	Unit
LED	Forward current	I_F	50	mA
	Forward current derating (Ta ≥ 25°C)	ΔI_F / °C	−0.5	mA / °C
	Pulse forward current (100μs pulse,100pps)	I_{FP}	1	A
	Reverse voltage	V_R	5	V
	Junction temperature	T_j	125	°C
Detector	Off−state output terminal voltage	V_{OFF}	350	V
	On−state current	I_{ON}	120	mA
	On−state current derating (Ta ≥ 25°C)	ΔI_{ON} / °C	−1.2	mA / °C
	Junction temperature	T_j	125	°C
Total power dissipation		PT	350	mW
Total power dissupation derating(Ta ≥ 25°C)		ΔPT / °C	−0.35	mW / °C
Storage temperature range		T_{stg}	−55~125	°C
Operating temperature range		T_{opr}	−40~85	°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 considered a two−terminal device: Pin 1 and 2 shorted together and pin 3 and 4 shorted together.

Recommended Operating Conditions

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	V_{DD}	—	—	280	V
Forward current	I_F	5	7.5	25	mA
On−state current	I_{ON}	—	—	100	mA
Operating temperature	T_{opr}	−20	—	65	°C

Individual Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
LED	Forward voltage	V_F	I_F = 10mA	1.0	1.15	1.3	V
	Reverse current	I_R	V_R = 5V	—	—	10	μA
	Capacitance	C_T	V = 0,f = 1MHz	—	30	—	pF
Detector	Off−state current	I_{OFF}	V_{OFF} = 350V	—	—	1	μA
	Capacitance	C_{OFF}	V = 0,f = 1MHz	—	40	—	pF

Coupled Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Trigger LED current	I_{FT}	I_{ON} = 120mA	—	1	3	mA
On−state resistance	R_{ON}	I_{ON} = 120mA,I_F = 5mA	—	22	35	Ω

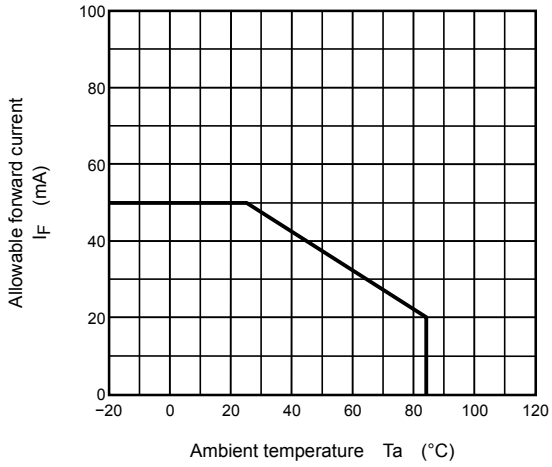
Isolation Characteristics (Ta = 25°C)

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

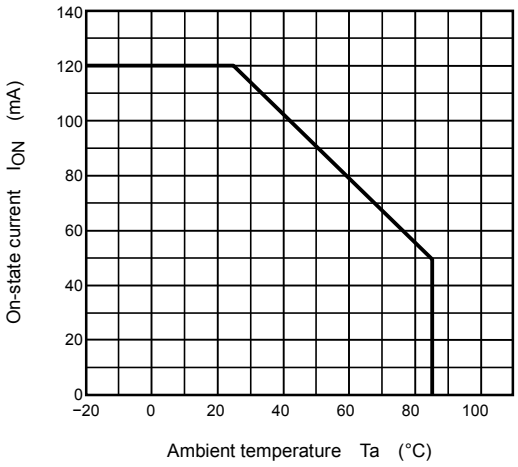
Switching Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Turn−on time	t_{ON}	R_L = 200Ω	—	0.3	1	ms
Turn−off time	t_{OFF}	V_{CC} = 20V, I_F = 5mA	—	0.1	1	

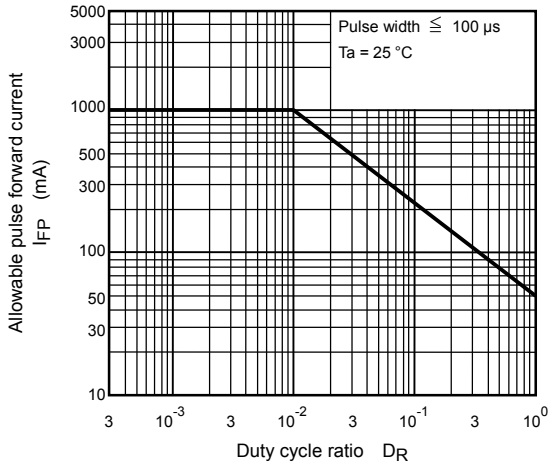
I_F – Ta



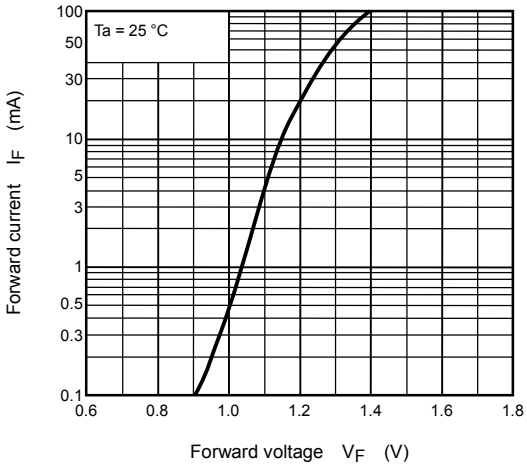
I_{ON} – Ta



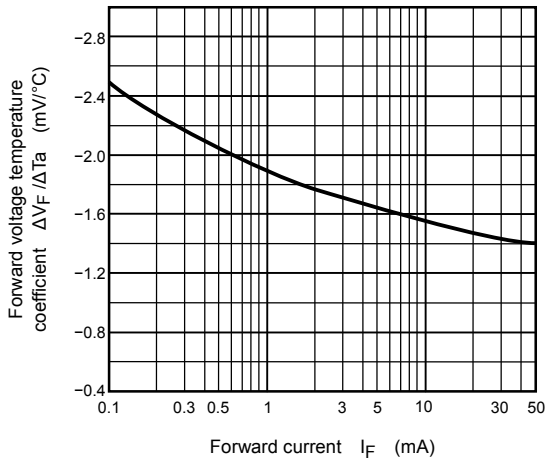
I_{FP} – D_R



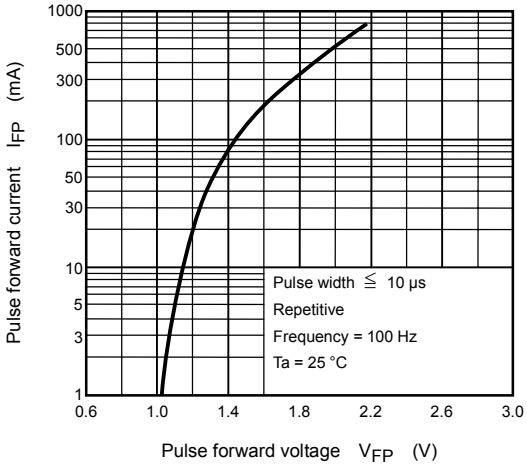
I_F – V_F



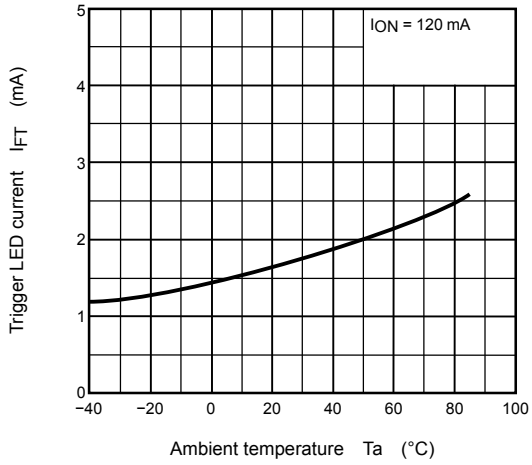
ΔV_F /ΔTa – I_F



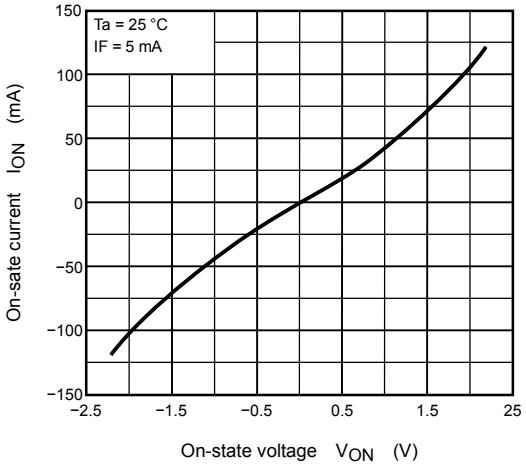
I_{FP} – V_{FP}



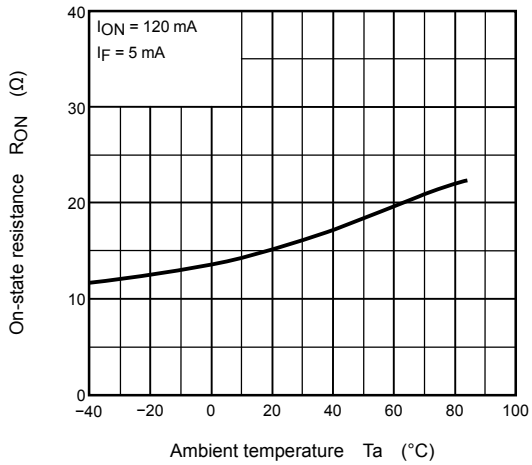
I_{FT} – Ta



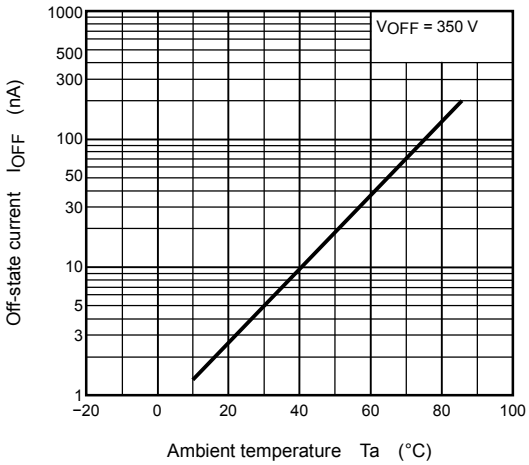
I_{ON} – V_{ON}



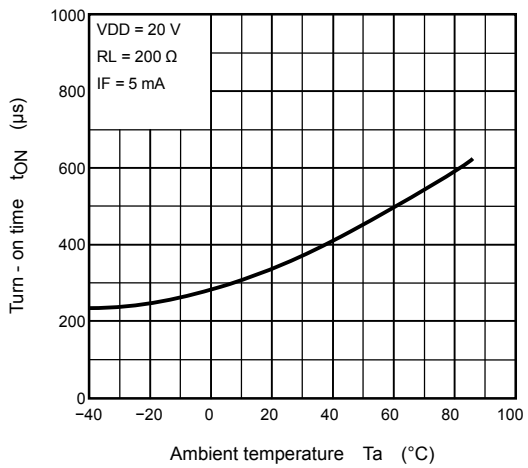
R_{ON} – Ta



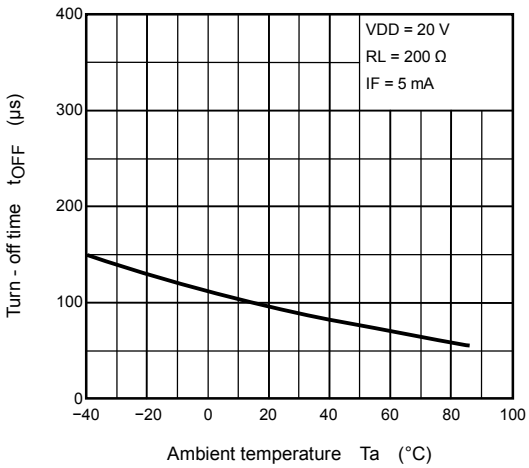
I_{OFF} – Ta

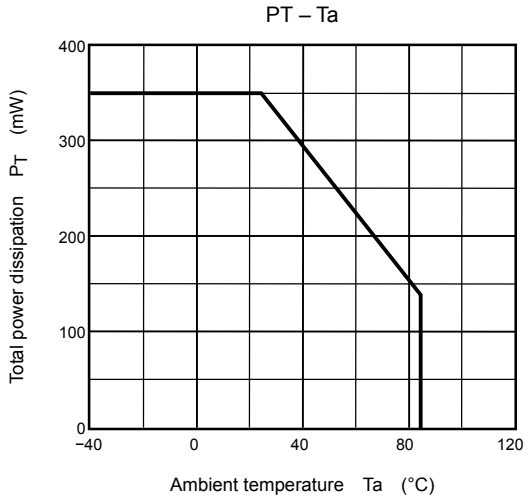


t_{ON} – Ta



t_{OFF} – Ta




PT – Ta
Total power dissipation PT (mW)
400
300
200
100
0
−40
0
40
80
120
Ambient temperature Ta (°C)

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000707EBC

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