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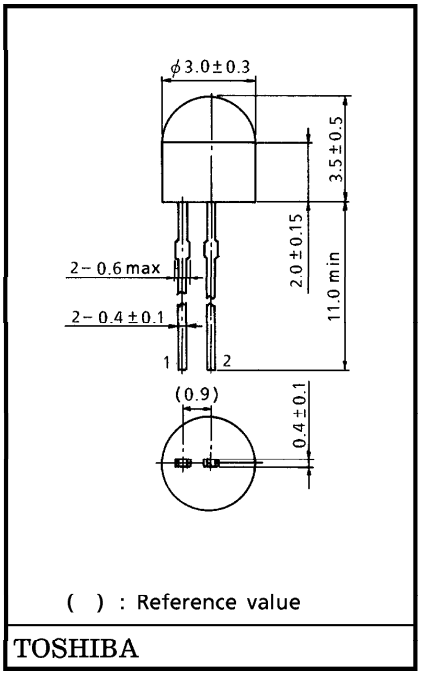
TOSHIBA INFRARED LED GaAs INFRARED EMITTER

TLN103A

INFRARED LED FOR PHOTOSENSORS

Unit : mm



Weight : 0.08 g (typ.)

OPTO-ELECTRONIC SWITCHES

SELECTORS

TAPE AND CARD READERS

EQUIPMENT USING INFRARED TRANSMISSION

- Wide half-angle value : $\theta\frac{1}{2} = \pm 80°$ (typ.)
- Excellent radiant-intensity linearity. Modulation by pulse operation and high frequency is possible.
- Same external shape as TPS603A phototransistors
- Maximum distance when used as photosensor :
  with DC drive ≃ 5 mm
  with pulse drive ≃ 30 mm
  } When TPS603A $I_L \simeq 100\ \mu A$

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Forward Current	I_F	60	mA
Pulse Forward Current (Note)	I_{FP}	1	A
Reverse Voltage	V_R	5	V
Forward Current Derating (Ta > 25°C)	ΔI_F / °C	−0.8	mA / °C
Operating Temperature Range	T_{opr}	−20~75	°C
Storage Temperature Range	T_{stg}	−30~100	°C

(Note) : Pulse width ≦ 100 μs, repetitive frequency = 100 Hz

PIN CONNECTION

1. Anode
2. Cathode

OPTICAL AND ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	Min	Typ.	Max	UNIT
Forward Voltage	V_F	I_F = 10 mA	1.00	1.15	1.30	V
Reverse Current	I_R	V_R = 5 V	—	—	10	μA
Radiant Intensity	I_E	I_F = 20 mA	0.5	1.0	—	mW / sr
Radiant Power	P_O	I_F = 20 mA	—	2.5	—	mW
Half Value Angle	$\theta\frac{1}{2}$	I_F = 20 mA	—	±80	—	°
Capacitance	C_T	V_R = 0, f = 1 MHz	—	30	—	pF
Peak Emission Wavelength	λ_P	I_F = 20 mA	—	940	—	nm
Spectral Line Half Width	$\Delta\lambda$	I_F = 20 mA	—	50	—	nm

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PRECAUTIONS

Please be careful of the followings.

1. Soldering temperature : 260°C max
   Soldering time : 3 s max
   (Soldering must be performed 2 m from the bottom of the package.)
2. When forming the leads, bend each lead under the 2 mm from the body of the device.
   Soldering must be performed after the leads have been formed.
3. Radiation intensity falls over time due to the current which flows in the infrared LED.
   When designing a circuit, take into account this change in radiant power over time.
   The ratio of fluctuation in radiation intensity to fluctuation in optical output is 1 : 1.

$$\frac{I_E(t)}{I_E(0)} = \frac{P_O(t)}{P_O(0)}$$

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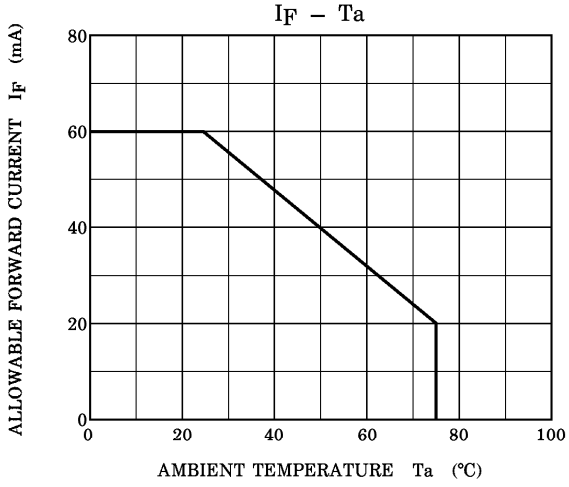
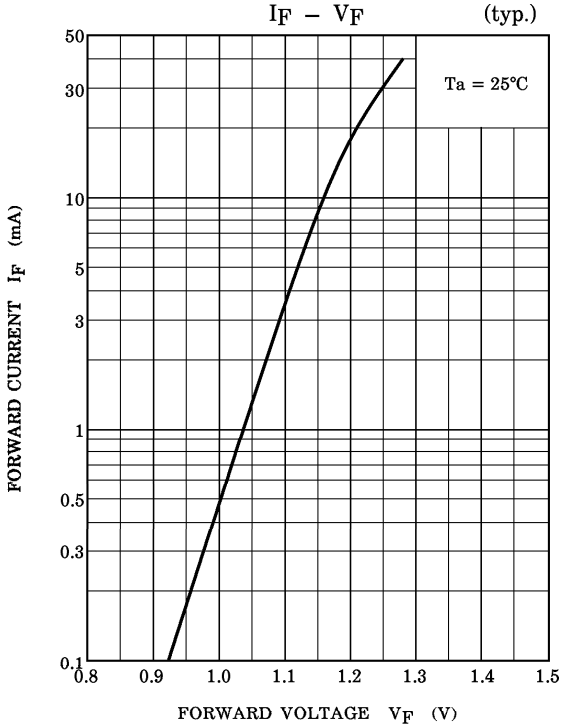
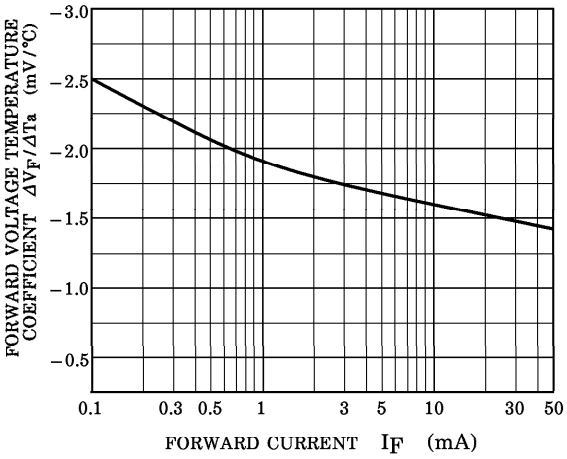
I_F – Ta



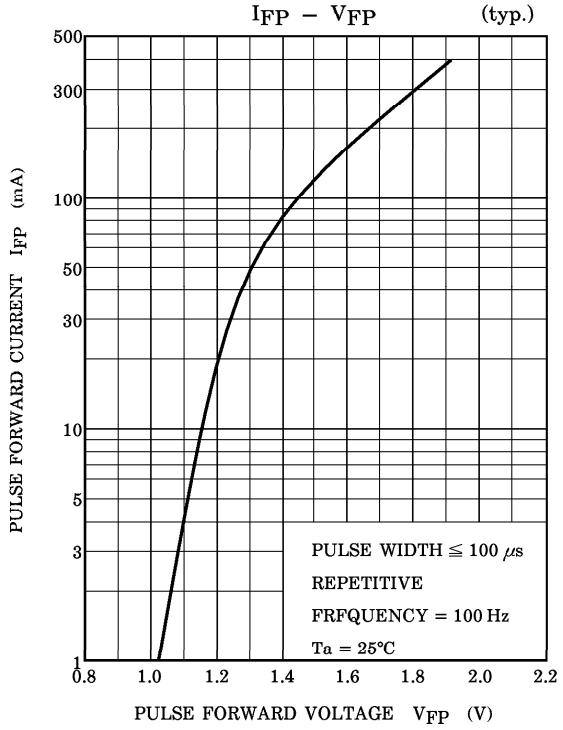
I_F – V_F (typ.)



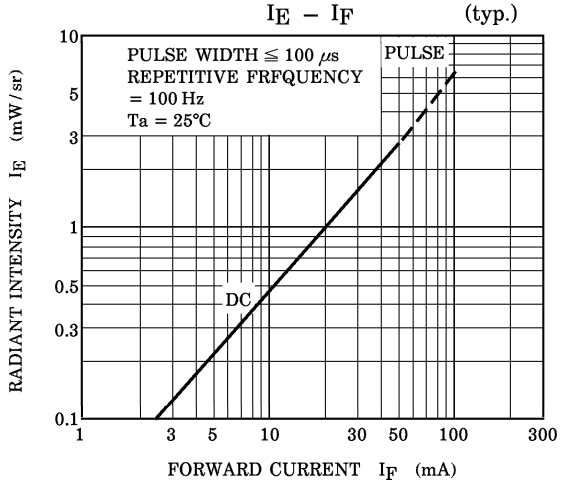
$\Delta V_F / \Delta Ta$ – I_F



I_{FP} – V_{FP} (typ.)



I_E – I_F (typ.)



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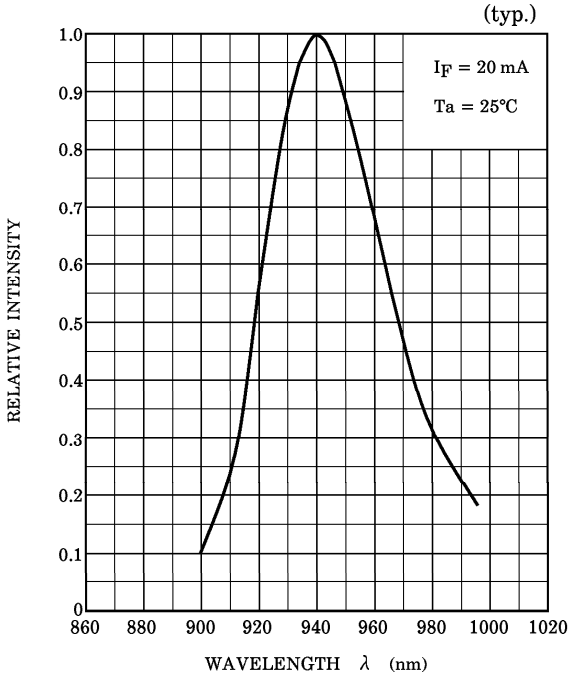
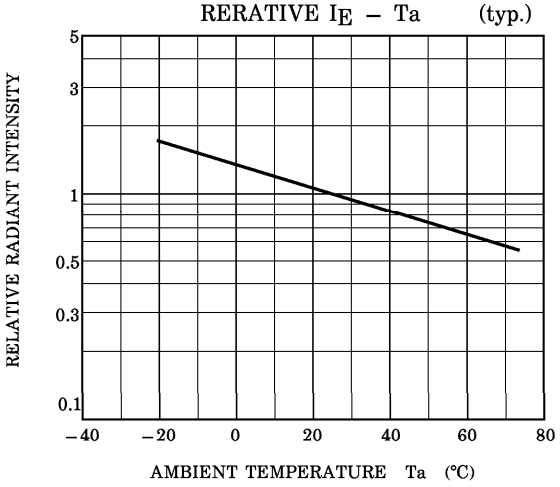
WAVELENGTH CHARACTERIISTIC (typ.)

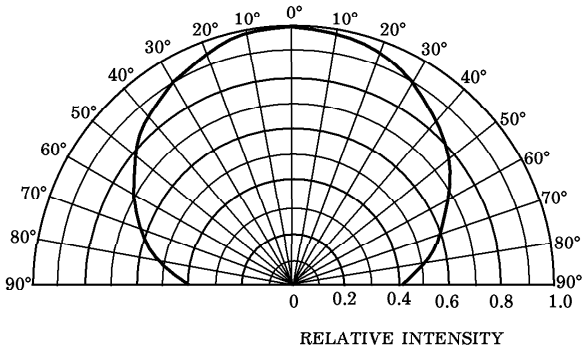


RERATIVE I_E – Ta (typ.)

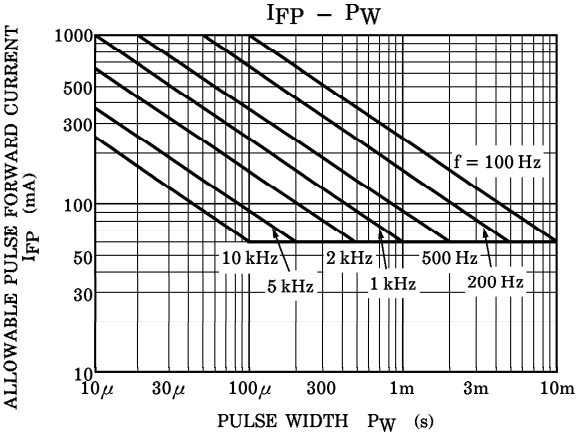


RADIATION PATTERN (typ.)

(Ta = 25°C)



I_{FP} – P_W



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