



*SPECIFICATION FOR LED LAMP*

*PART NO. : LT9F63-AT-RGB*

*HIGH POWER LED*

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## HIGH POWER LED

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### Features

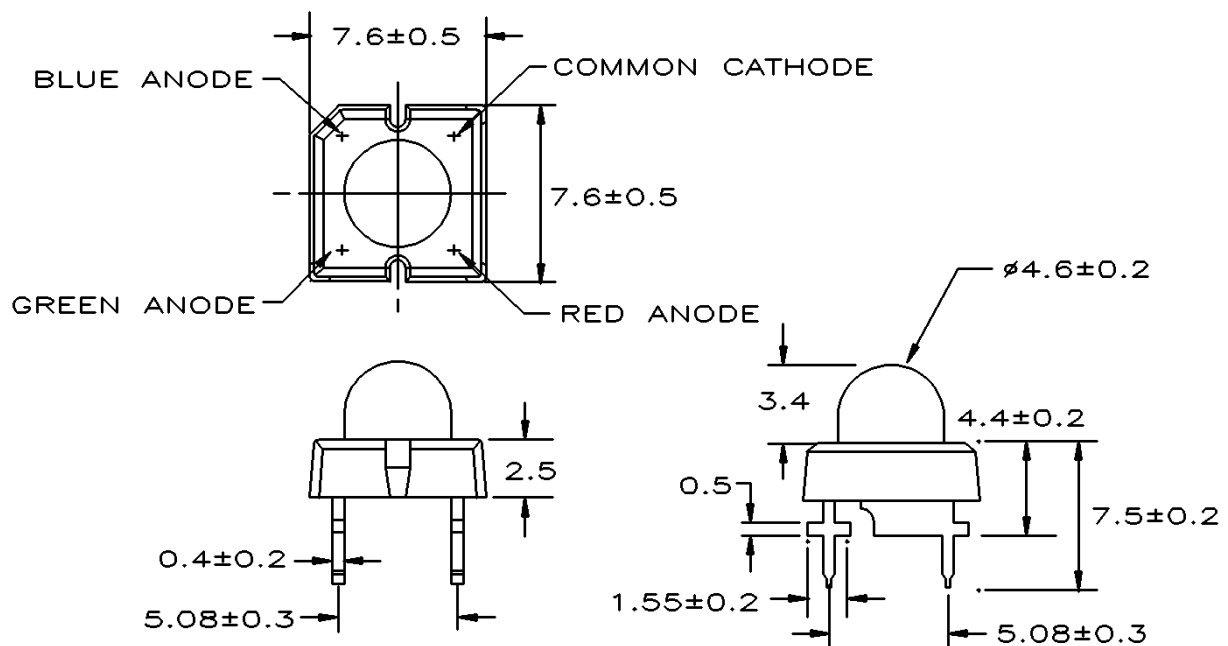
High Luminous Output at  
Lower Current Levels

- \* Meets SAE/ECE/JIS Automotive Colors
- \* Packaged in tubes for automatic insertion
- \* Ideal for Electronic Signs and Signals
- \* Can replace HPWA(T)-D in some applications

### Description

The full-color lamps are made with Tri-Color chips , AlGaInP hyper red and InGaN true green and InGaN blue chips , and water clear epoxy resin.

### Package Dimensions



Notes :

1. All dimensions are in millimeters.
2. Protruded resin under flange is 1.0mm max.
3. Tolerance is  $\pm 0.25$ mm unless otherwise noted.

Part No.	Led Chip		Lens Color
	Material	Emitting Color	
LT9F63-AT-RGB	AlGaInP	Hyper Red	Water Clear
	InGaN	True Green	
	InGaN	Blue	



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### Absolute Maximum Ratings at Ta=25°C :

#### Hyper Red

Parameter	Symbol	Rating	Unit
Power Dissipation	Pd	96	mW
Reverse Voltage	Vr	4	V
D.C. Forward Current	If	40	mA
Peak Current (1/10 Duty Cycle,0.1ms pulse width)	If (Peak)	100	mA
Operating Temperature Range	Topr	-40 to +85	°C
Storage Temperature Range	Tstg	-40 to +100	°C
Lead Soldering Temp. (4mm from body) for 5 seconds		260	260

### Electrical and Optical Characteristics :

#### Hyper Red

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Luminous Intensity	Iv	If=20mA	350	650		mcd
Forward Voltage	Vf	If=20mA		2.1	2.4	V
Peak Wavelength	$\lambda p$	If=20mA		632		nm
Dominant Wavelength	$\lambda d$	If=20mA		625		nm
Reverse Current	Ir	Vr=4V			100	$\mu A$
Viewing Angle	$2\theta 1/2$	If=20mA		20		deg
Spectrum Line Halfwidth	$\Delta \lambda$	If=20mA		20		nm



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### Absolute Maximum Ratings at Ta=25°C :

#### True Green

Parameter	Symbol	Rating	Unit
Power Dissipation	Pd	76	mW
Reverse Voltage	Vr	5	V
D.C. Forward Current	If	20	mA
Peak Current (1/10 Duty Cycle,0.1ms pulse width)	If (Peak)	100	mA
Operating Temperature Range	Topr	-40 to +85	°C
Storage Temperature Range	Tstg	-40 to +100	°C
Lead Soldering Temp. (4mm from body) for 5 seconds		260	260
Electric Static Discharge Threshold (HBM)		300	V

### Electrical and Optical Characteristics :

#### True Green

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Luminous Intensity	Iv	If=20mA	400	700		mcd
Forward Voltage	Vf	If=20mA		3.2	3.8	V
Dominant Wavelength	$\lambda d$	If=20mA		525		nm
Reverse Current	Ir	Vr=5V			50	$\mu A$
Viewing Angle	$2\theta 1/2$	If=20mA		20		deg



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### Absolute Maximum Ratings at Ta=25°C :

#### Blue

Parameter	Symbol	Rating	Unit
Power Dissipation	Pd	76	mW
Reverse Voltage	Vr	5	V
D.C. Forward Current	If	20	mA
Peak Current (1/10 Duty Cycle,0.1ms pulse width)	If (Peak)	100	mA
Operating Temperature Range	Topr	-40 to +85	°C
Storage Temperature Range	Tstg	-40 to +100	°C
Lead Soldering Temp. (4mm from body) for 5 seconds		260	260
Electric Static Discharge Threshold (HBM)		300	V

### Electrical and Optical Characteristics :

#### Blue

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Luminous Intensity	Iv	If=20mA	120	200		mcd
Forward Voltage	Vf	If=20mA		3.2	3.8	V
Dominant Wavelength	$\lambda d$	If=20mA		470		nm
Reverse Current	Ir	Vr=5V			50	$\mu A$
Viewing Angle	$2\theta 1/2$	If=20mA		20		deg

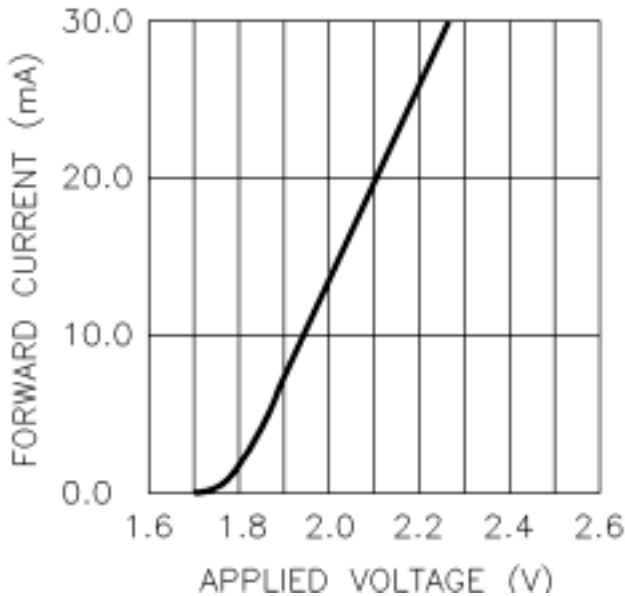


# HIGH POWER LED

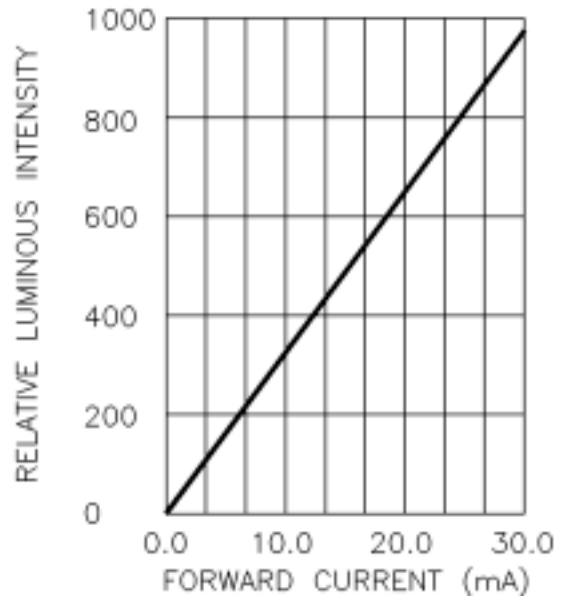
PART NO. : LT9F63-AT-RGB

## Typical Electrical / Optical Characteristics Curves :

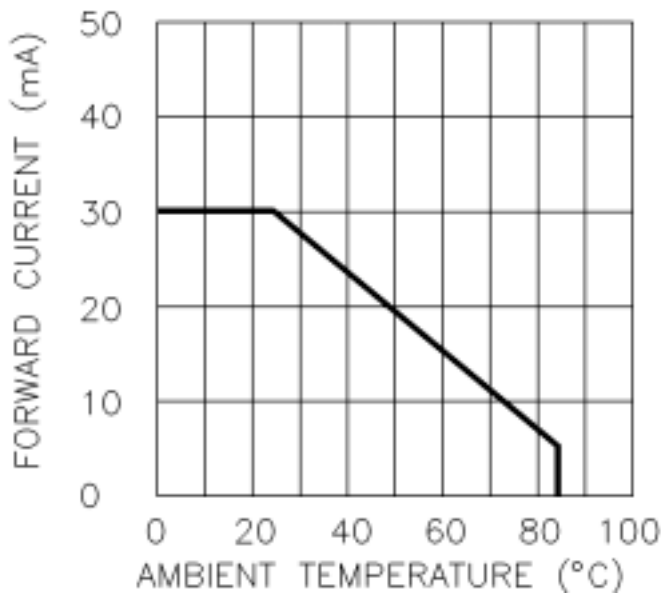
### Hyper Red



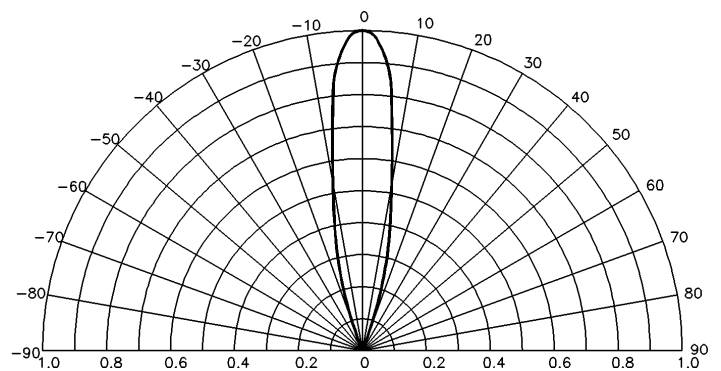
Forward Current vs. Forward Voltage



Forward Current vs. Relative Luminous Intensity



Ambient Temperature vs. Forward Current



Radiation Diagram

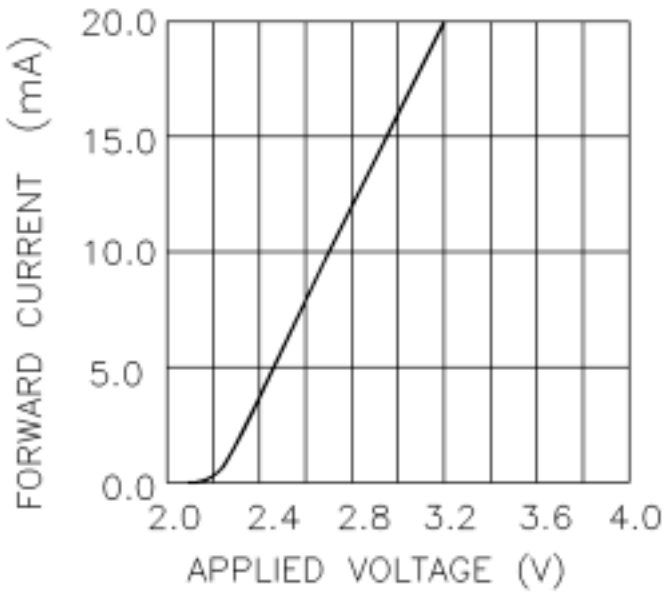


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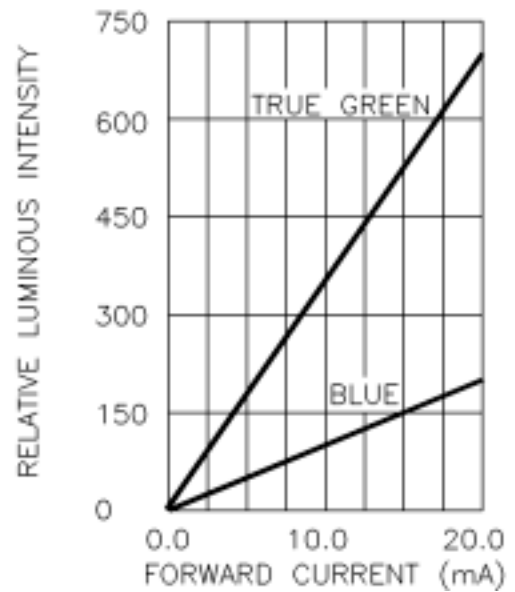
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## Typical Electrical / Optical Characteristics Curves :

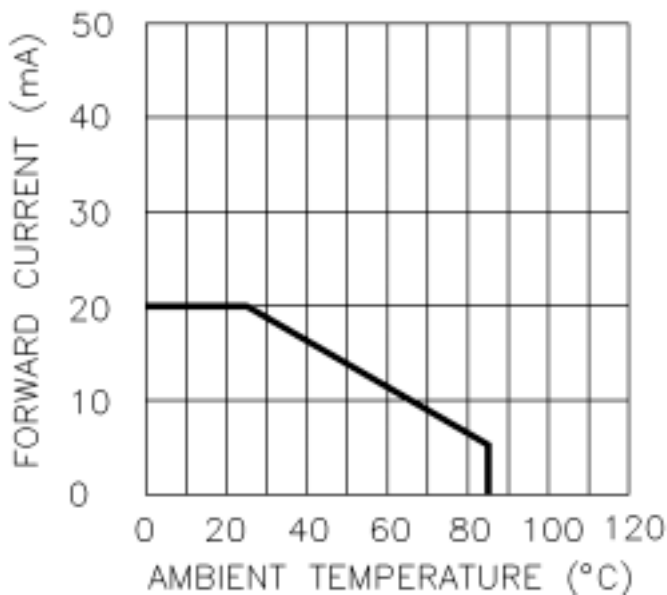
### True Green & Blue



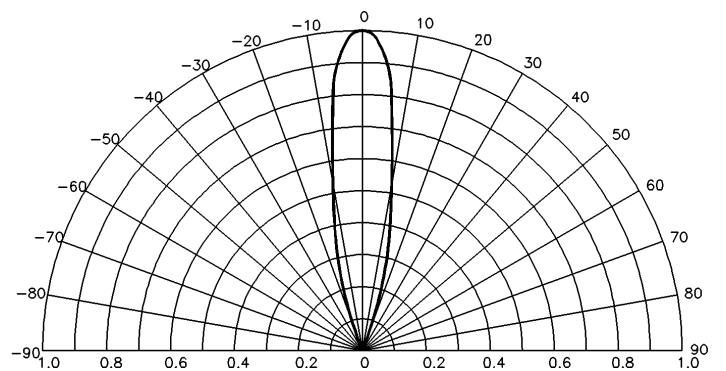
Forward Current vs. Forward Voltage



Forward Current vs. Relative Luminous Intensity



Ambient Temperature vs. Forward Current



Radiation Diagram



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### Reliability Test Method :

Test Item	Test Condition	Duration Time
Operation Life	If=20mA / Ta=25°C	168 hrs
Storage at High Temperature	Ta=100°C	168 hrs
Storage at Low Temperature	Ta=-40°C	168 hrs
Storage at High Temperature/High Humidity	Ta=85°C / RH=85%	168 hrs
Operating at High Temperature	Ta=85°C / If=20mA	168 hrs
Operating at Low Temperature	Ta=-25°C / If=20mA	168 hrs
Thermal Shock	Ta/T=100°C/30min~ - 40°C/30min	10 cycles
Solderability	Tsol=260°C	5 sec

### Criteria for Judging The Damage :

Item	Symbol	Color	Test Condition	Criteria for Judgment	
				Min.	Max.
Forward Voltage	Vf		If=20mA	— — —	Initial Data x1.1
Reverse Current	Ir	Hyper Red True Green Blue	Vr=4V Vr=5V Vr=5V	— — —	100 $\mu$ A 50 $\mu$ A 50 $\mu$ A
Luminous Intensity	Iv		If=20mA	Initial Data x0.8	— — —