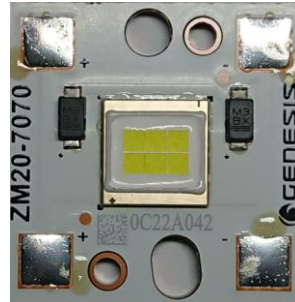


MATCH LED



ZGM20-6GX

Product Code: C7C2-CR40601XD0A-000

Table of Contents

REVISION HISTORY	1
PRODUCT CHARACTERISTICS ($T_j = 25\text{ }^\circ\text{C}$; $I_F = 1500\text{ mA}$)	2
JEDEC MOISTURE SENSITIVITY	2
BRIGHTNESS GROPPES	2
PERFORMANCE GROUPS – FORWARD VOLTAGE ($I_F = 1500\text{ mA}$)	3
MAXIMUM RATINGS	3
RELATIVE LUMINOUS FLUX VS. CURRENT ($T_B = 25\text{ }^\circ\text{C}$)	4
RELATIVE LUMINOUS FLUX VS. JUNCTION TEMPERATURE ($I_F = 1500\text{ mA}$)	5
FORWARD VOLTAGE VS. FORWARD CURRENT ($T_B = 25\text{ }^\circ\text{C}$)	5
CHROMATICITY COORDINATE SHIFT ($T_B = 25\text{ }^\circ\text{C}$)	6
CHROMATICITY COORDINATE SHIFT ($I_F = 1500\text{ mA}$)	6
RELATIVE FORWARD VOLTAGE ($I_F = 1500\text{ mA}$)	7
GPI'S STANDARD WHITE CHROMATICITY REGINS PLOTTED ON THE 1931 CIE CURVE	7
PERFORMANCE GROUPS – CHROMATICITY	8
Electrical Internal Circuit.....	8
ESD Protection Diode	8
RELIABILITY	9
MECHANICAL DIMENSIONS.....	10
TRAY	11
CAUTIONS	12

REVISION HISTORY

Rev.	Date	Charged	Approved	Revision Summary
A	2021/01/11	Hurry	Bruce	<i>First issue</i>

PRODUCT CHARACTERISTICS (T_j = 25 °C; I_f = 1500 mA)

Parameter	Values	Unit
Chromaticity coordinates acc. To CIE 1931 (typ.)	CIE-x : 0.323 CIE-y : 0.333	
Viewing Angle (FWHM)	120	°
Forward voltage	(min.) 18.0 (typ.) 19.8 (max.) 21.6	V V V
Reversed Current	not designed for reversed operation	
Thermal resistance junction / board (typ.)	1.0	K/W
Radiating surface	12.61	mm ²

JEDEC MOISTURE SENSITIVITY

Level	Floor Life	
	Time	Conditions
1	unlimited	≤ 30°C / 85 % RH

BRIGHTNESS GROUPS

Item	Group	Form Factor	Measured Test Condition 1500 mA Pulsed Operation Case Temperature T _c = 25°C Minimum Luminous Flux (lm)
ZGM20-6GX	Z30	2x3	2850
	Z31	2x3	3170
	Z32	2x3	3520

Notes:

- GPI maintains a tolerance of ±7% on flux
- Calculated flux values are for reference only

PERFORMANCE GROUPS – FORWARD VOLTAGE (IF = 1500 mA)

Group code	Minimum Forward Voltage (V)	Maximum Forward Voltage (V)
SE	17.2	18.4
SF	18.4	19.6
SG	19.6	20.8
SH	20.8	22.0

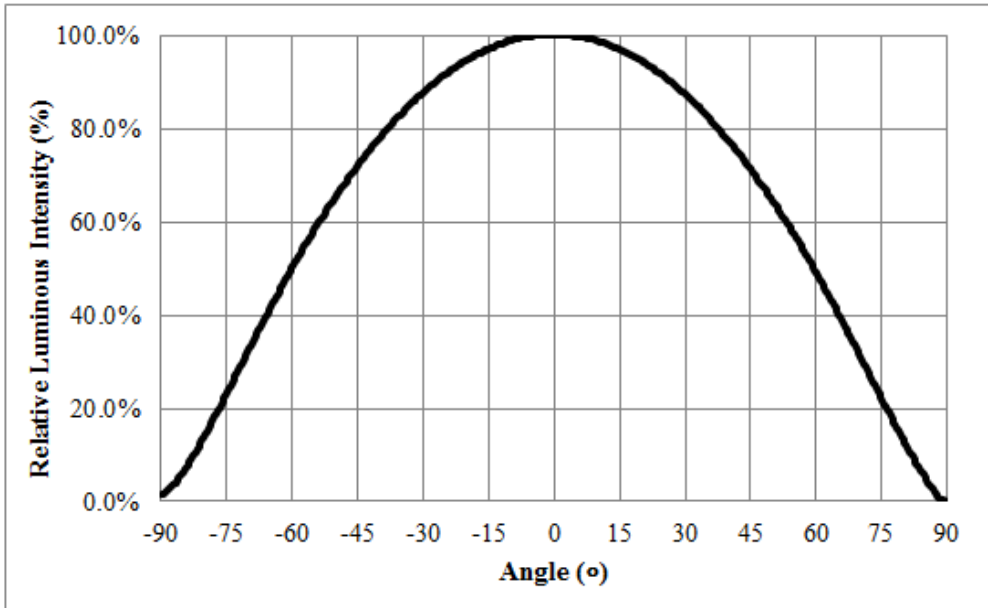
Notes:

- GPI maintains a tolerance $\pm 0.2V$ on voltage measurements

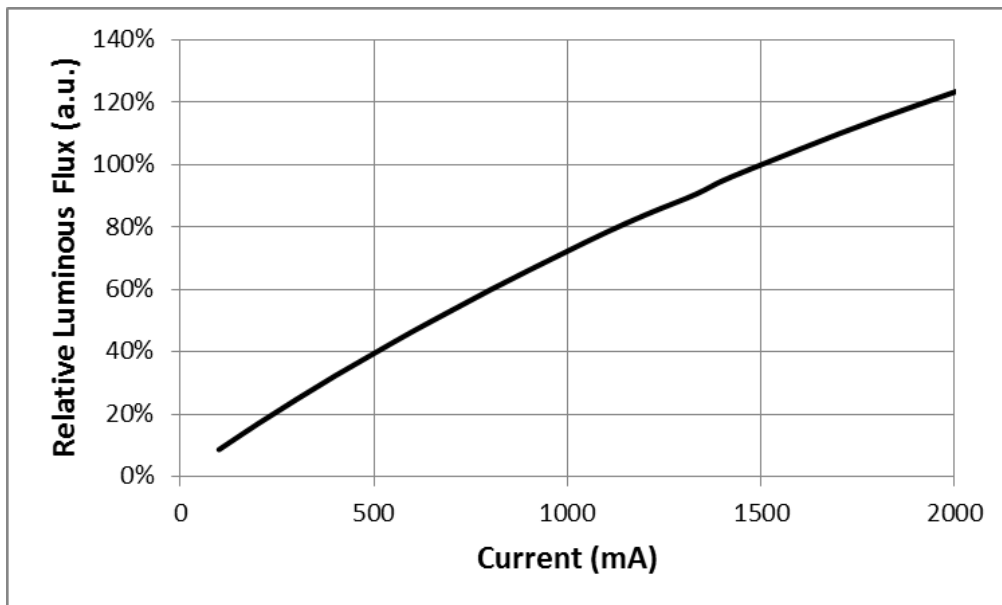
MAXIMUM RATINGS

Parameter	Values	Unit
Operating temperature range	-40 ... 125	°C
Storage temperature range	-40 ... 125	°C
Junction temperature	150	°C
Forward Current	(typ.) 1500 (max.) 2000	mA mA
Reversed voltage	not designed for reversed operation	V

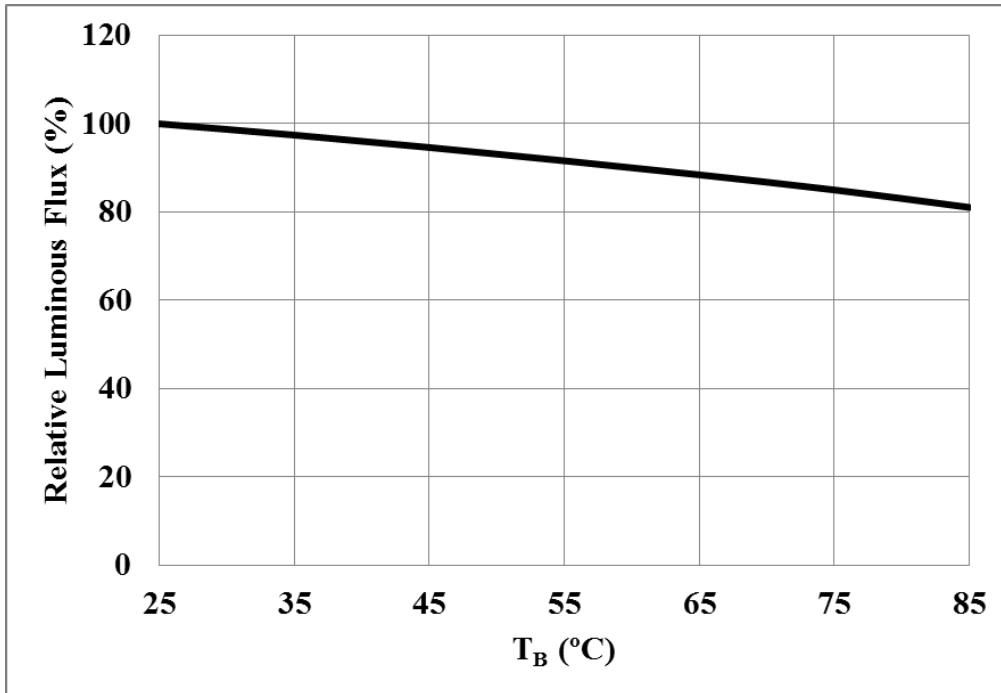
TYPICAL SPATIAL DISTRIBUTION – WHITE



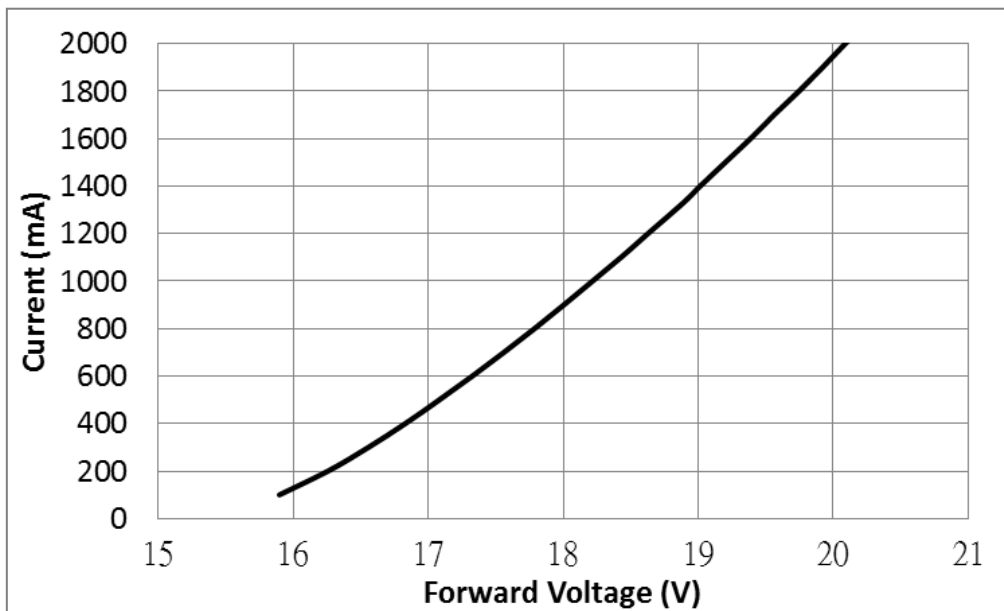
RELATIVE LUMINOUS FLUX VS. CURRENT ($T_B = 25\text{ }^\circ\text{C}$)



RELATIVE LUMINOUS FLUX VS. JUNCTION TEMPERATURE ($I_F = 1500 \text{ mA}$)

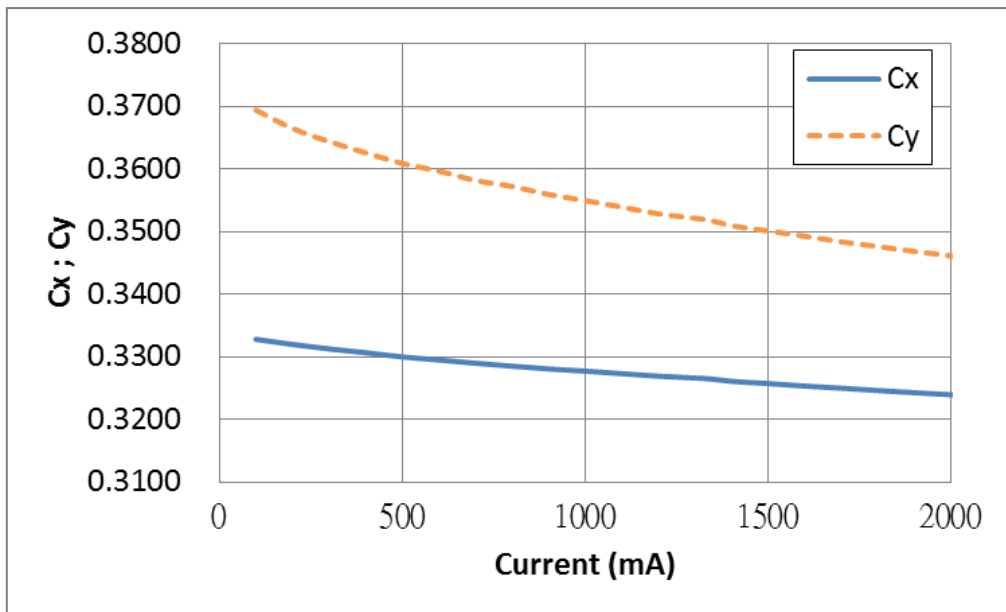


FORWARD VOLTAGE VS. FORWARD CURRENT ($T_B = 25 \text{ °C}$)

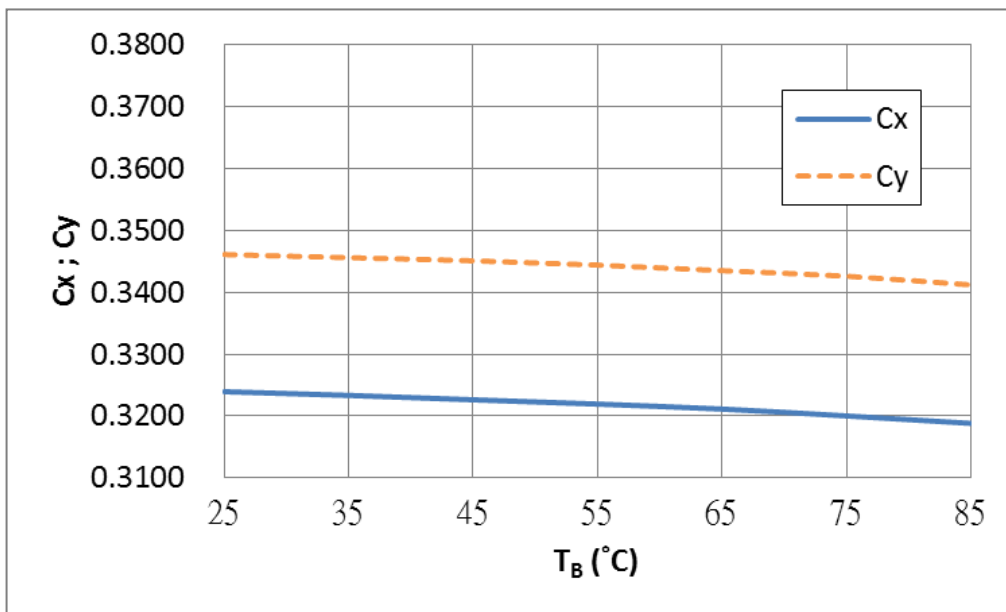


MOD-DS-022 Rev. Beta

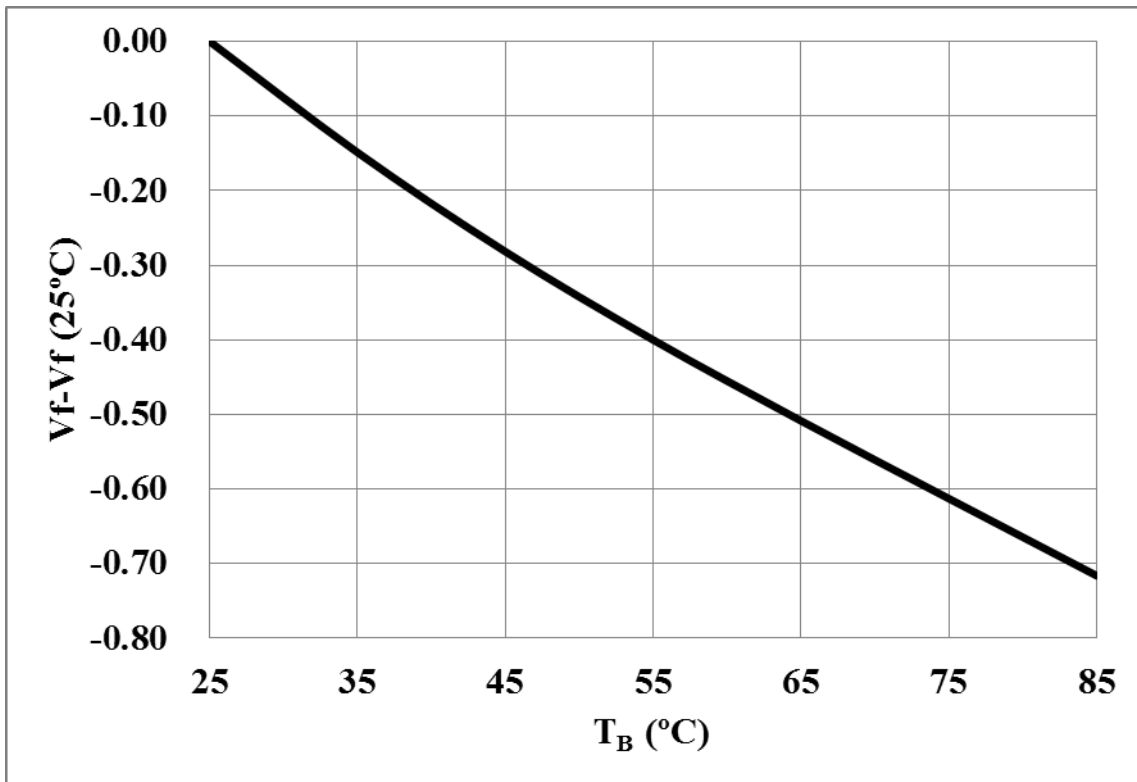
CHROMATICITY COORDINATE SHIFT ($T_B = 25\text{ }^\circ\text{C}$)



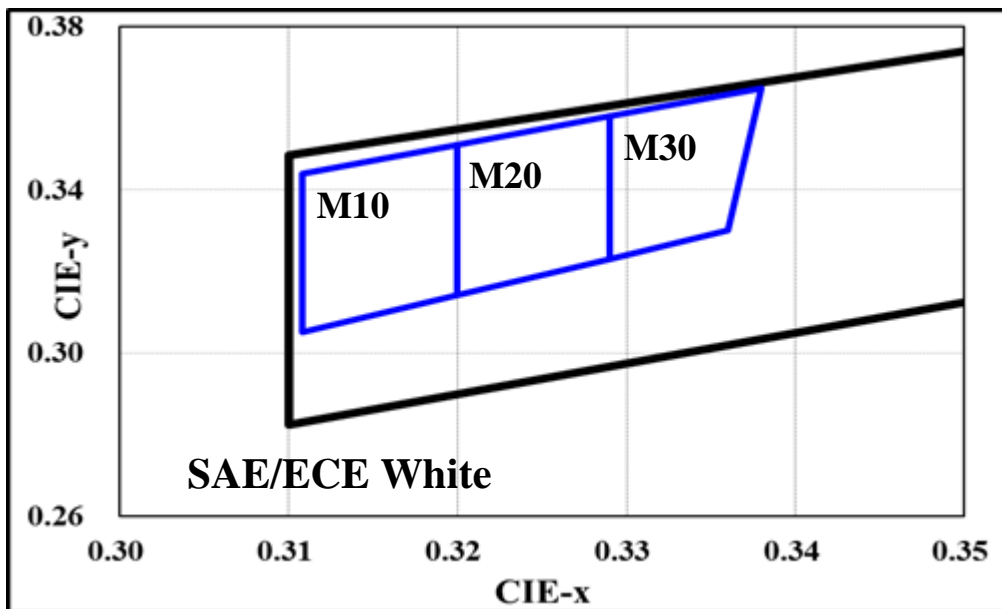
CHROMATICITY COORDINATE SHIFT ($I_F = 1500\text{ mA}$)



RELATIVE FORWARD VOLTAGE ($I_f = 1500 \text{ mA}$)



GPI'S STANDARD WHITE CHROMATICITY REGINS PLOTTED ON THE 1931 CIE CURVE



MOD-DS-022 Rev. Beta

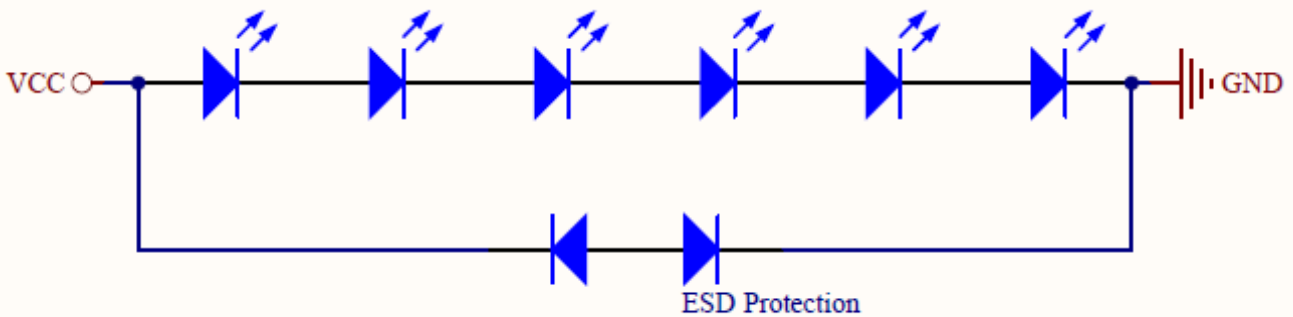
PERFORMANCE GROUPS – CHROMATICITY

Chromaticity Region	x	y
M10	0.3200	0.3511
	0.3108	0.3440
	0.3108	0.3050
	0.3200	0.3141
M20	0.3200	0.3511
	0.3290	0.3581
	0.3290	0.3231
	0.3200	0.3141
M30	0.3290	0.3581
	0.3380	0.3650
	0.3360	0.3300
	0.3290	0.3231

Notes:

- GPI maintains a tolerance of ± 0.005 on chromaticity (CCx, CCy) measurements

Electrical Internal Circuit



ESD Protection Diode

ELECTRICAL CHARACTERISTICS

Reverse breakdown voltage at I_T , $T_p = 5ms$	Test current	Reverse working voltage	Reverse current at V_{RWM}	Peak pulse current $T_p = 10/1000 \mu s$	Reverse clamping voltage at I_{PPM}
$V_{BR} \text{ MIN}$ (V)	I_T (mA)	$V_{RWM} \text{ MIN}$ (V)	I_R (uA)	I_{PPM} (A)	$V_c \text{ MAX}$ (V)
26.7	1	24	0.1	5.1	38.9

RELIABILITY

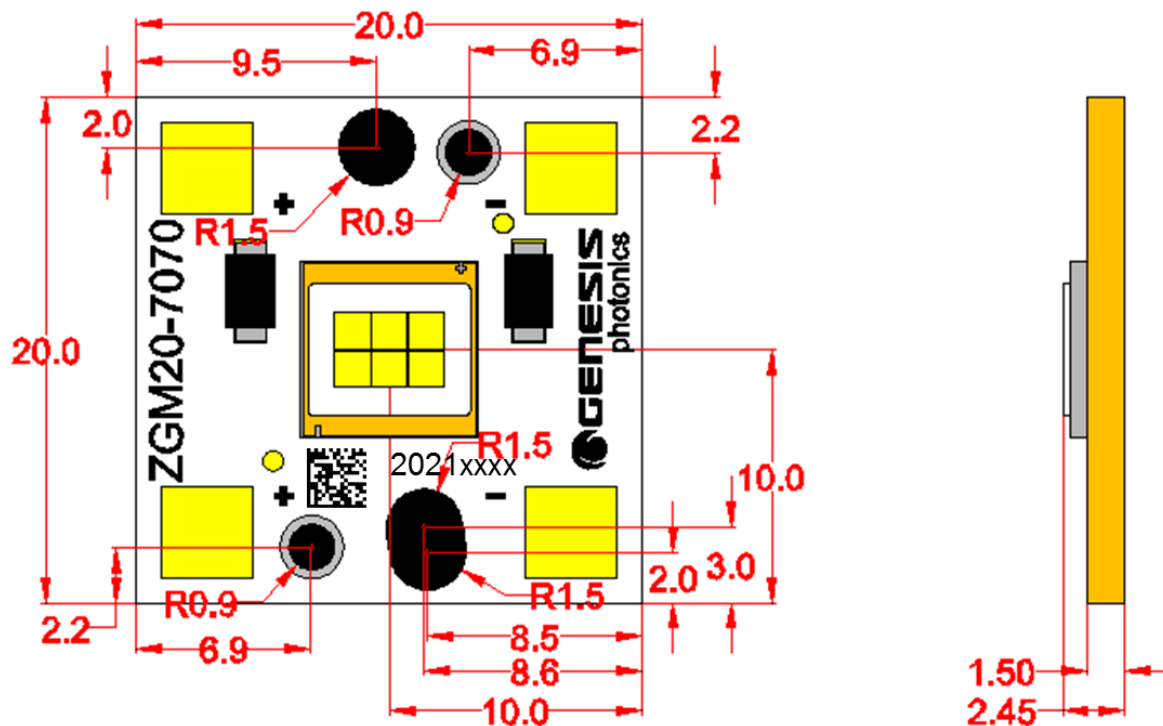
Test Item	Test Conditions	Test Period	Ac/Re
Room Temperature Operating Life (RTOL)	TA=25°C ; IF=2000mA DC	1000hrs	0/1
High Temperature Forward Bias (HTFB)	TA=85°C ; IF=2000mA DC	1000 hours	0/1
High Temperature High Humidity Bias (HTHHB)	TA=85°C ; 85% humidity IF=2000mA DC	1000 hours	0/1
Temperature Cycle (TC)	-40°C / 125°C 15min dwell, 5min transfer	1000 cycles	0/1
Power and Temperature Cycle (PTC)	-40°C / 85°C 10min dwell, 10min transfer t _{on/off} = 5 min, IF=2000mA DC	1000 cycles	0/1

Notes:

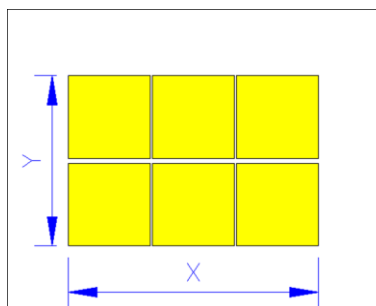
- No catastrophic (LED Fail)
- Lumen maintenance > 85%
- Change in Vf < 10%
- Change in white color point $\Delta x \Delta y \pm 0.01$
- No corrosion
- Moisture Sensitivity Level 1 (IPC/JEDEC J-STD-020)
- AEC-Q102 qualified

MECHANICAL DIMENSIONS

All measurements are ± 0.20 mm unless otherwise indicated.



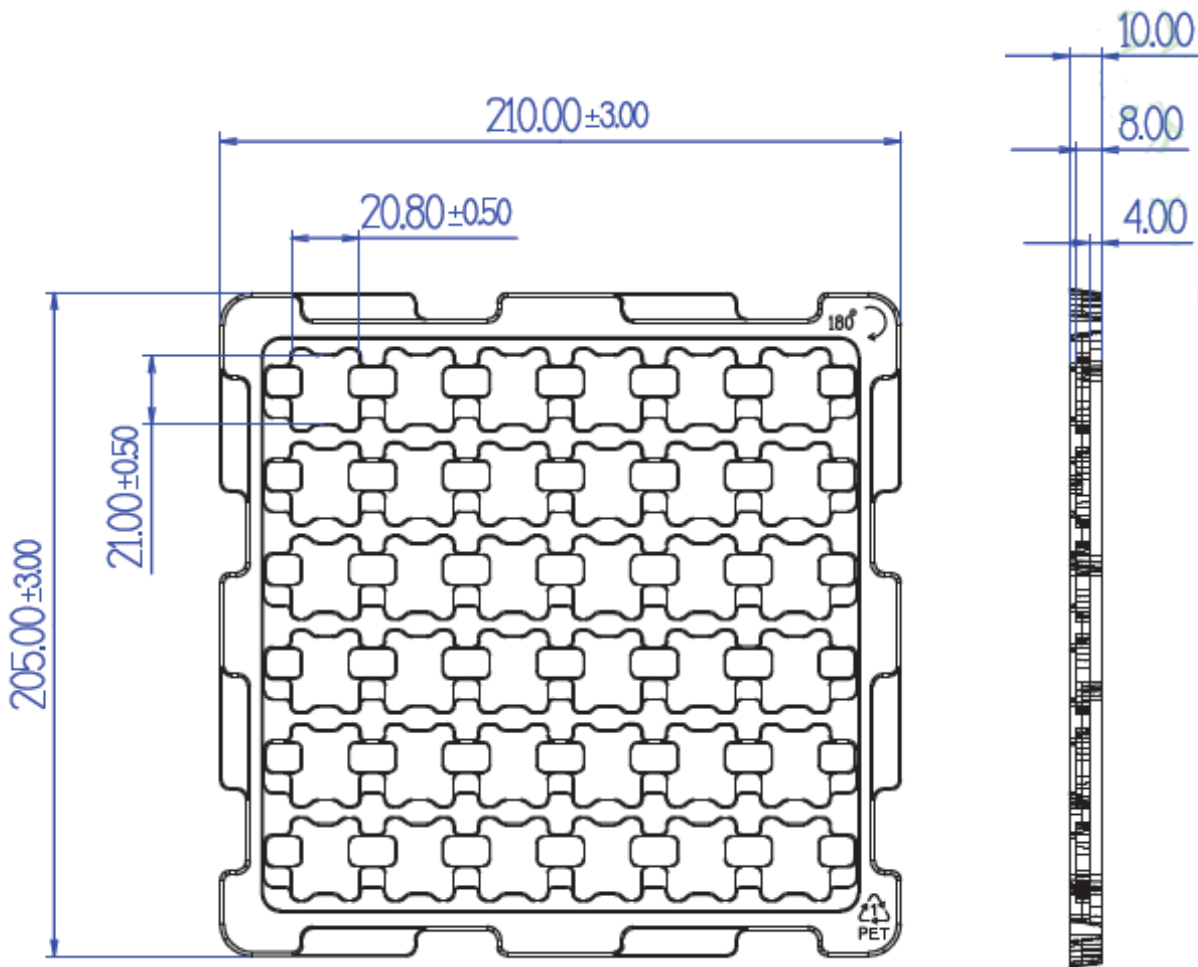
Unit: mm



Emitting Area:
X: 4.3mm* Y: 2.9mm

TRAY

36 pcs. per tray



CAUTIONS

1. Moisture Sensitivity

In testing, GPI has found ZGM20-6GX LEDs to have unlimited life in condition $\leq 30^{\circ}\text{C}$ / 85% relative humidity (RH). Moisture testing included a 168-hr soak at $85^{\circ}\text{C}/60\%$ RH followed by 3 times reflow cycles, with visual and electrical inspections at each stage.

GPI recommends keeping ZGM20-6GX LEDs in their sealed moisture-barrier packaging until immediately prior to use. GPI also recommends returning any unusual LEDs to the re-sealable moisture-barrier bag and closing the bag immediately after use.

2. Handling Precautions

Do not hand touch the light emitting surface of the LED package and it may contaminate the LED surface and affect optical characteristics. Ensure that when handling the LEDs with a vacuum pen, excessive force is not applied to the LED. The suction tip should be made of a soft material such as rubber to minimize the mechanical force exerted onto the top surface of the LED and apply no forces to the silicone side coat layer.

Avoid contaminating the surface of the LED package and do not stick any tape on top of the light emitting surface, such as Kapton tape, UV-tape...etc. A contamination of glue or its invisible constituent parts may change the LED performance.

Do not stack finished boards to avoid the LED package be damaged by the other boards. In addition, do not put finished boards with the emitting surface top side down on any surface. The surface of a worktable may be rough to damage the light emitting surface.

3. Eye safety

Warning: do not look at exposed lamp in operation. Eye injury can result.

4. Static Electricity

Wristbands and anti-electrostatic gloves are strongly recommended and all devices, equipment and machinery must be properly grounded when handling the LEDs, which are sensitive against static electricity and surge.

Precautions are to be taken against surge voltage to the equipment that mounts the LEDs.

Unusual characteristics such as significant increase of current leakage, decrease of turn-on voltage or non-operation at a low current can occur when the LED is damaged.

5. Thermal Constraints

The temperature of the package surface is strongly recommended below 200°C in operation