NEC

HIGH SPEED INFRARED LIGHT EMITTING DIODE

SE1103

FEATURES

- **HIGH OUTPUT POWER**
  I_e = 7 mW/sr TYP
- **WIDE HALF ANGLE**
  θ (1/2) = ± 25° TYP
- **SPECTRALLY MATCHED TO SILICON SENSORS**
- **ULTRA HIGH SPEED RESPONSE**
  t_r, t_f = 80 ns TYP

DESCRIPTION

The SE1103 is a GaAlAs Infrared Light Emitting Diode which is mounted on the lead frames and molded in plastic. On forward bias, it emits a spectrally narrow band of radiation peaking at 890 nm.

APPLICATIONS

- **LIGHT SOURCE FOR TV REMOTE CONTROL**
- **LIGHT SOURCE FOR SMOKE DETECTOR**
- **PHOTOCHOPPERS, ISOLATOR**
- **OPTICAL ENCODERS**
- **WIRELESS HEADPHONE SYSTEM (LIGHT SOURCE)**

ELECTRO-OPTICAL CHARACTERISTICS (T_A = 25°C)

PART NUMBER			SE1103		
SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
V_F	Forward Voltage, I_F = 50 mA	V		1.4	1.7
V_{FP}[1]	Pulse Forward Voltage I_{FP} = 1.0 A	V		1.9	
I_R	Reverse Current, V_R = 3 V	μA			10
C_t	Capacitance, V = 0, f = 1.0 MHz	pF		40	
λPeak	Peak Emission Wavelength, I_F = 50 mA	nm		890	
I_e	Output Power, I_F = 50 mA	mW/sr	3	7	
t_r	Rise Time, I_F = 50 mA	nm		80	
t_f	Fall Time, I_F = 50 mA	nm		80	

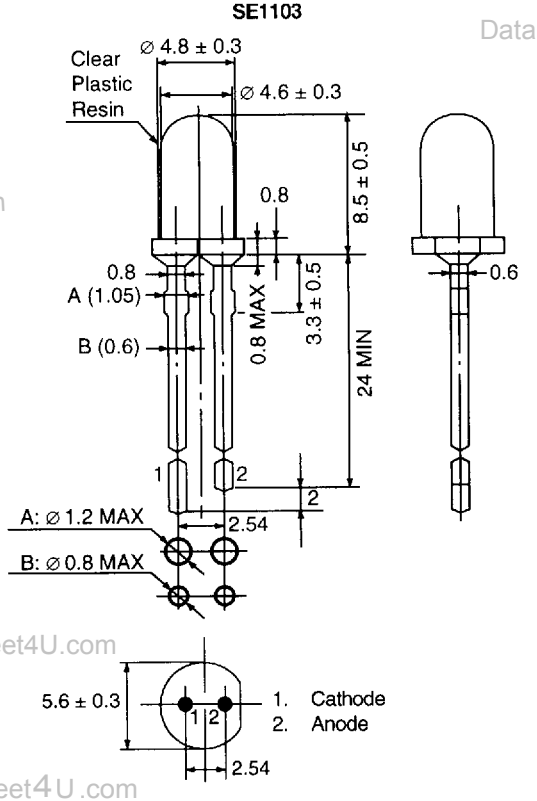
Note:
1. f = 1.0 kHz, Duty Cycle 1 %

ABSOLUTE MAXIMUM RATINGS[1] (T_A = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
P	Max Power Dissipation	mW	150
I_F	Max Forward Current	mA	100
I_{FP}[1]	Max Pulse Forward Current	A	1.0
V_R	Max Reverse Voltage	V	5.0
Maximum Temperatures			
T_j	Junction Temperature	°C	100
T_{STG}	Storage Temperature	°C	-40 to +100
T_{OP}	Operating Temperature	°C	-30 to +85

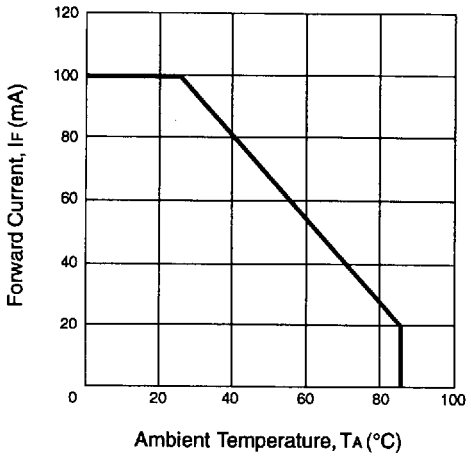
Notes:
1. Operation in excess of any one of these parameters may result in permanent damage.
2. f = 1.0 kHz, Duty Cycle 1 %

OUTLINE DIMENSIONS (Units in mm)

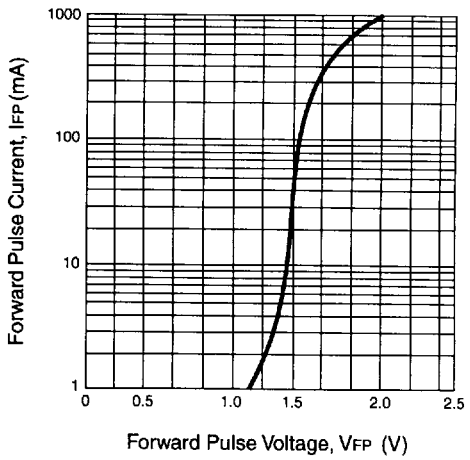


TYPICAL PERFORMANCE CURVES (T_A = 25 °C)

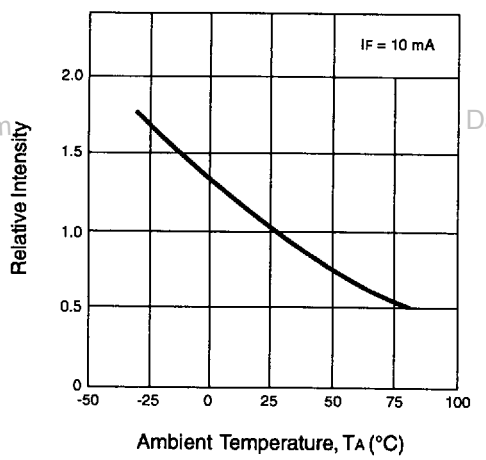
FORWARD CURRENT vs. AMBIENT TEMPERATURE



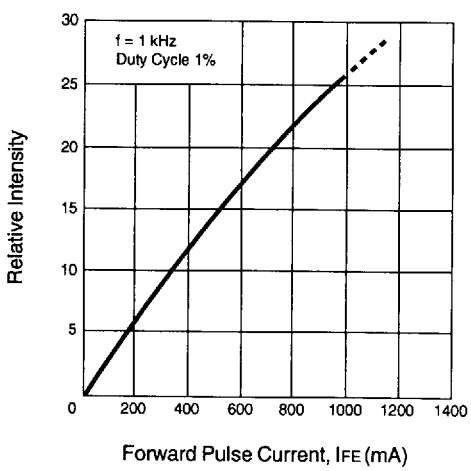
FORWARD PULSE CURRENT vs. FORWARD PULSE VOLTAGE



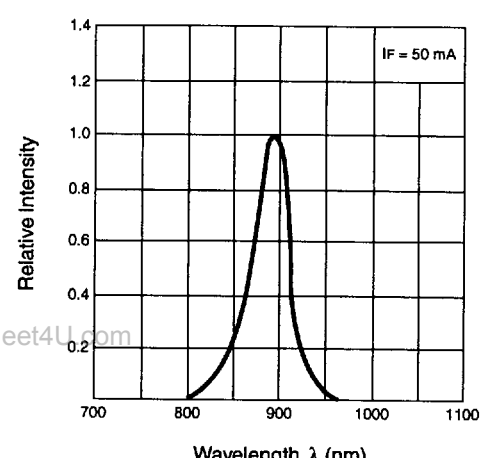
RELATIVE LUMINOUS INTENSITY vs. AMBIENT TEMPERATURE



RELATIVE LUMINOUS INTENSITY vs. FORWARD CURRENT



SPECTRAL DISTRIBUTION



SPATIAL DISTRIBUTION