

IR Emitting Diode 5 mm

IR5123C

Description

IR5123C is an infrared emitting diode in GaAlAs on GaAs technology, molded in clear, plastic packages. In comparison with the standard GaAs on GaAs technology, these emitters achieve more than 100% radiant power improvement at a similar wavelength. The forward voltages at low current and at high pulse current roughly correspond to the low values of the standard technology. Therefore, these emitters are ideally suitable as high performance replacements of standard emitters.

Features

- ✓ Extra high radiant power and radiant intensity
- ✓ Angle of Intensity $\pm 30^\circ$
- ✓ High reliability
- ✓ Low forward voltage
- ✓ Suitable for high pulse current operation
- ✓ Standard (5 mm) package
- ✓ Peak wavelength = 940 nm
- ✓ Good spectral matching to Si photodetectors
- ✓ Lead-free component
- ✓ Component in accordance to RoHS

Applications

- ◇ Infrared remote control units with high power requirements
- ◇ Free air transmission systems
- ◇ Infrared source for optical counters and card readers
- ◇ IR source for smoke detectors

Absolute Maximum Ratings

$T_{amb} = 25^\circ\text{C}$, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse Voltage		V_R	5	V
Forward current		I_F	100	mA
Peak Forward Current	$t_p/T=0.5$, $t_p = 100\mu\text{s}$	I_{FM}	200	mA
Surge Forward Current	$t_p = 100\mu\text{s}$	I_{FSM}	1.5	A
Power Dissipation		P_V	100	mW
Junction Temperature		T_j	100	$^\circ\text{C}$
Operating Temperature Range		T_{amb}	- 55 to + 100	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	- 55 to + 100	$^\circ\text{C}$
Soldering Temperature	$t = 5\text{ sec}$, 2 mm from case	T_{sd}	260	$^\circ\text{C}$

Characteristics

IR5123C

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward Voltage	$I_F = 20\text{ mA}$, $t_p = 20\text{ ms}$	V_F		1.2		V
	$I_F = 0.5\text{ A}$, $t_p = 100\text{ }\mu\text{s}$	V_F		1.9	2.5	V
Reverse Current	$V_R = 5\text{ V}$	I_R			0.5	μA
Junction capacitance	$V_R = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$	C_j		25		pF
Radiant Intensity	$I_F = 20\text{ mA}$, $t_p = 20\text{ ms}$	I_e	15	24		mW/sr
	$I_F = 0.5\text{ A}$, $t_p = 100\text{ }\mu\text{s}$	I_e	320	580		mW/sr
	$I_F = 20\text{ mA}$, $t_p = 20\text{ ms}$,	I_e		24		mW/sr
Angle of Intensity	$I_F = 20\text{ mA}$, $E_e > 7\text{ mW/cm}^2$, $r = 50\text{ cm}$?		± 30		deg
Radiant Power	$I_F = 50\text{ mA}$, $t_p = 20\text{ ms}$	f_e		20		mW
Peak Wavelength	$I_F = 20\text{ mA}$	λ_p		940		nm
Spectral Bandwidth	$I_F = 20\text{ mA}$? ?		50		nm
Temp. Coefficient of λ_p	$I_F = 100\text{ mA}$	TK λ_p		0.2		nm/K
Rise Time	$I_F = 100\text{ mA}$	t_r		800		ns
Fall Time	$I_F = 100\text{ mA}$	t_f		800		ns

Typical Characteristics

($T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)

Fig.1 Forward Current vs. Ambient Temperature

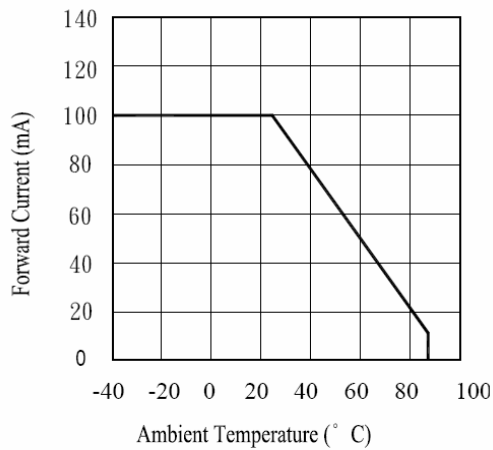


Fig.2 Spectral Distribution

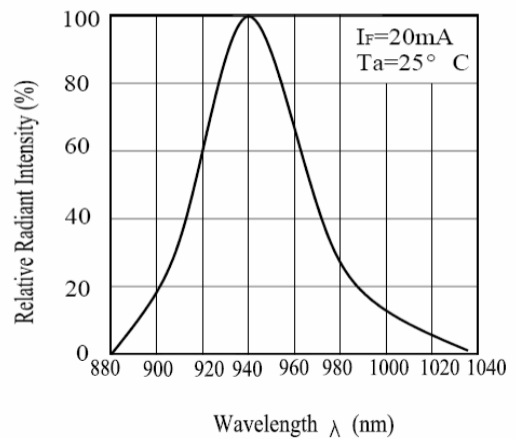


Fig.3 Peak Emission Wavelength
Ambient Temperature

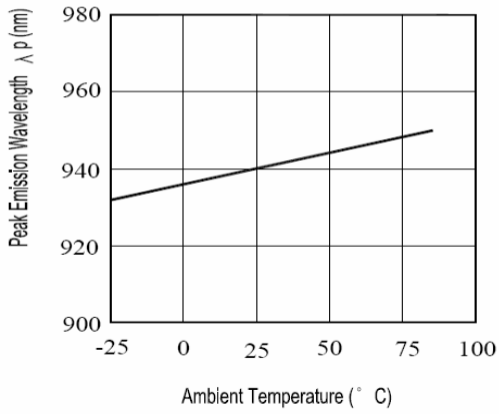


Fig.4 Forward Current
vs. Forward Voltage

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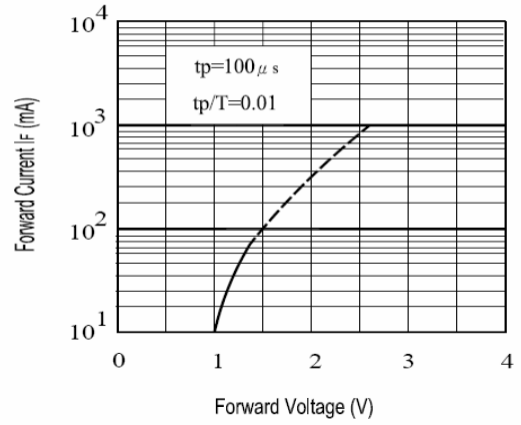


Fig.5 Relative Intensity vs.
Forward Current

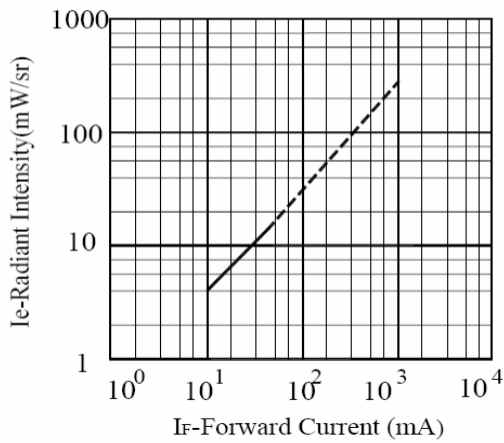


FIG.6 Radiant Diagram

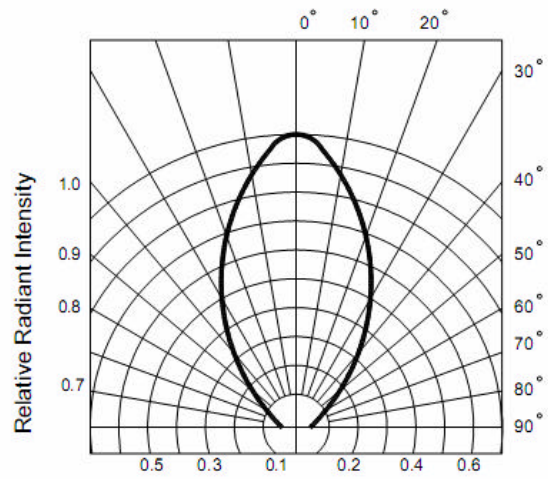


Fig.7 Relative Intensity vs.
Ambient Temperature(°C)

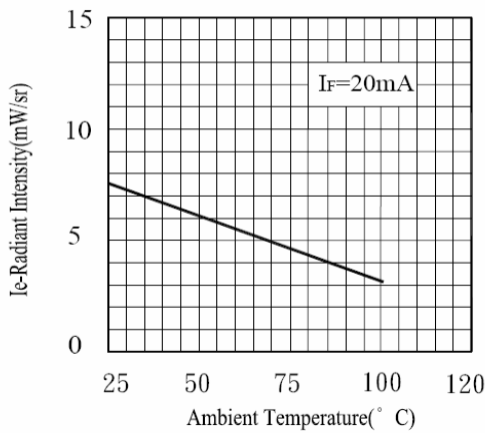
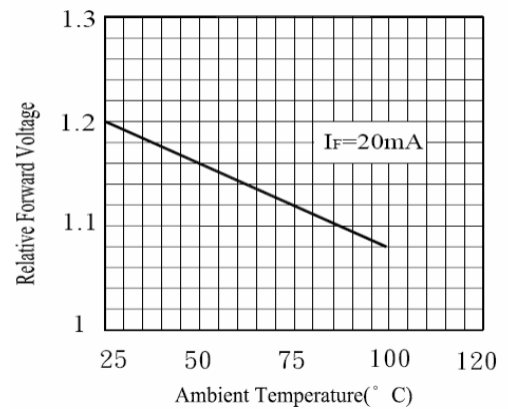


Fig.8 Forward Voltage vs.
Ambient Temperature(°C)



Package Dimensions in mm

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