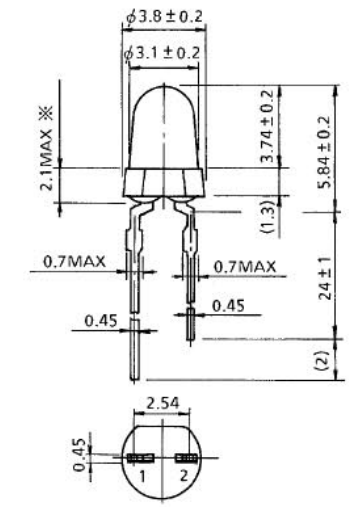
TOSHIBA Infrared LED GaAℓAs Infrared Emitter

TLN238(F)

Lead-Free Product
Space-Optical-Transmission
Opto-Electronic Switches
Printers, Fax Machines
Home Electric Equipment

Unit: mm



* Includes resin-mold portion
( ) : Reference Value

TOSHIBA 4-3EA1

Weight: 0.14 g (typ.)

- High radiant intensity: 70 mW/sr (typ.) at I_F = 50 mA
- Half-angle value: θ1/2 = ±18° (typ.)
- High-speed data transmission purposes

Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Forward current	I_F	100	mA
Pulse forward current	I_{FP}	1000 (Note 1)	mA
Power dissipation	P_D	200	mW
Reverse voltage	V_R	4	V
Operating temperature range	T_{opr}	−25~85	°C
Storage temperature range	T_{stg}	−30~100	°C
Soldering temperature (5 s), (Note 2)	T_{sol}	260	°C

Note 1: f = 100 kHz, duty = 1%

Note 2: Soldering must be performed 2 mm from the bottom of the package body.

Pin Connection

1. Anode
2. Cathode

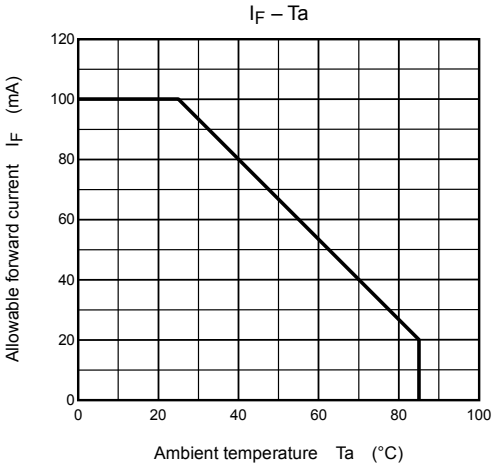
Optical and Electrical Characteristics (Ta = 25°C)

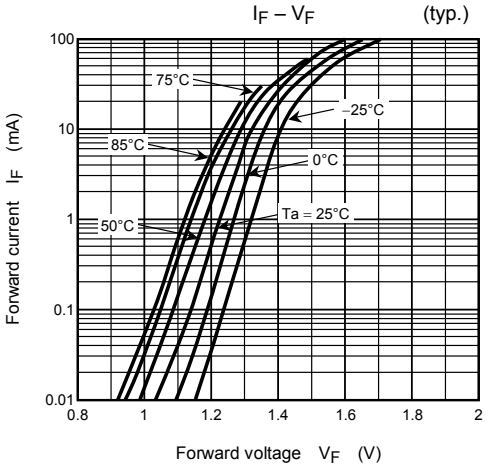
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward voltage	V_F	I_F = 100 mA	—	1.6	2.0	V
Reverse current	I_R	V_R = 4 V	—	—	60	μA
Radiant intensity	I_E	I_F = 50 mA	40	70	—	mW/sr
Cut-off frequency	f_c	I_F = 50 mA + 5 mA_{P-P} (Note 3)	—	15	—	MHz
Peak emission wavelength	λ_P	I_F = 50 mA	—	870	—	nm
Half-angle value	$\theta \frac{1}{2}$	I_F = 50 mA	—	±18	—	°

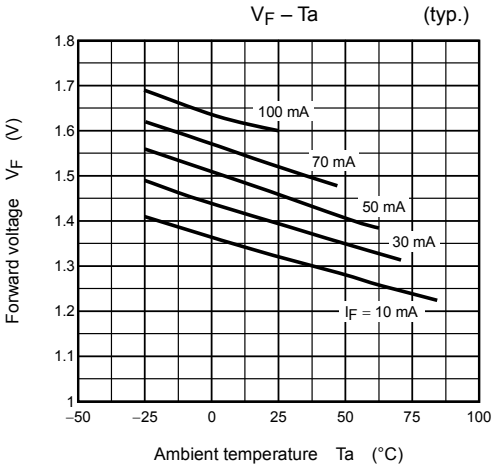
Note 3: This is the frequency when modulation light power decreases by 3 dB from 1 MHz.

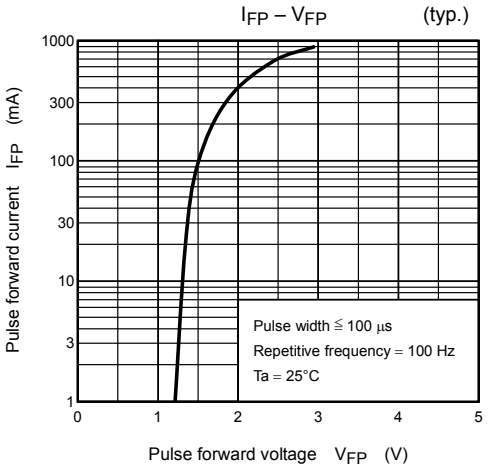
Handling Precautions

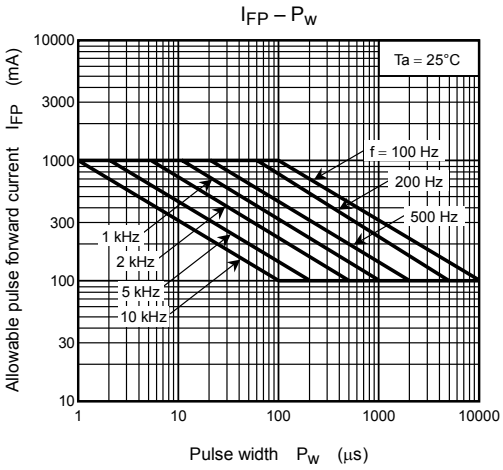
- Soldering must be performed under the stopper.
- When forming the leads, bend each lead at least 5 mm from the package body. Soldering must be performed after the leads have been formed.
- The radiant intensity decreases over time due to current flowing in the infrared LED. When designing circuits, take into account the change in radiant intensity over time.

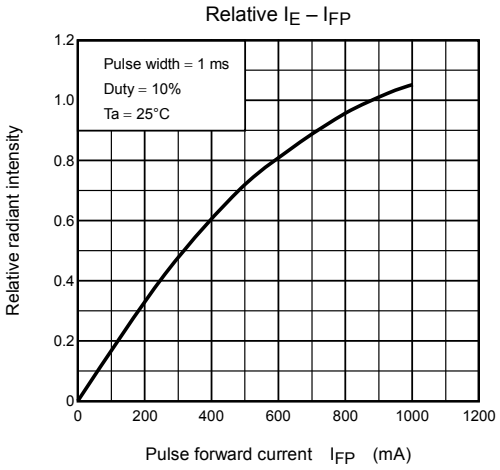

I_F – Ta
Allowable forward current I_F (mA)
Ambient temperature Ta (°C)
0
20
40
60
80
100
120


I_F – V_F (typ.)
Forward current I_F (mA)
Forward voltage V_F (V)
75°C
−25°C
85°C
0°C
50°C
Ta = 25°C
0.01
0.1
1
10
100
0.8
1
1.2
1.4
1.6
1.8
2

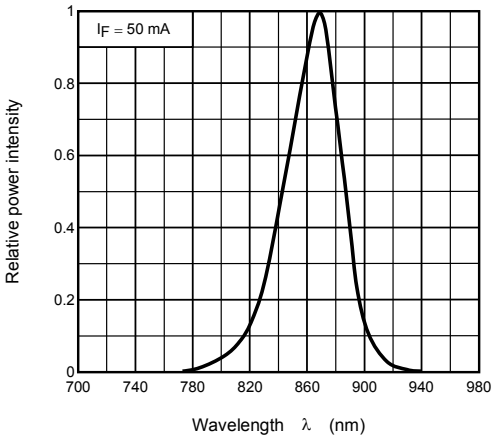

V_F – Ta (typ.)
Forward voltage V_F (V)
Ambient temperature Ta (°C)
100 mA
70 mA
50 mA
30 mA
I_F = 10 mA
1
1.1
1.2
1.3
1.4
1.5
1.6
1.7
1.8
−50
−25
0
25
50
75
100


I_{FP} – V_{FP} (typ.)
Pulse forward current I_{FP} (mA)
Pulse forward voltage V_{FP} (V)
Pulse width ≦ 100 μs
Repetitive frequency = 100 Hz
Ta = 25°C
1
3
10
30
100
300
1000
0
1
2
3
4
5

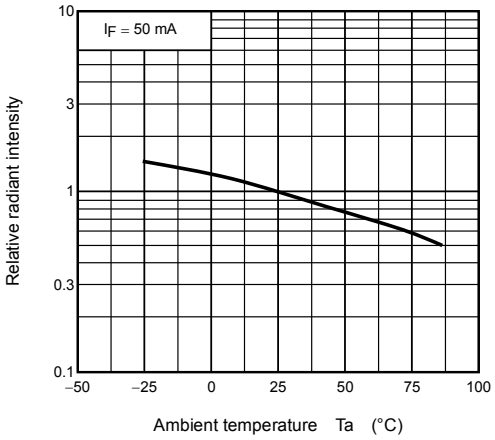

I_{FP} – P_W
Allowable pulse forward current I_{FP} (mA)
Pulse width P_W (μs)
Ta = 25°C
f = 100 Hz
200 Hz
500 Hz
1 kHz
2 kHz
5 kHz
10 kHz
10
30
100
300
1000
3000
10000
1
10
100
1000
10000


Relative I_E – I_{FP}
Relative radiant intensity
Pulse forward current I_{FP} (mA)
Pulse width = 1 ms
Duty = 10%
Ta = 25°C
0
0.2
0.4
0.6
0.8
1.0
1.2
0
200
400
600
800
1000
1200

Wavelength characteristic

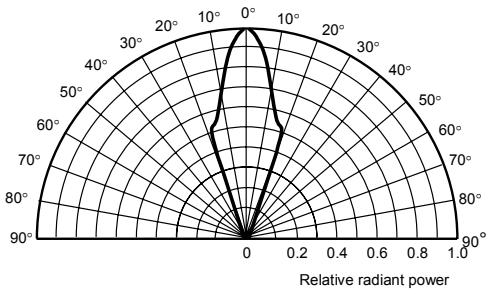


Relative I_E – Ta (typ.)



Radiation pattern (typ.)

Ta = 25°C



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