Discrete LED Lamps

Monsanto offers a broad line of discrete light emitting diode products to provide the customer with a wide selection of off-the-shelf products that will meet his particular requirements. A broad selection of packages, lens effects, color power, and brightness is available from standard distribution channels in virtually all quantities. These lines are being updated continually to provide modern, functional devices for customer use.

QUICK REFERENCE CHART

MODEL NO.	VIEWED COLOR	SOURCE WAVE-LENGTH	FORWARD VOLTAGE	BRIGHTNESS NO. AND UNITS	TEST @ CURR. (I_F)	REVERSE CURRENT	MAX. FORWARD* CURRENT @ 25°C	MAX. POWER	PACKAGE KEY
MV10B	Red	(660) nm	1.65 V	0.8 mcd	10 mA	50 nA	70 mA	175 mW	C
MV50	Red	(660) nm	1.65 V	1.4 mcd	20 mA	5.0 nA	40 mA	80 mW	A
MV52	Green	(565) nm	2.2 V	1.5 mcd	50 mA	100 μA max.	35 mA	105 mW	A
MV53	Yellow	(589) nm	2.1 V	1.5 mcd	50 mA	100 μA max.	35 mA	105 mW	A
MV54	Red	(660) nm	1.65 V	1.0 mcd	20 mA	5.0 nA	40 mA	80 mW	A
MV55	Red	(660) nm	1.6 V	0.5 mcd	3 mA	150 nA	4 mA	6 mW	B
MV5020	Red	(660) nm	1.65 V	2.0 mcd	20 mA	15 nA	100 mA	180 mW	G
MV5021	Red	(660) nm	1.65 V	1.6 mcd	20 mA	15 nA	100 mA	180 mW	G
MV5022	Red	(660) nm	1.65 V	1.6 mcd	20 mA	15 nA	100 mA	180 mW	G
MV5023	Red	(660) nm	1.65 V	1.6 mcd	20 mA	15 nA	100 mA	180 mW	G
MV5024	Red	(660) nm	1.65 V	3.0 mcd	20 mA	15 nA	100 mA	180 mW	G
MV5025	Red	(660) nm	1.65 V	0.4 mcd	20 mA	15 nA	100 mA	180 mW	G
MV5026	Red	(660) nm	1.65 V	0.6 mcd	20 mA	15 nA	100 mA	180 mW	G
MV5050	Red	(660) nm	1.7 V	2.0 mcd	20 mA	20 nA	100 mA	180 mW	I
MV5051	Red	(660) nm	1.7 V	1.6 mcd	20 mA	15 nA	100 mA	180 mW	I
MV5052	Red	(660) nm	1.7 V	2.0 mcd	20 mA	5 nA	100 mA	180 mW	I
MV5053	Red	(660) nm	1.7 V	1.6 mcd	20 mA	5 nA	100 mA	180 mW	I
MV5054-1	Red	(660) nm	1.8 V	2.0 mcd	10 mA	100 nA	100 mA	180 mW	H
MV5054-2	Red	(660) nm	1.8 V	3.0 mcd	10 mA	100 nA	100 mA	180 mW	H
MV5054-3	Red	(660) nm	1.8 V	4.0 mcd	10 mA	100 nA	100 mA	180 mW	H
MV5055	Red	(660) nm	1.7 V	0.6 mcd	20 mA	5 nA	100 mA	180 mW	I
MV5056	Red	(660) nm	1.7 V	0.8 mcd	20 mA	5 nA	100 mA	180 mW	I
MV5074B/C	Red	(660) nm	1.68 V	2.4 mcd	20 mA	15 nA	50 mA	100 mW	E
MV5075B/C	Red	(660) nm	1.68 V	1.5 mcd	20 mA	15 nA	50 mA	100 mW	E
MV5077B/C	Red	(660) nm	1.6 V	1.7 mcd	20 mA	15 nA	50 mA	100 mW	D
MV5152	Orange	(635) nm	2.0 V	40 mcd	20 mA	20 nA	35 mA	105 mW	I
MV5153	Orange	(635) nm	2.0 V	9.0 mcd	20 mA	20 nA	35 mA	105 mW	I
MV5154	Orange	(635) nm	2.0 V	10.0 mcd	20 mA	20 nA	35 mA	105 mW	I
MV5252	Green	(565) nm	2.2 V	11 mcd	20 mA	20 nA	35 mA	105 mW	I
MV5253	Green	(565) nm	2.2 V	3.5 mcd	20 mA	20 nA	35 mA	105 mW	I
MV5254	Green	(565) nm	2.2 V	3.0 mcd	20 mA	20 nA	35 mA	105 mW	I
MV5352	Yellow	(585) nm	2.1 V	40 mcd	20 mA	20 nA	35 mA	105 mW	I
MV5353	Yellow	(585) nm	2.1 V	8.0 mcd	20 mA	20 nA	35 mA	105 mW	I
MV5354	Yellow	(585) nm	2.1 V	10.0 mcd	20 mA	20 nA	35 mA	105 mW	I
MV5752	Orange	(635) nm	2.0 V	40 mcd	20 mA	20 nA	35 mA	105 mW	I
MV5753	Orange	(635) nm	2.0 V	9.0 mcd	20 mA	20 nA	35 mA	105 mW	I
MV5754	Orange	(635) nm	2.0 V	10.0 mcd	20 mA	20 nA	35 mA	105 mW	I
MV5174B/C	Orange	(635) nm	2.0 V	3.5 mcd	20 mA	20 nA	35 mA	105 mW	E
MV5177B/C	Orange	(635) nm	2.0 V	2.4 mcd	20 mA	20 nA	35 mA	105 mW	D
MV5274B/C	Green	(565) nm	2.2 V	1.8 mcd	20 mA	20 nA	35 mA	105 mW	E
MV5277B/C	Green	(565) nm	2.2 V	0.9 mcd	20 mA	20 nA	35 mA	105 mW	D
MV5374B/C	Yellow	(585) nm	2.1 V	2.5 mcd	20 mA	20 nA	35 mA	105 mW	E
MV5377B/C	Yellow	(585) nm	2.1 V	2.0 mcd	20 mA	20 nA	35 mA	105 mW	D
MV5774B/C	Orange	(635) nm	2.0 V	3.5 mcd	20 mA	20 nA	35 mA	105 mW	E
MV5777B/C	Orange	(635) nm	2.0 V	2.4 mcd	20 mA	20 nA	35 mA	105 mW	D
MV5094	Red/Red (Note a)		1.6 V	0.8 mcd	20 mA	15 nA	70 mA	140 mW	F
MV5491	Red/Green (Note b)								
	Red Diode		1.65 V	1.5 mcd	20 mA	15 nA	70 mA	200 mW	F
	Green Diode		3.0 V	0.5 mcd	20 mA	100 μA max.	35 mA	200 mW	F

NOTES:

(a) The MV5094 contains two red diodes connected inversely parallel. Therefore the unit operates on either polarity DC current or AC current. Wavelength is 660 nm. For this unit, I^2T (0.1% duty cycle . . . 2.5×10^{-4} amps^2 sec).

(b) The MV5491 contains one red and one green diode connected inversely parallel. Therefore the unit emits green light (570 nm) with one DC polarity and red light (660 nm) with the opposite DC polarity.

All specifications are typical unless otherwise specified.

Monsanto

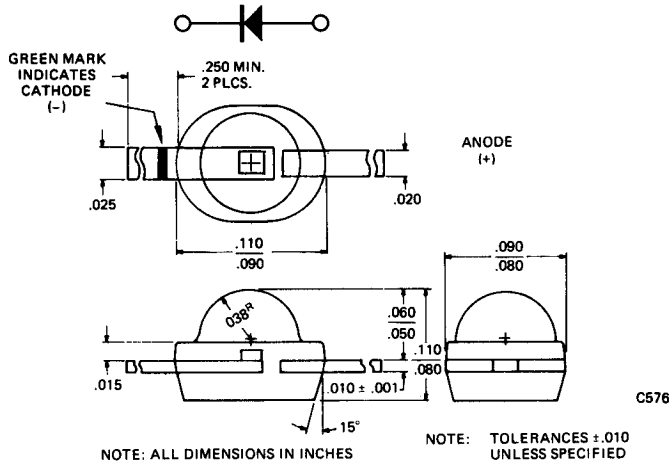
RED LED

MV50

PRODUCT DESCRIPTION

The MV50 is a diffused Gallium Arsenide Phosphide diode mounted in a two lead epoxy package. On forward bias it emits a spectrally narrow band of visible light which peaks at 660 nm.

PACKAGE DIMENSIONS



FEATURES

The MV50 is intended for high volume indicator light applications where low cost, high reliability, and top performance are required. Major usage is expected in applications such as diagnostic lights on printed circuit boards and panel lights. The MV50 can be used to displace subminiature lamps as small as T3/4 size.

- Low cost
- Bright
- Compatible with integrated circuits
- Long life, rugged
- Small size – T3/4
- Easily assembled in arrays

ABSOLUTE MAXIMUM RATINGS

Power dissipation @ 25°C ambient	80 mW
Derate linearly from 25°C	1.0 mW/°C
Storage and operating temperature	–55°C to 100°C
Peak forward current (1 μsec pulse width, 0.3% duty cycle)	1.0A
Lead solder time @ 230° (note 1)	5 sec
Continuous forward current	40 mA
Reverse Voltage	5.0 V

ELECTRO-OPTICAL CHARACTERISTICS

CHARACTERISTICS	MINIMUM	TYPICAL	MAXIMUM	UNITS	TEST CONDITIONS
Luminous Intensity (I) (note 3)*	0.5	1.4		mcd	I_F = 20 mA
Total external radiated power		60		μW	I_F = 20 mA
Peak emission wavelength	630	660		nm	I_F = 20 mA
Spectral line halfwidth		20		nm	I_F = 20 mA
Forward voltage		1.65	2.0	V	I_F = 20 mA
Capacitance		80		pF	V = 0
Light rise and fall time		50		ns	50Ω system, I_F = 20 mA
Reverse current		5.0		nA	V_R = 3.0 V
Reverse breakdown voltage	5	15		V	I_R = 100 μA
Luminous flux		1.6		mL	I_F = 20 mA
View angle		80		degrees	50% points

*Luminous intensity guaranteed to a 2.5% AQL inspection plan per MIL-STD-105D.

TYPICAL THERMAL CHARACTERISTICS

Wavelength temperature coefficient (case temperature) . . . . . 0.3 nm/°C
Forward voltage temperature coefficient . . . . . -2.0 mV/°C

TYPICAL ELECTRO-OPTICAL CHARACTERISTIC CURVES

(25°C Free Air Temperature Unless Otherwise Specified)

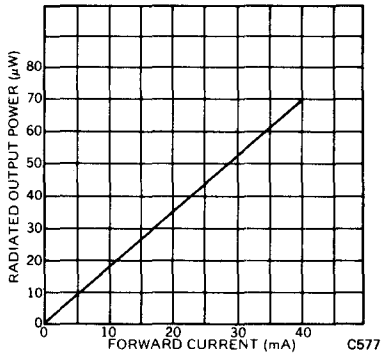


Figure 1 ROP vs. Forward Current

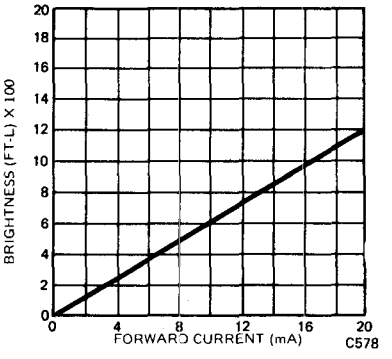


Figure 2 Brightness vs. Forward Current

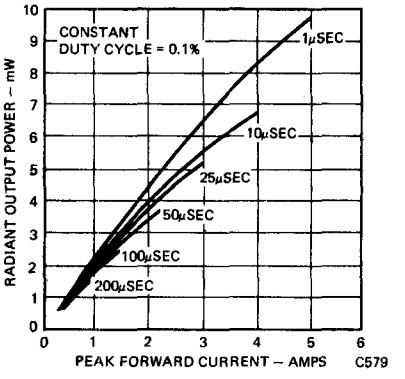


Figure 3 Peak Power Output vs. Pulsed Forward Current

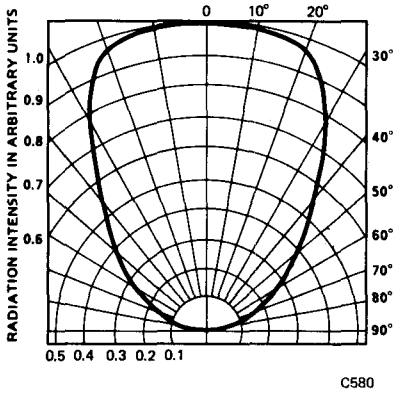


Figure 4 Spatial Distribution (Note 4)

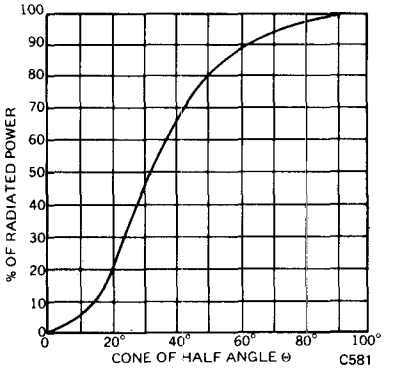


Figure 5 Percent Radiated Power Into Cone of Half Angle

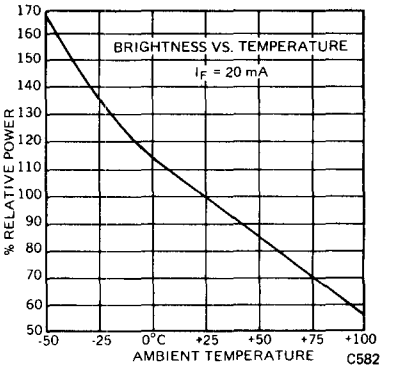


Figure 6 Relative Power vs. Temperature

NOTES

1. *The leads of the device were immersed in molten solder at 260° C to a point 1/16 inch from the body of the device per MIL-S-750.*
2. *As measured with a photo Research Spectra Spot Brightness Meter with "Spectar" L-175 lens in the brightest region of the emitting surface.*
3. *As measured with a Photo Research Corp. Microcandela Meter (Model IV D).*
4. *The axis of spatial distribution are typically within a 10° cone with reference to the central axis of the device.*