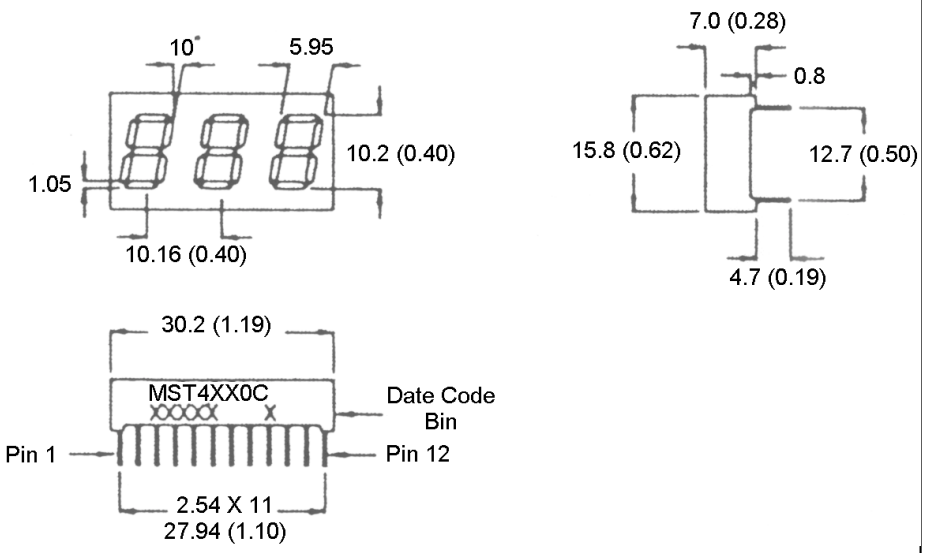
FAIRCHILD
SEMICONDUCTOR™

# 10mm (0.400 inch) Three Digit NUMERIC STICK DISPLAY

## Bright Red MST4110C, MST4140C
## High Efficiency Red MST4910C, MST4940C
## Green MST4410C, MST4440C

TR/QTS/030100-001

## PACKAGE DIMENSIONS




### NOTES:

- Dimensions are in mm (inches)
- Tolerances are +/- 0.25 (0.010) unless otherwise stated.

## FEATURES

- Bright Bold Segments
- Common Anode/Cathode
- Low Power Consumption
- Low Current Capability
- Neutral Segments
- Grey Face
- Epoxy Encapsulated PCB
- High Performance
- High Reliability

## APPLICATIONS

- Appliances
- Automotive
- Instrumentation
- Process Control

## MODELS AVAILABLE

| Part Number | Colour | Description |
|---|---|---|
| MST4110C | Bright Red | Three Digit, RHDP, Common Anode |
| MST4140C | Bright Red | Three Digit, RHDP, Common Cathode |
| MST4410C | Green | Three Digit, RHDP, Common Anode |
| MST4440C | Green | Three Digit, RHDP, Common Cathode |
| MST4910C | High Efficiency Red | Three Digit, RHDP, Common Anode |
| MST4Y40C | High Efficiency Red | Three Digit, RHDP, Common Cathode |
| | | |
| | | |

(For other colour options, contact your local area Sales Manager)

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## ABSOLUTE MAXIMUM RATINGS[1] ($T_A$ = 25°C, unless otherwise specified)

| Part Number / Parameter | MST4110C MST4140C | MST4410C MST4440C | MST4910C MST4940C | Units |
|---|---|---|---|---|
| **Continuous Forward Current** (each segment) | 15 | 25 | 25 | mA |
| **Peak Forward Current** (F = 10KHz, D/F = 1/10) | 60 | 90 | 90 | mA |
| **Power Dissipation ($P_D$)** | 40 | 70 | 70 | mW |
| ***Derate Linearly from 25°C** | 0.17 | 0.33 | 0.33 | mW |
| **Reverse Voltage per Die** | | | | 5 Volts |
| **Operating and Storage Temperature Range** | | | | -40°C to +85°C |
| **Lead soldering time (1/16 inch from standoffs)** | | | | 5 seconds @ 230°C |

## ELECTRO-OPTICAL CHARACTERISTICS[1] ($T_A$ = 25°C, unless otherwise specified)

| Part Number / Parameter | MST4110C MST4140C | MST4410C MST4440C | MST4910C MST4940C | Units | Test Condition |
|---|---|---|---|---|---|
| **Luminous intensity[2] ($I_V$)** | | | | | |
| Minimum ( Standard Current) | 320 | 850 | 800 | ucd | $I_F$ = 20mA |
| Typical (Standard Current) | 800 | 2200 | 2200 | ucd | $I_F$ = 20mA |
| Minimum (Low Current) | Not Available | | | | |
| Typical (Low Current) | Not Available | | | | |
| **Forward Voltage ($V_F$)** | | | | | |
| Typical (Standard Current) | 2.10 | 2.10 | 2.00 | Volts | $I_F$ = 20mA |
| Maximum (Standard Current) | 2.60 | 2.80 | 2.80 | Volts | $I_F$ = 20mA |
| Typical (Low Current) | Not Available | | | | |
| Maximum (Low Current) | Not Available | | | | |
| **Peak Wavelength** | 697 | 570 | 635 | nm | $I_F$ = 20mA |
| **Dominant Wavelength** | Not Available | | | | |
| **Spectral Line 1/2 Width** | 90 | 30 | 45 | nm | $I_F$ = 10mA |
| **Reverse B[3].Voltage ($V_R$)** | 5 | 5 | 5 | Volts | $I_R$ = 100uA |

NOTES:
(1) Data per individual LED element
(2) Luminous intensity (ucd) = average light output per segment
(3) B = breakdown

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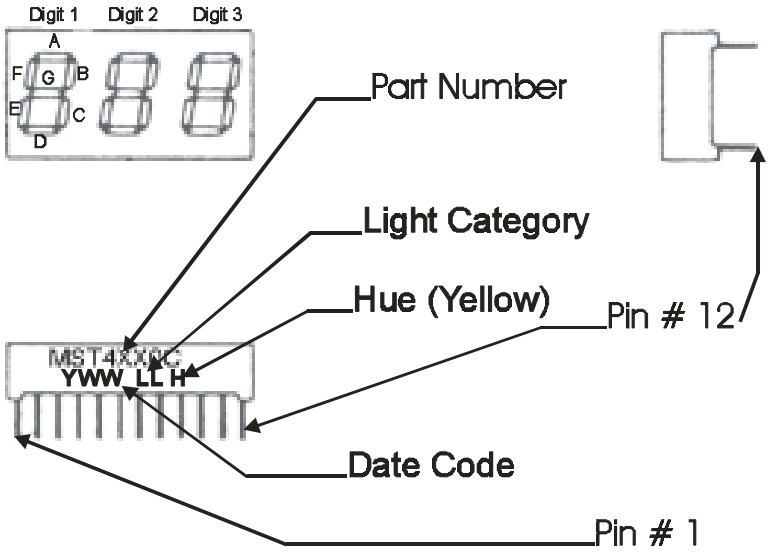
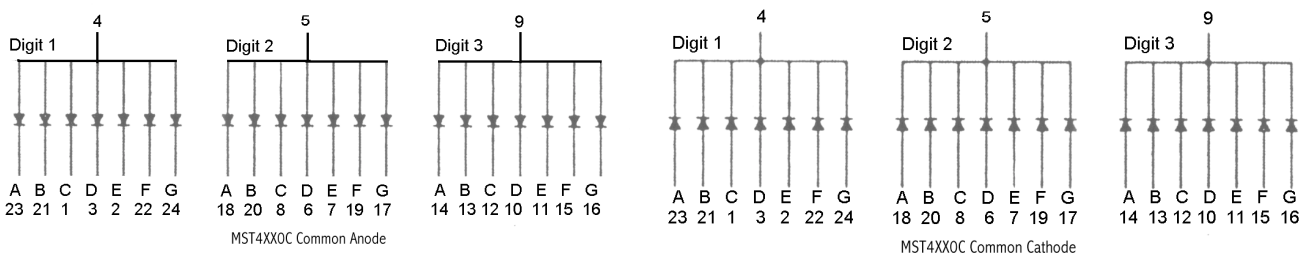
## PIN ORIENTATION, SEGMENT IDENTIFICATION, AND PRODUCT MARKING




## SCHEMATICS

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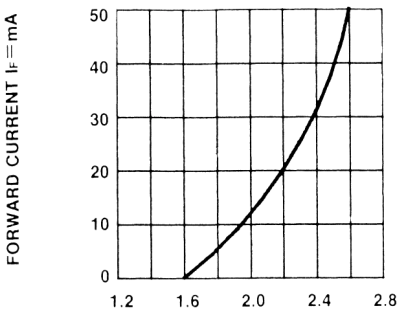
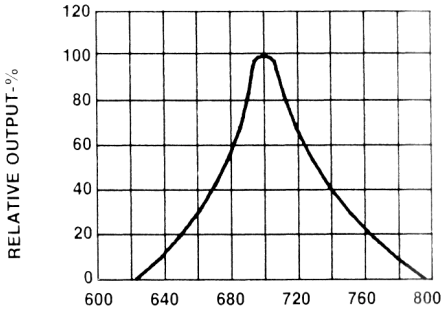
## GRAPHICAL DATA Bright Red ($T_A$ = 25°C, unless otherwise specified)



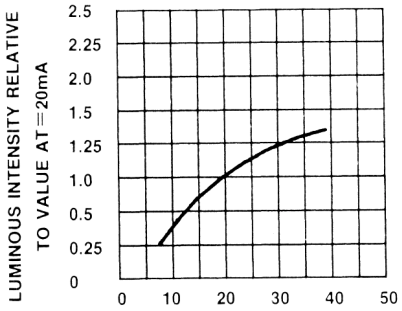

FORWARD VOLTAGE ($V_F$)-VOLTS

Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE.



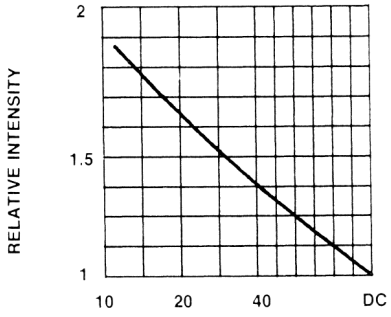

WAVELENGTH ($\lambda$)-nm

Fig.2 SPECTRAL RESPONSE



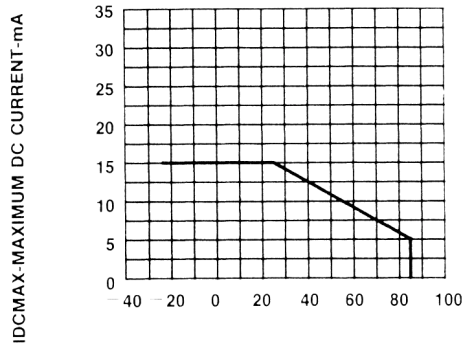

$I_F$-FORWARD CURRENT-mA

Fig.3 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT



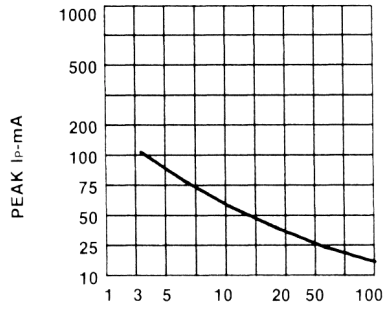

DUTY CYCLE % PER SEGMENT (AVERAGE $I_F$=10mA)

Fig.5 LUMINOUS INTENSITY VS. DUTY CYCLE




$T_A$ AMBIENT TEMPERATURE C

Fig.4 MAXIMUM ALLOWABLE DC CURRENT PER SEGMENT VS. A FUNCTION OF AMBIENT TEMPERATURE.




DUTY CYCLE %

Fig. 6 MAX PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE f=1 KHz)

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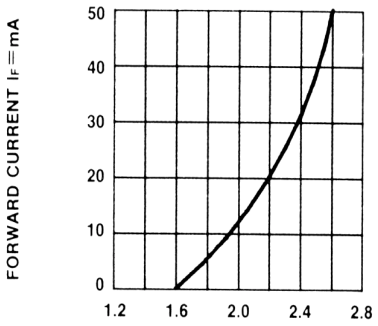
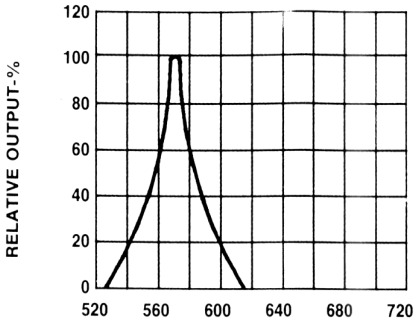
## GRAPHICAL DATA Green ($T_A$ = 25°C, unless otherwise specified)



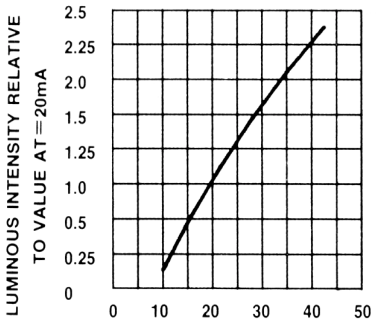

FORWARD VOLTAGE ($V_F$)-VOLTS

Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE.



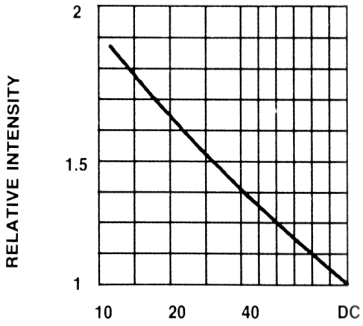

WAVELENGTH (λ)-nm

Fig.2 SPECTRAL RESPONSE



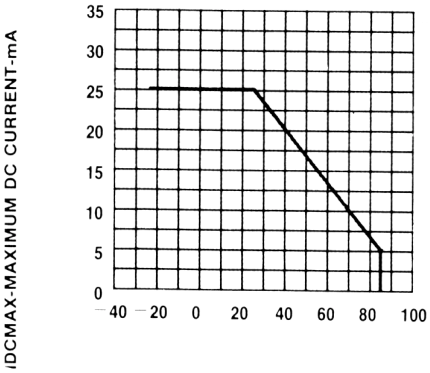

$I_F$-FORWARD CURRENT-mA

Fig.3 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT



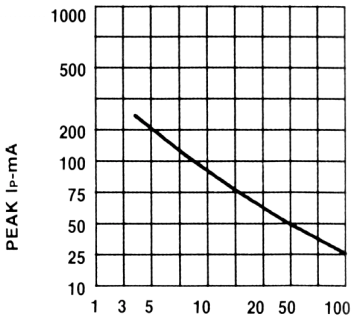

DUTY CYCLE % PER SEGMENT (AVERAGE $I_F$=10mA)

Fig.5 LUMINOUS INTENSITY VS. DUTY CYCLE




$T_A$ AMBIENT TEMPERATURE °C

Fig.4 MAXIMUM ALLOWABLE DC CURRENT PER SEGMENT CS. A FUNCTION OF AMBIENT TEMPERATURE.




DUTY CYCLE %

Fig. 6 MAX PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE f=1 KHz)

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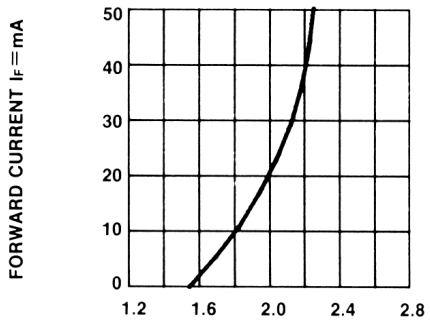
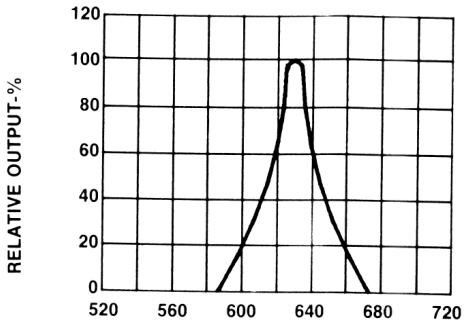
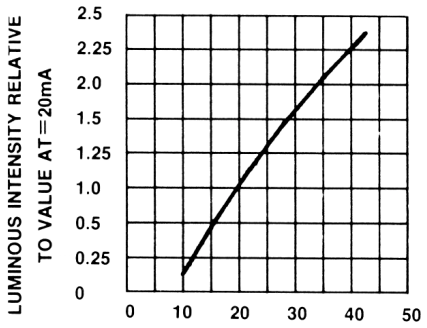
## GRAPHICAL DATA High Efficiency Red($T_A$ = 25°C, unless otherwise specified)



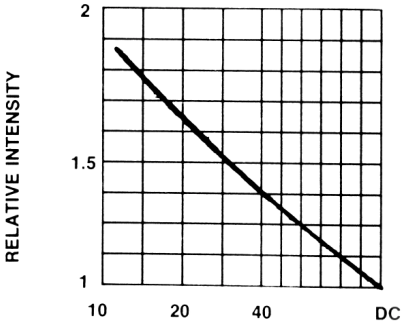

FORWARD VOLTAGE ($V_F$)-VOLTS
Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE.



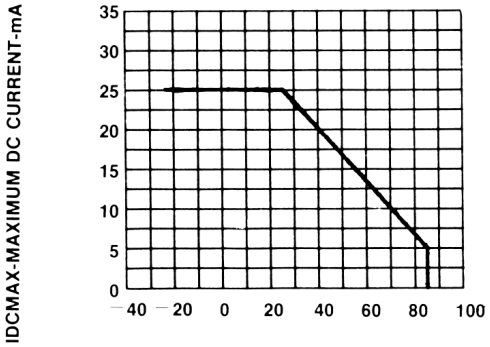

WAVELENGTH (λ)-nm
Fig.2 SPECTRAL RESPONSE



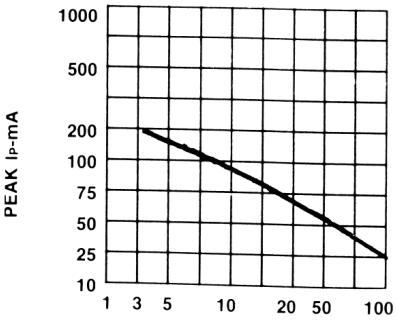

$I_F$-FORWARD CURRENT-mA
Fig.3 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT




DUTY CYCLE % PER SEGMENT
(AVERAGE $I_F$=10mA)
Fig.5 LUMINOUS INTENSITY VS. DUTY CYCLE




$T_A$ AMBIENT TEMPERATURE °C
Fig.4 MAXIMUM ALLOWABLE DC CURRENT PER SEGMENT VS. A FUNCTION OF AMBIENT TEMPERATURE.




DUTY CYCLE %
Fig. 6 MAX PEAK CURRENT VS. DUTY CYCLE %
(REFRESH RATE f=1 KHz)

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