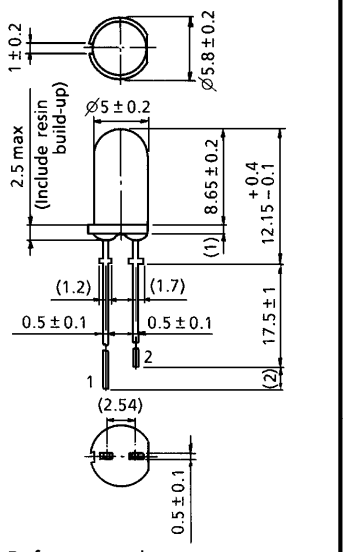
TOSHIBA INFRARED LED GaAs INFRARED EMITTER

TLN110

INFRARED LED FOR REMOTE-CONTROL SYSTEMS

Unit : mm



( ) : Reference value

TOSHIBA 4-6C4

Weight : 0.32 g (typ.)

REMOTE-CONTROL SYSTEMS

SMOKE SENSORS

OPTO-ELECTRONIC SWITCHES

- High radiant intensity : I_E = 30mW / sr (typ.)
- Excellent radiant-intensity linearity. Modulation by pulse operation and high frequency is possible.
- TPS703 PIN photodiode with resin to acreen out visible light available as detector for remote control

PIN CONNECTION

1. Anode
2. Cathode

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Forward Current	I_F	100	mA
Forward Current Derating (Ta > 25°C)	ΔI_F / °C	−1.33	mA / °C
Pulse Forward Current	I_{FP} (Note)	1	A
Reverse Voltage	V_R	5	V
Power Dissipation	P_D	150	mW
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

OPTICAL AND ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	Min	Typ.	Max	UNIT
Forward Voltage	V_F	I_F = 100 mA	—	1.35	1.5	V
Reverse Current	I_R	V_R = 5 V	—	—	10	μA
Radiant Intensity	I_E	I_F = 50 mA	15	30	—	mW / sr
Radiant Power	P_O	I_F = 50 mA	—	9	—	mW
Capacitance	C_T	V_R = 0, f = 1 MHz	—	20	—	pF
Peak Emission Wavelength	λ_P	I_F = 50 mA	—	940	—	nm
Spectral Line Half Width	$\Delta\lambda$	I_F = 50 mA	—	45	—	nm
Half Value Angle	$\theta \frac{1}{2}$	I_F = 50 mA	—	±8	—	°

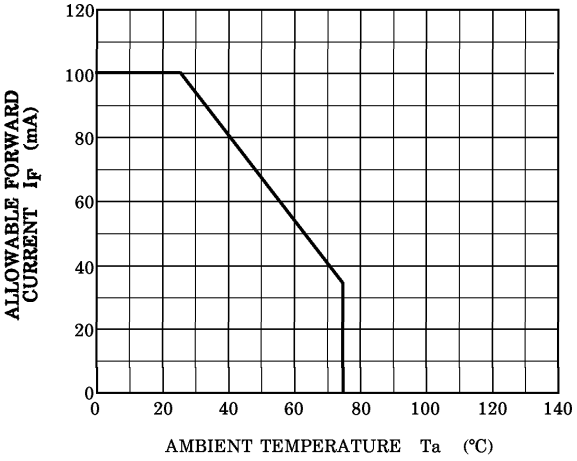
PRECAUTIONS

Please be careful of the followings.

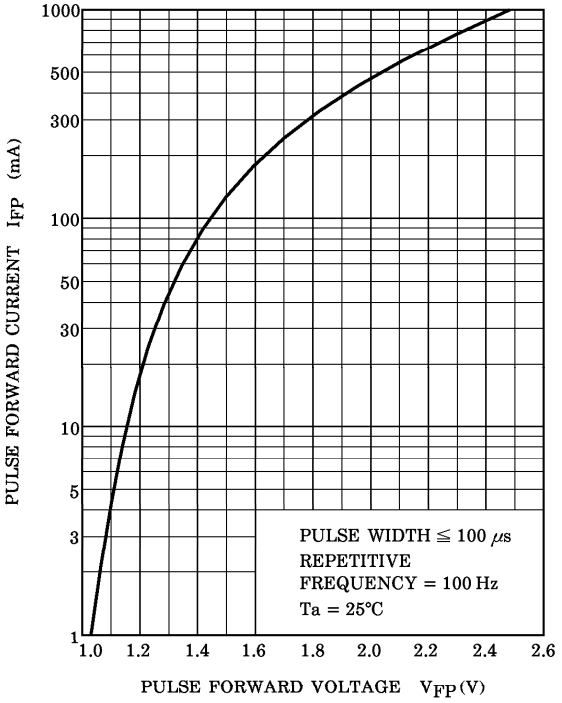
1. Soldering temperature : 260°C max
   Soldering time : 5 s max
   (Soldering must be performed under the stopper.)
2. When forming the leads, bend each lead under the 2 mm from the body of the device.
   Soldering must be performed after the leads have been formed.
3. Radiant intensity falls over time 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.

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

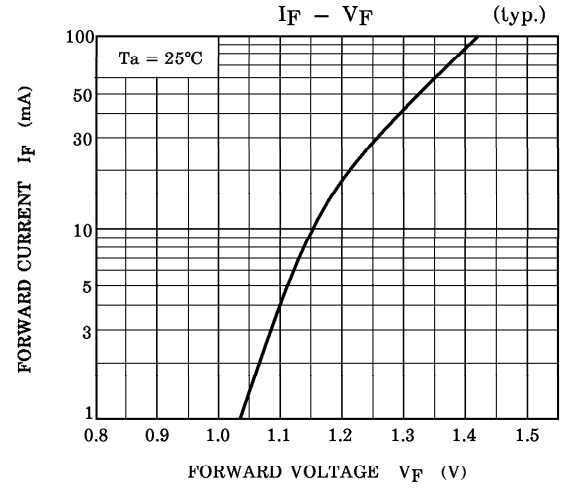
I_F – Ta



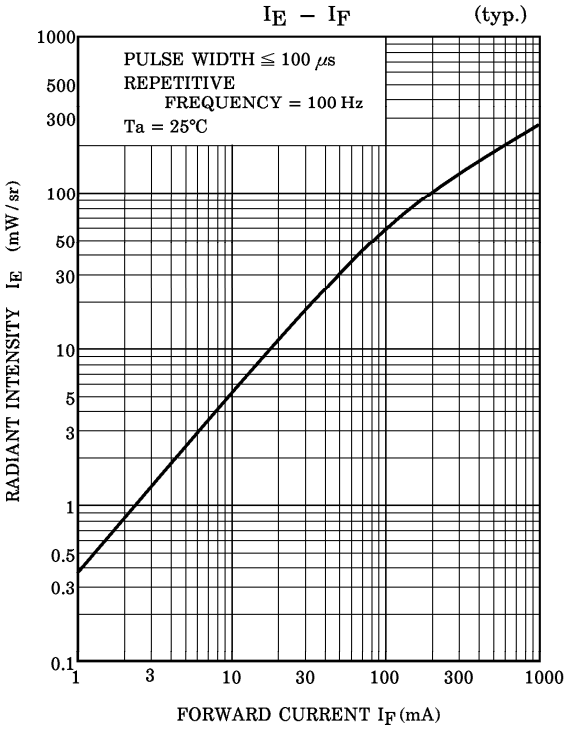
I_{FP} – V_{FP} (typ.)



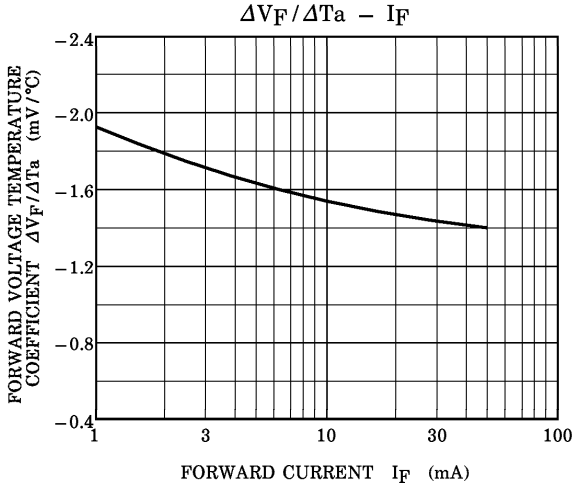
I_F – V_F (typ.)



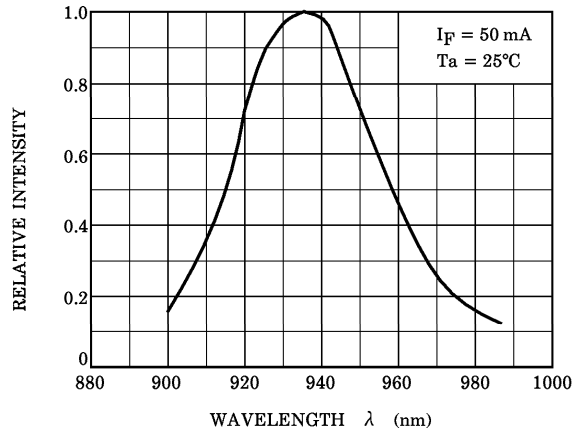
I_E – I_F (typ.)



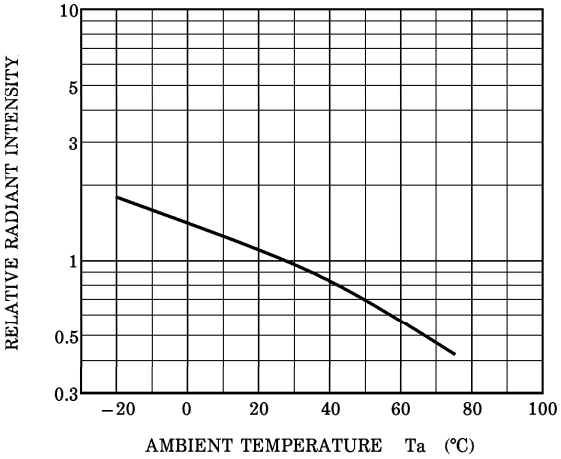
$\Delta V_F / \Delta Ta$ – I_F



WAVELENGTH CHARACTERIISTIC (typ.)

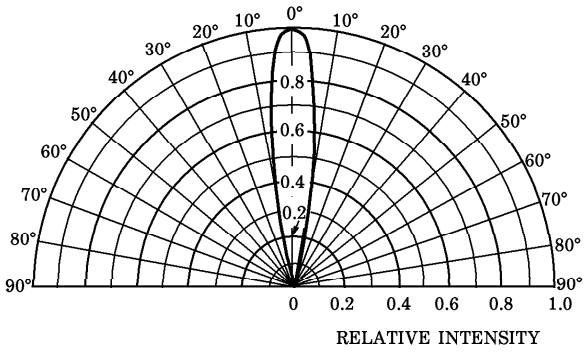


RELATIVE I_E – Ta (typ.)

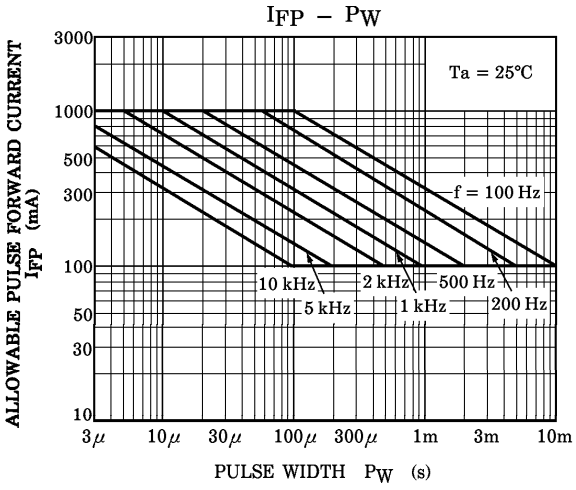


RADIATION PATTERN (typ.)

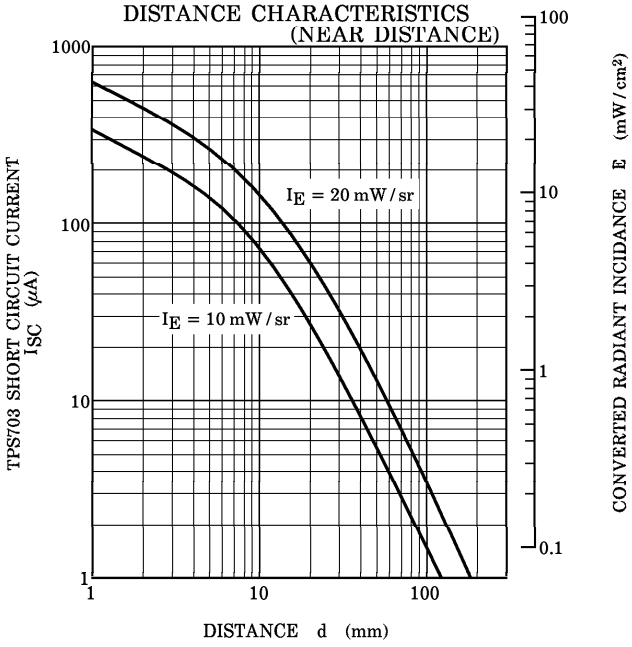
(Ta = 25°C)

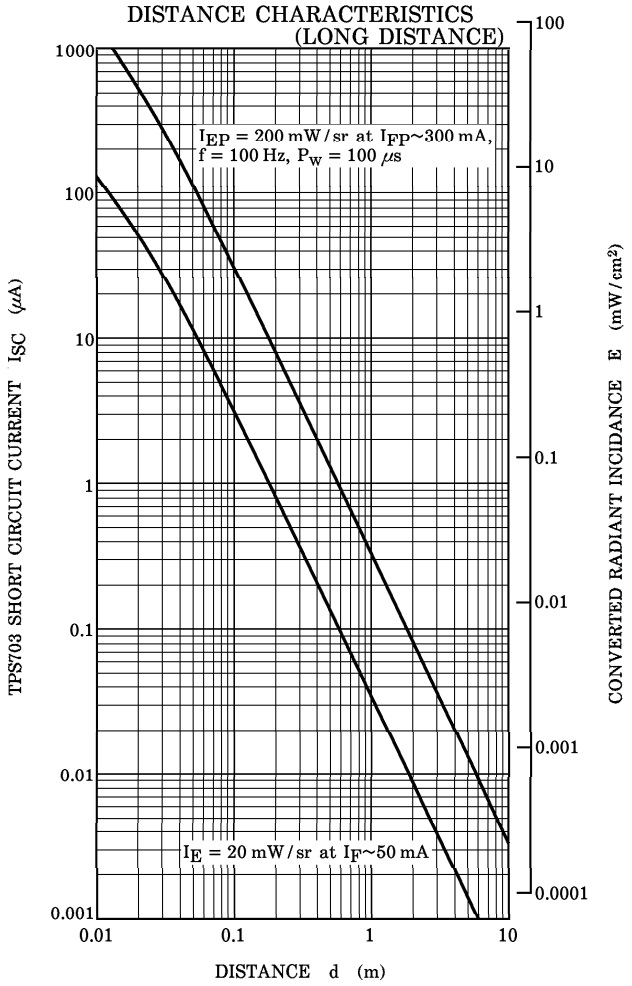


I_{FP} – P_W



DISTANCE CHARACTERISTICS (NEAR DISTANCE)




DISTANCE CHARACTERISTICS
(LONG DISTANCE)
I_{EP} = 200 mW / sr at I_{FP}~300 mA,
f = 100 Hz, P_W = 100 μs
I_E = 20 mW / sr at I_F~50 mA
TPS703 SHORT CIRCUIT CURRENT I_{SC} (μA)
CONVERTED RADIANT INCIDANCE E (mW / cm²)
DISTANCE d (m)
1000
100
10
1
0.1
0.01
0.001
0.01
0.1
1
10
100
10
1
0.1
0.01
0.001
0.0001

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