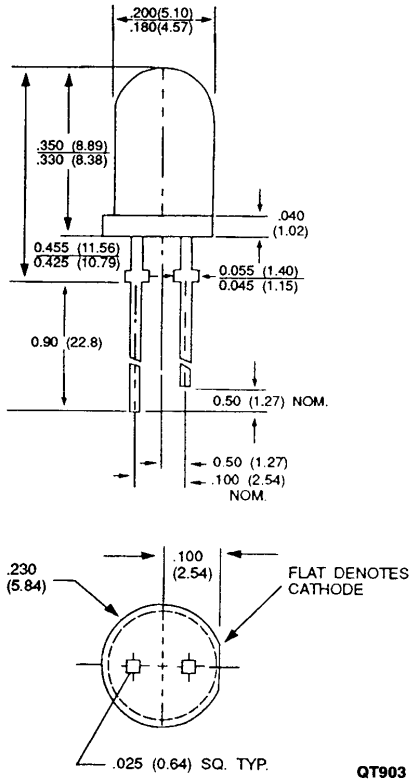
QT OPTOELECTRONICS

INTEGRATED T-1 3/4 RESISTOR LAMPS
5 VOLT and 12 VOLT SERIES

RED **MR3050/MR3051** TINTED
HIGH EFFICIENCY RED **MR3750/MR3751** TINTED
YELLOW **MR3350/MR3351** TINTED
HIGH EFFICIENCY GREEN **MR3450/MR3451** TINTED

PACKAGE DIMENSIONS



QT903

DESCRIPTION

This group of T-1 3/4 size LED lamps contain integral resistors. Operation at 5 volts (MR3X50 Part Nos.) or 12 volts (MR3X51 Part Nos.) is possible without the use of external current limiting resistors. Color tinted, diffused epoxy packages are used for all the lamps in this group.

FEATURES

- Integral Current Limiting Resistor (No external resistor required)
- TTL Compatible
- Operate with 5 Volt & 12 Volt Supplies
- All Colors - Red, HER, Yellow, Green
- Wide Viewing Angle
- Solid-State Reliability

NOTES:
1. ALL TOLERANCES, UNLESS OTHERWISE SPECIFIED: .XXX ± 010
2. ALL DIMENSIONS IN INCHES (MILLIMETERS)

PHYSICAL CHARACTERISTICS

TYPE	SOURCE COLOR	LENS COLOR
MR3050	Red	Red Diffused
MR3051	Red	Red Diffused
MR3750	High Efficiency Red	Red Diffused
MR3751	High Efficiency Red	Red Diffused
MR3350	Yellow	Yellow Diffused
MR3351	Yellow	Yellow Diffused
MR3450	High Efficiency Green	Green Diffused
MR3451	High Efficiency Green	Green Diffused

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ELECTRO-OPTICAL CHARACTERISTICS (TA = 25°C Unless Otherwise Specified)

		RED						HIGH EFFICIENCY RED						UNITS	TEST CONDITION
PARAMETER	SYMBOL	MR3050			MR3051			MR3750			MR3751				
		MIN.	TYP.	MAX	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
Luminous Intensity	I_V				1.0	2.0					1.5	4.0		mcd	V_F=12 V
Luminous Intensity	I_V	1.0	2.0					1.5	4.0					mcd	V_F=5 V
Total Viewing Angle	2θ1/2		60			60			60			60		Deg	
Peak Wavelength	λp		655			655			635			635		nm	
Spectral Line Halfwidth	Δ λ1/2		24			24			40			40		nm	
Forward Current 12V Devices	I_F											13	20	mA	V_F=12 V
Forward Current 5V Devices	I_F		13	20		13	20		10	15				mA	V_F=5 V
Reverse Breakdown Voltage	V_R	5.0			5.0			5.0			5.0				I_R=100μA

ELECTRO-OPTICAL CHARACTERISTICS (TA = 25°C Unless Otherwise Specified)

		YELLOW						HIGH EFFICIENCY GREEN						UNITS	TEST CONDITION
PARAMETER	SYMBOL	MR3350			MR3351			MR3450			MR3451				
		MIN.	TYP.	MAX	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
Luminous Intensity	I_V				1.5	4.0					1.5	4.0		mcd	V_F=12 V
Luminous Intensity	I_V	1.5	4.0					1.5	4.0					mcd	V_F=5 V
Total Viewing Angle	2θ1/2		60			60			60			60		Deg	
Peak Wavelength	λp		583			583			565			565		nm	
Spectral Line Halfwidth	Δ λ1/2		36			36			28			28		nm	
Forward Current 12V Devices	I_F					13	20					13	20	mA	V_F=12 V
Forward Current 5V Devices	I_F		10	15					12	15				mA	V_F=5 V
Reverse Breakdown Voltage	V_R	5.0			5.0			5.0			5.0				I_R=100μA

ABSOLUTE MAXIMUM RATINGS (TA = 25°C Unless Otherwise Specified)

	RED/HER/YELLOW 5 VOLT LAMPS	RED/HER/YELLOW 12 VOLT LAMPS	GREEN 5 VOLT LAMPS	GREEN 12 VOLT LAMPS
DC Forward Voltage (T_A=25°C)	7.5 Volts	15 Volts	7.5 Volts	15 Volts
Reverse Voltage (I_R=100 μA)	5 Volts	5 Volts	5 Volts	5 Volts
Operating Temperature Range	−40°C to +85°C	−40°C to +85°C	−20°C to +85°C	−20°C to +85°C
Storage Temperature Range	−55°C to +100°C	−55°C to +100°C	−55°C to +100°C	−55°C to +100°C
Lead Soldering Temperature	260°C for 5 seconds			

TYPICAL ELECTRO-OPTICAL CHARACTERISTIC CURVES

(TA = 25°C Unless Otherwise Specified)

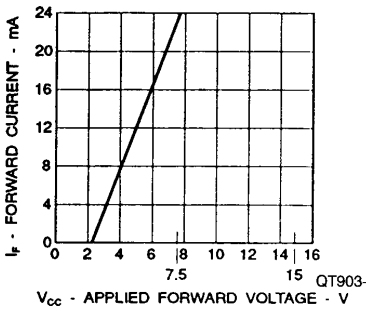

Fig. 1. Forward Current vs. Applied Forward Voltage 5 Volt Devices

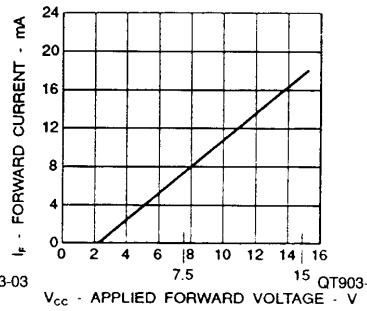

Fig. 2. Forward Current vs. Applied Forward Voltage 12 Volt Devices

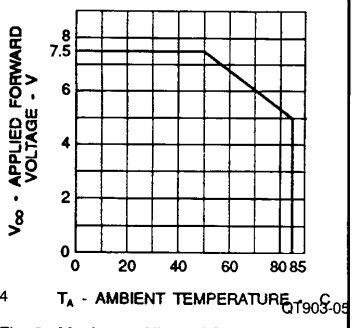

Fig. 3. Maximum Allowed Applied Forward Voltage vs. Ambient Temperature $R\theta_{JA}$=175°C/W 5 Volt Devices

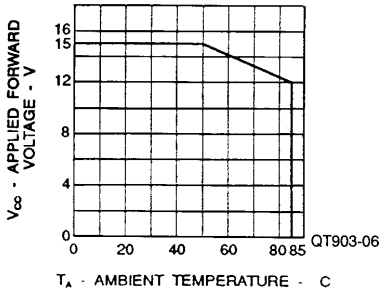

Fig. 4. Maximum Allowed Applied Forward Voltage vs. Ambient Temperature $R\theta_{JA}$=175°C/W 12 Volt Devices

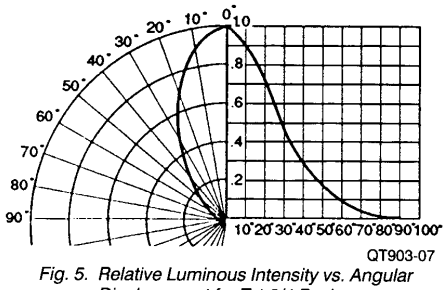

Fig. 5. Relative Luminous Intensity vs. Angular Displacement for T-1 3/4 Package

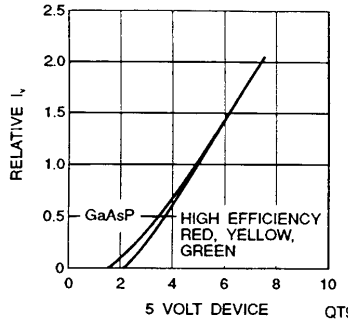

Fig. 6. Relative Luminous Intensity vs. Applied Forward Voltage 5 Volt Devices

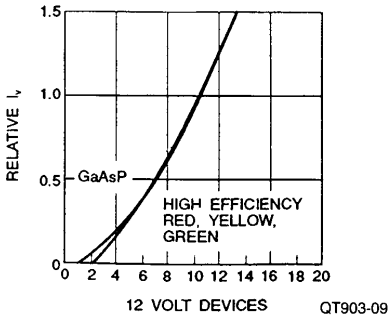

Fig. 7. Relative Luminous Intensity vs. Applied Forward Voltage 12 Volt Devices