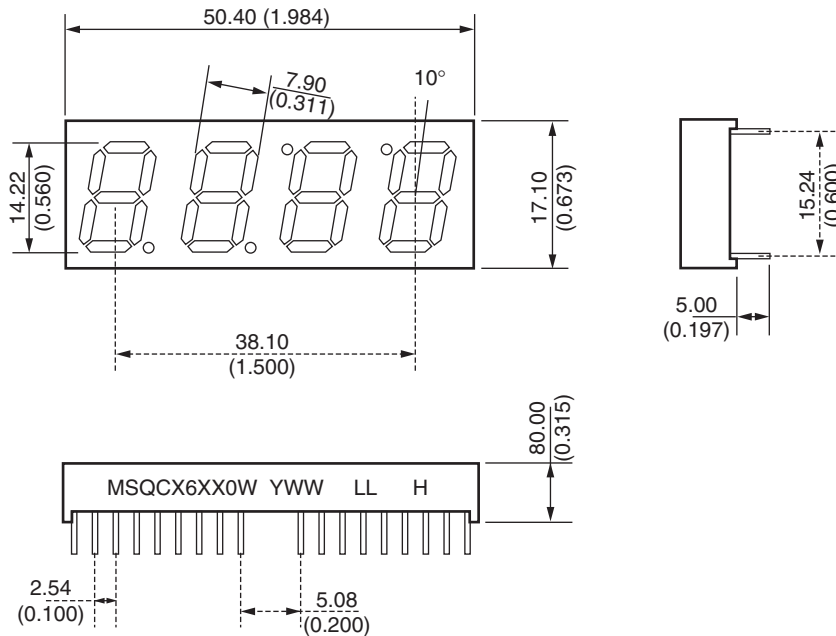


**Bright Red MSQC6110W, MSQC6140W**  
**High Efficiency Red MSQC6910W, MSQC6940W**  
**Green MSQC6410W, MSQC6440W**

## PACKAGE DIMENSIONS



**Notes:**

- Dimensions are in mm (inches)
- All pins 0.5mm (0.020") diameter
- Tolerances are ±0.25mm (0.010") unless otherwise stated

## Features

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

## Applications

- Appliances
- Automotive
- Instrumentation
- Process Control

## MODELS AVAILABLE

Part Number	Color	Description
MSQC6110W	Bright Red	Clock Display, Common Anode – gray face, neutral segments
MSQC6140W	Bright Red	Clock Display, Common Cathode – gray face, neutral segments
MSQC6410W	Green	Clock Display, Common Anode – gray face, green segments
MSQC6440W	Green	Clock Display, Common Cathode – gray face, green segments
MSQC6910W	High Efficiency Red	Clock Display, Common Anode – gray face, neutral segments
MSQC6940W	High Efficiency Red	Clock Display, Common Cathode – gray face, neutral segments

**Bright Red MSQC6110W, MSQC6140W**  
**High Efficiency Red MSQC6910W, MSQC6940W**  
**Green MSQC6410W, MSQC6440W**

<b>ABSOLUTE MAXIMUM RATINGS<sup>(1)</sup></b> ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)				
Part Number Parameter	MSQC6110W MSQC6140W	MSQC6410W MSQC6440W	MSQC6910W MSQC6940W	Units
<b>Continuous Forward Current</b> (each segment)	15	25	25	mA
<b>Peak Forward Current</b> ( $F = 10\text{KHz}$ , $D/F = 1/10$ )	60	90	90	mA
<b>Power Dissipation (<math>P_D</math>)</b>	40	70	70	mW
<b>*Derate Linearly from <math>25^\circ\text{C}</math></b>	0.17	0.33	0.33	mW
<b>Reverse Voltage per Die</b>	5 Volts			
<b>Operating and Storage Temperature Range</b>	$-40^\circ\text{C}$ to $+85^\circ\text{C}$			
<b>Lead soldering time (1/16 inch from standoffs)</b>	5 seconds @ $230^\circ\text{C}$			

<b>ELECTRO-OPTICAL CHARACTERISTICS<sup>(1)</sup></b> ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)					
Part Number Parameter	MSQC6110W MSQC6140W	MSQC6410W MSQC6440W	MSQC6910W MSQC6910W	Units	Test Condition
<b>Luminous intensity<sup>(2)</sup> (<math>I_V</math>)</b>					
Minimum (Standard Current)	300	800	800	$\mu\text{cd}$	$I_F = 10\text{mA}$
Typical (Standard Current)	700	2400	2000	$\mu\text{cd}$	$I_F = 10\text{mA}$
Minimum (Low Current)	Not Available				
Typical (Low Current)	Not Available				
<b>Forward Voltage (<math>V_F</math>)</b>					
Typical (Standard Current)	2.10	2.10	2.00	V	$I_F = 20\text{mA}$
Maximum (Standard Current)	2.80	2.80	2.80	V	$I_F = 20\text{mA}$
Typical (Low Current)	Not Available				
Maximum (Low Current)	Not Available				
<b>Peak Wavelength</b>	695	570	635	nm	$I_F = 20\text{mA}$
<b>Dominant Wavelength</b>	Not Available				
<b>Spectral Line 1/2 Width</b>	90	30	45	nm	$I_F = 10\text{mA}$
<b>Reverse B<sup>(3)</sup>. Voltage (<math>V_R</math>)</b>	5	5	5	V	$I_R = 100\mu\text{A}$

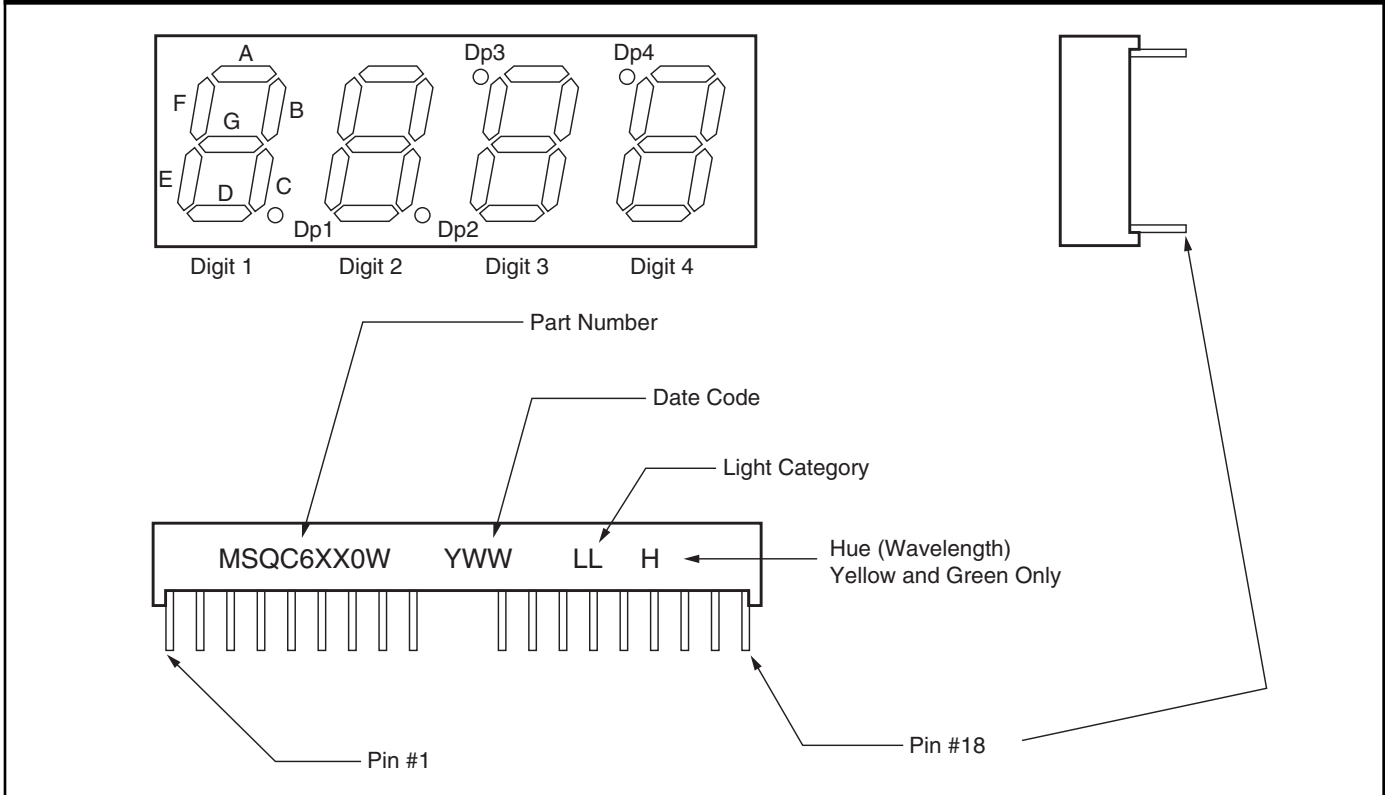
NOTES:

- (1) Data per individual LED element
- (2) Luminous intensity ( $\mu\text{cd}$ ) = average light output per segment
- (3) B = breakdown

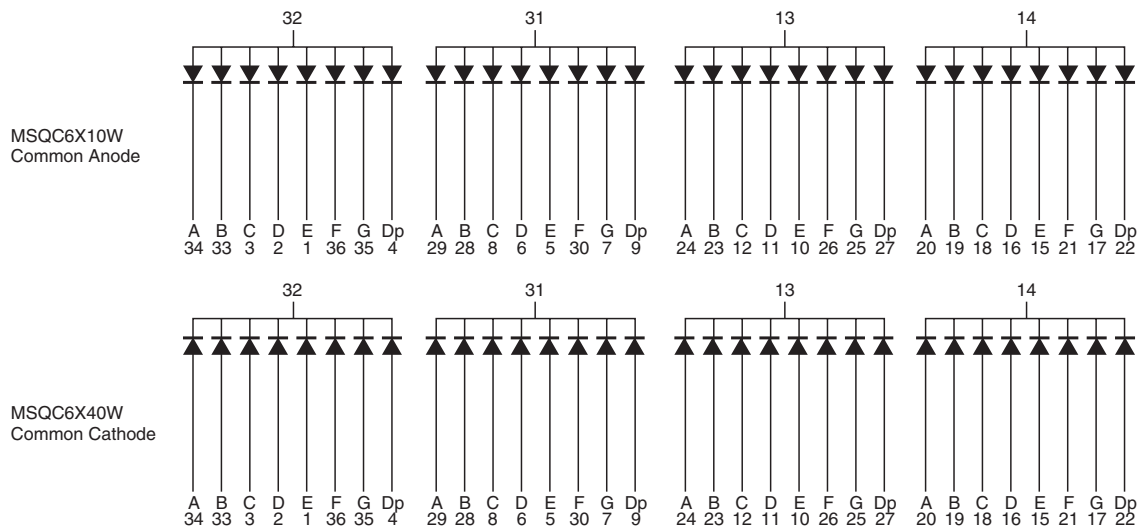
# 14mm (0.56 inch) Four Digit CLOCK STICK DISPLAY

**Bright Red MSQC6110W, MSQC6140W**  
**High Efficiency Red MSQC6910W, MSQC6940W**  
**Green MSQC6410W, MSQC6440W**

## PIN ORIENTATION, SEGMENT IDENTIFICATION, AND PRODUCT MARKING



## SCHEMATICS



**Bright Red MSQC6110W, MSQC6140W  
High Efficiency Red MSQC6910W, MSQC6940W  
Green MSQC6410W, MSQC6440W**

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

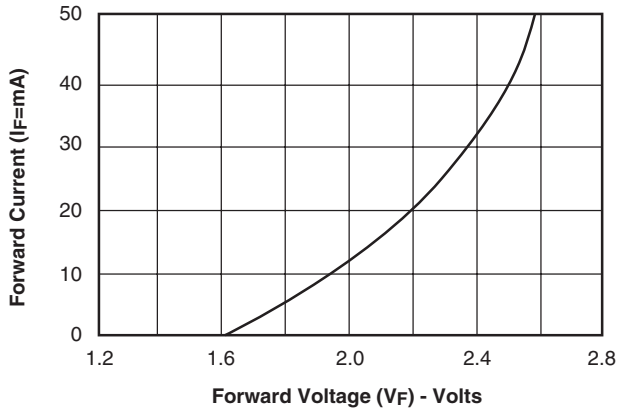


Fig. 1 Forward Current vs. Forward Voltage

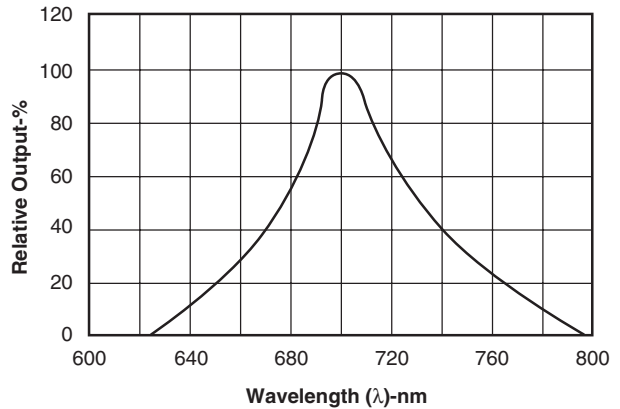


Fig. 2 Spectral Response

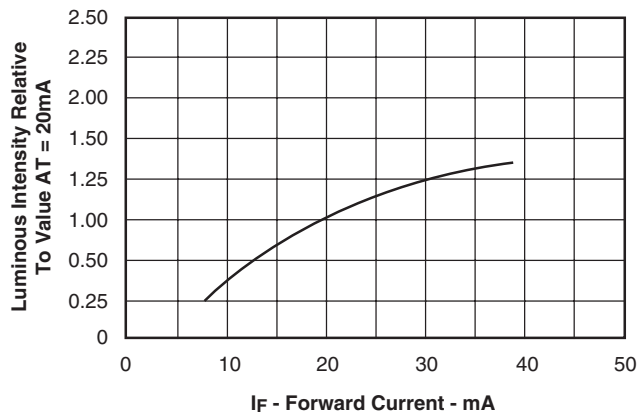


Fig. 3 Relative Luminous Intensity vs. Forward Current

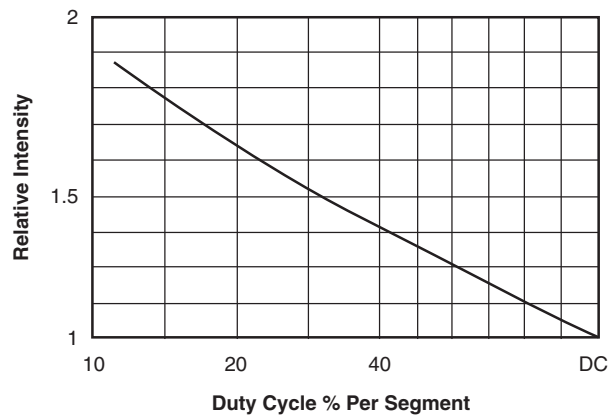


Fig. 5 Luminous Intensity vs. Duty Cycle

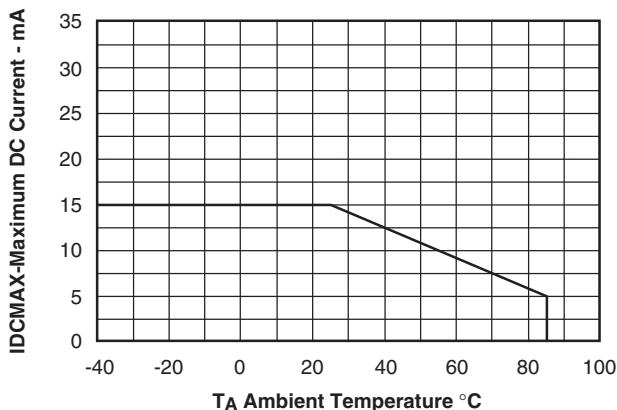


Fig. 4 Maximum Allowable DC Current per Segment vs. a Function of Ambient Temperature

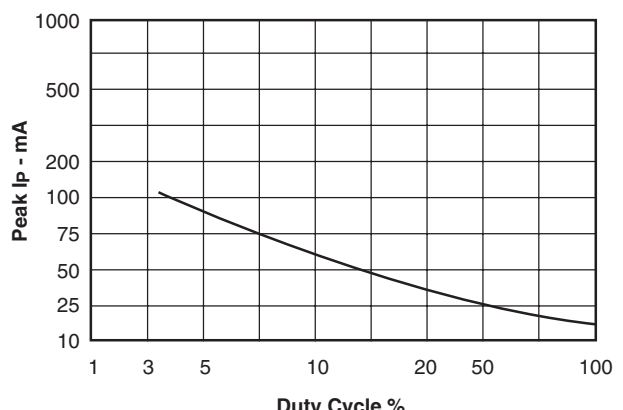


Fig. 6 Max Peak Current vs. Duty Cycle % (Refresh Rate f=1 KHz)

**Bright Red MSQC6110W, MSQC6140W**  
**High Efficiency Red MSQC6910W, MSQC6940W**  
**Green MSQC6410W, MSQC6440W**

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

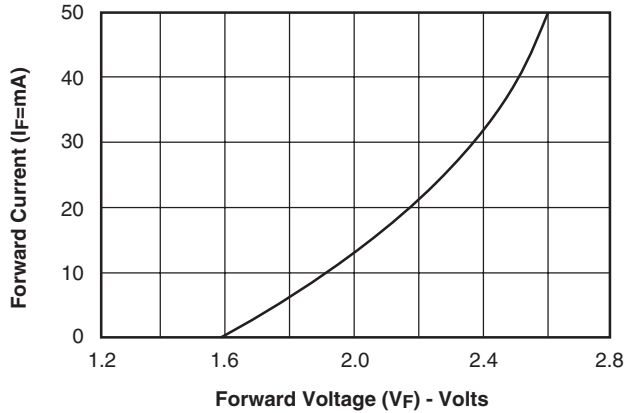


Fig. 1 Forward Current vs. Forward Voltage

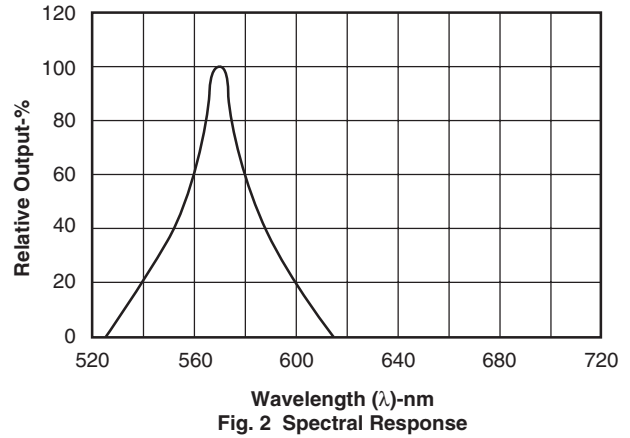


Fig. 2 Spectral Response

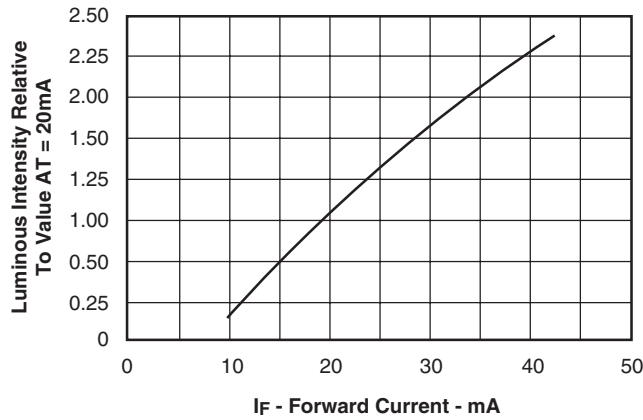


Fig. 3 Relative Luminous Intensity vs. Forward Current

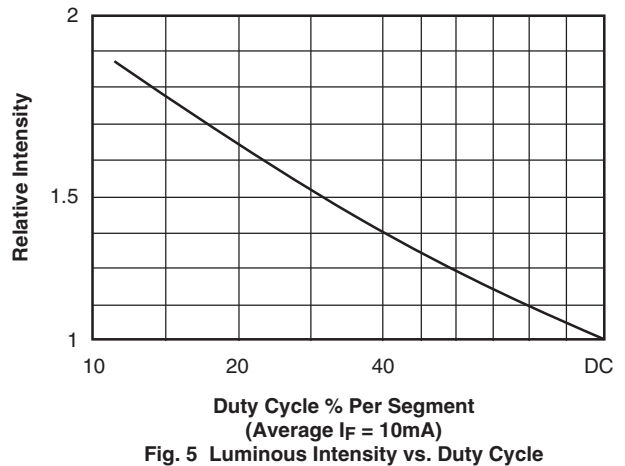


Fig. 5 Luminous Intensity vs. Duty Cycle

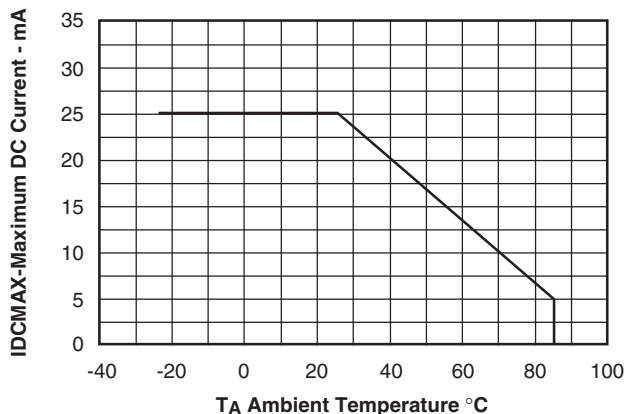


Fig. 4 Maximum Allowable DC Current per Segment vs. a Function of Ambient Temperature

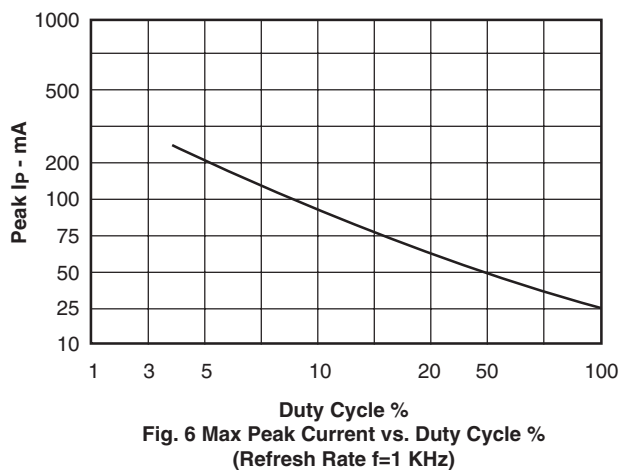
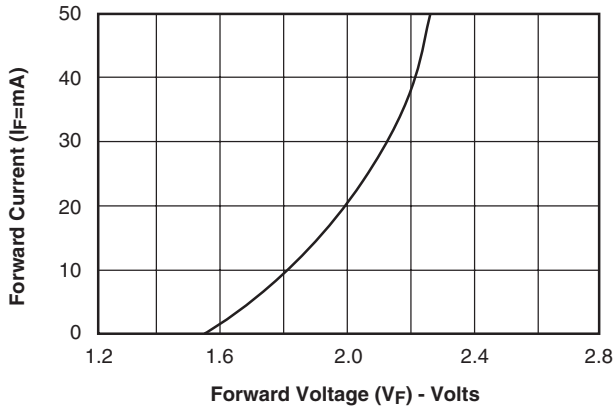


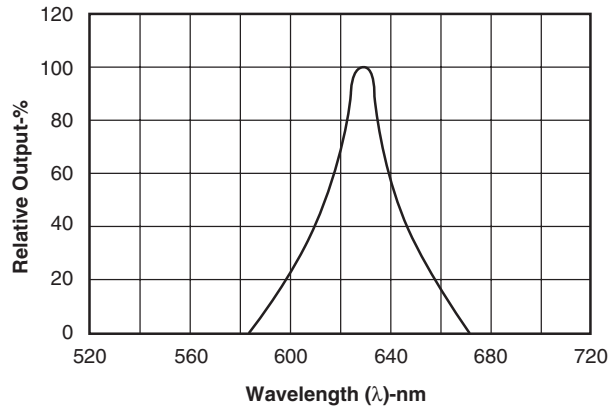
Fig. 6 Max Peak Current vs. Duty Cycle % (Refresh Rate f=1 KHz)

**Bright Red MSQC6110W, MSQC6140W  
High Efficiency Red MSQC6910W, MSQC6940W  
Green MSQC6410W, MSQC6440W**

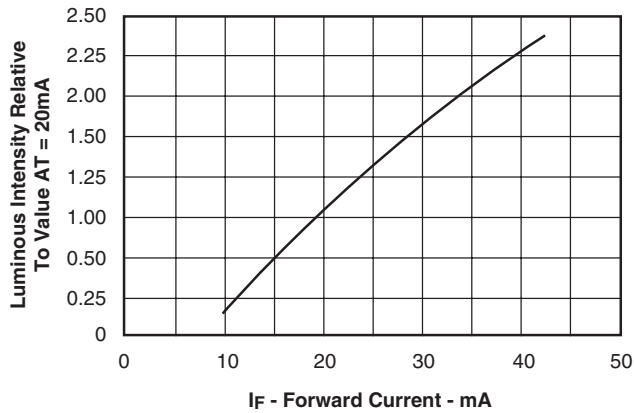
**GRAPHICAL DATA High Efficiency Red ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)**



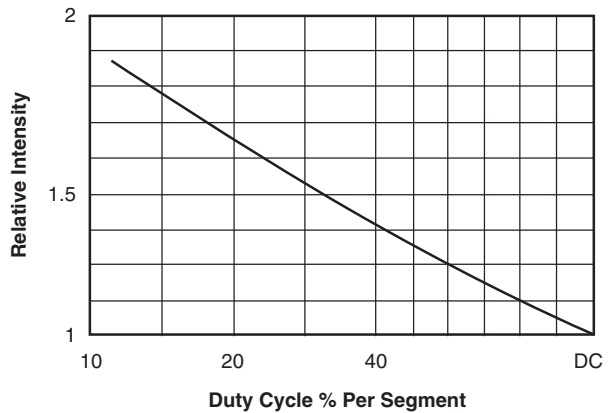
**Fig. 1 Forward Current vs. Forward Voltage**



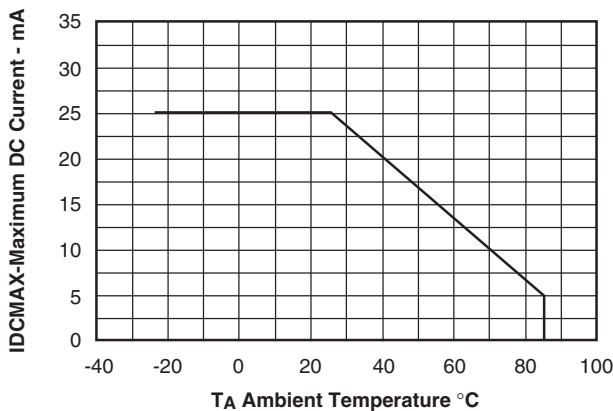
**Fig. 2 Spectral Response**



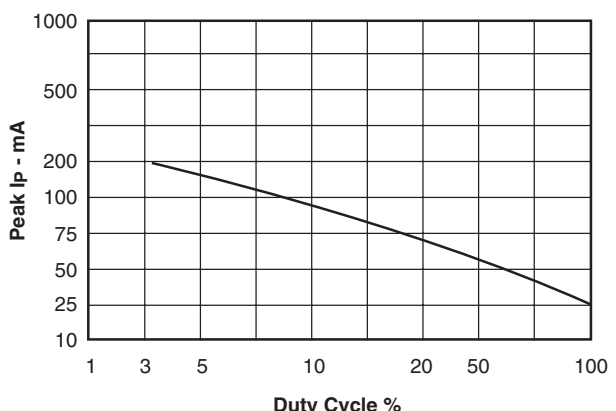
**Fig. 3 Relative Luminous Intensity vs. Forward Current**



**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)**

---

**Bright Red MSQC6110W, MSQC6140W  
High Efficiency Red MSQC6910W, MSQC6940W  
Green MSQC6410W, MSQC6440W**

---

**DISCLAIMER**

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

**LIFE SUPPORT POLICY**

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
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.