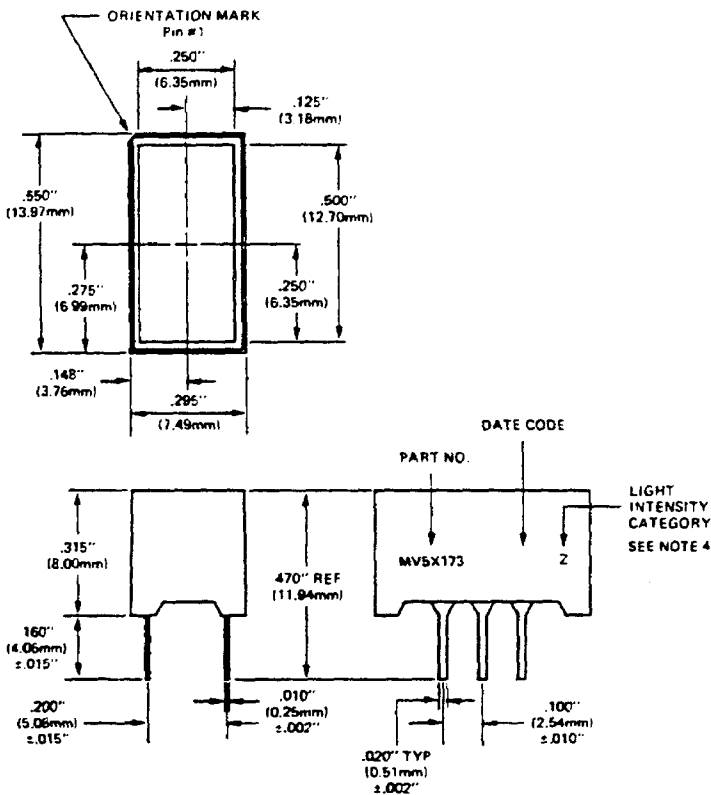


# GENERAL INSTRUMENT

**YELLOW MV53173**  
**HIGH EFFICIENCY GREEN MV54173**  
**HIGH EFFICIENCY RED MV57173**

## PACKAGE DIMENSIONS



NOTE: TOLERANCE ± .010" UNLESS SPECIFIED

C1467

## DESCRIPTION

The MV5X173 series is a large rectangular lamp which contains two LED chips with separate anodes and cathodes for each light. The illuminated area is 0.500 inches x 0.250 inches (12.7 mm x 6.35 mm).

Separate mounting hardware is available. See MP73.

## FEATURES

- .500" x .250" lighted area available in three colors
- Solid state reliability
- Fast switching – excellent for multiplexing
- Low power consumption
- Directly compatible with IC's
- Wide viewing angle
- .2" DIP lead spacing
- Mounting hardware available
- Categorized for luminous intensity (See note 1)

## APPLICATIONS

- Panel indicators
- Backlight legends
- Light arrays

## ABSOLUTE MAXIMUM RATINGS

	MV53173	MV54173	MV57173
Power Dissipation at 25°C	200 mW	200 mW	200 mW
Derate linearly from 50°C	-4.3 mW/°C	-4.5 mW/°C	-4.3 mW/°C
Storage Temperature	-40°C to 100°C	-40°C to 100°C	-40°C to 100°C
Operating Temperature	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
Continuous Forward Current per light (25°C)	25 mA	30 mA	35 mA
Peak Forward Current per LED chip (1 μsec pulse width, 300 pps)	1.0 A	90 mA	1.0 A
Solder Time at 260°C (See notes 3 and 5)	5 sec.	5 sec.	5 sec.

# MV53173 MV54173 MV57173

## ELECTRO-OPTICAL CHARACTERISTICS (25°C Free Air Temperature)

PARAMETER	TEST COND.	MV53173	MV54173	MV57173	UNITS
Forward voltage ( $V_F$ )					
Typ.	$I_F = 20 \text{ mA}$	2.0	2.2	2.0	V
Max.	$I_F = 20 \text{ mA}$	2.5	3.0	2.5	V
Luminous Intensity (See Note 1) Min.	$I_F = 20 \text{ mA}$	4.5	4.5	4.5	med
Peak wave length					
Typ.	$I_F = 20 \text{ mA}$	585	562	635	nm
Spectral line half width	$I_F = 20 \text{ mA}$	45	30	45	nm
Capacitance					
Typ.	$V = 0, f = 1 \text{ MHz}$	35	20	35	pF
Reverse voltage ( $V_R$ )					
Min.	$I_R = 100 \mu\text{A}$	5	5	5	V
Typ.	$I_R = 100 \mu\text{A}$	25	50	25	V
Viewing angle (total)		120	120	120	degrees

## TYPICAL THERMAL CHARACTERISTICS

Thermal resistance junction to free air $\Phi_{JA}$ . . . . .	MV53173	MV54173	MV57173
Wavelength temperature coefficient (case temp) . . .	160°C/W	160°C/W	160°C/W
Forward voltage temperature coefficient . . . . .	1.0 Å/°C	1.0 Å/°C	1.0 Å/°C
	-1.5 mV/°C	-1.4 mV/°C	-2.0 mV/°C

## TYPICAL CURVES (Per LED Chip Unless Indicated) (25°C Free Air Temperature)

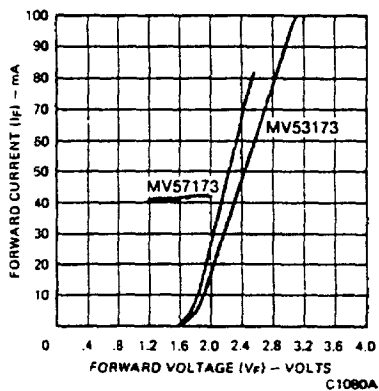


Fig. 1. Forward Current vs. Forward Voltage

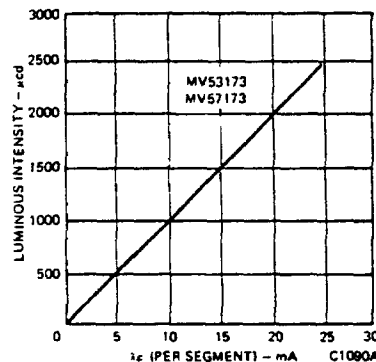


Fig. 2. Luminous Intensity vs. Forward Current (both LED chips on)

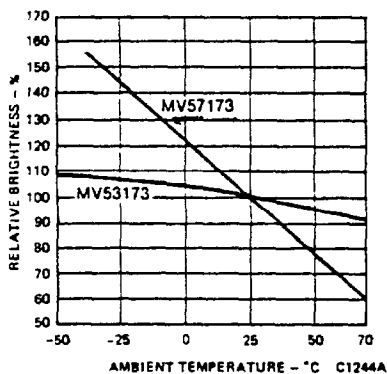


Fig. 3. Luminous Intensity vs. Temperature  
See Note 2

# MV53173 MV54173 MV57173

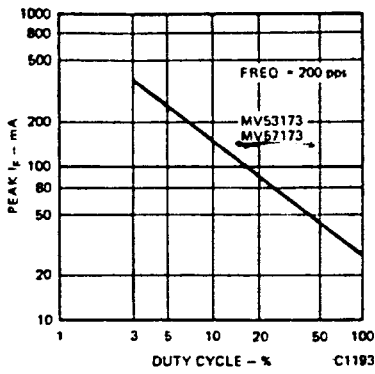


Fig. 4. Max Peak Current vs. Duty Cycle

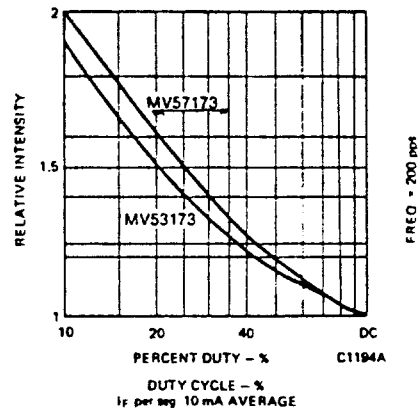


Fig. 5. Luminous Intensity vs. Duty Cycle

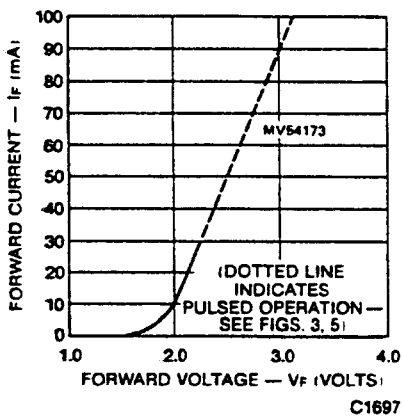


Fig. 6. Forward Current vs. Forward Voltage

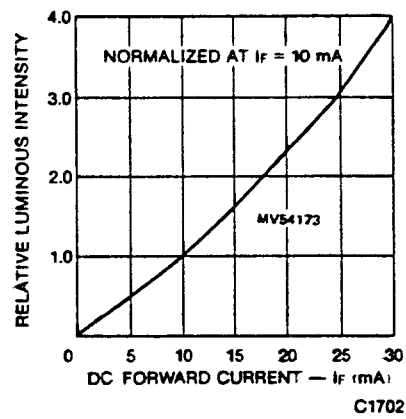


Fig. 7. Relative Luminous Intensity vs. DC Forward Current (Both LED chips on)

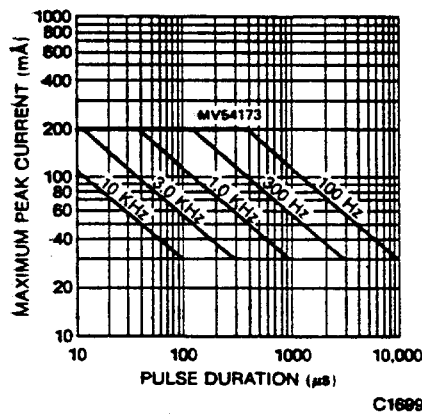


Fig. 8. Maximum Peak Current vs. Pulse Duration

# MV53173 MV54173 MV57173

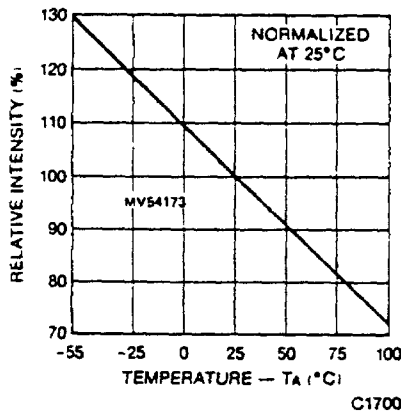


Fig. 9. Relative Luminous Intensity vs. Temperature

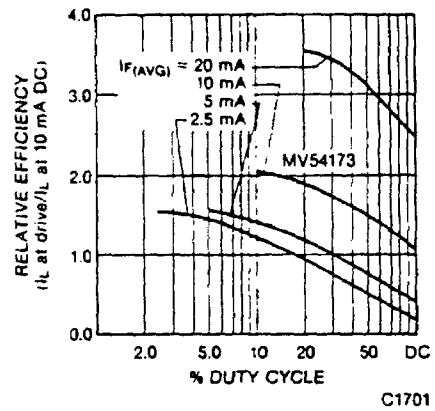
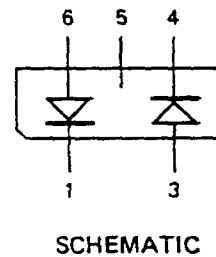


Fig. 10. Relative Efficiency vs. Duty Cycle

## PIN CONNECTIONS

PIN NO.	ELECTRICAL CONNECTIONS
1	Cathode 1
2	No Pin
3	Anode 2
4	Cathode 2
5	NC
6	Anode 1



## FILTER RECOMMENDATIONS

For optimum on and off contrast, one of the following filters or equivalents may be used over the lamp

**MV53173**  
 Panelgraphic Yellow 25 or Amber 23  
 Homalite 190 - 1720 or 100 - 1726

**MV54173**  
 Panelgraphic Green 48  
 Homalite 100 - 1440 Green

**MV57173**  
 Panelgraphic Red 60  
 Homalite 100 - 1605

In situations of high ambient light, a neutral density filter can be used to achieve greater contrast

Panelgraphic Grey 10

Panelgraphic Grey 10  
 Homalite 100 - 1266 Grey

1. The average Luminous Intensity is obtained by summing the Luminous Intensity of each segment and dividing by the total number of segments. The standard of measurement is the Photo Research Corp. "Spectra" Microcandela Meter (Model IV-D) corrected for wavelength. Intensity will not vary more than  $\pm 33.3\%$  between all segments within a unit.
2. The curve in Figure 3 is normalized to the brightness at  $25^{\circ}\text{C}$  to indicate the relative efficiency over the operating temperature range.
3. Leads immersed to  $1/16''$  (1.6mm) from the body of the device. Maximum unit surface temperature is  $140^{\circ}\text{C}$ .
4. All units are categorized for luminous intensity. The intensity category is marked on each part as a suffix letter to the part number.
5. For flux removal, Freon TF, Freon TE, isopropanol or water may be used up to their boiling points.