

SPC No.	Version	Issue Date	Approval	Making
230420003	B	2023-4-20	Mr Chiang	Ms Lee

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 ($T_s=25^{\circ}\text{C}$)

Parameter	Symbol	Value	Units
DC Forward Current	(R)	20	mA
	(G/B)	20	
Pulse Forward Current ($t_p \leq 100\mu\text{s}$, Duty cycle=0.25)	I_{pulse}	30	mA
		30	
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	

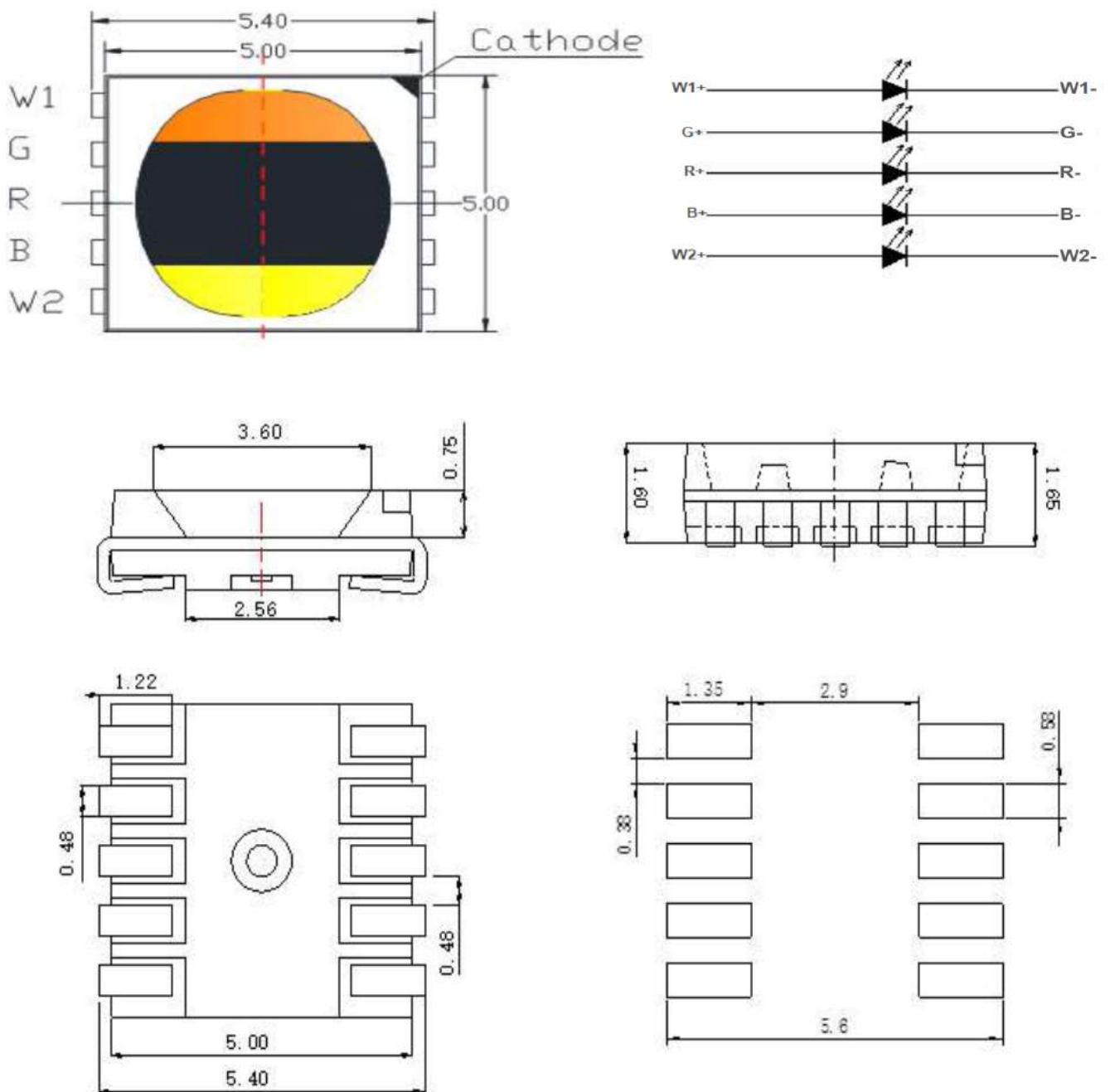
Notes:

- 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

Model Number: GESMD5050RGBWW at 25 $^{\circ}\text{C}$							
Parameter	Condition	Symbol	Color/CCT	Min	Typical	Max	Unit
Wavelength	IF=20mA	Wd (λ)	R	620	-	625	nm
			G	520	-	525	
			B	465	-	470	
Color Temp	IF=20mA	CCT	WW	2400	-	2600	K
			-	-	-	-	-
			CW	6000	-	7000	K
CRI	IF=20mA	Ra	white	80	-	85	-
Forward Voltage	IF=20mA	VF	R	1.8	2.0	2.2	V
			G	2.8	3.0	3.2	
			B/W	2.8	3.0	3.2	
Luminous Flux	IF=20mA	IV	R	600	-	900	MCD
			G	1500	-	2000	
			B	400	-	600	
			WW	2000	-	2200	
			CW	2200	-	2600	
Beam Angle	IF=20mA	2θ 1/2	-	-	120 $^{\circ}$	-	-
Reverse Current	IF=20mA	IR	-	-	-	10	μA
Note: Luminous flux performance is guaranteed within published operation condition, GREELED maintains a tolerance of $\pm 10\%$							

Mechanical Dimensions

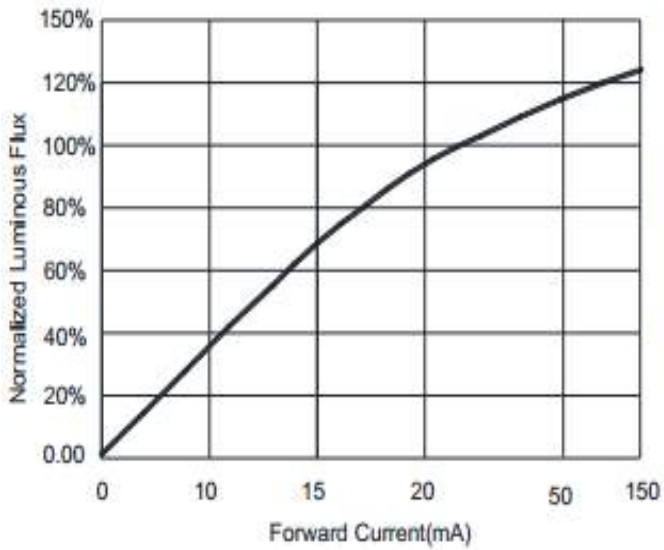


Notes:

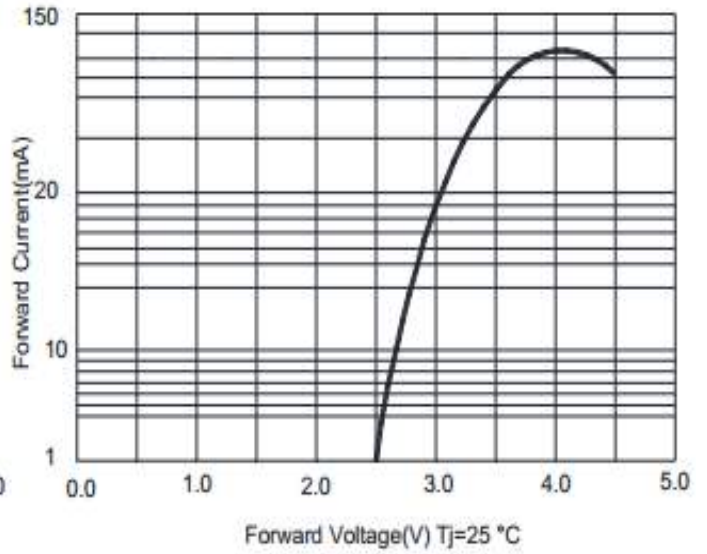
1. All dimensions are measured in mm.
2. Tolerance : ± 0.2 mm

Characteristic Curve

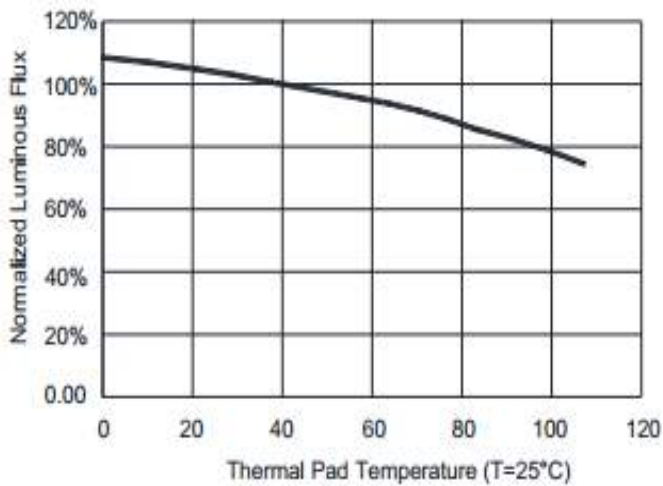
Typical Relative Luminous Flux vs. Forward Current



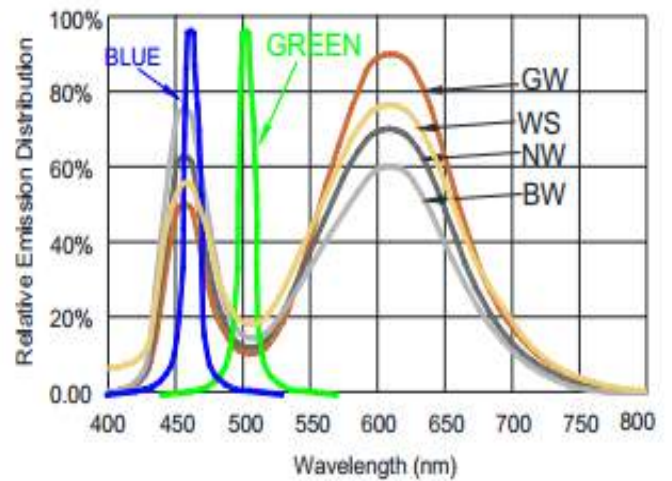
Forward Voltage vs. Forward Current



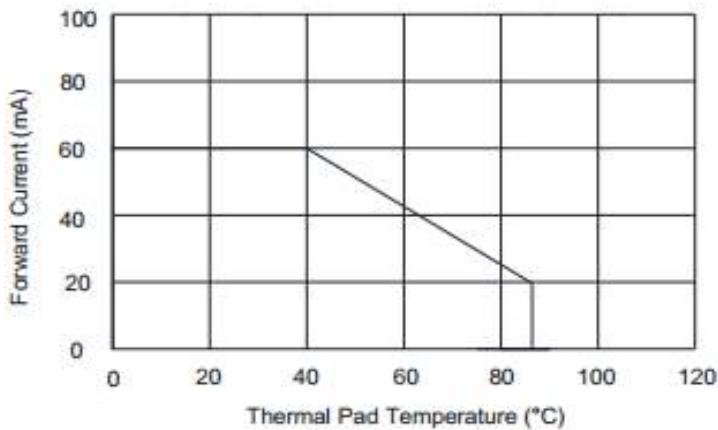
Thermal Pad Temperature vs. Relative Light Output



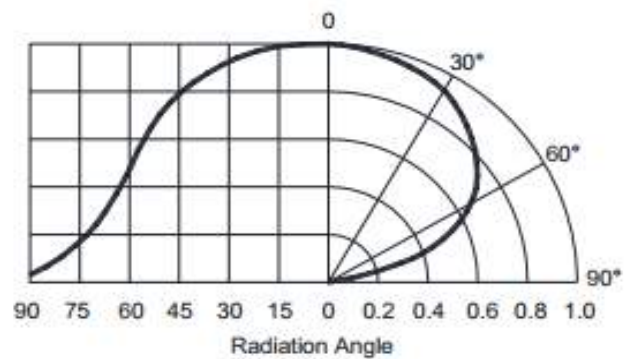
Wavelength Characteristics



Thermal Pad Temperature vs. Forward Current

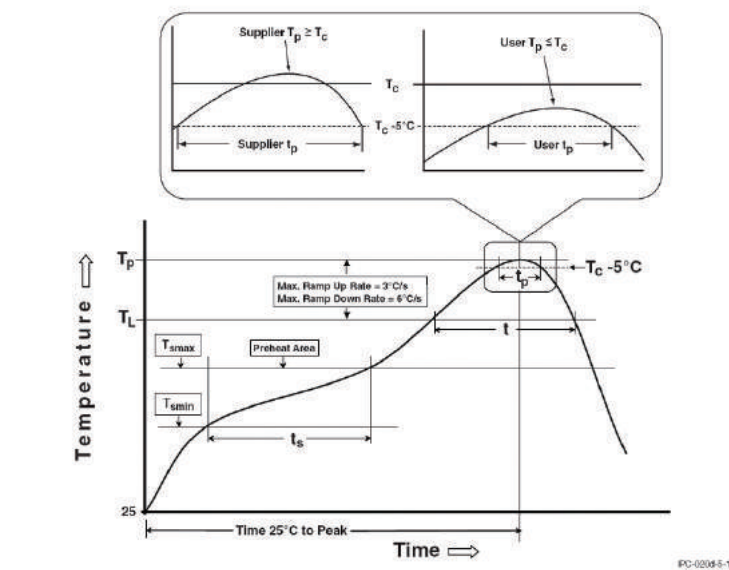


Typical Radiation Pattern 120°



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 (Tsmn)	200 °C
Temperature max (Tsmx)	60-120 seconds
Time (Tsmn to Tsmx) (ts)	
Average ramp-up rate (Tsmx to Tp)	3 °C/second max.
Liquidous temperature (TL)	217 °C
Time at liquidous (tL)	60-150 seconds
Peak package body temperature (Tp)*	255 °C ~260 °C *
Classification temperature (Tc)	260 °C
Time (tp)** within 5 °C of the specified classification temperature (Tc)	30** seconds
Average ramp-down rate (Tp to Tsmx)	6°C/second max.
Time 25°C to peak temperature	8 minutes max.

Notes:

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

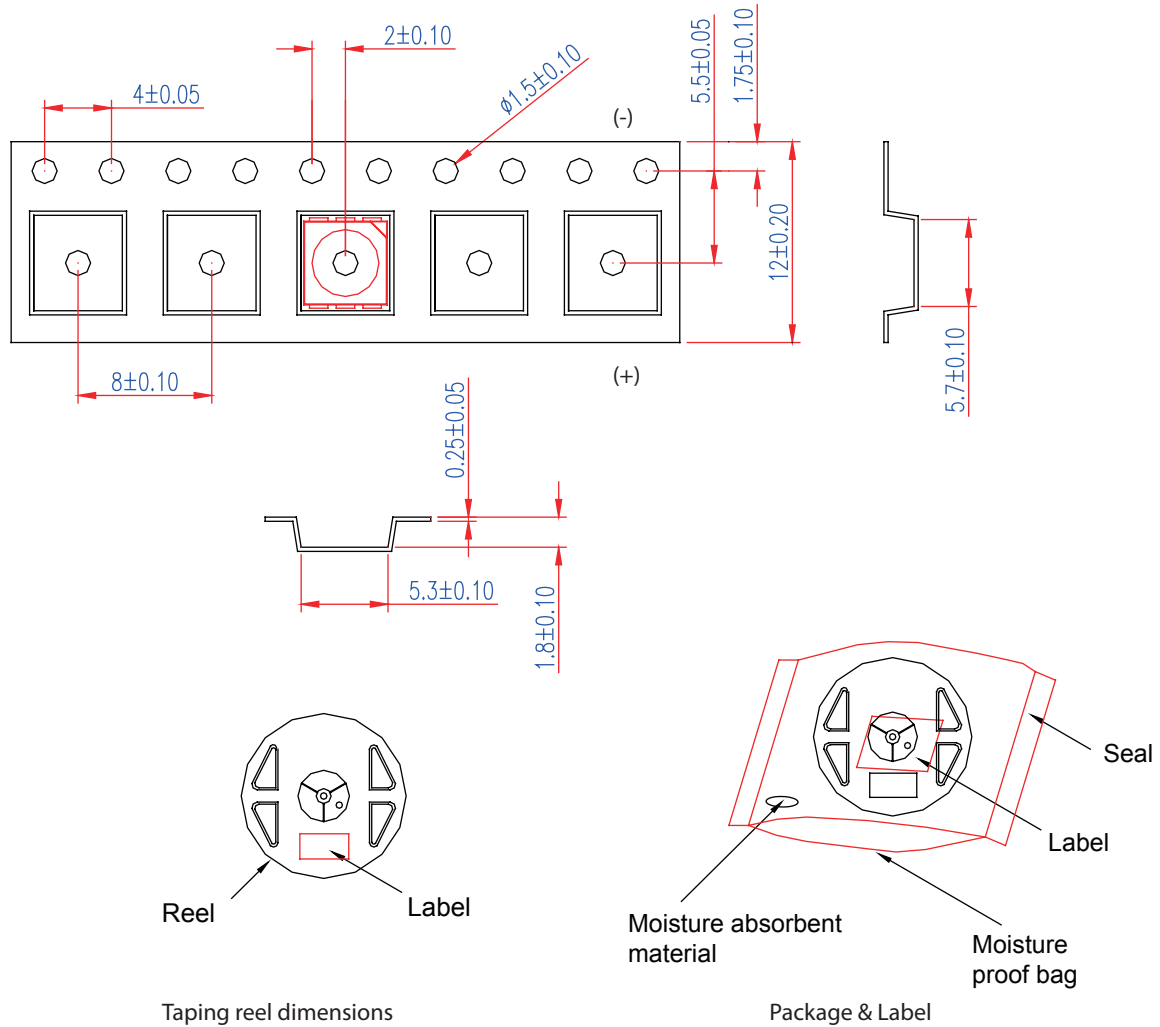
Reliability

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	

Product Packaging Information



Model	Package	Emitting Color	QTY/Reel	Reel/CTN
GESMD5050RGBWW	SMD5050 5IN1	RGB+WW+CW	1k/Reel	50Reel/CTN

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