



**2.0" 5x7 SINGLE  
COLOR & MULTICOLOR  
DOT MATRIX DISPLAYS**

T-41-35

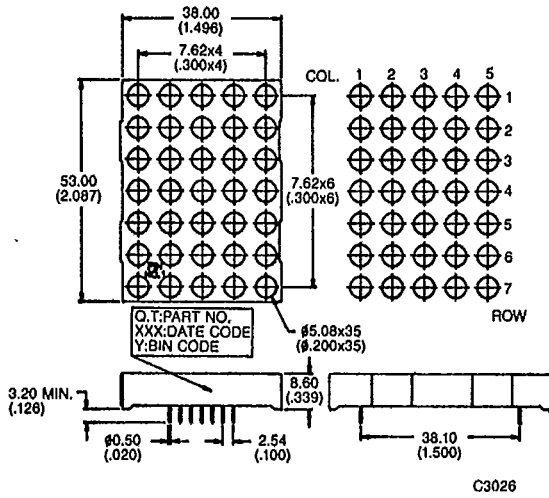
- ORANGE **GMA 2175 GMC 2175**
- YELLOW **GMA 2875 GMC 2875**
- HIGH EFFICIENCY RED **GMA 2975 GMC 2975**
- HIGH EFFICIENCY GREEN **GMA 2475 GMC 2475**
- BICOLOR RED/GREEN **GMA 2675**

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**PACKAGE DIMENSIONS**

**DESCRIPTION**

**A. GMA/GMC 2X75**

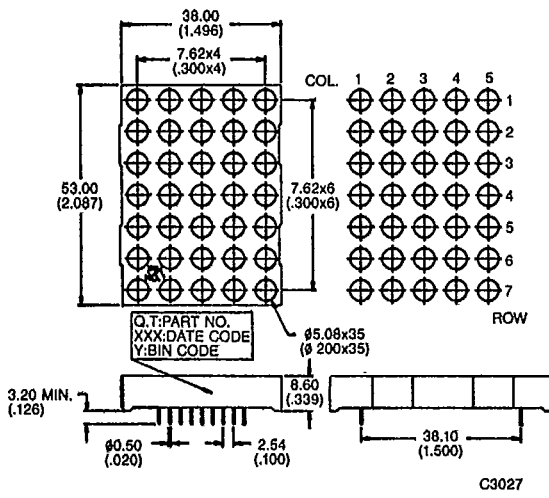


The GMX2675 common anode row are multicolor applicable displays.  
The multicolor displays have gray face and white dot color.  
The GMX2X75 series are single color displays. The green, yellow and orange displays have gray face and white dot color.  
The X in GMX denotes cathode row or anode row.  
The GMX2X75 family of displays are large emitting area ( $\phi 0.2''$ ) LED sources.

**FEATURES**

- 2" (30.48mm) character height
- Lower power requirement
- High contrast & brightness
- Wide viewing angle 130°
- 5x7 array wwith X-Y select
- Compatible with USASCII and EBCDIC codes
- X-Y stackable
- Choice of two matrix orientation
- Anode row or cathode row
- Easy mounting on P.C. board
- Categorized for luminous intensity
- Single color displays have the choice of four bright colors—green/yellow/orange/high efficiency red.
- Multicolor displays are applicable to three bright colors: greens, orange (H.E.R.) and yellow (green and H.E.R. mixed)

**B. GMA2675**



Note:  
All dimensions are in millimeters, tolerance is 0.25mm (0.010") unless otherwise noted.  
(inches)

**GMA 2X75 GMC 2X75**



**QUALITY TECHNOLOGIES**

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MODEL NUMBERS							
GREEN	PART NO. GMA/GMC			MULTI-COLOR	DESCRIPTION	PACKAGE DIMENSION	INTERNAL CIRCUIT DIAGRAM
	YELLOW	ORANGE	HI-EFF. RED				
2475C	2875C	2175C	2975C	—	Anode column, cathode row	A	A
2475A	2875A	2175A	2975A	—	Cathode row, anode column	A	A
—	—	—	—	2675	—	—	—
—	—	—	—	2675	Cathode row, anode column	B	B

ABSOLUTE MAXIMUM RATINGS AT T <sub>A</sub> =25°C					
PARAMETER	GREEN	YELLOW	ORANGE	HI-EFF RED	UNIT
Power dissipation per dot .....	75	60	75	75	mW
Peak forward current per dot (1/10 duty cycle, 0.1Ms pulse width) .....	100	80	100	100	mA
Continuous forward current per dot .....	25	20	25	25	mA
Derating linear from 25°C per dot .....	0.3	0.24	0.3	0.3	mA/°C
Reverse voltage per dot .....	5	5	5	5	V
Operating temperature range .....	-25°C to +85°C				
Storage temperature range .....	-25°C to +85°C				
Solder temperature 1/16 inch below seating plane for 3 seconds at 260°C					

GMA 2X75 GMC 2X75



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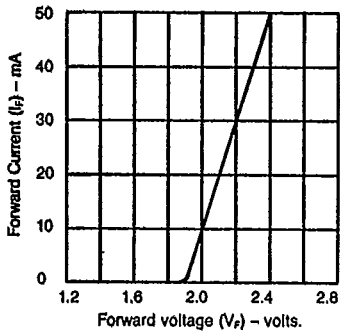
T-41-35

**ELECTRICAL/OPTICAL CHARACTERISTICS AT T<sub>A</sub> = 25°C  
GMX2175 & GMX2675 (ORANGE)**

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Average luminous intensity	I <sub>v</sub>	900	4000		μcd	I <sub>p</sub> = 48 mA 1/8 DUTY
Peak emission wavelength	λ <sub>p</sub>		630		nm	I <sub>F</sub> = 20 mA
Spectral line half-width	Δλ		40		nm	I <sub>F</sub> = 20 mA
Forward voltage, any dot	V <sub>F</sub>		2.1	2.8	V	I <sub>F</sub> = 20 mA
Reverse current, any dot	I <sub>R</sub>			100	μA	V <sub>R</sub> = 5V
Luminous intensity Matching ratio	I <sub>v</sub> - m			2:1		I <sub>F</sub> = 20 mA

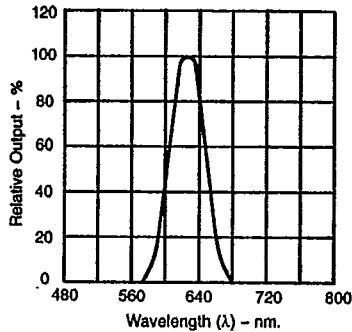
3

**TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES  
(25°C Ambient Temperature Unless Otherwise Noted)**



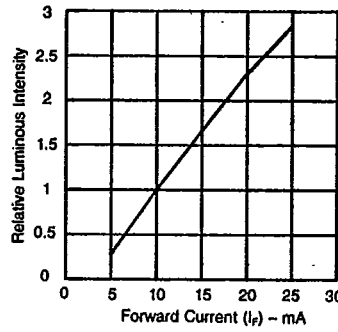
C3031

Fig. 1. Forward Current vs. Forward Voltage



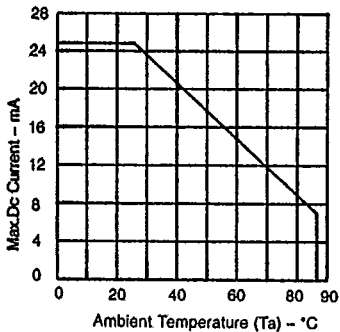
C3032

Fig. 2. Spectral Response



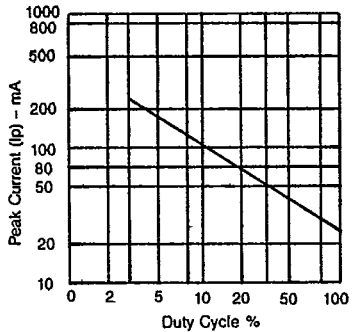
C3033

Fig. 3. Relative Luminous Intensity vs. Forward Current (Per Segment)



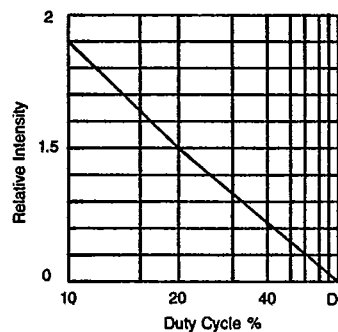
C3034

Fig. 4. Max. Forward Allowable DC Current Per Seg. vs. Ambient Temperature



C3035

Fig. 5. Max. Peak Current vs. Duty Cycle % (Refresh Rate - F = 1 KHz)



C3036

Fig. 6. Luminous Intensity vs. Duty Cycle % (Average I = 10 mA Per Seg.)

GMX 2X75 GMC 2X75



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<b>ELECTRICAL/OPTICAL CHARACTERISTICS AT T<sub>A</sub>=25°C GMX2875 (YELLOW)</b>						
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Average luminous intensity	$I_v$	750	4000		$\mu\text{cd}$	$I_F=48 \text{ mA}$ 1/8 DUTY
Peak emission wavelength	$\lambda_p$		585		nm	$I_F=20 \text{ mA}$
Spectral line half-width	$\Delta\lambda$		35		nm	$I_F=20 \text{ mA}$
Forward voltage, any dot	$V_F$		2.1	2.8	V	$I_F=20 \text{ mA}$
Reverse current, any dot	$I_R$			100	$\mu\text{A}$	$V_R=5\text{V}$
Luminous intensity Matching ratio	$I_v-m$			2:1		$I_F=20 \text{ mA}$

**TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES**  
(25°C Ambient Temperature Unless Otherwise Noted)

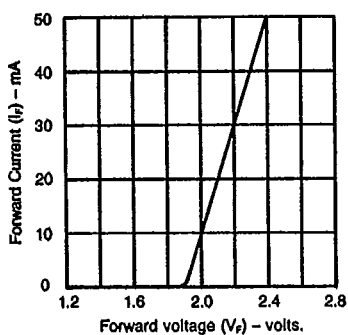


Fig. 1. Forward Current vs. Forward Voltage

C3037

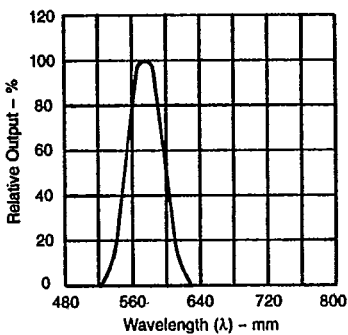


Fig. 2. Spectral Response

C3038

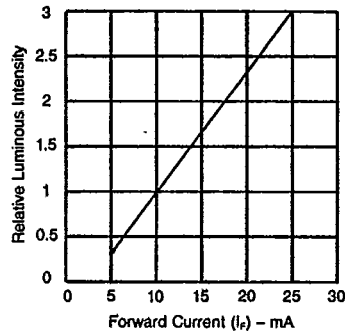


Fig. 3. Relative Luminous Intensity vs. Forward Current (Per Segment)

C3039

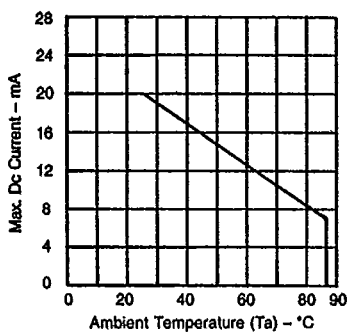


Fig. 4. Max. Forward Allowable DC Current Per Seg. vs. Ambient Temperature

C3040

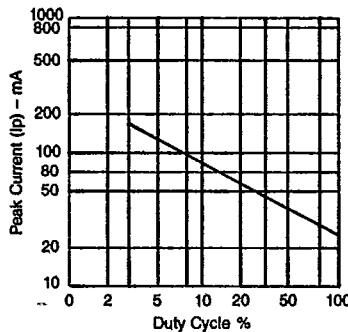


Fig. 5. Max. Peak Current vs. Duty Cycle % (Refresh Rate—F=1 KHz)

C3041

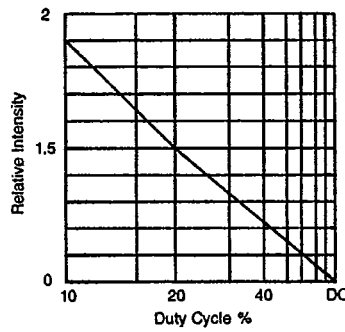


Fig. 6. Luminous Intensity vs. Duty Cycle % (Average I=10 mA Per Seg.)

C3042

GMA 2X75 GMC 2X75



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**ELECTRICAL/OPTICAL CHARACTERISTICS AT T<sub>A</sub>=25°C  
GMX2475 & GMA2675 (GREEN)**

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Average luminous intensity	I <sub>v</sub>	960	4000		μcd	I <sub>p</sub> =48 mA 1/8 DUTY
Peak emission wavelength	λ <sub>p</sub>		565		nm	I <sub>F</sub> =20 mA
Spectral line half-width	Δλ		30		nm	I <sub>F</sub> =20 mA
Forward voltage, any dot	V <sub>F</sub>		2.1	2.8	V	I <sub>F</sub> =20 mA
Reverse current, any dot	I <sub>R</sub>			100	μA	V <sub>R</sub> =5V
Luminous intensity Matching ratio	I <sub>v</sub> -m			2:1		I <sub>F</sub> =20 mA

3

**TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES  
(25°C Ambient Temperature Unless Otherwise Noted)**

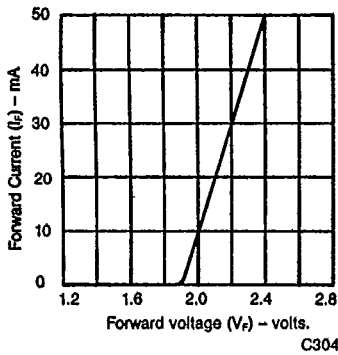


Fig. 1. Forward Current vs. Forward Voltage

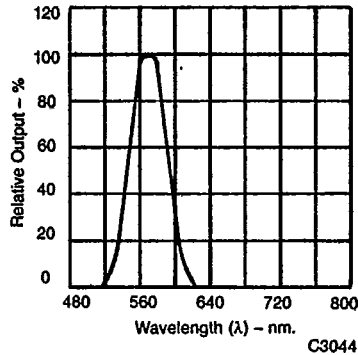


Fig. 2. Spectral Response

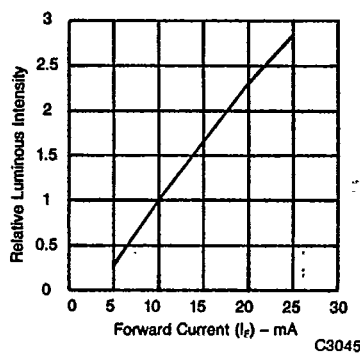


Fig. 3. Relative Luminous Intensity vs. Forward Current (Per Segment)

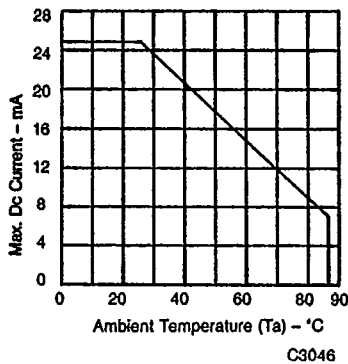


Fig. 4. Max. Forward Allowable DC Current Per Seg. vs. Ambient Temperature

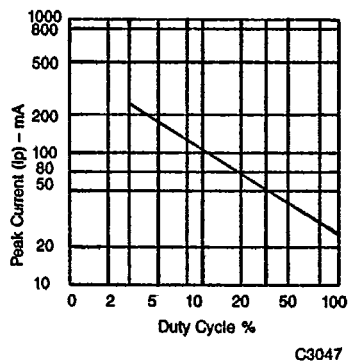


Fig. 5. Max. Peak Current vs. Duty Cycle % (Refresh Rate - F=1 KHz)

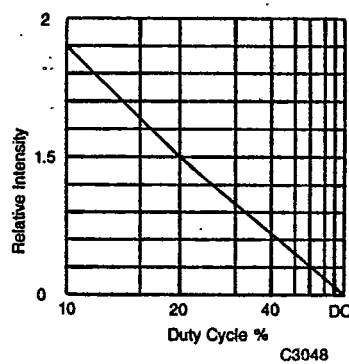


Fig. 6. Luminous Intensity vs. Duty Cycle % (Average I=10 mA Per Seg.)

GMX 2X75 GMC 2X75



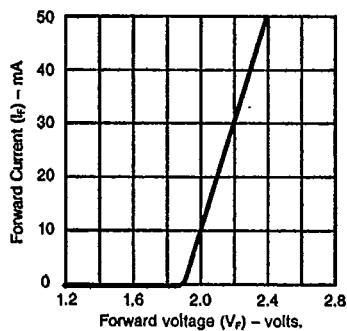
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**ELECTRICAL/OPTICAL CHARACTERISTICS AT T<sub>A</sub>=25°C  
GMX2975 (H.E. RED)**

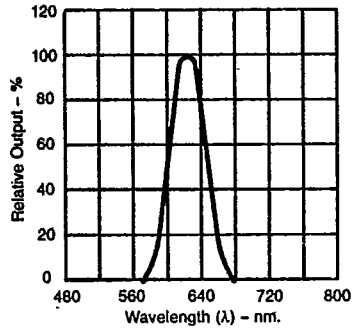
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Average luminous intensity	I <sub>v</sub>	900	4000		μcd	I <sub>p</sub> =48 mA 1/8 DUTY
Peak emission wavelength	λ <sub>p</sub>		635		nm	I <sub>F</sub> =20 mA
Spectral line half-width	Δλ		40		nm	I <sub>F</sub> =20 mA
Forward voltage, any dot	V <sub>F</sub>		2.1	2.8	V	I <sub>F</sub> =20 mA
Reverse current, any dot	I <sub>R</sub>			100	μA	V <sub>R</sub> =5V
Luminous intensity Matching ratio	I <sub>v</sub> -m			2:1		I <sub>F</sub> =20 mA

**TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES  
(25°C Ambient Temperature Unless Otherwise Noted)**



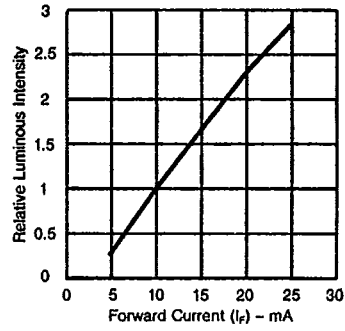
C3049

Fig. 1. Forward Current vs. Forward Voltage



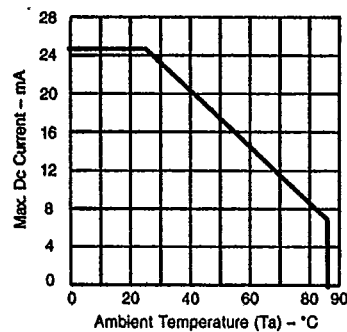
C3050

Fig. 2. Spectral Response



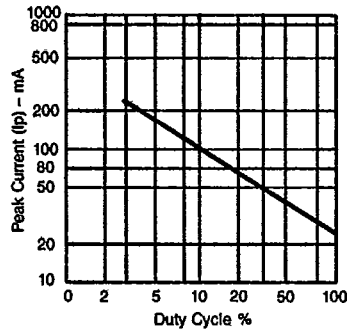
C3051

Fig. 3. Relative Luminous Intensity vs. Forward Current (Per Segment)



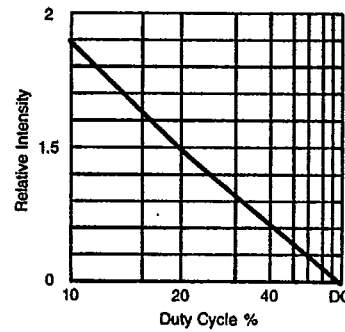
C3052

Fig. 4. Max. Forward Allowable DC Current Per Seg. vs. Ambient Temperature



C3053

Fig. 5. Max. Peak Current vs. Duty Cycle % (Refresh Rate - F=1 KHz)



C3054

Fig. 6. Luminous Intensity vs. Duty Cycle % (Average I=10 mA Per Seg.)

GMA 2X75 GMC 2X75



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**PIN CONNECTION**

PIN NO.	CONNECTION		
	A. GMC2X75	B. GMA2X75	C. GMA2675
1	Cathode Row 5	Anode Row 5	Cathode Column 1 Green
2	Cathode Row 7	Anode Row 7	Cathode Column 2 Green
3	Anode Column 2	Cathode Column 2	Cathode Column 2 Orange
4	Anode Column 3	Cathode Column 3	Cathode Column 3 Orange
5	Cathode Row 4	Anode Row 4	Anode Row 6
6	Anode Column 5	Cathode Column 5	Anode Row 7
7	Cathode Row 6	Anode Row 6	Cathode Column 4 Orange
8	Cathode Row 3	Anode Row 3	Anode Row 5
9	Cathode Row 1	Anode Row 1	No Connection
10	Anode Column 4	Cathode Column 4	Cathode Column 5 Green
11	Anode Column 3	Cathode Column 3	Cathode Column 5 Orange
12	Cathode Row 4	Anode Row 4	Cathode Column 4 Green
13	Anode Column 1	Cathode Column 1	Anode Column 3 Green
14	Cathode Row 2	Anode Row 2	Anode Row 4
15	---	---	Anode Row 2
16	---	---	Anode Row 1
17	---	---	Anode Row 3
18	---	---	Cathode Column 1 Orange

**3**

**GMA 2X75 GMC 2X75**

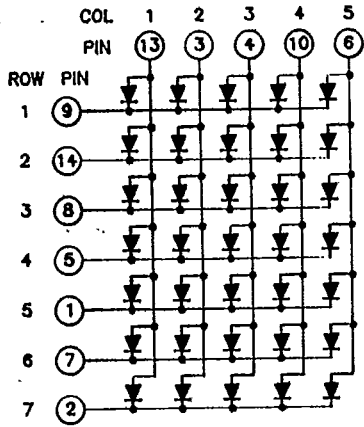


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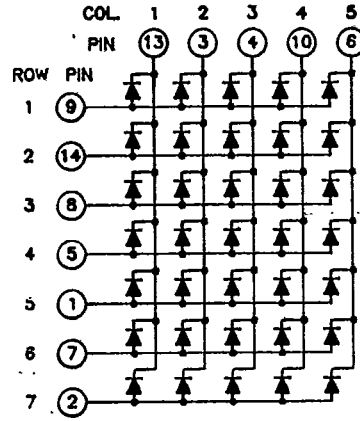
**INTERNAL CIRCUIT DIAGRAM**

A. GMC2X75



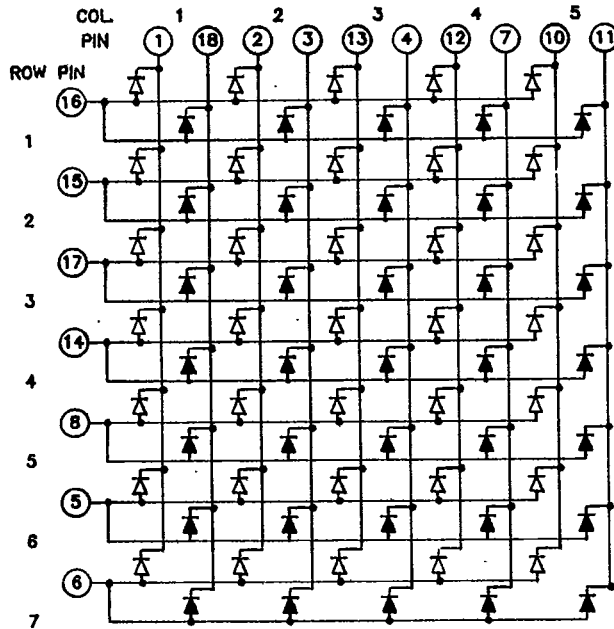
C3028

B. GMA2X75



C3029

C. GMA2675



C3030

- NOTES :
1. THE SIGN STANDS FOR GREEN COLOR CHIPS.
  2. THE SIGN STANDS FOR ORANGE COLOR CHIPS.

**GMA 2X75 GMC 2X75**