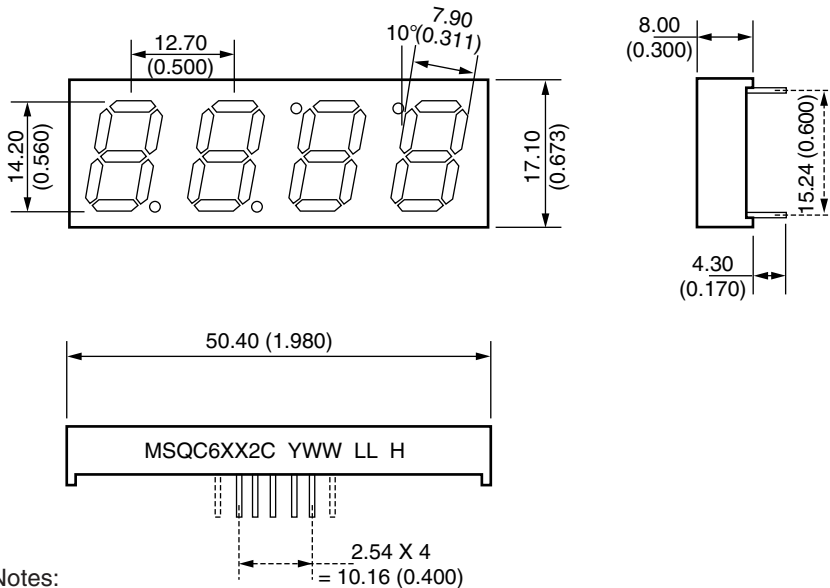


**Bright Red MSQC6112C, MSQC6142C**  
**High Efficiency Red MSQC6912C, MSQC6942C**  
**Green MSQC6412C, MSQC6442C**

## PACKAGE DIMENSIONS



**Notes:**

- Dimensions are in mm (inches)
- All Pins 0.5 (0.020) Diameter
- Tolerances are  $\pm 0.25\text{mm}$  (0.010") unless otherwise stated.

## Features

- Bright Bold Segments
- Common Anode/Cathode
- Low Power Consumption
- Low Current Capability
- High Performance
- High Reliability

## Applications

- Appliances
- Automotive
- Instrumentation
- Process Control

## MODELS AVAILABLE

| Part Number | Colour     | Description  |
|-------------|------------|--|
| MSQC6112C   | Bright Red | Clock Display, Common Anode, gray face, neutral segments   |
| MSQC6142C   | Bright Red | Clock Display, Common Cathode, gray face, neutral segments |
| MSQC6412C   | Green      | Clock Display, Common Anode, gray face, green segments     |
| MSQC6442C   | Green      | Clock Display, Common Cathode, gray face, green segments   |
| MSQC6912C   | H.E.R      | Clock Display, Common Anode, gray face, neutral segments   |
| MSQC6942C   | H.E.R.     | Clock Display, Common Cathode, gray face, neutral segments |

(For other colour options, contact your local area Sales Manager)

**BRIGHT RED MSQC6112C, MSQC6142C  
HIGH EFFICIENCY RED MSQC6912C, MSQC6942C  
GREEN MSQC6412C, MSQC6442C**

| <b>ABSOLUTE MAXIMUM RATINGS<sup>(1)</sup> (T<sub>A</sub> = 25°C, unless otherwise specified)</b> |                        |                        |                        |                   |
|--|------------------------|------------------------|------------------------|-------------------|
| Part Number<br>Parameter   | MSQC6112C<br>MSQC6142C | MSQC6412C<br>MSQC6442C | MSQC6912C<br>MSQC6942C | Units             |
| Continuous Forward Current<br>(each segment)   | 15                     | 25                     | 25                     | mA                |
| Peak Forward Current<br>(F = 10KHz, D/F = 1/10)  | 60                     | 90                     | 90                     | mA                |
| Power Dissipation (P <sub>D</sub> )  | 40                     | 70                     | 70                     | mW                |
| *Derate Linearly from 25°C   | 0.17                   | 0.33                   | 0.33                   | mW                |
| Reverse Voltage per Die  |                        |                        |                        | 5 Volts           |
| Operating and Storage Temperature Range  |                        |                        |                        | -40°C to +85°C    |
| Lead soldering time (1/16 inch from standoffs)   |                        |                        |                        | 5 seconds @ 230°C |

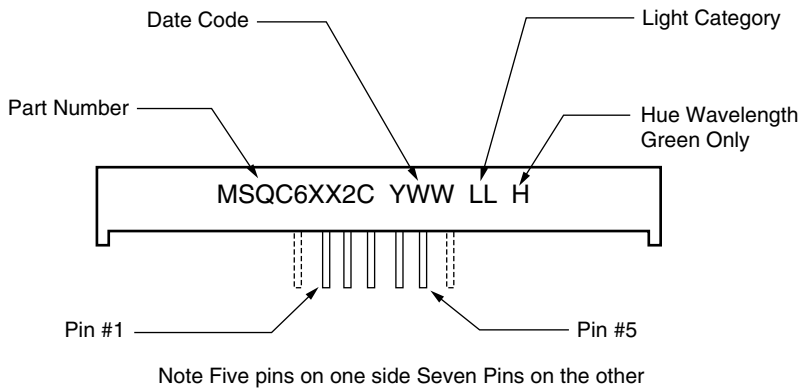
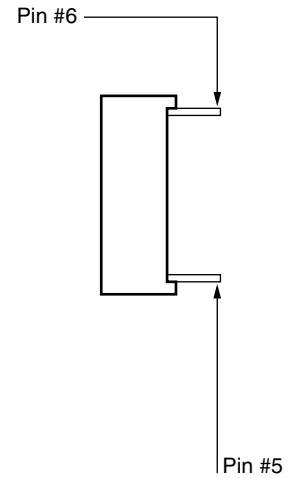
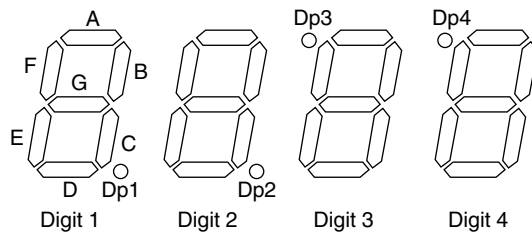
| <b>ELECTRO-OPTICAL CHARACTERISTICS<sup>(1)</sup> (T<sub>A</sub> = 25°C, unless otherwise specified)</b> |                        |                        |                        |       |                        |
|---|------------------------|------------------------|------------------------|-------|------------------------|
| Part Number<br>Parameter  | MSQC6112C<br>MSQC6142C | MSQC6412C<br>MSQC6442C | MSQC6912C<br>MSQC6912C | Units | Test<br>Condition      |
| Luminous intensity <sup>(2)</sup> (I <sub>V</sub> )   |                        |                        |                        |       |                        |
| Minimum (Standard Current)  | 300                    | 800                    | 800                    | μcd   | I <sub>F</sub> = 10mA  |
| Typical (Standard Current)  | 700                    | 2400                   | 2000                   | μcd   | I <sub>F</sub> = 10mA  |
| Minimum (Low Current)   | Not Available          |                        |                        |       |                        |
| Typical (Low Current)   | Not Available          |                        |                        |       |                        |
| Forward Voltage (V <sub>F</sub> )   |                        |                        |                        |       |                        |
| Typical (Standard Current)  | 2.10                   | 2.10                   | 2.00                   | V     | I <sub>F</sub> = 20mA  |
| Maximum (Standard Current)  | 2.80                   | 2.80                   | 2.80                   | V     | I <sub>F</sub> = 20mA  |
| Typical (Low Current)   | Not Available          |                        |                        |       |                        |
| Maximum (Low Current)   | Not Available          |                        |                        |       |                        |
| Peak Wavelength   | 695                    | 570                    | 635                    | nm    | I <sub>F</sub> = 20mA  |
| Dominant Wavelength   | Not Available          |                        |                        |       |                        |
| Spectral Line 1/2 Width   | 90                     | 30                     | 45                     | nm    | I <sub>F</sub> = 10mA  |
| Reverse B <sup>(3)</sup> . Voltage (V <sub>R</sub> )  | 5                      | 5                      | 5                      | V     | I <sub>R</sub> = 100uA |

NOTES:

- (1) Data per individual LED element
- (2) Luminous intensity (ucd) = average light output per segment
- (3) B = breakdown

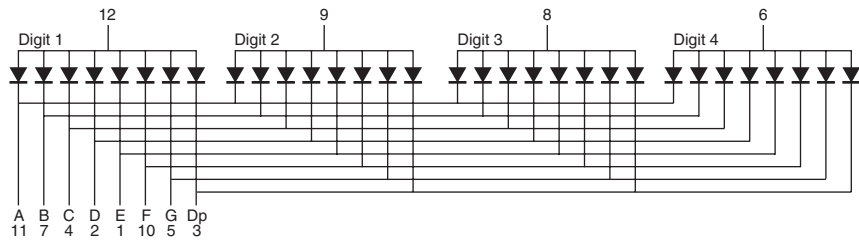
**BRIGHT RED MSQC6112C, MSQC6142C  
HIGH EFFICIENCY RED MSQC6912C, MSQC6942C  
GREEN MSQC6412C, MSQC6442C**

**PIN ORIENTATION, SEGMENT IDENTIFICATION, AND PRODUCT MARKING**

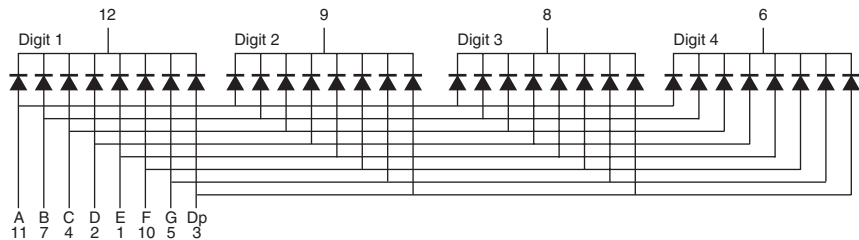


**SCHEMATICS**

MSQC6X10C  
(Common Anode)

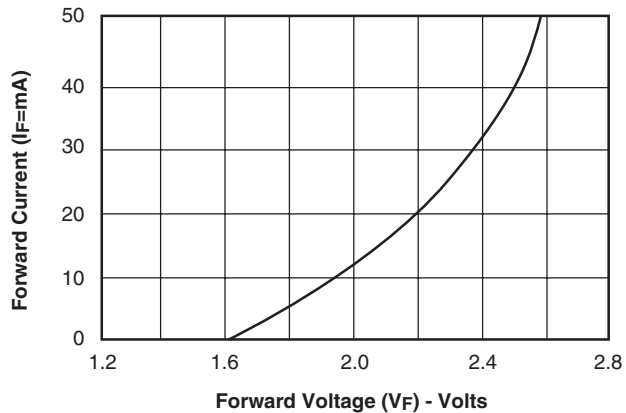


MSQC6X40C  
(Common Cathode)

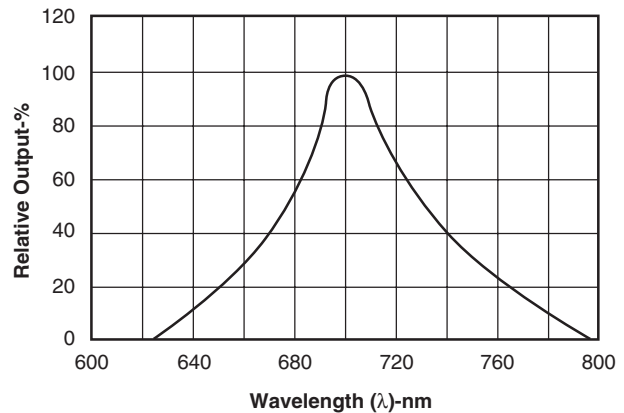


**BRIGHT RED MSQC6112C, MSQC6142C  
HIGH EFFICIENCY RED MSQC6912C, MSQC6942C  
GREEN MSQC6412C, MSQC6442C**

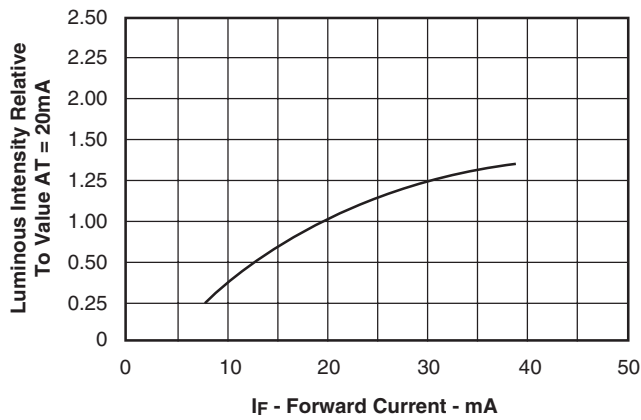
**GRAPHICAL DATA Bright Red ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)**



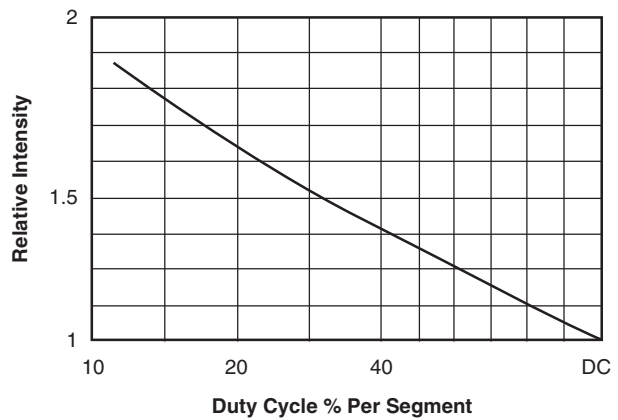
**Fig. 1 Forward Current vs. Forward Voltage**



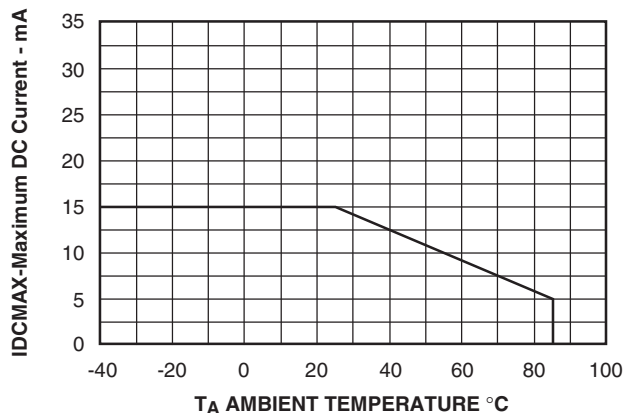
**Fig. 2 Spectral Response**



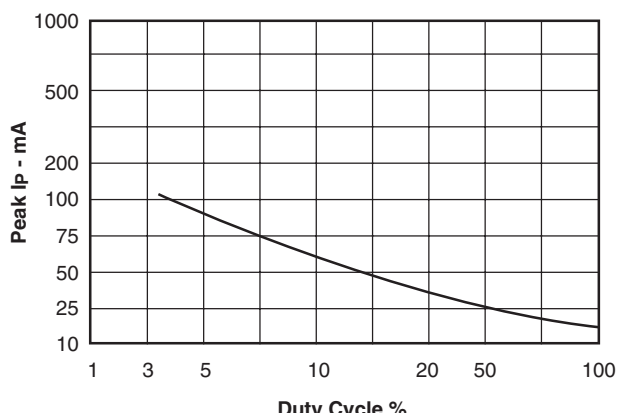
**Fig. 3 Relative Luminous Intensity vs. Forward Current**



**Fig. 5 Luminous Intensity vs. Duty Cycle**



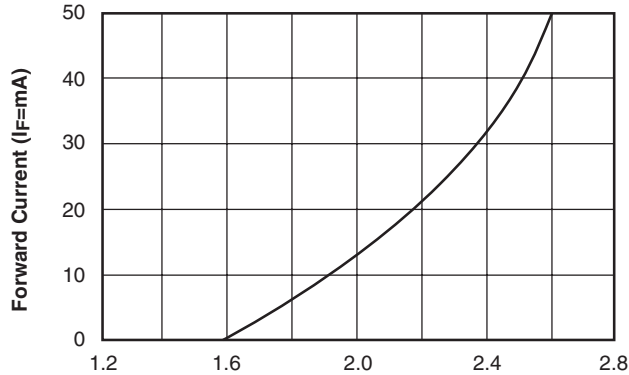
**Fig. 4 Maximum Allowable DC Current per Segment vs. a Function of Ambient Temperature**



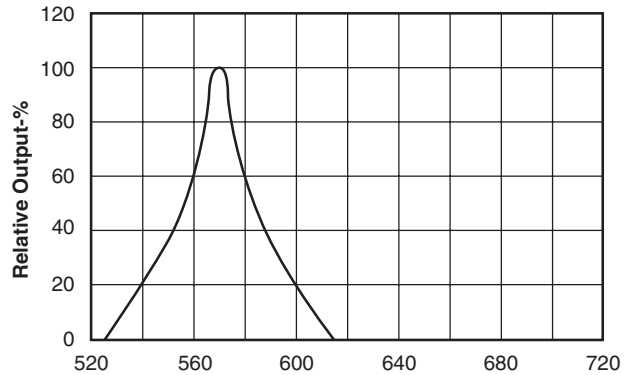
**Fig. 6 Max Peak Current vs. Duty Cycle % (Refresh Rate f=1 KHz)**

**BRIGHT RED MSQC6112C, MSQC6142C  
HIGH EFFICIENCY RED MSQC6912C, MSQC6942C  
GREEN MSQC6412C, MSQC6442C**

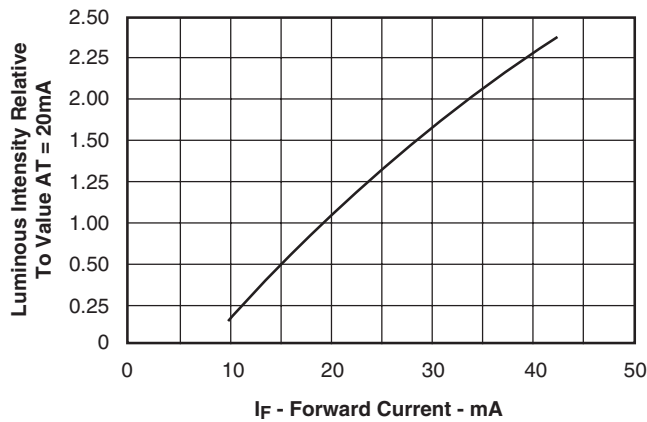
**GRAPHICAL DATA Green ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)**



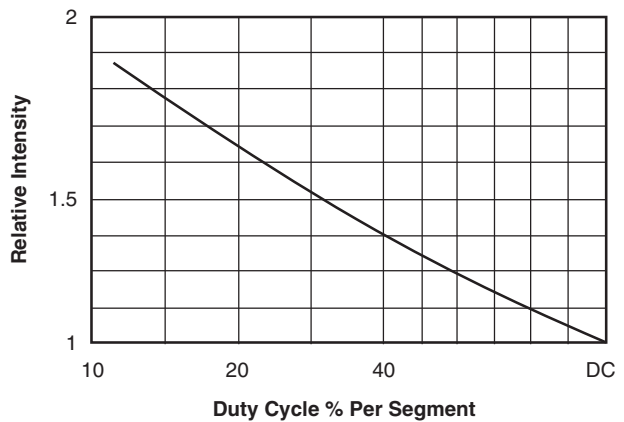
**Fig. 1 Forward Current vs. Forward Voltage**



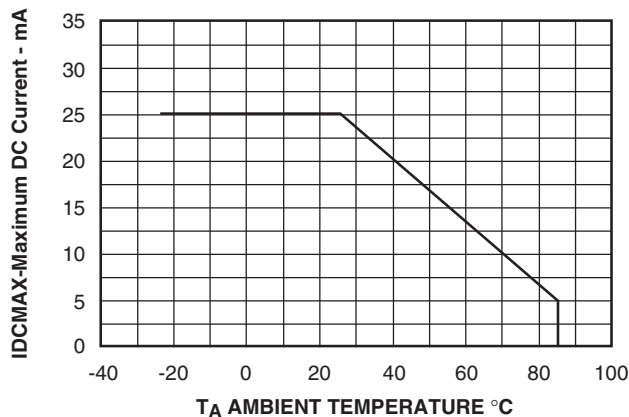
**Fig. 2 Spectral Response**



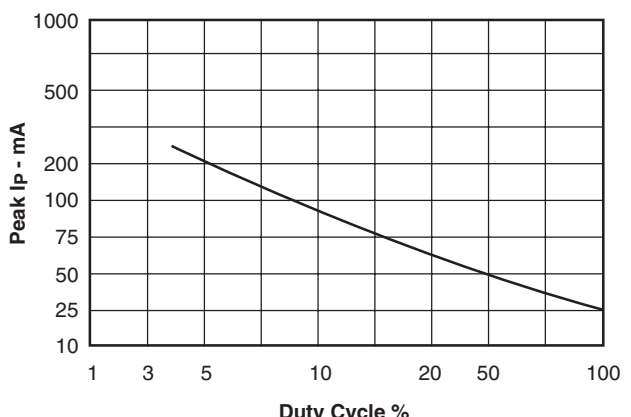
**Fig. 3 Relative Luminous Intensity vs. Forward Current**



**Fig. 5 Luminous Intensity vs. Duty Cycle**



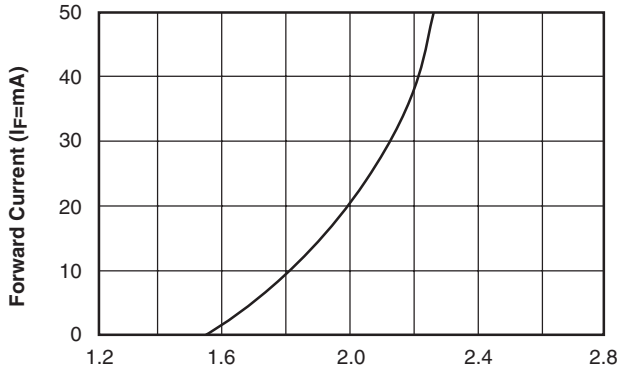
**Fig. 4 Maximum Allowable DC Current per Segment vs. a Function of Ambient Temperature**



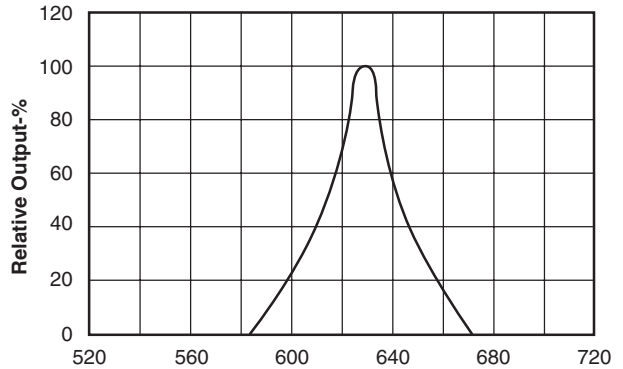
**Fig. 6 Max Peak Current vs. Duty Cycle % (Refresh Rate f=1 KHz)**

**BRIGHT RED MSQC6112C, MSQC6142C  
HIGH EFFICIENCY RED MSQC6912C, MSQC6942C  
GREEN MSQC6412C, MSQC6442C**

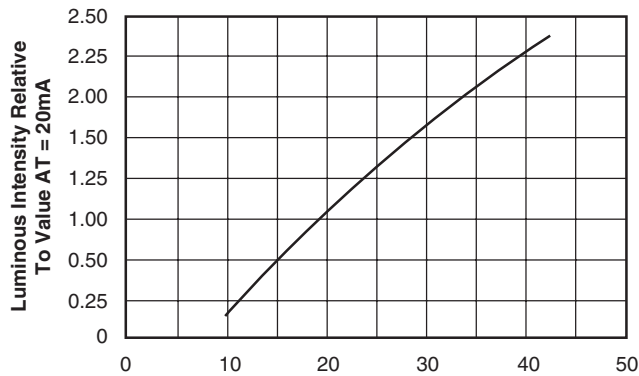
**GRAPHICAL DATA High Efficiency Red ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)**



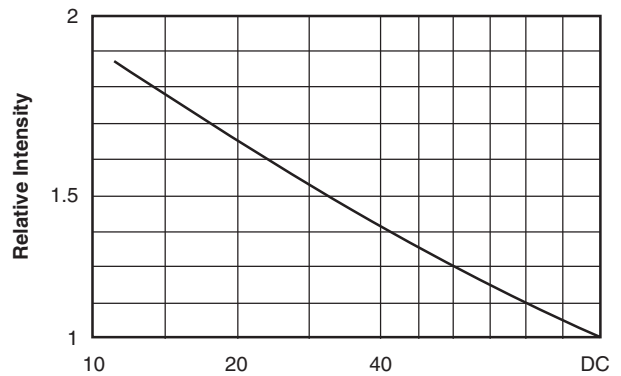
**Fig. 1 Forward Current vs. Forward Voltage**



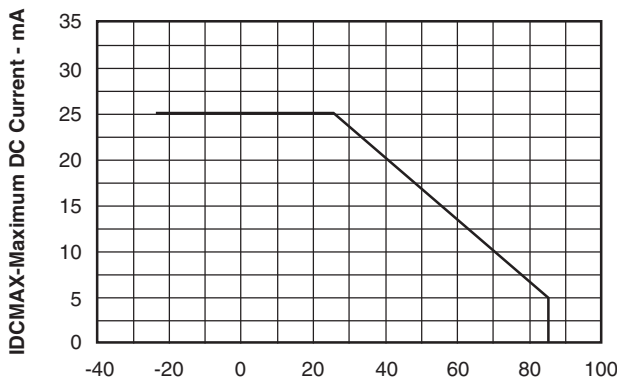
**Fig. 2 Spectral Response**



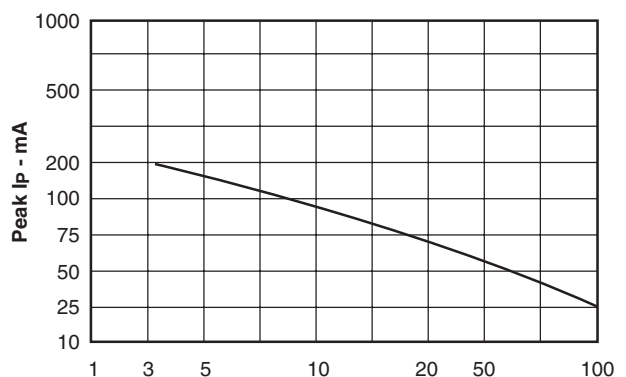
**Fig. 3 Relative Luminous Intensity vs. Forward Current**



**Fig. 5 Luminous Intensity vs. Duty Cycle**



**Fig. 4 Maximum Allowable DC Current per Segment vs. a Function of Ambient Temperature**



**Fig. 6 Max Peak Current vs. Duty Cycle % (Refresh Rate f=1 KHz)**

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**BRIGHT RED MSQC6112C, MSQC6142C  
HIGH EFFICIENCY RED MSQC6912C, MSQC6942C  
GREEN MSQC6412C, MSQC6442C**

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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.