MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA

Infrared LED Chip

MLEDC1000

. . . designed for applications requiring a stable, high power, low drive current infrared emitting diode which is spectrally matched for use with silicon detectors.

- High Power Output — 2 mW Min
- Infrared Emission — 940 nm Typ
- Low Drive Current — 50 mA Typ
- Metallization Compatible with Conventional Wire and Die Bonding Techniques
- Available in Chip or Wafer Form

GaAs INFRARED LED CHIP

MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

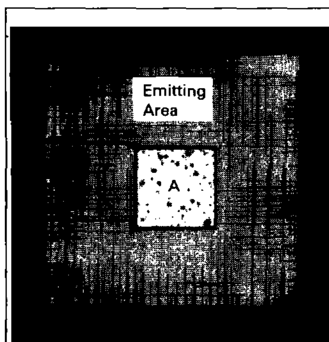
Rating	Symbol	Value	Unit
Reverse Voltage	V_R	3	Volts
Forward Current, Continuous	I_F	100	mA
Forward Current, Peak (1 μs Pulse, 1% Duty Cycle)	I_F	1	A
Power Dissipation[1]	P_D	150	mW
Operating Junction Temperature Range	T_J	−65 to +125	°C
Storage Temperature Range	T_{stg}	−65 to +150	°C

STATIC ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage (I_R = 100 μA)	$V_{(BR)R}$	3	—	—	Volts
Forward Voltage (I_F = 50 mA)	V_F	—	—	1.5	Volts
Junction Capacitance (V_R = 0 V, f = 1 MHz)	C_j	—	150	—	pF

OPTICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Total Power Output (I_F = 50 mA)	P_o	2	—	—	mW
Peak Emission Wavelength (I_F = 50 mA)	λ_p	—	940	—	nm
Optical Rise Time (I_F = 10 mA, 10% to 90%)	t_r	—	600	—	μs
Optical Fall Time (I_F = 10 mA, 10% to 90%)	t_f	—	600	—	μs



Back = Cathode

A = Anode

DIE SPECIFICATIONS

Die Size Mils	Die Thickness Mils	Bond Pad Size Mils		Metallization		Active Area Square Mils
		Anode	Cathode	Front[2]	Back[3]	
16 x 16	8–10	4 x 4	16 x 16	Al	Au	240

NOTES: 1. Maximum power dissipation rating is determined with chip mounted on a header or lead frame using conventional Motorola Semiconductor assembly techniques.
2. Thickness — a minimum of 10,000 Å.
3. Thickness — a minimum of 15,000 Å.

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TYPICAL CHARACTERISTICS

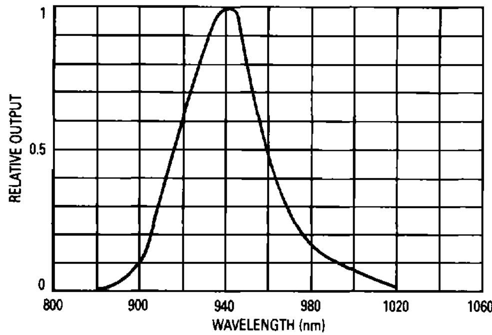

Figure 1. Relative Spectral Output

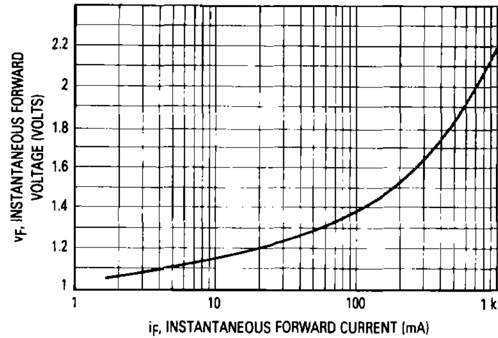

Figure 2. Forward Characteristics

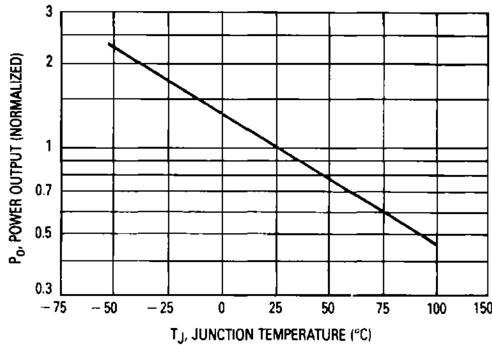

Figure 3. Power Output versus Junction Temperature

ORDERING INFORMATION

This die is available with the packaging and visual inspection options listed below. To obtain the desired combination of options, it will be necessary to add a suffix to the die type number in accordance with the information given in Table 1.

TABLE 1

Die Type Suffix	Packaging	Description	Visual Inspection
None	Multi-Pak	Chips in waffle package (individual chip compartments)	100% visually inspected Rejects removed
WP	Wafer Pak	Wafer-probed, unscribed, unbroken and heat sealed in plastic bag (rejects are inked)	Visual inspected by sample to a LTPD = 10
CP	Circle Pak	Wafer-probed, mounted on sticky film, sawed through and heat sealed in plastic bag (rejects are inked)	Visual inspected by sample to a LTPD = 10