

**QT-Brightek Corporation**

**2.1" 5x7 Dot Matrix**

**Part No.: GMZ21XX75\_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 2.1" 5x7 dot matrix displays are made with white dots and a grey surface.

**Application:**

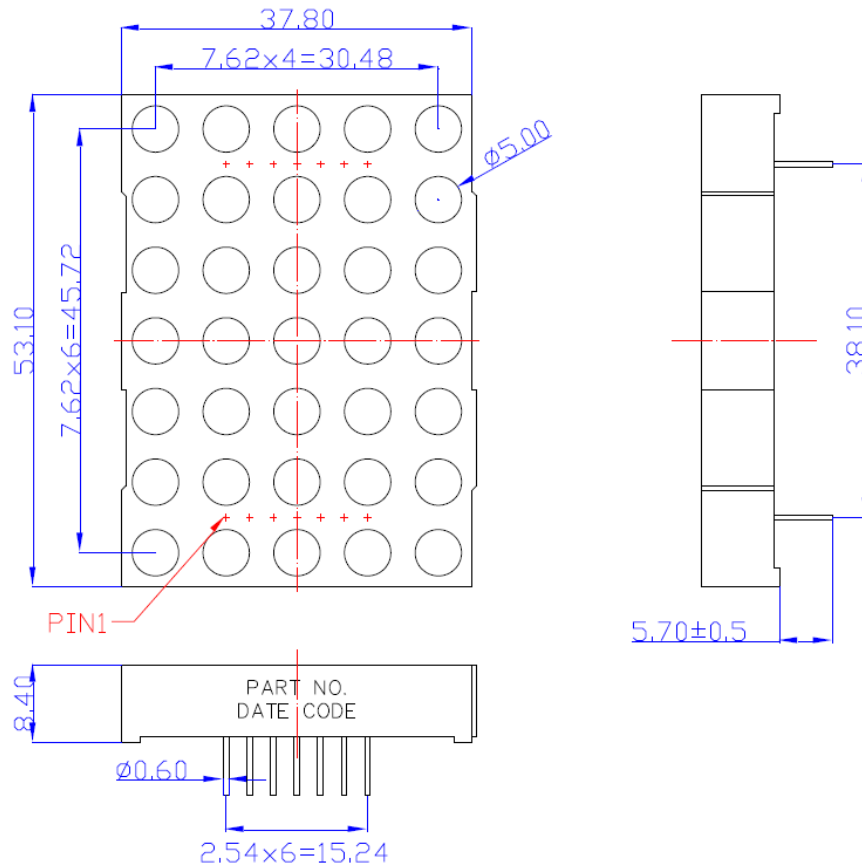
- Instrument panels
- Indoor/Outdoor display board
- Audio equipment

**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.
GMC21R75	GMA21R75	AllnGaP	Red	20	2.0	2.6	619	624	629	90
GMC21S75	GMA21S75	AllnGaP	Deep Red	20	2.0	2.6	636	639	647	35
GMC21Y75	GMA21Y75	AllnGaP	Yellow	20	2.0	2.6	585	590	595	90
GMC21O75	GMA21O75	AllnGaP	Orange	20	2.0	2.6	601	606	611	90
GMC21AG75	GMA21AG75	AllnGaP	Yellow Green	20	2.1	2.6	566	571	574	30
GMC21IG75	GMA21IG75	InGaN	True Green	20	3.2	4.0	515	525	530	200
GMC21IB75	GMA21IB75	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	53	72	

**Luminous Intensity  $I_V$  for Yellow @  $I_F=20mA$** 

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

**Luminous Intensity  $I_V$  for Orange @  $I_F=20mA$** 

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

**Luminous Intensity  $I_V$  for Yellow Green @  $I_F =20mA$** 

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

**Luminous Intensity  $I_V$  for True Green @  $I_F =20mA$** 

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

**Luminous Intensity  $I_V$  for Blue @  $I_F=20mA$** 

Bin	Min.	Max.	Unit
K	120	150	mcd
L	150	180	
M	180	210	

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

Bin	Min.	Max.	Unit
1	619	622	nm
2	622	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	

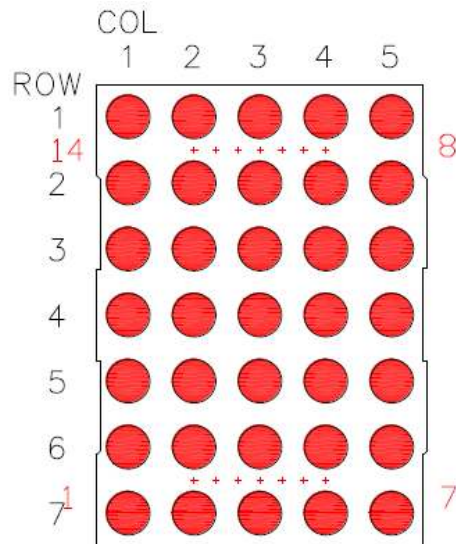
**Dominant Wavelength  $\lambda_D$  for True Green @  $I_F = 20\text{mA}$** 

Bin	Min.	Max.	Unit
1	515	525	nm
2	525	530	
3	530	535	

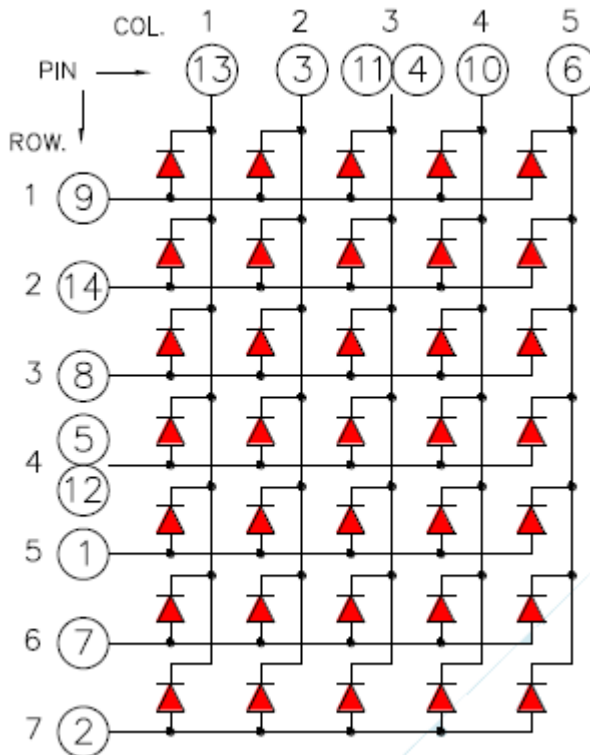
**Dominant Wavelength  $\lambda_D$  for Blue @  $I_F = 20\text{mA}$** 

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

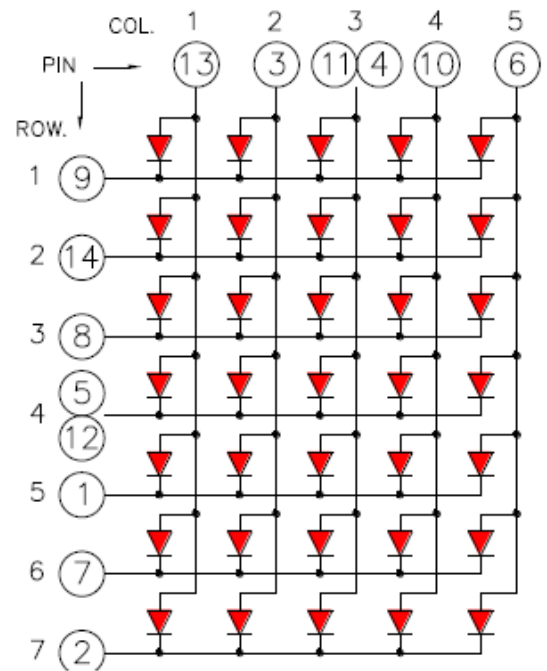
**Pin Configuration**



**Anode Row, Cathode Column**

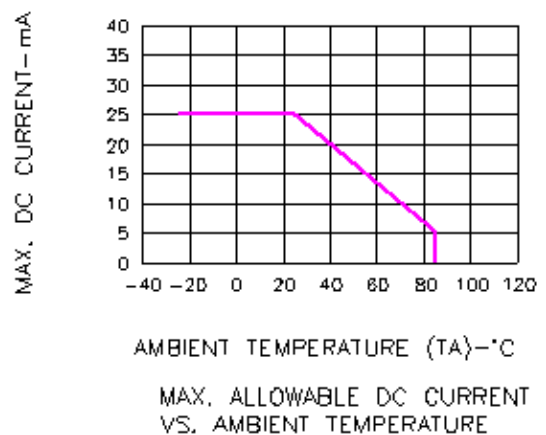
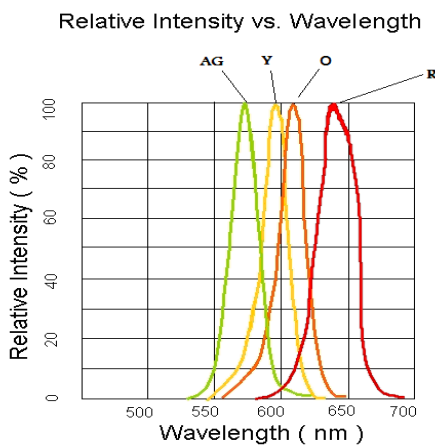
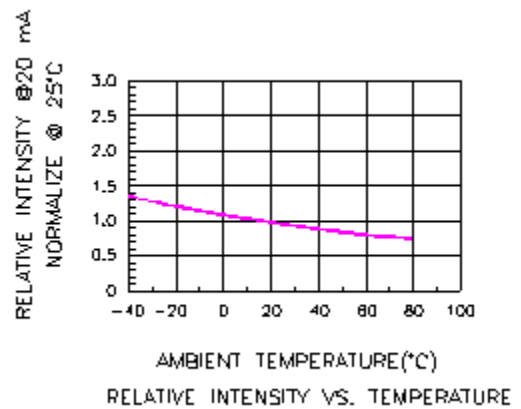
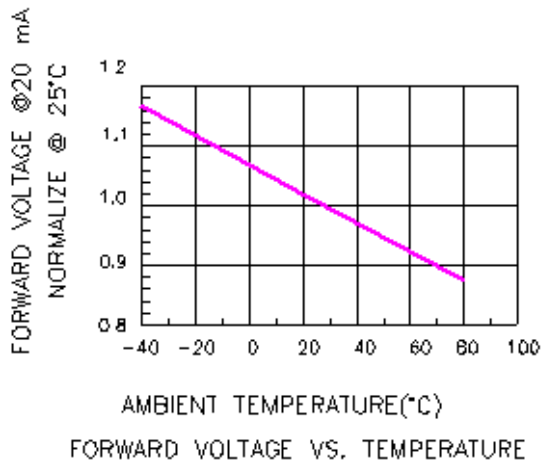
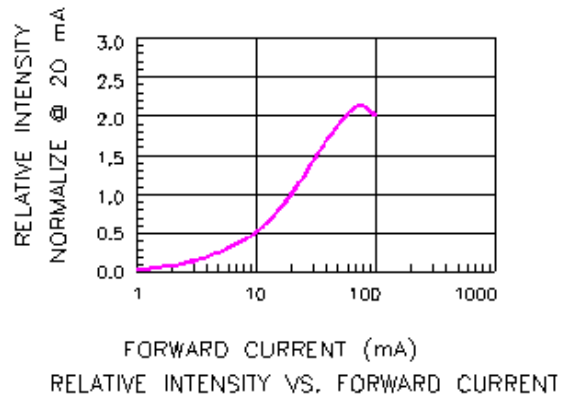
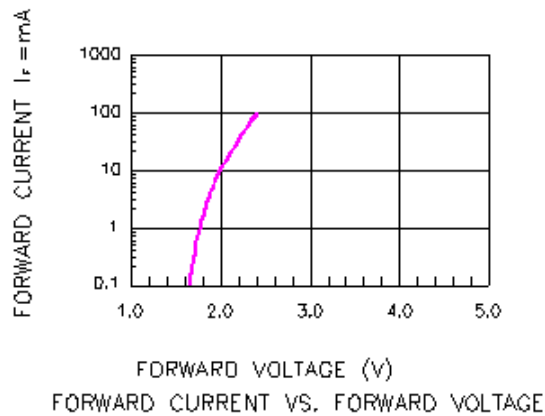


**Anode Column, Cathode Row**



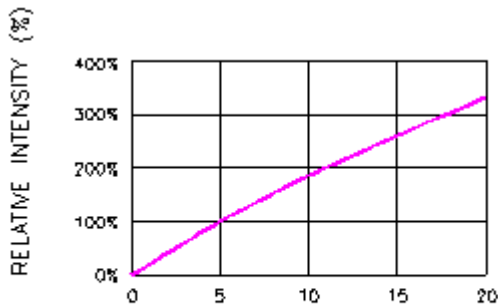
**Characteristic Curves**

AllInGaP

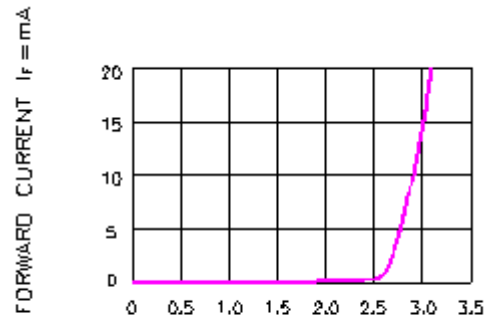




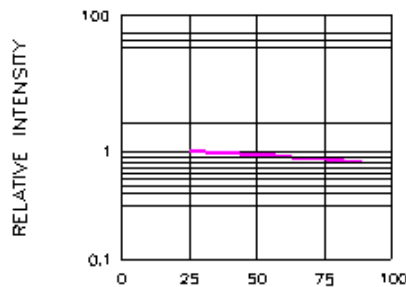
InGaN



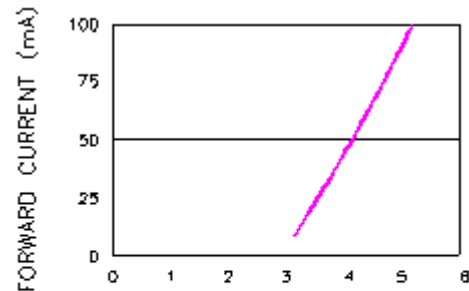
$I_r @ 20mA$  (mA)  
RELATIVE INTENSITY VS. FORWARD CURRENT



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

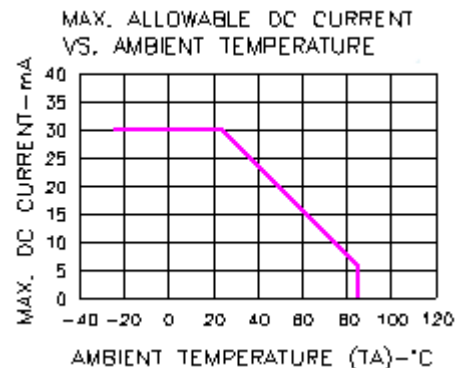
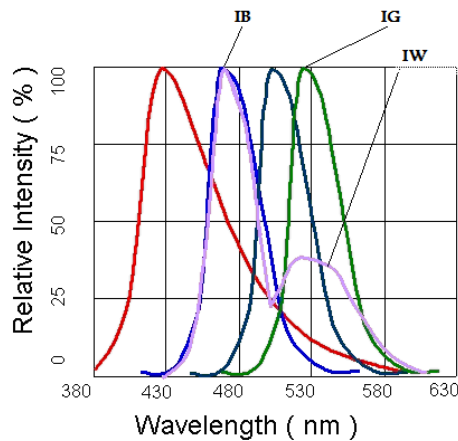


RELATIVE INTENSITY  
LEAD TEMPERATURE (°C)  
RELATIVE INTENSITY VS. LEAD TEMPERATURE  
(PULSED 20 mA; 300us PULSE, 10ms PERIOD)



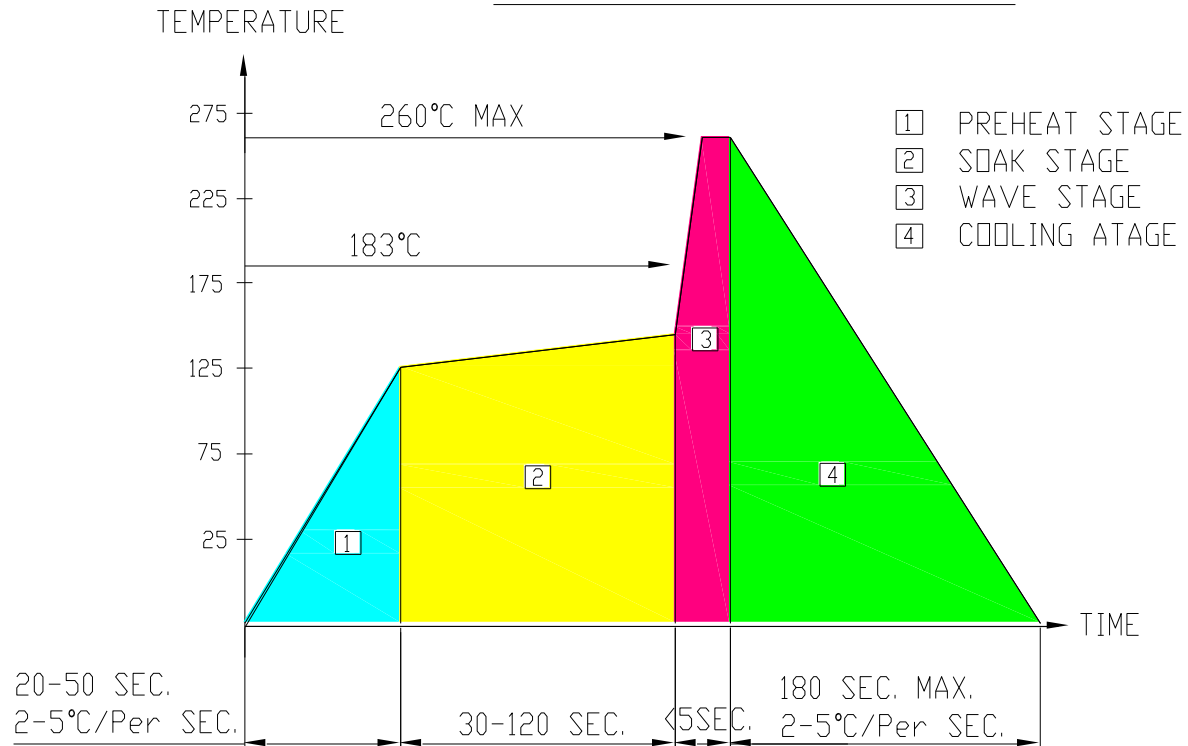
FORWARD CURRENT (mA)  
FORWARD VOLTAGE (V)  
PEAK FORWARD VOLTAGE VS. FORWARD (100us TEST PULSE, 1% DUTY CYCLE)

Relative Intensity vs. Wavelength



**Solder Profile**

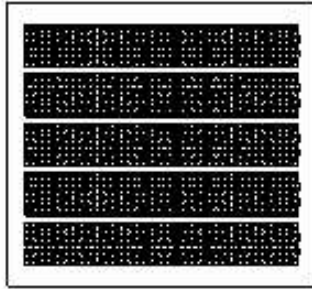
WAVE SOLDER PROFILE



**Package Dimensions**

**PACKAGE DIMENSIONS**

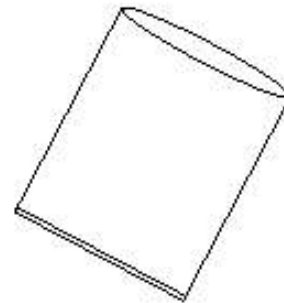
45 PCS / 1 Polyform ( 9 X 5 PCS )



5 Polyform / 1 BAG  
225PCS /1 Inner Carton

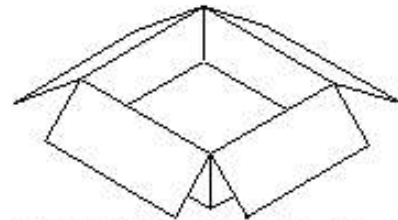


A reference for packing within bag.

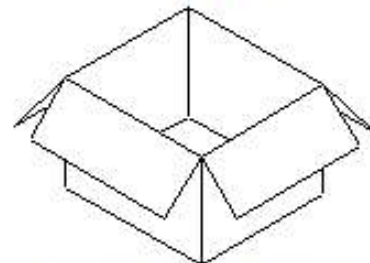


BAG SIZE : 450X410X580

450 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		
GMC21R75	GMA21R75	GMC21R75	GMA21R75	I <sub>v</sub> =90mcd typ. @ I <sub>F</sub> =20mA, λ <sub>d</sub> =619nm to 629nm	45pcs
GMC21S75	GMA21S75	GMC21S75	GMA21S75	I <sub>v</sub> =35mcd typ. @ I <sub>F</sub> =20mA, λ <sub>d</sub> =636nm to 647nm	45pcs
GMC21Y75	GMA21Y75	GMC21Y75	GMA21Y75	I <sub>v</sub> =90mcd typ. @ I <sub>F</sub> =20mA, λ <sub>d</sub> =585nm to 595nm	45pcs
GMC21O75	GMA21O75	GMC21O75	GMA21O75	I <sub>v</sub> =90mcd typ. @ I <sub>F</sub> =20mA, λ <sub>d</sub> =601nm to 611nm	45pcs
GMC21AG75	GMA21AG75	GMC21AG75	GMA21AG75	I <sub>v</sub> =25mcd typ. @ I <sub>F</sub> =20mA, λ <sub>d</sub> =566nm to 574nm	45pcs
GMC21IG75	GMA21IG75	GMC21IG75	GMA21IG75	I <sub>v</sub> =200mcd typ. @ I <sub>F</sub> =20mA, λ <sub>d</sub> =515nm to 530nm	45pcs
GMC21IB75	GMA21IB75	GMC21IB75	GMA21IB75	I <sub>v</sub> =160mcd typ. @ I <sub>F</sub> =20mA, λ <sub>d</sub> =460nm to 470nm	45pcs

## Revision History

Description:	Revision #	Revision Date
New Release of GMZ21XX75_series	V1.0	05/27/2011
Add Blue and Green Color Spec.	V1.2	07/13/2011
Amend to the new format	V1.3	04/29/2013
Add binning/ add deep red and orange spec	V1.4	09/18/2015

## 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.