

GESMD5050RGBWW

Datasheet



Features :

- High Luminous Intensity
- Based on Blue/Green : InGaN, Red : AlGaInP technology
- Wide viewing angle : 120°
- Excellent performance and visibility
- Suitable for all SMT assembly methods
- IR reflow process compatible
- Environmental friendly; RoHS compliance

Typical Applications :

- Signal and Symbol Luminaire
- Indoor and Outdoor Displays
- Backlighting (illuminated advertising, general lighting)
- Interior Automotive Lighting

Absolute Maximum Ratings

Absolute maximum ratings ($T_a=25^{\circ}\text{C}$)

Parameter	Symbol	Value	Units
DC Forward Current	(R)	35	mA
	(T/B)	30	
Pulse Forward Current ($t_p \leq 100\mu\text{s}$, Duty cycle=0.25)	I_{pulse}	80	mA
		100	
Reverse Voltage	V_R	5	V
LED Junction Temperature	T_j	115	$^{\circ}\text{C}$
Operating Temperature	-	-40 ~ +85	$^{\circ}\text{C}$
Storage Temperature	-	-40 ~ +125	$^{\circ}\text{C}$
ESD Sensitivity (HBM)	V_B	2,000	V
Soldering Temperature	T_s	Reflow Soldering : 255~260 $^{\circ}\text{C}$ /10~30sec Manual Soldering : 350 $^{\circ}\text{C}$ /3sec	

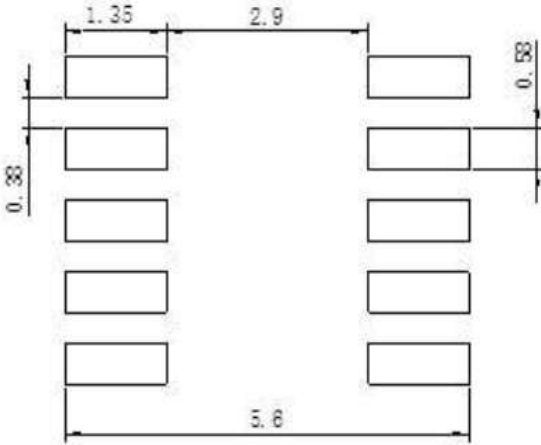
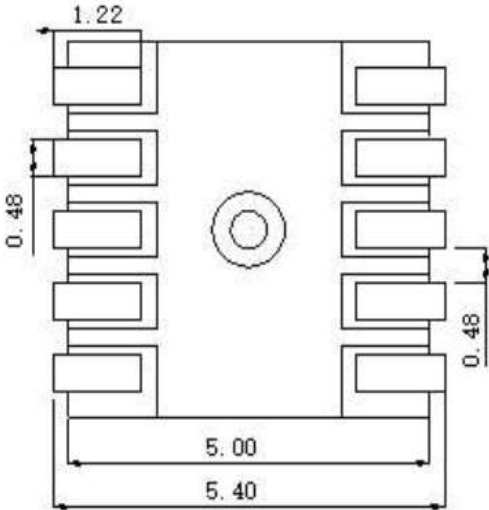
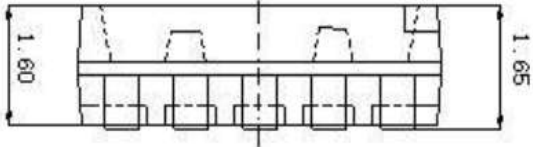
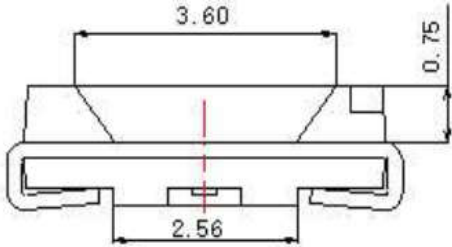
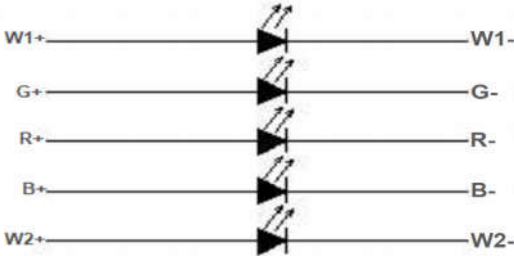
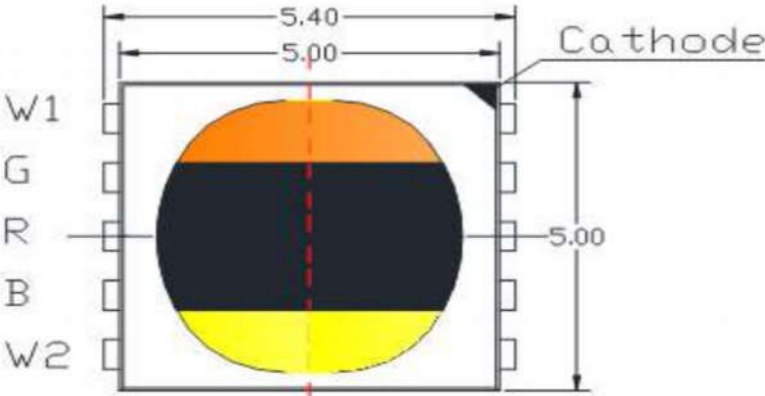
Notes:

- The values are based on 1-die performance.
- * I_{FP} condition: pulse width $\leq 0.1\text{msec}$ and duty $\leq 1/10$.

Electronic optical Parameters

M/N: GESMD5050RGBWW ($T_a=25^{\circ}\text{C}$)							
Parameter	Test condition	Symbol	Color	Value			Unit
				Min	Typ	Max	
Wavelength	$I_f=20\text{mA}$	λ	R	620	625	630	nm
			G	520	525	530	nm
			B	460	465	470	nm
Color Temperature		CCT	W1	2400	2500	2600	K
			W2	6300	6500	6700	K
Forward Voltage	$I_f=20\text{mA}$	VF	R	1.8	2.0	2.2	V
			G	3.0	3.2	3.4	V
			B	3.0	3.2	3.4	V
			W	3.0	3.2	3.4	V
Luminous Intensity	$I_f=20\text{mA}$	Iv	R	600	640	720	mcd
			G	1500	1650	1800	mcd
			B	400	450	500	mcd
			W1	1900	2000	2100	mcd
			W2	2000	2100	2200	mcd
View angle	$I_f=20\text{mA}$	θ		120		Deg	
Reverse current	$I_f=20\text{mA}$	Ir		10		μA	

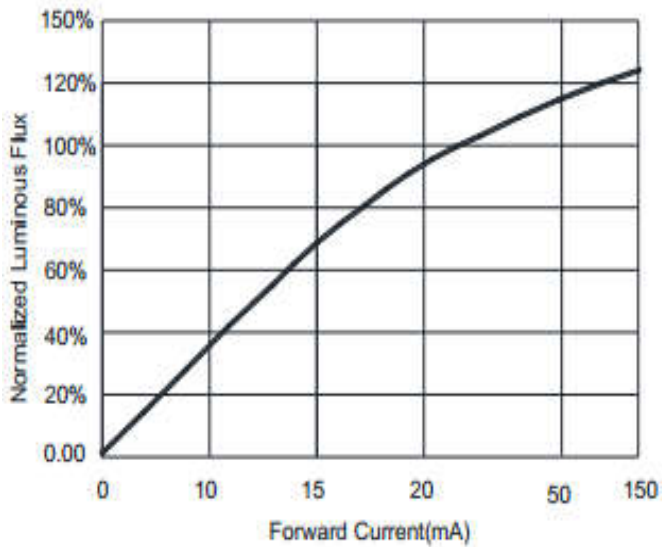
Mechanical Dimensions



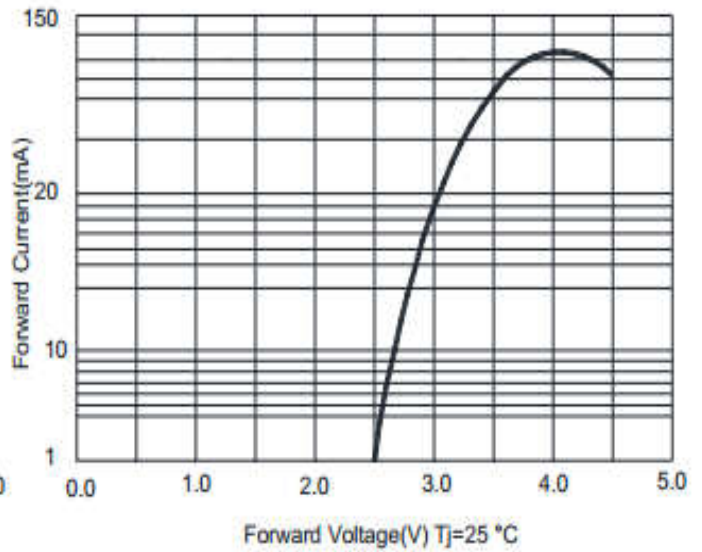
- Notes:
- 1. All dimensions are measured in mm.
 - 2. Tolerance : ± 0.2 mm

Characteristic Curve

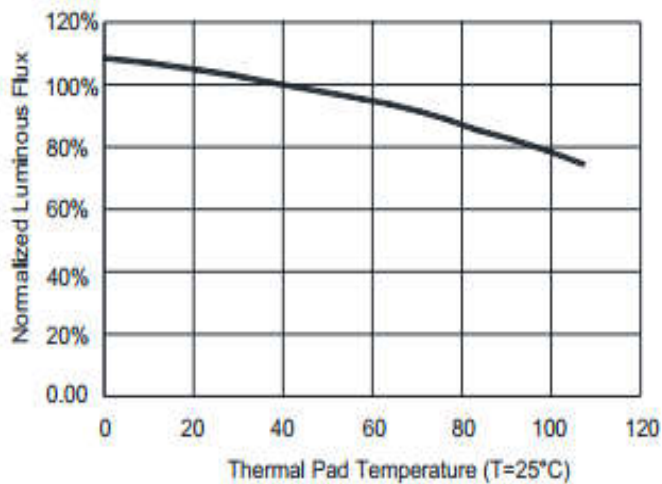
Typical Relative Luminous Flux vs. Forward Current



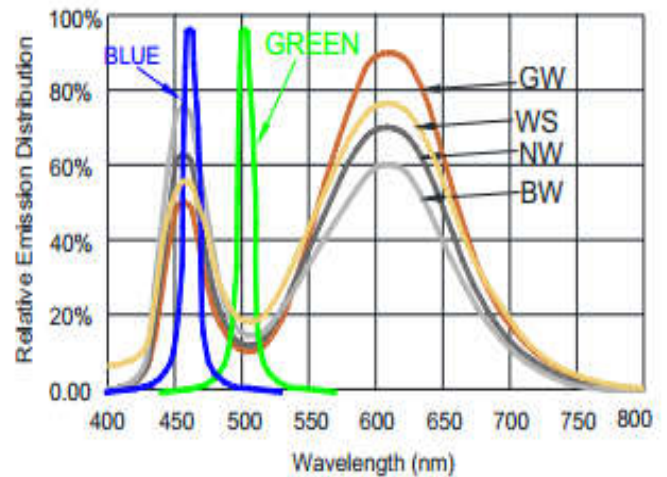
Forward Voltage vs. Forward Current



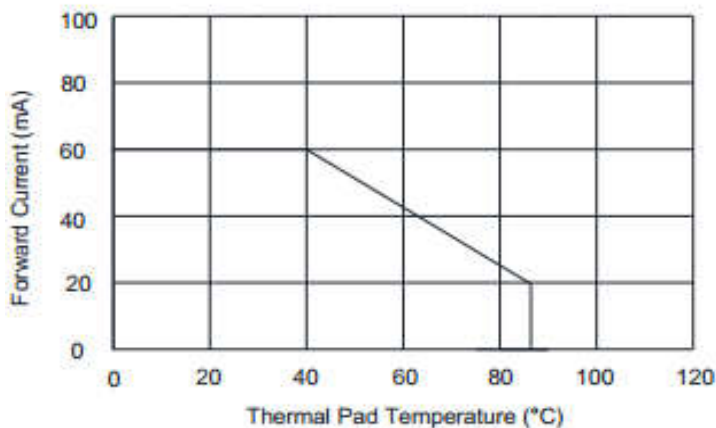
Thermal Pad Temperature vs. Relative Light Output



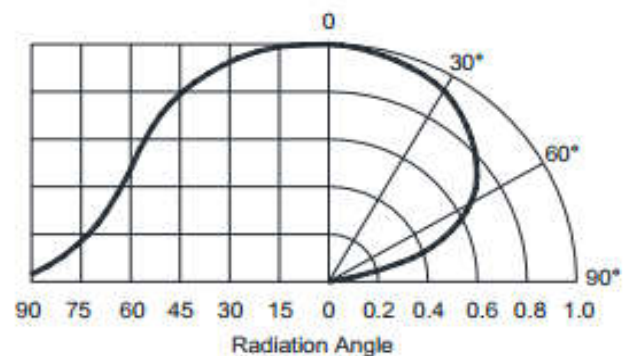
Wavelength Characteristics



Thermal Pad Temperature vs. Forward Current

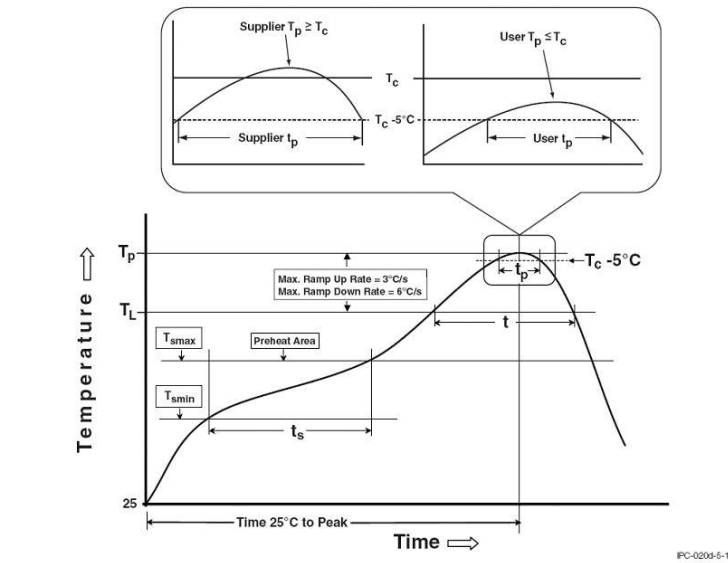


Typical Radiation Pattern 120°



Reflow Profile

The following reflow profile is from IPC/JEDEC J-STD-020D which provided here for reference.



Reflow Profiles

Classification Reflow Profiles

Profile Feature	Pb-Free Assembly
Preheat & Soak	150 °C
Temperature min (T _{min})	200 °C
Temperature max (T _{max})	60-120 seconds
Time (T _{min} to T _{max}) (t _s)	
Average ramp-up rate (T _{max} to T _p)	3 °C/second max.
Liquidous temperature (T _L)	217 °C
Time at liquidous (t _L)	60-150 seconds
Peak package body temperature (T _p)*	255 °C ~260 °C *
Classification temperature (T _c)	260 °C
Time (t _p)** within 5 °C of the specified classification temperature (T _c)	30** seconds
Average ramp-down rate (T _p to T _{max})	6°C/second max.
Time 25°C to peak temperature	8 minutes max.

Notes:

- * Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.
- ** Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

Reliability

NO .	Test Item	Test Condition	Remark
1	Temperature Cycle	-40°C~100°C 30, 30, mins	100 Cycle
2	Thermal Shock	-40°C~100°C 15, 15 mins ≤ 10 sec	100 Cycle
3	Resistance to Soldering Heat	T _{SOL} =260°C, 30 sec	3 times
4	Moisture Resistance	25°C~65°C 90% RH 24 hrs / 1 cycle	10 Cycle
5	High-Temperature Storage	T _A =100°C	1,000 hrs
6	Humidity Heat Storage	T _A =85°C RH=85%	1,000 hrs
7	Low-Temperature Storage	T _A =-40°C	1,000 hrs
8	Operation Life test	25°C	1,000 hrs
9	High Temperature Operation Life test	85°C	1,000 hrs
10	High Humidity Heat Life Test	85°C, 85%RH	1,000 hrs
11	ON/OFF Test	30 sec ON, 30 sec OFF	1.5W times

Failure Criteria

Item	Criteria for Judgment	
	Min.	Max.
Lumen Maintenance	85%	-
$\Delta u'v'$	-	0.006
Forward Voltage	-	Initial Data x 1.1
Reverse Current	-	10 μ A
Resistance to Soldering Heat	No dead lamps or visual damage	

