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**QT-Brightek Corporation**

**1.5" 8x8 Dot Matrix**

**Part No.: GMZ15XX88\_series**

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## Introduction

**Feature:**

- Low power consumption
- Packed in foam
- AllInGaP technology for R/S/Y/O/AG
- InGaN technology for IG/IB
- Z=C: Anode Row, Cathode column or A: Anode Column, Cathode Row
- XX= Color

**Description:**

These 1.5" 8x8 dot matrix displays are made with white dots and a grey surface.

**Application:**

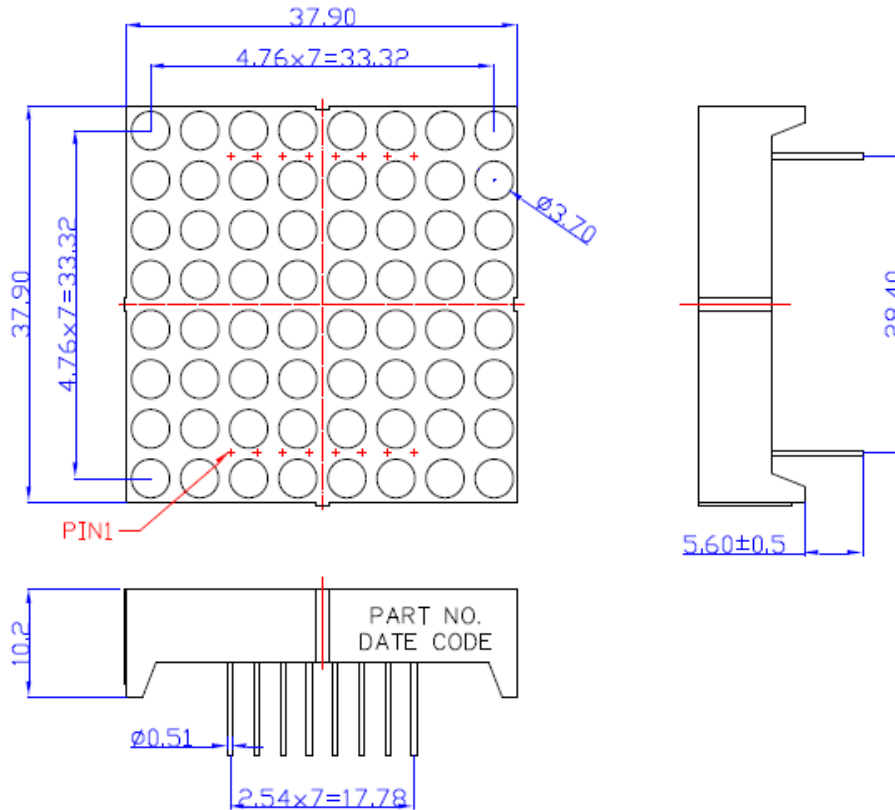
- Instrument panels
- Indoor/Outdoor display board
- Audio equipment

**Certification & Compliance:**

- TS16949
- ISO9001
- RoHS Compliant



**Dimension:**



Units: mm / tolerance = +/-0.25mm



**Electrical / Optical Characteristic (Ta=25 °C)**

Product		Material	Color	I <sub>F</sub> (mA)	V <sub>F</sub> (V)		λ <sub>D</sub> (nm)			I <sub>V</sub> (mcd)
Anode Row, Cathode Column	Anode Column, Cathode Row				Typ.	Max.	Min.	Typ.	Max.	Typ.
GMC15R88	GMA15R88	AllnGaP	Red	20	2.0	2.6	619	624	629	90
GMC15S88	GMA15S88	AllnGaP	Deep Red	20	2.0	2.6	636	639	647	35
GMC15Y88	GMA15Y88	AllnGaP	Yellow	20	2.0	2.6	585	590	595	90
GMC15O88	GMA15O88	AllnGaP	Orange	20	2.0	2.6	601	606	611	90
GMC15AG88	GMA15AG88	AllnGaP	Yellow Green	20	2.1	2.6	566	571	574	25
GMC15IG88	GMA15IG88	InGaN	True Green	20	3.2	4.0	515	525	530	200
GMC12IB88	GMA15IB88	InGaN	Blue	20	3.0	4.0	460	465	470	160

**Absolute Maximum Rating**

Material	P <sub>d</sub> (mW)	Derating liner from 25 °C per dice (mA/ °C)	I <sub>F</sub> (mA)	I <sub>FP</sub> (mA)*	V <sub>R</sub> (V)	T <sub>OP</sub> (°C)	T <sub>ST</sub> (°C)
AllnGaP	70	0.33	25	90	5	-25 to +85	-25 to +85
InGaN	120	0.4	30	100	5	-25 to +85	-25 to +85

\*Duty 1/10 @ 1KHz

**Luminous Intensity I<sub>V</sub> for Red @ I<sub>F</sub>=20mA**

Bin	Min.	Max.	Unit
R	60	90	mcd
S	90	120	
T	120	150	
U	150	180	

**Luminous Intensity I<sub>V</sub> for Deep Red @ I<sub>F</sub>=20mA**

Bin	Min.	Max.	Unit
P	17	35	mcd
Q	35	53	
R	55	72	

**Luminous Intensity  $I_V$  for Yellow @  $I_F=20\text{mA}$** 

Bin	Min.	Max.	Unit
R	60	90	mcd
S	90	120	
T	120	150	
U	150	180	

**Luminous Intensity  $I_V$  for Orange @  $I_F=20\text{mA}$** 

Bin	Min.	Max.	Unit
R	60	90	mcd
S	90	120	
T	120	150	
U	150	180	

**Luminous Intensity  $I_V$  for Yellow Green @  $I_F =20\text{mA}$** 

Bin	Min.	Max.	Unit
M	10	20	mcd
N	20	30	
O	30	40	

**Luminous Intensity  $I_V$  for True Green @  $I_F =20\text{mA}$** 

Bin	Min.	Max.	Unit
R	120	190	mcd
S	190	260	
T	260	330	
U	330	400	

**Luminous Intensity  $I_V$  for Blue @  $I_F=20\text{mA}$** 

Bin	Min.	Max.	Unit
T	120	150	mcd
U	150	180	
V	180	210	

**Dominant Wavelength  $\lambda_D$  for Red @  $I_F =20\text{mA}$** 

Bin	Min.	Max.	Unit
1	619	623	nm
2	623	626	
3	626	629	

**Dominant Wavelength  $\lambda_D$  for Deep Red @  $I_F = 20\text{mA}$** 

Bin	Min.	Max.	Unit
1	636	640	nm
2	640	643	
3	643	647	

**Dominant Wavelength  $\lambda_D$  for Yellow @  $I_F = 20\text{mA}$** 

Bin	Min.	Max.	Unit
1	585	588	nm
2	588	592	
3	592	595	

**Dominant Wavelength  $\lambda_D$  for Orange @  $I_F = 20\text{mA}$** 

Bin	Min.	Max.	Unit
1	601	605	nm
2	605	611	

**Dominant Wavelength  $\lambda_D$  for Yellow Green @  $I_F = 20\text{mA}$** 

Bin	Min.	Max.	Unit
1	566	569	nm
2	569	571	
3	571	574	

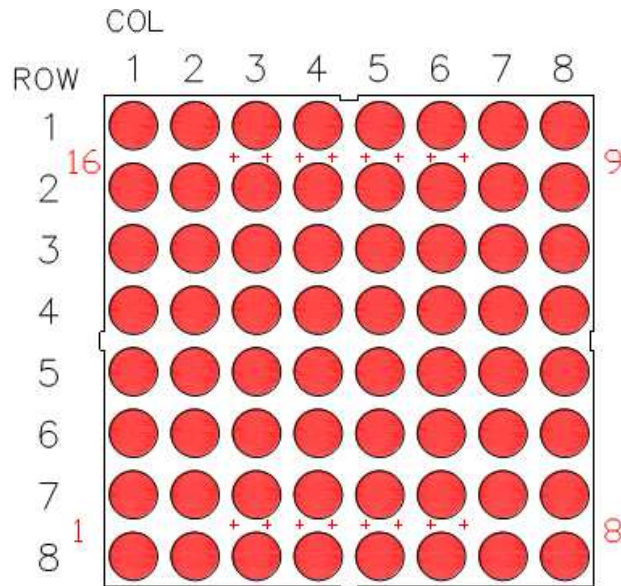
**Dominant Wavelength  $\lambda_D$  for True Green @  $I_F = 20\text{mA}$** 

Bin	Min.	Max.	Unit
1	515	520	nm
2	520	525	
3	525	530	

**Dominant Wavelength  $\lambda_D$  for Blue @  $I_F = 20\text{mA}$** 

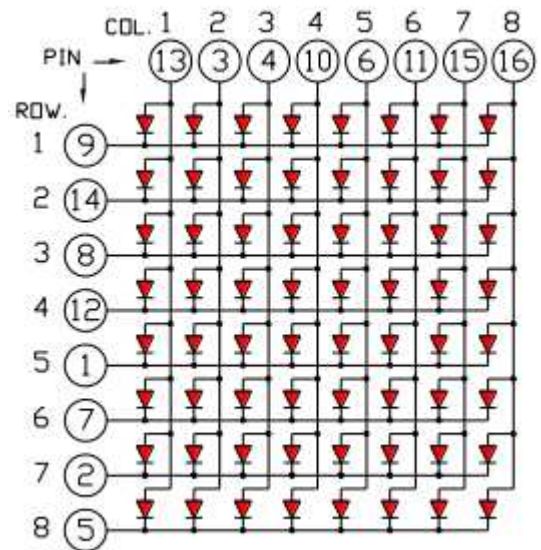
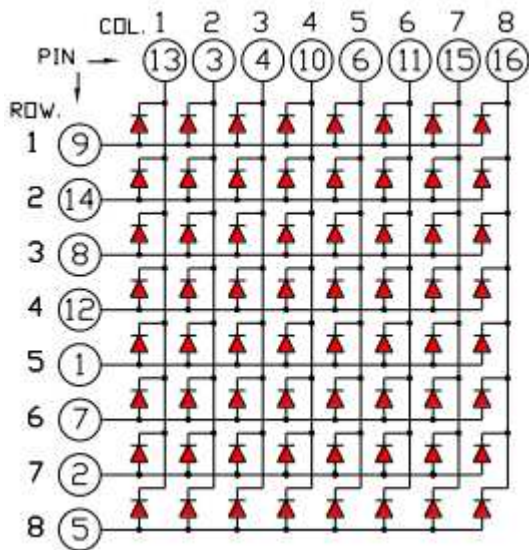
Bin	Min.	Max.	Unit
1	460	462.5	nm
2	462.5	465	
3	465	467.5	
4	467.5	470	

**Pin Configuration**



**Anode Row, Cathode Column**

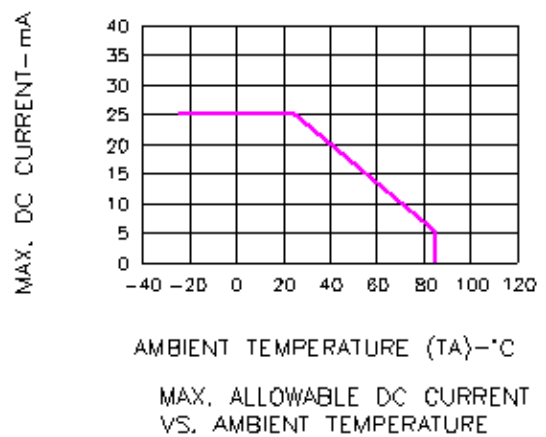
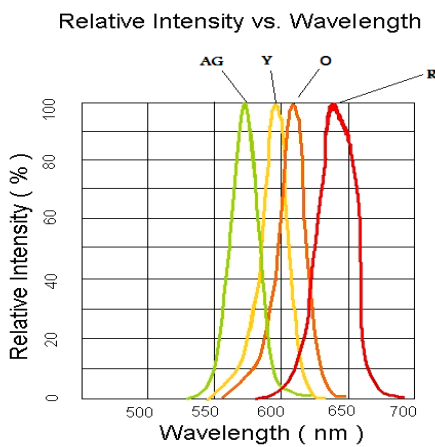
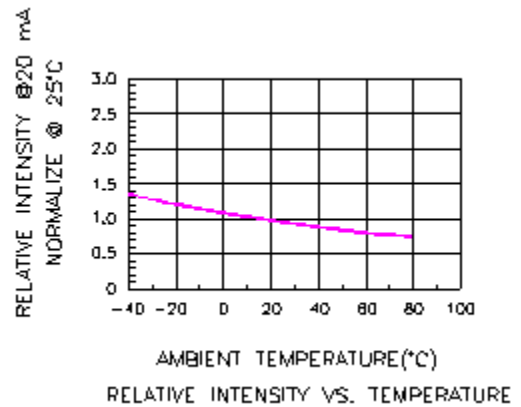
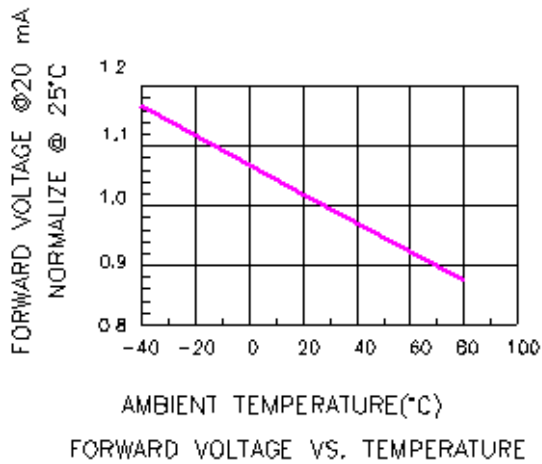
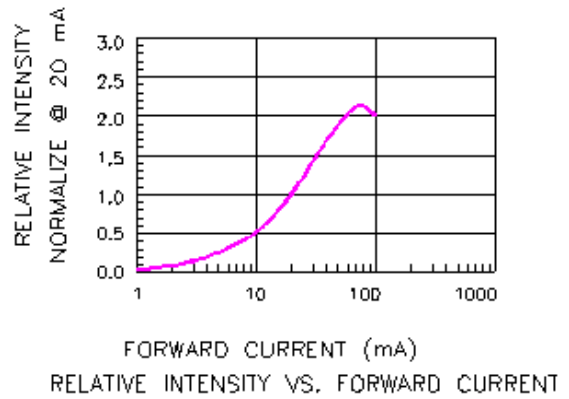
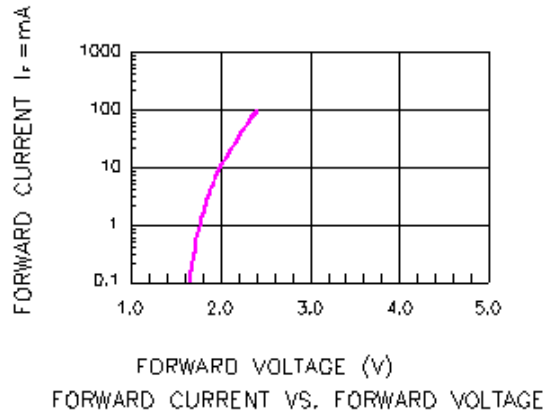
**Anode Column, Cathode Row**



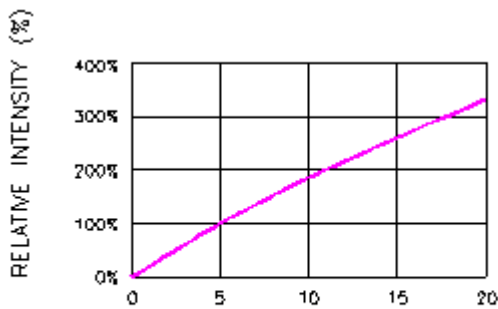


**Characteristic Curves**

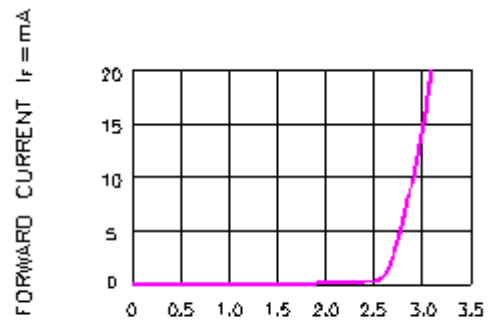
AllnGaP



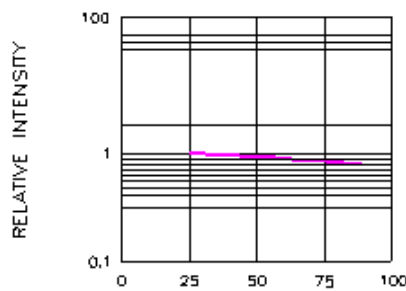
InGaN



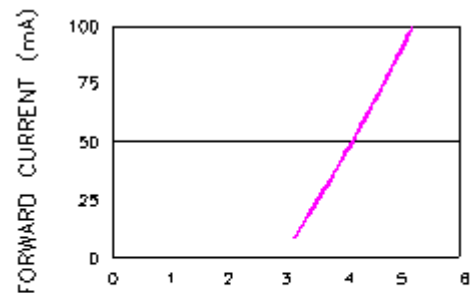
$I_r @ 20mA$  (mA)  
RELATIVE INTENSITY VS. FORWARD CURRENT



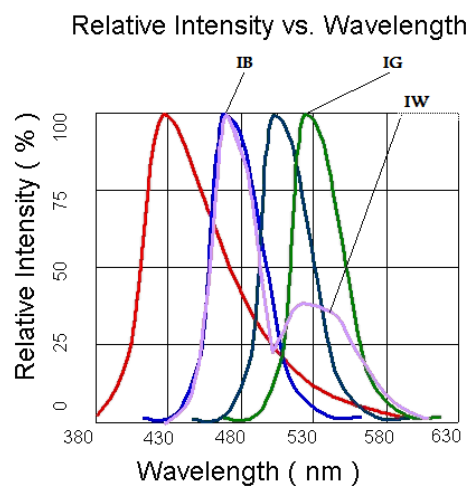
FORWARD CURRENT  $I_f = mA$   
FORWARD VOLTAGE (V)  
FORWARD CURRENT VS. FORWARD VOLTAGE



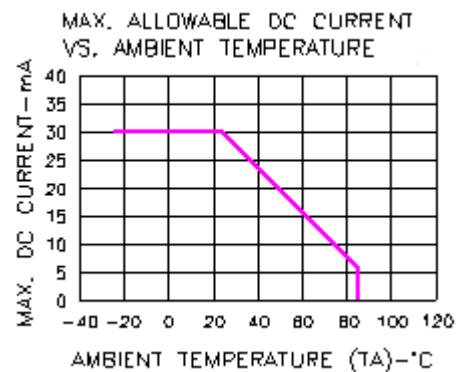
RELATIVE INTENSITY  
LEAD TEMPERATURE (°C)  
RELATIVE INTENSITY VS. LEAD TEMPERATURE  
(PULSED 20 mA; 300us PULSE, 10ms PERIOD)



FORWARD CURRENT (mA)  
FORWARD VOLTAGE (V)  
PEAK FORWARD VOLTAGE VS. FORWARD (100us TEST PULSE, 1% DUTY CYCLE)



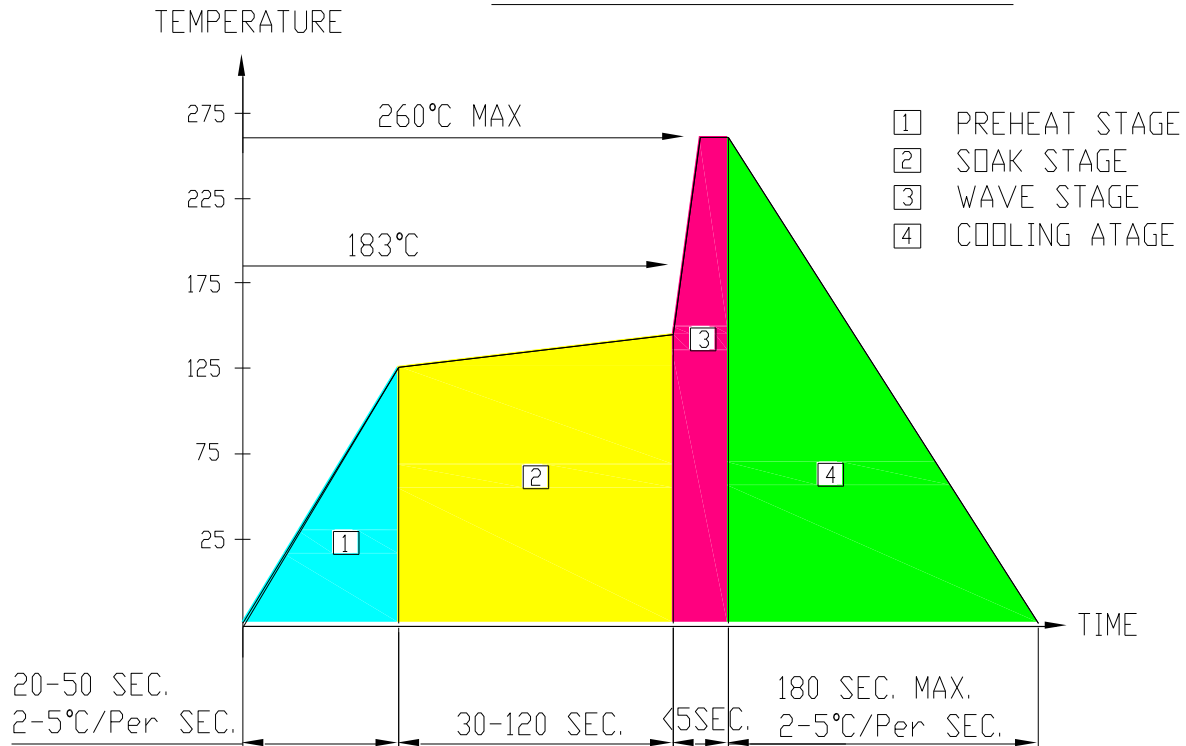
Relative Intensity vs. Wavelength



MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE

**Solder Profile**

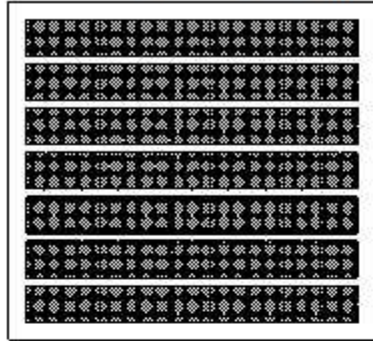
WAVE SOLDER PROFILE



**Package Dimensions**

**PACKAGE DIMENSIONS**

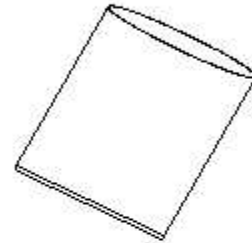
63 PCS / 1 Pink ESD Polyform ( 9 X 7 PCS )



5 Pink ESD Polyform / 1 Pink BAG  
315 PCS / 1 Inner Carton

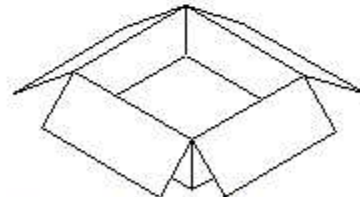


A reference for packing within bag.

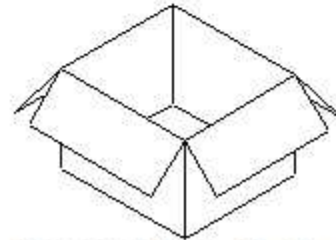


ESD BAG SIZE : 650 x 550 mm

630 PCS / 2 INNER CARTON / 1 OUTER CARTON



INNER BOX SIZE : 394 x 370 x 138 mm



OUTER BOX SIZE : 430 x 390 x 300 mm

## Ordering Information

Product		Orderable Part#		Spec Range	Quantity per foam
Anode Row, Cathode Column	Anode Column, Cathode Row	Anode Row, Cathode Column	Anode Column, Cathode Row		
GMC15R88	GMA15R88	GMC15R88	GMA15R88	I <sub>v</sub> =90mcd typ. @ I <sub>F</sub> =20mA, λ <sub>d</sub> =619nm to 629nm	63pcs
GMC15S88	GMA15S88	GMC15S88	GMA15S88	I <sub>v</sub> =35mcd typ. @ I <sub>F</sub> =20mA, λ <sub>d</sub> =636nm to 647nm	63pcs
GMC15Y88	GMA15Y88	GMC15Y88	GMA15Y88	I <sub>v</sub> =90mcd typ. @ I <sub>F</sub> =20mA, λ <sub>d</sub> =585nm to 595nm	63pcs
GMC15O88	GMA15O88	GMC15O88	GMA15O88	I <sub>v</sub> =90mcd typ. @ I <sub>F</sub> =20mA, λ <sub>d</sub> =601nm to 611nm	63pcs
GMC15AG88	GMA15A88	GMC15AG88	GMA15AG88	I <sub>v</sub> =25mcd typ. @ I <sub>F</sub> =20mA, λ <sub>d</sub> =566nm to 574nm	63pcs
GMC15IG88	GMA15IG88	GMC15IG88	GMA15IG88	I <sub>v</sub> =200mcd typ. @ I <sub>F</sub> =20mA, λ <sub>d</sub> =515nm to 530nm	63pcs
GMC15IB88	GMA15IB88	GMC15IB88	GMA15IB88	I <sub>v</sub> =160mcd typ. @ I <sub>F</sub> =20mA, λ <sub>d</sub> =460nm to 470nm	63pcs



## Revision History

Description:	Revision #	Revision Date
New Release of GMX15X88_series	V1.0	05/26/2011
Amend Brightness & Part number to GMZ15XX88_series	V1.1	06/23/2011
Add Blue and Green Color Spec.	V1.2	07/13/2011
Update spec	V1.3	09/23/2015

## Disclaimer

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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.