

# BRIGHT LED ELECTRONICS CORP.

## LED DOT-MATRIX DISPLAY SPECIFICATION

●COMMODITY : 2.3”(60.20mm) High ø5

●DEVICE NUMBER : BM-20488MD

VERSION : 1.0 / 2001.06.01

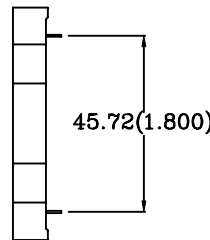
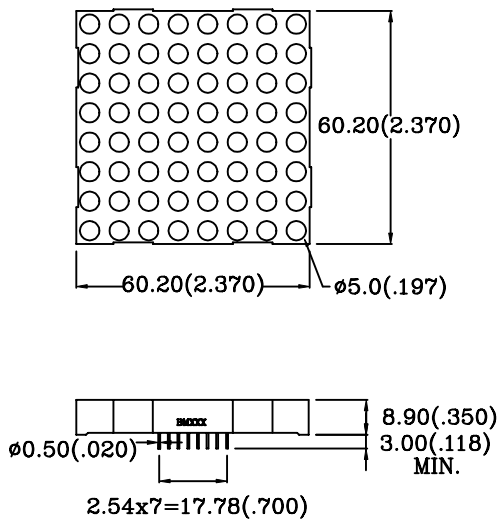
●ELECTRICAL AND OPTICAL CHARACTERISTICS (Ta=25°C)

| Chip          |                          | Absolute Maximum Rating |         |         |             | Electro-optical Data (At 10mA) |      |               | Surface Color | Segment Color |
|---------------|--------------------------|-------------------------|---------|---------|-------------|--------------------------------|------|---------------|---------------|---------------|
| Emitted Color | Peak Wave Length λ P(nm) | Δ λ (nm)                | Pd (mW) | If (mA) | Peak If(mA) | Vf(V)                          |      | Iv Typ. (mcd) |               |               |
|               |                          |                         |         |         |             | Typ.                           | Max. |               |               |               |
| Hi-Eff Red    | 635                      | 45                      | 80      | 30      | 150         | 2.0                            | 2.5  | 12.0          | Black         | White         |

●ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

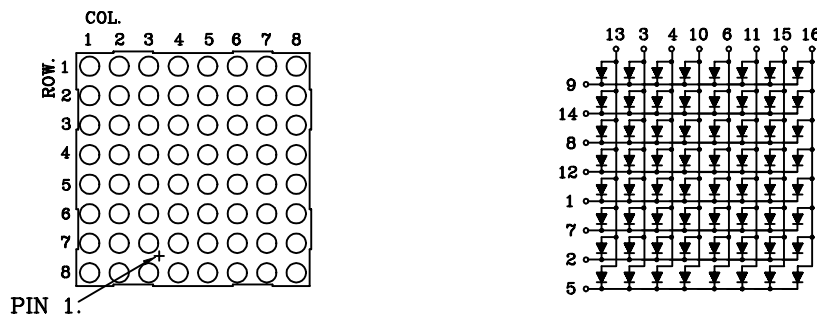
Reverse Voltage ..... 5V  
 Reverse Current (-Vr=5V) ..... 50μA  
 Operating Temperature Range ..... -40°C ~ 80°C  
 Storage Temperature Range ..... -40°C ~ 85°C  
 Lead Soldering Temperature (1/16” From Body).....260°C For 5 Seconds

### PACKAGE DIMENSIONS:



NOTES:  
 1.All dimensions are in millimeters(inches).  
 2.Tolerance is ±0.25mm(.01”) unless otherwise specified.  
 3.Specifications are subject to change without notice.

### PIN FUNCTIONS:



RELEASED:

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2001.02.26  
志宏

ENGINEER:

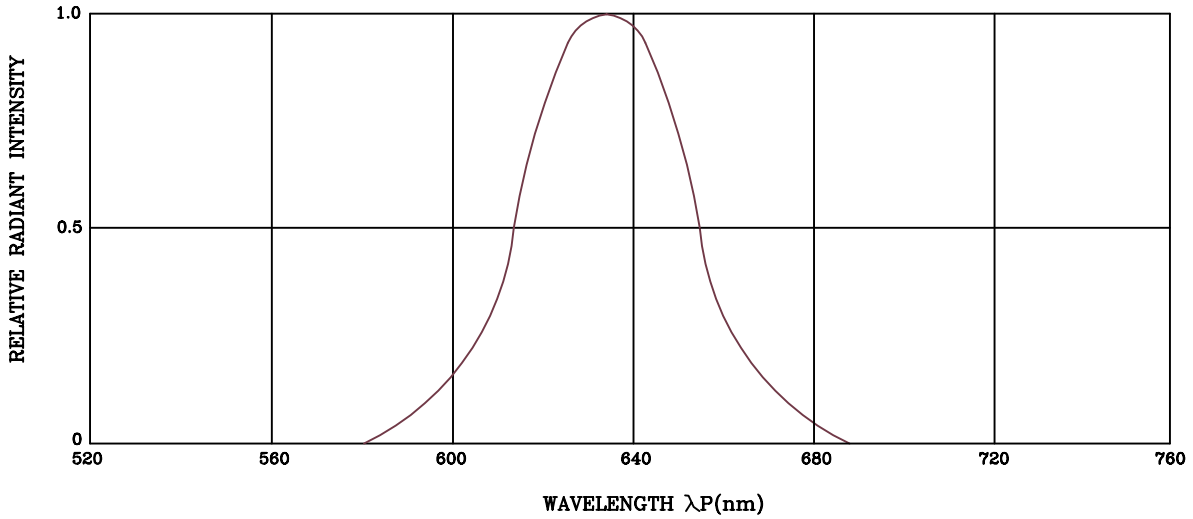
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# BRIGHT LED ELECTRONICS CORP.

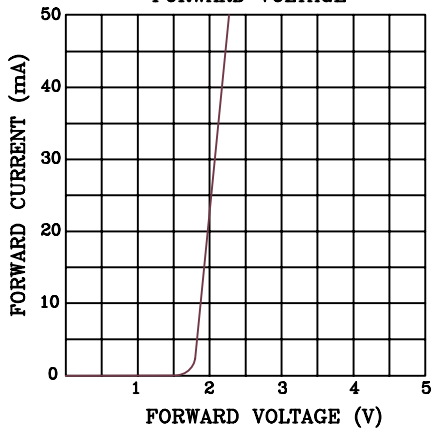
## TYPICAL CHARACTERISTICS

DEVICE NUMBER: BM-20488MD

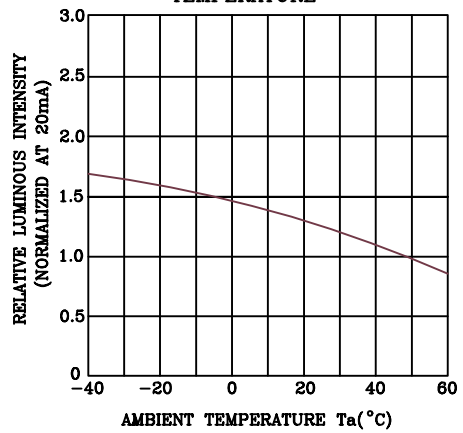
### SPECTRAL DISTRIBUTION



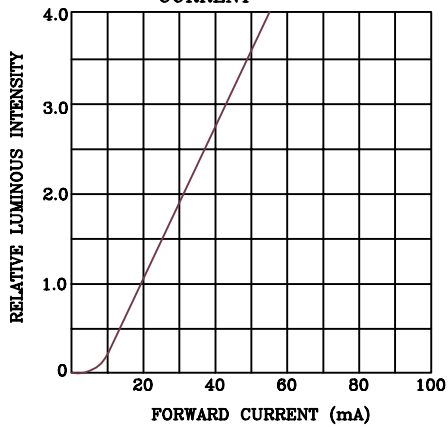
### FORWARD CURRENT VS. FORWARD VOLTAGE



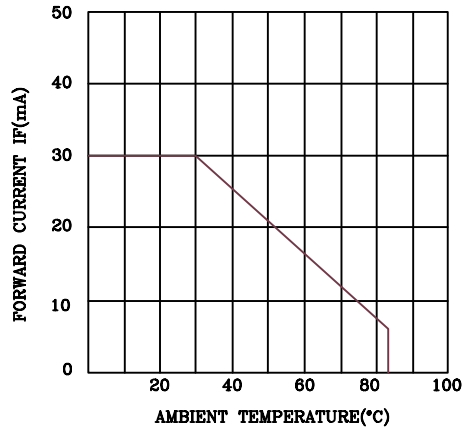
### RELATIVE LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE



### RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT



### FORWARD CURRENT DERATING CURVE



# RELIABILITY TEST

**DEVICE NO.: BM-20488MD**

| Classification     | Test Item   | Reference Standard  | Test Conditions   | Result |
|--------------------|---|---|---|--------|
| Endurance Test     | Operation Life                                    | MIL-STD-750:1026<br>MIL-STD-883:1005<br>JIS C 7021 :B-1                     | Connect with a power $I_f=25\text{mA}$<br>$T_a$ =Under room temperature<br>Test time=1,000hrs(-24hrs,+72hrs)                        | 0/10   |
|                    | High Temperature<br>High Humidity<br>Storage      | MIL-STD-202:103B<br>JIS C 7021 :B-11  | $T_a=65^\circ\text{C}\pm 5^\circ\text{C}$<br>RH=90%-95%<br>Test time=240hrs $\pm$ 2hrs  | 0/10   |
|                    | High Temperature<br>High Humidity<br>Reverse Bias |   | $T_a=65^\circ\text{C}\pm 5^\circ\text{C}$<br>RH=90%-95%<br>Test time=500hrs(-24hrs,+48hrs)  | 0/10   |
|                    | High Temperature<br>Storage                       | MIL-STD-883:1008<br>JIS C 7021 :B-10  | High $T_a=85^\circ\text{C}\pm 5^\circ\text{C}$<br>Test time=1,000hrs(-24hrs,+72hrs)   | 0/10   |
|                    | Low Temperature<br>Storage                        | JIS-C-7021 :B-12  | Low $T_a=-35^\circ\text{C}\pm 5^\circ\text{C}$<br>Test time=1,000hrs(-24hrs,+72hrs)   | 0/10   |
| Environmental Test | Temperature Cycling                               | MIL-STD-202:107D<br>MIL-STD-750:1051<br>MIL-STD-883:1010<br>JIS C 7021 :A-4 | $-35^\circ\text{C} \sim 25^\circ\text{C} \sim 85^\circ\text{C} \sim 25^\circ\text{C}$<br>30min 5min 30min 5min<br>Test Time=10cycle | 0/10   |
|                    | Thermal Shock                                     | MIL-STD-202:107D<br>MIL-STD-750:1051<br>MIL-STD-883:1011                    | $85^\circ\text{C}\pm 5^\circ\text{C} \sim -35^\circ\text{C}\pm 5^\circ\text{C}$<br>10min 10min<br>Test Time=10cycle                 | 0/10   |
|                    | Solder Resistance                                 | MIL-STD-202:201A<br>MIL-STD-750:2031<br>JIS C 7021 :A-1                     | $T_{\text{sol}}=260\pm 5^\circ\text{C}$<br>Dwell Time=10 $\pm$ 1sec.  | 0/10   |
|                    | Solderability                                     | MIL-STD-202:208D<br>MIL-STD-750:2026<br>MIL-STD-883:2003<br>JIS C 7021 :A-2 | $T_{\text{sol}}=230\pm 5^\circ\text{C}$<br>Dwell Time=5 $\pm$ 1sec.   | 0/10   |

## JUDGMENT CRITERIA OF FAILURE FOR THE RELIABILITY

| Measuring items    | Symbol | Measuring conditions | Judgement criteria for failure |
|--------------------|--------|----------------------|--------------------------------|
| Forward voltage    | VF     | $I_F=10\text{mA}$    | Over $U_x1.2$                  |
| Reverse current    | IR     | $V_R=5\text{V}$      | Over $U_x2$                    |
| Luminous intensity | IV     | $I_F=20\text{mA}$    | Below $S_x0.5$                 |

Note: 1.U means the upper limit of specified characteristics. S means initial value.

2.Measurment shall be taken between 2 hours and after the test pieces have been returned to normal ambient conditions after completion of each test.