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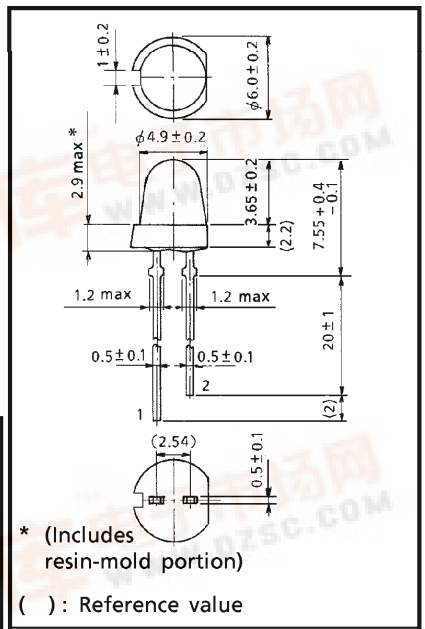
TENTATIVE TOSHIBA INFRARED LED GaAℓAs INFRARED EMITTER

TLN225

INFRARED LED FOR SPACE-OPTICAL-TRANSMISSION

Unit : mm



TOSHIBA 4-5MA1

- High radiant power : Po = 18 mW (typ.) at I_F = 50 mA
- Wide half-angle value: $\theta\frac{1}{2}$ = ±21° (typ.)
- High-speed response : t_r, t_f = 30 ns (typ.)
- Light source for remote control
- Designed for transmission of wireless AVsignals
- Designed for high-speed data transmission

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Forward Current	I_F	100	mA
Pulse Forward Current	I_{FP}	1000 (Note 1)	mA
Power Dissipation	P_D	220	mW
Reverse Voltage	V_R	4	V
Operating temperature	T_{opr}	−25~85	°C
Storage Temperature	T_{stg}	−30~100	°C
Soldering Temperature (5 s)	T_{sol}	260	°C

(Note 1) : Frequency = 100 kHz, duty = 1%

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 = 100 mA	—	1.6	1.8	V
Reverse Current	I_R	V_R = 4 V	—	—	10	μA
Radiant Power	P_O	I_F = 50 mA	14	18	—	mW
Radiant Intensity	I_E	I_F = 50 mA	—	40	—	mW / sr
Rise Time, Fall Time	t_r, t_f	I_{FP} = 100 mA, P_W = 100 ns	—	30	—	ns
Cut-off Frequency	f_c	I_F = 50 mA_{DC} + 5 mA_{P-P} (Note 2)	10	15	—	MHz
Capacitance	C_T	V_R = 0, f = 1 MHz	—	110	—	pF
Peak Emission Wavelength	λ_P	I_F = 50 mA	830	870	900	nm
Spectral Line Half Width	$\Delta\lambda$	I_F = 50 mA	—	50	—	nm
Half Value Angle	$\theta\frac{1}{2}$	I_F = 50 mA	—	±21	—	°

(Note 2) : Frequency when modulation light power decreases by 3dB from 1 MHz.

PRECAUTIONS

Please be careful of the followings.

1. Soldering must be performed under the lead stopper.
2. When forming the leads, bend each lead under the stopper without leaving forming stress to the body of the device. Soldering must be performed after the leads have been formed.
3. Radiant power 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.

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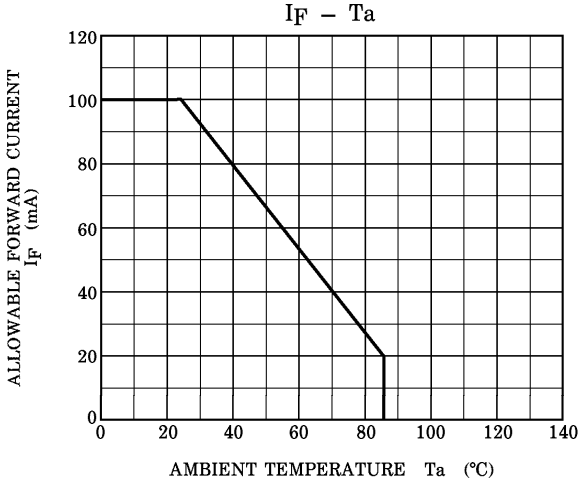
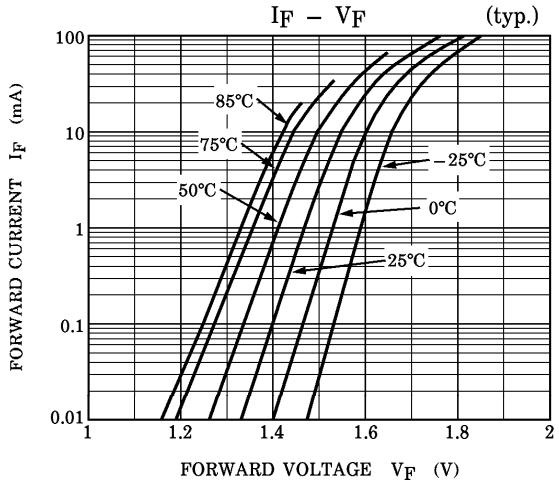
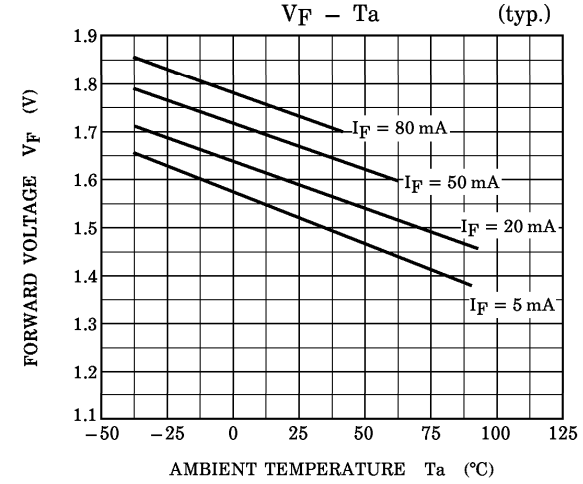
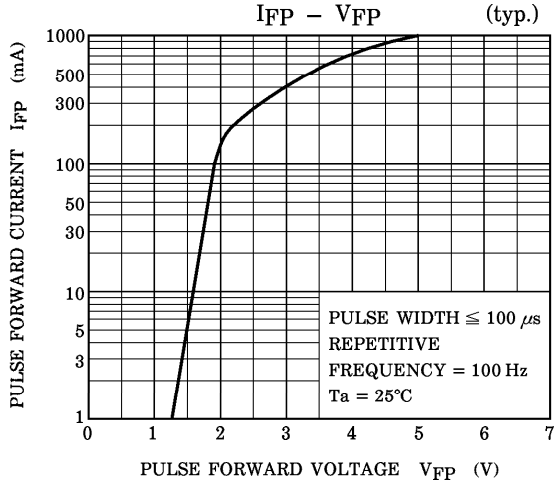
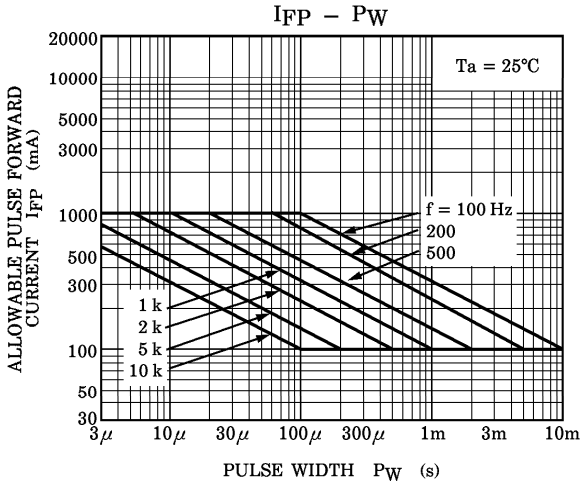
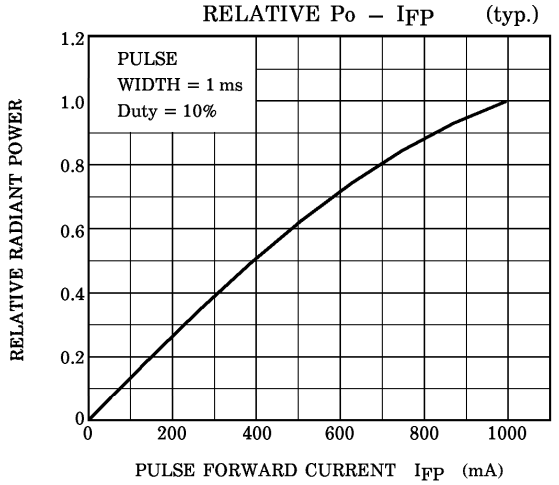

IF – Ta
ALLOWABLE FORWARD CURRENT IF (mA)
AMBIENT TEMPERATURE Ta (°C)


IF – VF (typ.)
FORWARD CURRENT IF (mA)
FORWARD VOLTAGE VF (V)
85°C
75°C
50°C
25°C
0°C
25°C

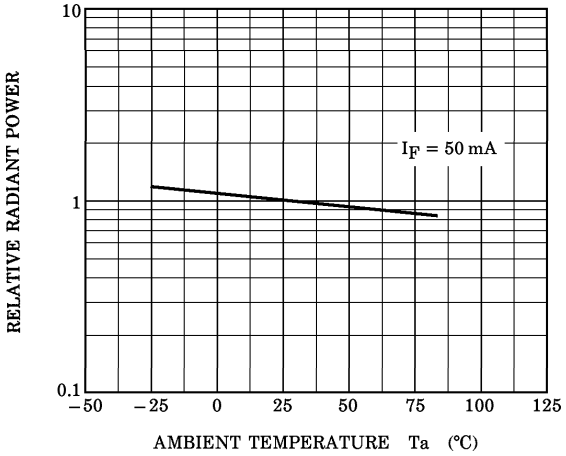

VF – Ta (typ.)
FORWARD VOLTAGE VF (V)
AMBIENT TEMPERATURE Ta (°C)
IF = 80 mA
IF = 50 mA
IF = 20 mA
IF = 5 mA


IFP – VFP (typ.)
PULSE FORWARD CURRENT IFP (mA)
PULSE FORWARD VOLTAGE VFP (V)
PULSE WIDTH ≦ 100 μs
REPETITIVE
FREQUENCY = 100 Hz
Ta = 25°C

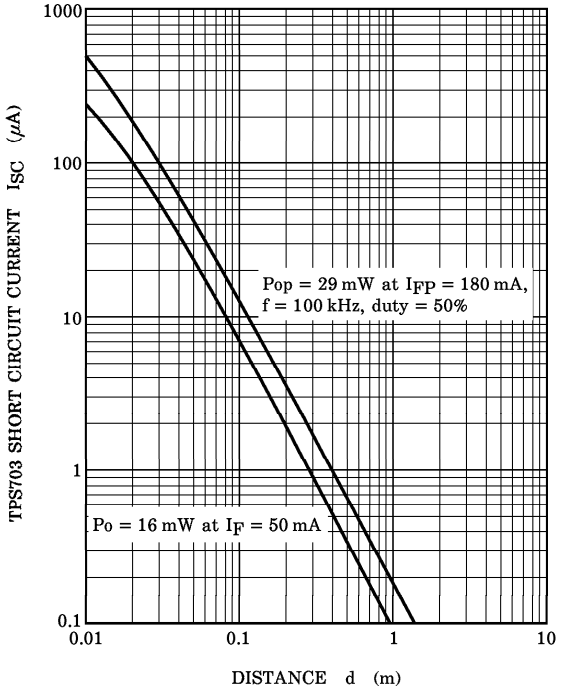

IFP – PW
ALLOWABLE PULSE FORWARD CURRENT IFP (mA)
PULSE WIDTH PW (s)
Ta = 25°C
f = 100 Hz
200
500
1 k
2 k
5 k
10 k


RELATIVE Po – IFP (typ.)
RELATIVE RADIANT POWER
PULSE FORWARD CURRENT IFP (mA)
PULSE
WIDTH = 1 ms
Duty = 10%

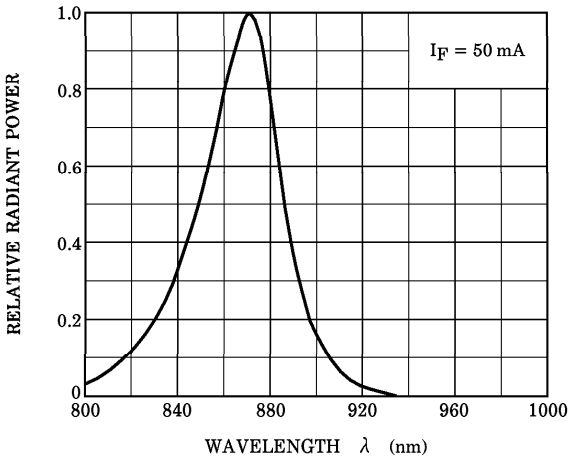
RELATIVE Po – Ta (typ.)



DISTANCE CHARACTERISTICS

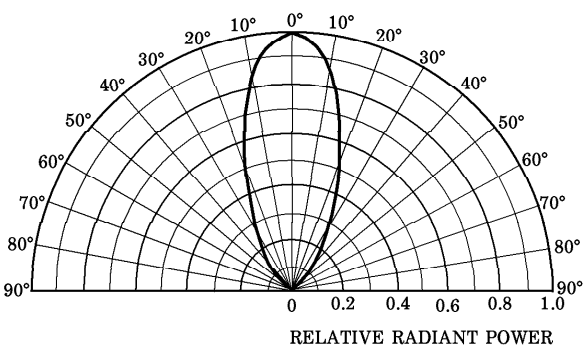


WAVELENGTH CHARACTERIISTIC (typ.)

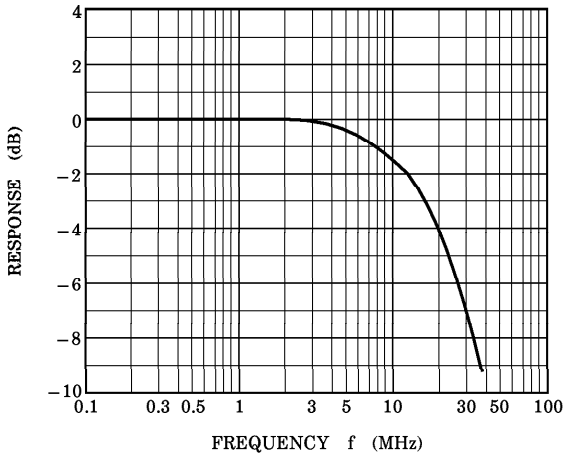


RADIATION PATTERN (typ.)

Ta = 25°C



FREQUENCY CHARACTERISTIC (typ.)



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