TOSHIBA PHOTOCOUPLER PHOTO RELAY

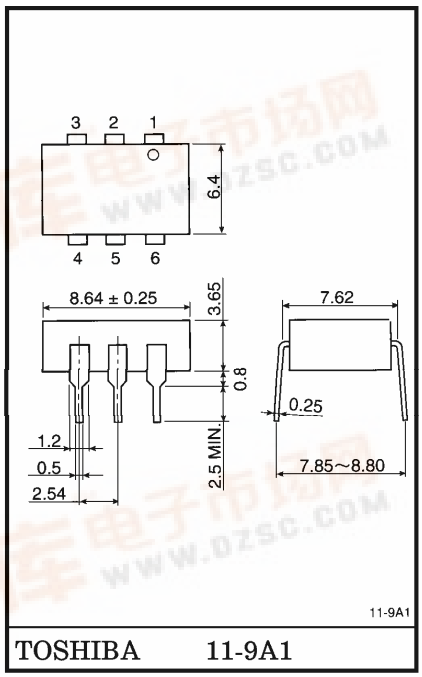
TLP798G

TELECOMMUNICATION

DATA ACQUISITION

MEASUREMENT INSTRUMENTATION

Unit in mm



TOSHIBA 11-9A1

Weight : 0.49 g

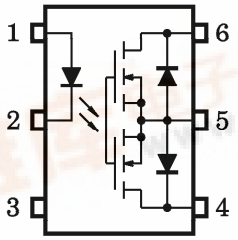
The TOSHIBA TLP798G consists of an aluminum gallium arsenide infrared emitting diode optically coupled to a photo-MOS FET in a six lead plastic DIP package (DIP6).
The TLP798G is a bi-directional switch which can replace mechanical relays in many applications.

- Peak Off-State Voltage : 400 V (MIN.)
- On-State Current : 150 mA (MAX.) (A Connection)
- On-State Resistance : 12 Ω (MAX.) (A Connection)
- Isolation Voltage : 5000 Vrms (MIN.) (A Connection)
- Isolation Thickness : 0.4 mm (MIN.)
- Trigger LED Current (Ta = 25°C)

CLASSIFICATION (Note 1)	Trigger LED Current (mA) @I_{ON} = 150 mA		MARKING OF CLASSIFICATION
	Min.	Max.	
(IFT2)	—	2	T2
Standard	—	5	T2, blank

(Note 1) : Application type name for certification test, please use standard product type name, i.e.
TLP798G (IFT2) : TLP798G

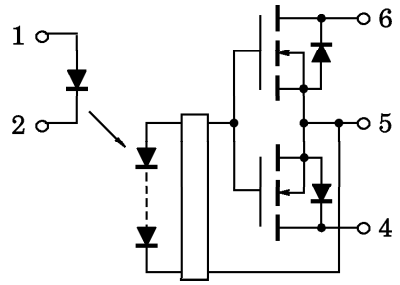
PIN CONFIGURATION (TOP VIEW)



1. : ANODE
2. : CATHODE
3. : NC
4. : DRAIN D1
5. : SOURCE
6. : DRAIN D2

- BSI Approved : BS EN60065 : 1994, Certificate No. 8318
  BS EN60950 : 1992, Certificate No. 8319
- Option (D4) type
  TUV Approved : DIN VDE0884 / 06.92,
  Certificate No. 9850585

SCHEMATIC



MAXIMUM RATINGS (Ta = 25°C)

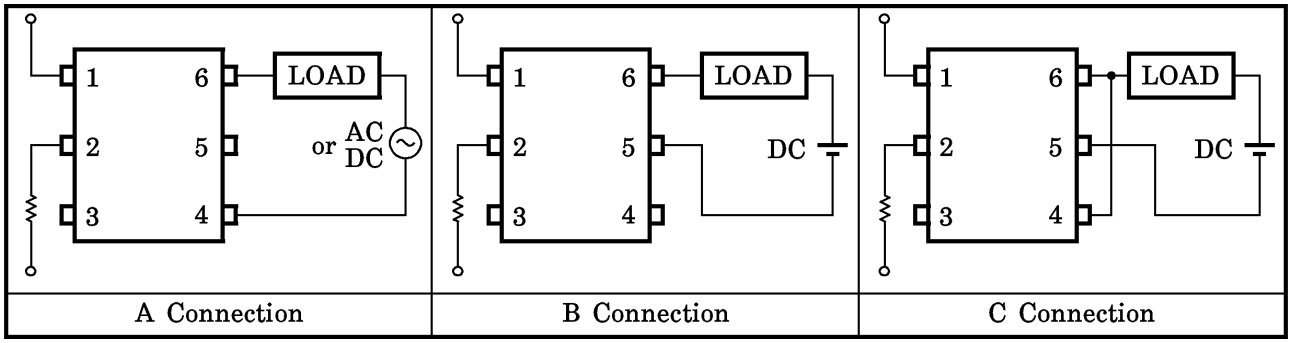
	CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current		I_F	30	mA
	Forward Current Derating (Ta ≧ 25°C)		ΔI_F / °C	−0.3	mA / °C
	Peak Forward Current (100 μs pulse, 100 pps)		I_{FP}	1	A
	Reverse Voltage		V_R	5	V
	Junction Temperature		T_j	125	°C
DETECTOR	Off-State Output Terminal Voltage		V_{OFF}	400	V
	On-State RMS Current	A Connection	I_{ON}	150	mA
		B Connection		200	
		C Connection		300	
	On-State Current Derating (Ta ≧ 25°C)	A Connection	ΔI_{ON} / °C	−1.5	mA / °C
		B Connection		−2.0	
		C Connection		−3.0	
	Junction temperature		T_j	125	°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, 1min., R.H. ≦ 60%)(Note 2)			BV_S	5000	Vrms

(Note 2) : Device considered a two-terminal device : Pins 1, 2 and 3 shorted together, and pins 4, 5 and 6 shorted together.

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{DD}	—	—	320	V
Forward Current	I_F	10	15	20	mA
On-State Current	I_{ON}	—	—	150	mA
Operating Temperature	T_{opr}	−20	—	80	°C

CIRCUIT CONNECTIONS



A Connection | B Connection | C Connection

INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

	CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V_F	I_F = 10 mA	1.2	1.4	1.7	V
	Reverse Current	I_R	V_R = 3 V	—	—	10	μA
	Capacitance	C_T	V = 0, f = 1 MHz	—	30	—	pF
DETECTOR	Off-State Current	I_{OFF}	V_{OFF} = 400 V	—	—	1	μA
	Capacitance	C_{OFF}	V = 0, f = 1 MHz	—	150	—	pF

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current		I_{FT}	I_{ON} = 150 mA	—	1	5	mA
On-State Resistance	A Connection	R_{ON}	I_{ON} = 150 mA, I_F = 10 mA	—	8	12	Ω
	B Connection		I_{ON} = 200 mA, I_F = 10 mA	—	4	6	
	C Connection		I_{ON} = 300 mA, I_F = 10 mA	—	2	3	

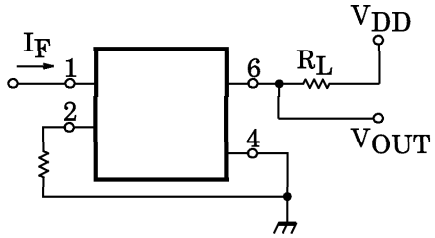
ISOLATION CHARACTERISTICS (Ta = 25°C)

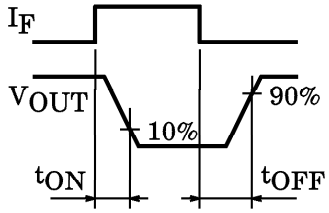
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance Input to Output	C_S	V_S = 0, f = 1 MHz	—	0.8	—	pF
Isolation Resistance	R_S	V_S = 500 V, R.H. ≦ 60%	5×10^{10}	10^{14}	—	Ω
Isolation Voltage	BV_S	AC, 1 minute	5000	—	—	Vrms
		AC, 1 second (in Oil)	—	10000	—	
		DC, 1 minute (in Oil)	—	10000	—	V_{DC}

SWITCHING CHARACTERISTICS (Ta = 25°C)

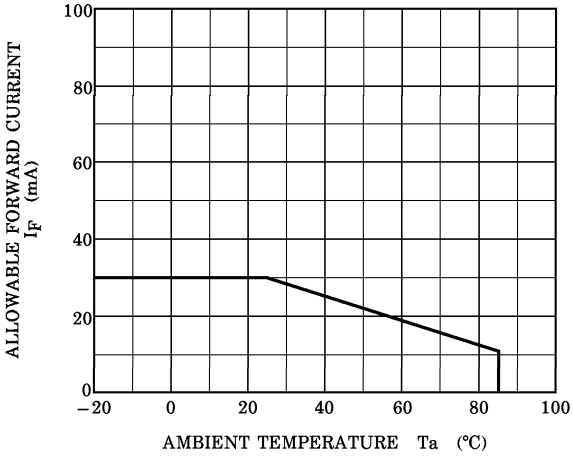
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Turn-on Time	t_{ON}	V_{DD} = 20 V, R_L = 200 Ω I_F = 10 mA (Note 3)	—	0.3	1.0	ms
Turn-off Time	t_{OFF}		—	0.2	1.0	

(Note 3) : SWITCHING TIME TEST CIRCUIT

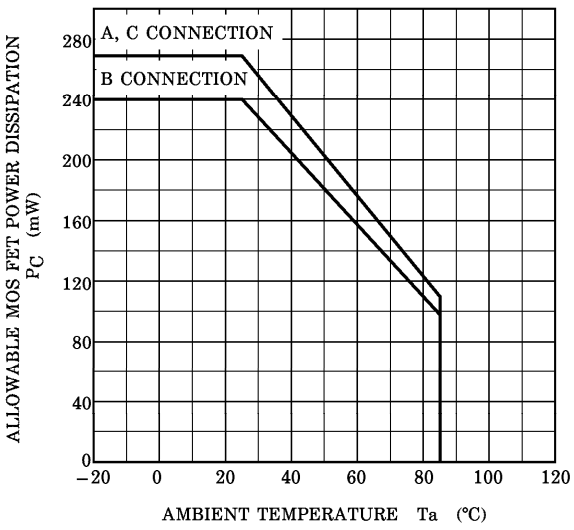




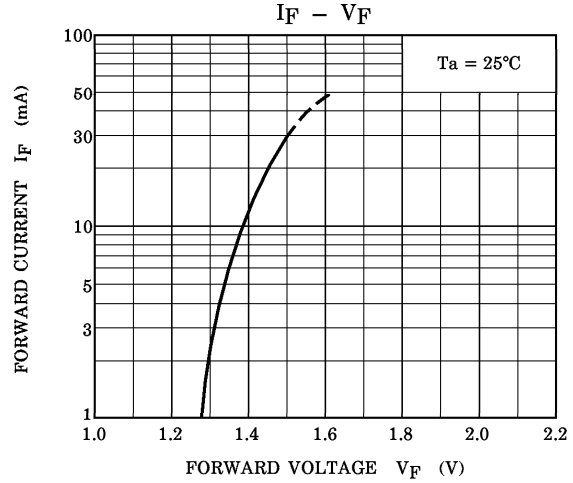
I_F – Ta



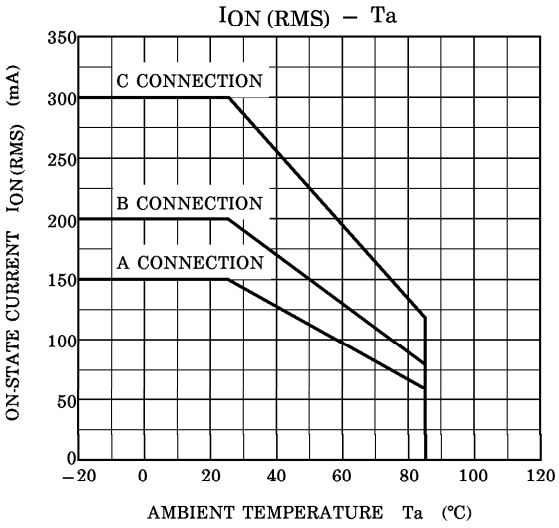
P_C – Ta



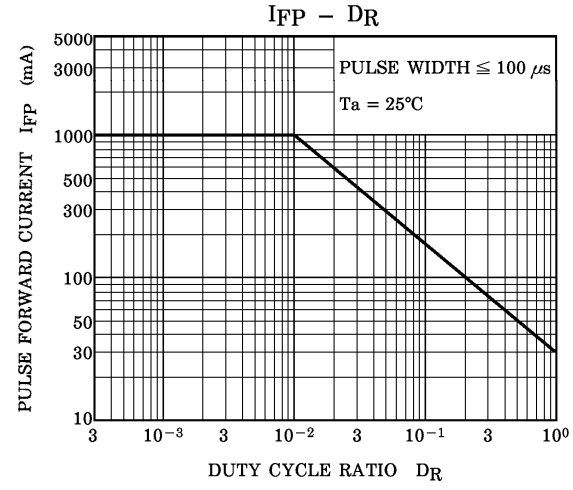
I_F – V_F



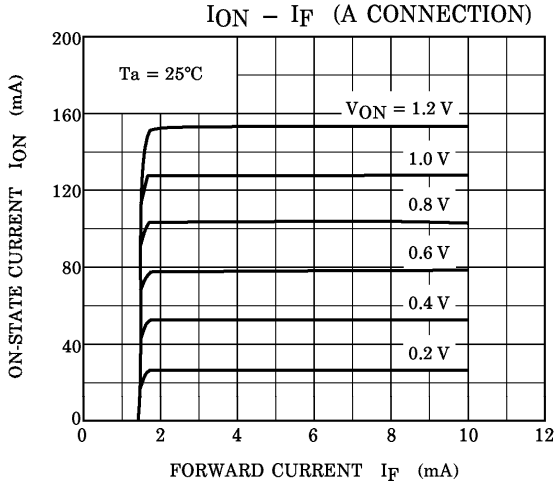
I_{ON} (RMS) – Ta



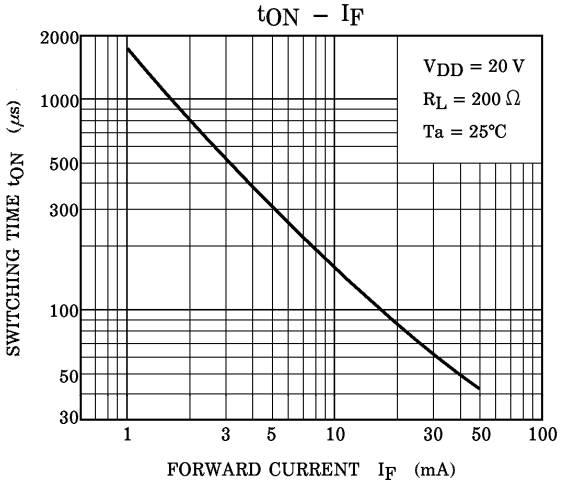
I_{FP} – D_R



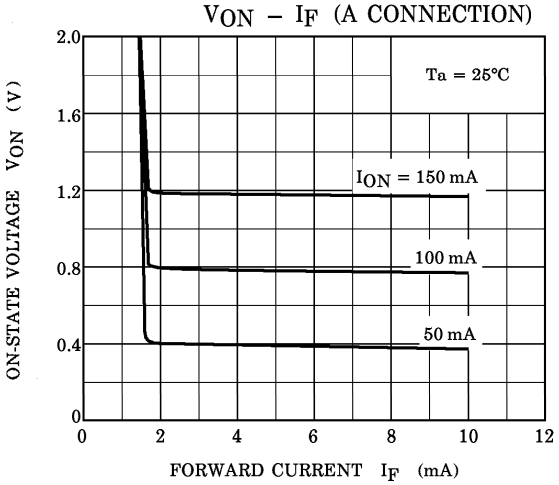
I_{ON} – I_F (A CONNECTION)



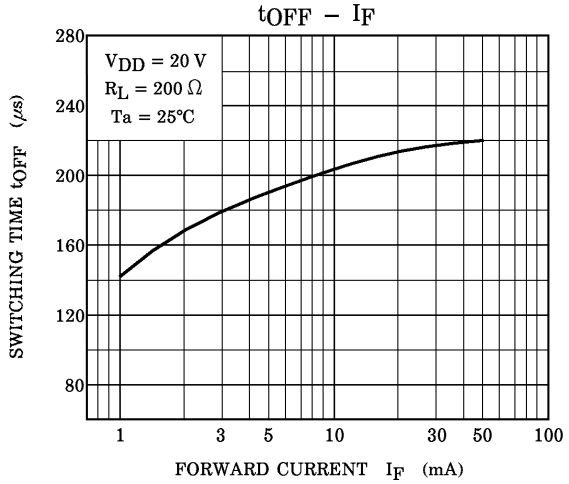
t_{ON} – I_F



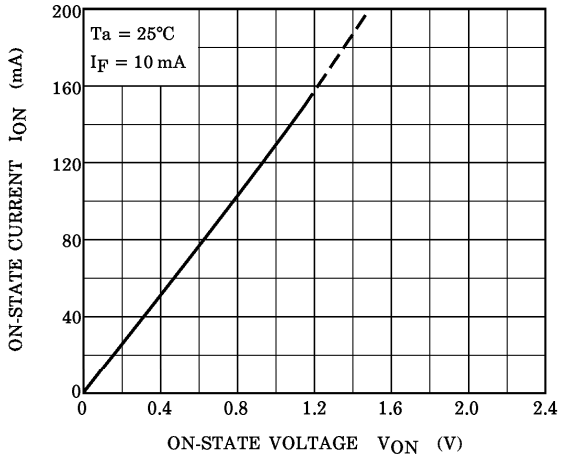
V_{ON} – I_F (A CONNECTION)



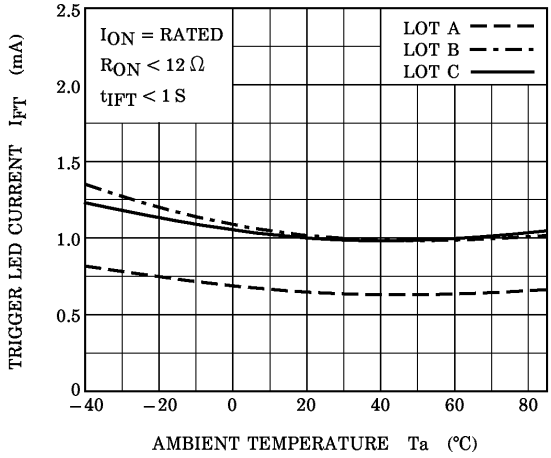
t_{OFF} – I_F



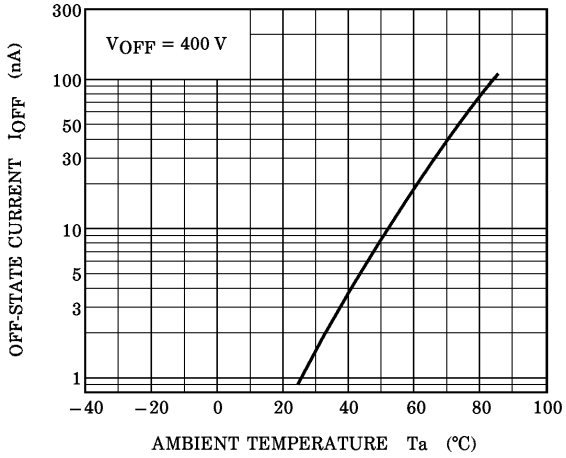
I_{ON} – V_{ON} (A CONNECTION)



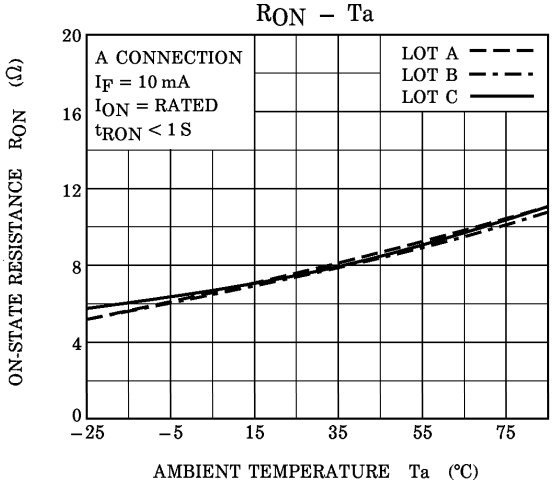
I_{FT} – Ta



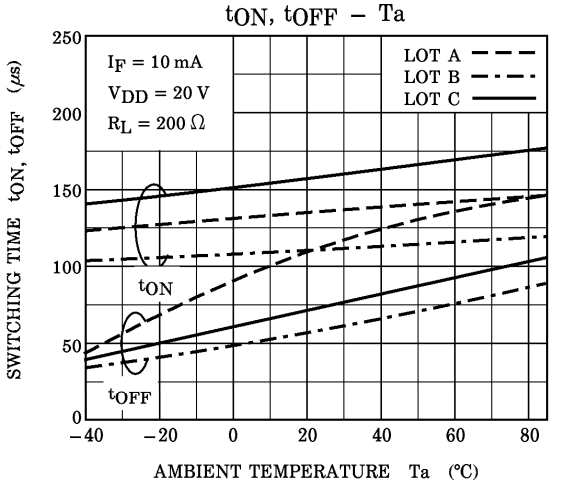
I_{OFF} – Ta



R_{ON} – Ta



t_{ON}, t_{OFF} – Ta



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000707EBC

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