



LTD- 432XC 482XC SERIES

0.4" DUAL DIGIT NUMERIC DISPLAYS

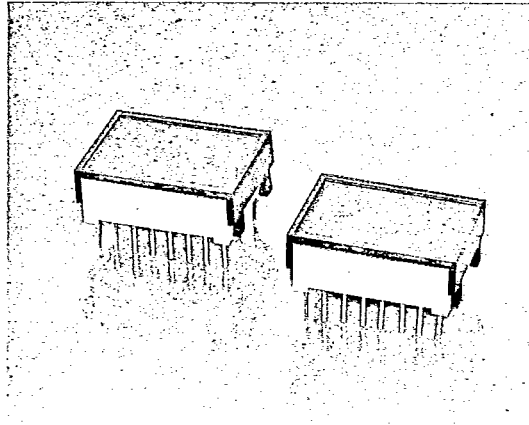
LITE-ON INC

31E D 5536367 0002400 3 LTN

T-41-33

FEATURES

- 0.4 INCH (10.21 mm) DIGIT HEIGHT.
- CONTINUOUS UNIFORM SEGMENTS.
- CHOICE OF FOUR BRIGHT COLORS-RED / BRIGHT RED/GREEN/ORANGE.
- LOW POWER REQUIREMENT.
- EXCELLENT CHARACTERS APPEARANCE.
- HIGH CONTRAST.
- HIGH BRIGHTNESS.
- WIDE VIEWING ANGLE.
- SOLID STATE RELIABILITY.
- COMMON ANODE OR COMMON CATHODE MODELS.
- TWO DIGIT PACKAGE SIMPLIFIES ALIGNMENTS & ASSEMBLY.
- LEADS ON .100" (2.54mm) CENTERS.
- CATEGORIZED FOR LUMINOUS INTENSITY.
- I.C. COMPATIBLE.
- EASY MOUNTING ON P.C. BOARD.



SEVEN-SEGMENT LED DISPLAYS
& ALPHANUMERIC DISPLAYS

DESCRIPTION

The LTD-432XC/482XC series are 0.4 inch (10.21mm) height dual digit displays.

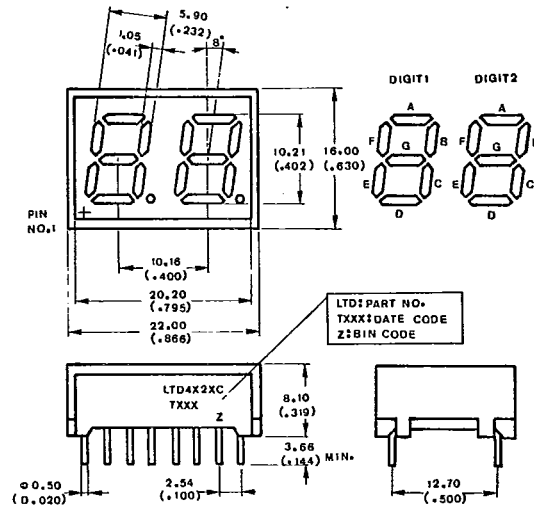
The red series devices utilize LED chips which are made from GaAsP on a GaAs substrate. The bright red and green series devices utilize LED chips which are made from GaP on a transparent GaP substrate. The orange series devices utilize LED chips which are made from GaAsP on a transparent GaP substrate. Red, bright red and orange displays have red cap. Green displays have green cap.

DEVICE

| PART NO. LTD- | | | | DESCRIPTION | INTERNAL CIRCUIT DIAGRAM |
|---------------|-------------|-------|--------|----------------|--------------------------|
| RED | BRIGHT RED. | GREEN | ORANGE | | |
| 432RC | 432PC | 432GC | 432EC | Common Cathode | A |
| 482RC | 482PC | 482GC | 482EC | Common Anode | B |

5-98
761

PACKAGE DIMENSIONS



NOTE: All dimensions are in millimeters (inches) tolerance are:

- Lead length (from seating plane): minimum value $\frac{+1.00}{-0.00}$ mm $\frac{+0.040''}{-0.000''}$
- $\frac{\pm 0.25}{(0.010)}$ mm unless otherwise noted.

PIN CONNECTION

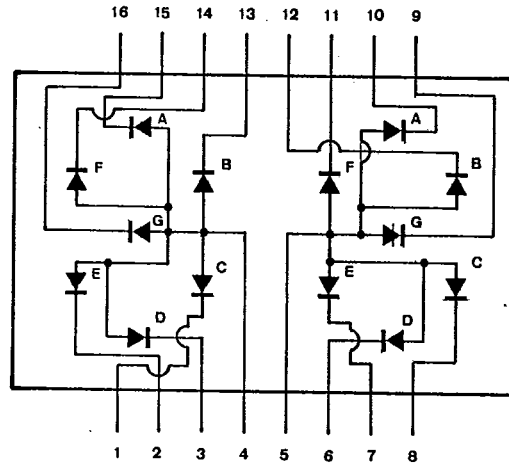
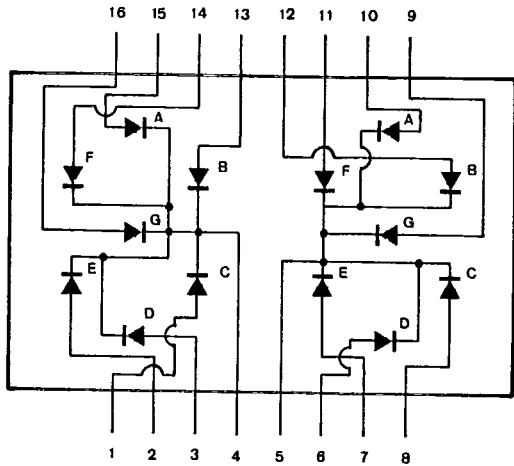
| PIN NO. | CONNECTION | |
|---------|--------------------------|------------------------|
| | A. LTD-432XC | B. LTD-482XC |
| 1 | Anode C (Digit 1) | Cathode C (Digit 1) |
| 2 | Anode E (Digit 1) | Cathode E (Digit 1) |
| 3 | Anode D (Digit 1) | Cathode D (Digit 1) |
| 4 | Common Cathode (Digit 1) | Common Anode (Digit 1) |
| 5 | Common Cathode (Digit 2) | Common Anode (Digit 2) |
| 6 | Anode D (Digit 2) | Cathode D (Digit 2) |
| 7 | Anode E (Digit 2) | Cathode E (Digit 2) |
| 8 | Anode C (Digit 2) | Cathode C (Digit 2) |
| 9 | Anode G (Digit 2) | Cathode G (Digit 2) |
| 10 | Anode A (Digit 2) | Cathode A (Digit 2) |
| 11 | Anode F (Digit 2) | Cathode F (Digit 2) |
| 12 | Anode B (Digit 2) | Cathode B (Digit 2) |
| 13 | Anode B (Digit 1) | Cathode B (Digit 1) |
| 14 | Anode F (Digit 1) | Cathode F (Digit 1) |
| 15 | Anode A (Digit 1) | Cathode A (Digit 1) |
| 16 | Anode G (Digit 1) | Cathode G (Digit 1) |

T-41-33

INTERNAL CIRCUIT DIAGRAM

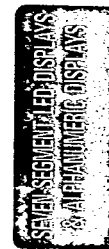
A. LTD-432XC

B. LTD-482XC



ABSOLUTE MAXIMUM RATINGS AT $T_A = 25^\circ\text{C}$

| PARAMETER | RED | BRIGHT RED | GREEN | ORANGE | UNIT |
|--|----------------|------------|-------|--------|-------|
| Power Dissipation Per Segment | 55 | 40 | 75 | 75 | mW |
| Peak Forward Current Per Segment (1/10 Duty Cycle, 0.1ms Pulse Width) | 160 | 60 | 100 | 100 | mA |
| Continuous Forward Current Per Segment | 25 | 15 | 25 | 25 | mA |
| Derating Linear From 25°C Per Segment | 0.3 | 0.18 | 0.3 | 0.3 | mA/°C |
| Reverse Voltage Per Segment | 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 | | | | | |



**ELECTRICAL/OPTICAL CHARACTERISTICS AT TA = 25°C
LTD-432RC/482RC SERIES**

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | TEST CONDITION |
|-------------------------------------|-----------------|------|------|------|----------------|-----------------------|
| Average Luminous Intensity | I_v | 100 | 300 | | μcd | $I_F = 10 \text{ mA}$ |
| Peak Emission Wavelength | λ_p | | 655 | | nm | $I_F = 20 \text{ mA}$ |
| Spectral Line Half-Width | $\Delta\lambda$ | | 24 | | nm | $I_F = 20 \text{ mA}$ |
| Forward Voltage Segment or D.P. | V_F | | 1.7 | 2.0 | V | $I_F = 20 \text{ mA}$ |
| Reverse Current any Segment or D.P. | I_R | | | 100 | μA | $V_R = 5\text{V}$ |
| Luminous Intensity Matching Ratio | $I_v\text{-m}$ | | | 2:1 | | $I_F = 20 \text{ mA}$ |

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

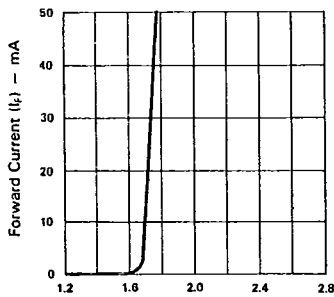


Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.

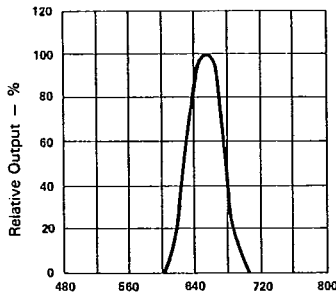


Fig. 2 SPECTRAL RESPONSE.

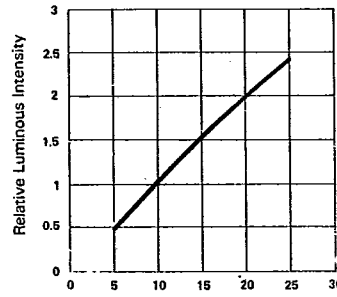


Fig. 3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).

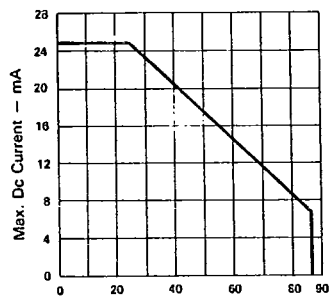


Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.

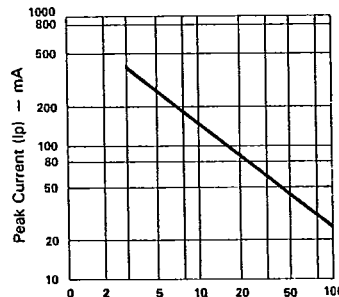


Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE.% (REFRESH RATE - F = 1 KHz)

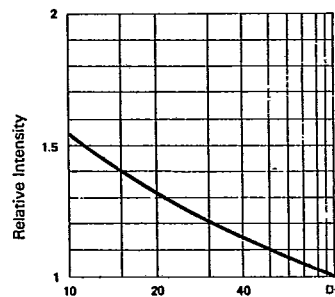


Fig. 6 LUMINOUS INTENSITY Vs. DUTY CYCLE% (AVERAGE $I_F = 10\text{mA}$ PER SEG.)

ELECTRICAL/OPTICAL CHARACTERISTICS AT $T_A = 25^\circ\text{C}$
LTD-432PC/482PC SERIES

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | TEST CONDITION |
|-------------------------------------|-----------------|------|------|------|----------------|-----------------------|
| Average Luminous Intensity | I_v | 200 | 500 | | μcd | $I_F = 10 \text{ mA}$ |
| Peak Emission Wavelength | λ_p | | 697 | | nm | $I_F = 20 \text{ mA}$ |
| Spectral Line Half-Width | $\Delta\lambda$ | | 90 | | nm | $I_F = 20 \text{ mA}$ |
| Forward Voltage Segment or D.P. | V_F | | 2.1 | 2.8 | V | $I_F = 20 \text{ mA}$ |
| Reverse Current any Segment or D.P. | I_R | | | 100 | μA | $V_R = 5\text{V}$ |
| Luminous Intensity Matching Ratio | $I_v\text{-m}$ | | | 2:1 | | $I_F = 20 \text{ mA}$ |

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

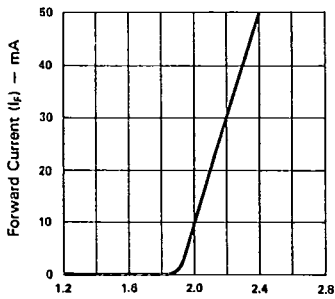


Fig. 1 FORWARD CURRENT vs. FORWARD VOLTAGE.

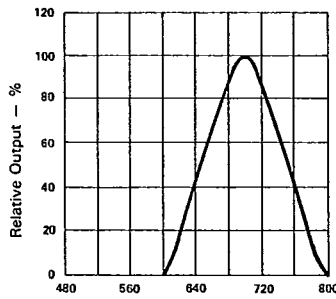


Fig. 2 SPECTRAL RESPONSE.

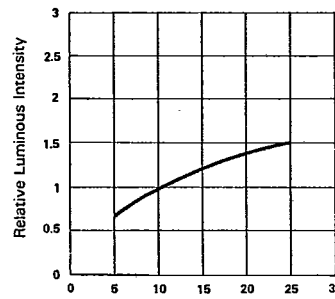


Fig. 3 RELATIVE LUMINOUS INTENSITY vs. FORWARD CURRENT (PER SEGMENT).

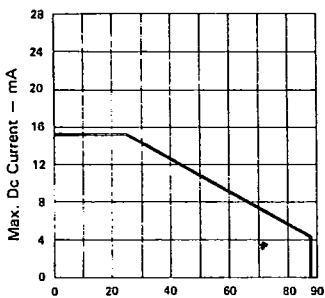


Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. vs AMBIENT TEMPERATURE.

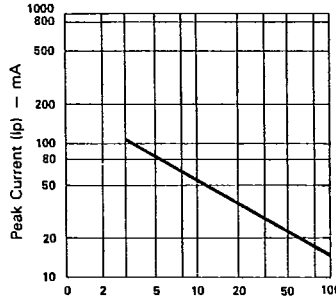


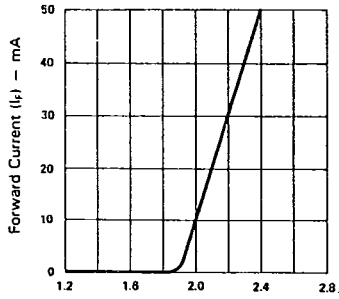
Fig. 5 MAX. PEAK CURRENT vs. DUTY CYCLE.% (REFRESH RATE - $F = 1 \text{ KHz}$)



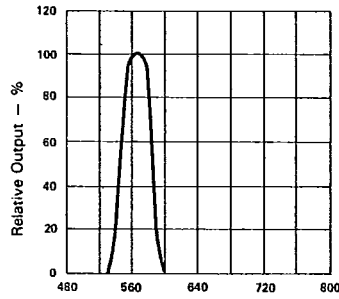
**ELECTRICAL/OPTICAL CHARACTERISTICS AT TA = 25°C
LTD-432GC/482GC SERIES**

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | TEST CONDITION |
|-------------------------------------|--------|------|------|------|------|----------------|
| Average Luminous Intensity | Iv | 500 | 1100 | | μcd | IF = 10 mA |
| Peak Emission Wavelength | λp | | 565 | | nm | IF = 20 mA |
| Spectral Line Half-Width | Δλ | | 30 | | nm | IF = 20 mA |
| Forward Voltage Segment or D.P. | VF | | 2.1 | 2.8 | V | IF = 20 mA |
| Reverse Current any Segment or D.P. | IR | | | 100 | μA | VR = 5V |
| Luminous Intensity Matching Ratio | Iv-m | | | 2:1 | | IF = 20 mA |

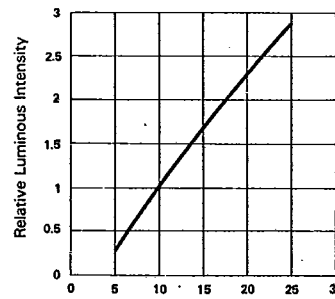
TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES
(25°C Ambient Temperature Unless Otherwise Noted)



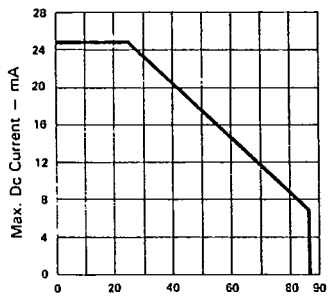
Forward Voltage (VF) - Volts
Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.



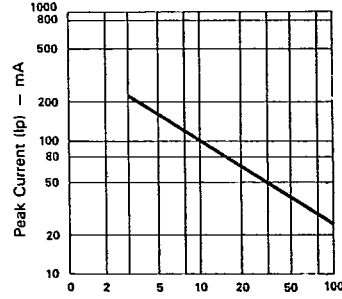
Wavelength (λ) - nm.
Fig. 2 SPECTRAL RESPONSE.



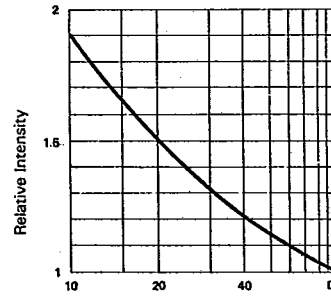
Forward Current (If) - mA
Fig. 3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).



Ambient Temperature (TA) - °C
Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.



Duty Cycle %
Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE % (REFRESH RATE - F = 1 KHz)



Duty Cycle %
Fig. 6 LUMINOUS INTENSITY Vs. DUTY CYCLE % (AVERAGE If = 10mA PER SEG.)

**ELECTRICAL/OPTICAL CHARACTERISTICS AT TA = 25°C
LTD-432EC/482EC SERIES**

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | TEST CONDITION |
|-------------------------------------|-----------------|------|------|------|----------------|-----------------------|
| Average Luminous Intensity | I_v | 500 | 1100 | | μcd | $I_F = 10 \text{ mA}$ |
| Peak Emission Wavelength | λ_p | | 630 | | nm | $I_F = 20 \text{ mA}$ |
| Spectral Line Half-Width | $\Delta\lambda$ | | 40 | | nm | $I_F = 20 \text{ mA}$ |
| Forward Voltage Segment or D.P. | V_F | | 2.1 | 2.8 | V | $I_F = 20 \text{ mA}$ |
| Reverse Current any Segment or D.P. | I_R | | | 100 | μA | $V_R = 5 \text{ V}$ |
| Luminous Intensity Matching Ratio | $I_v\text{-m}$ | | | 2:1 | | $I_F = 20 \text{ mA}$ |



TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

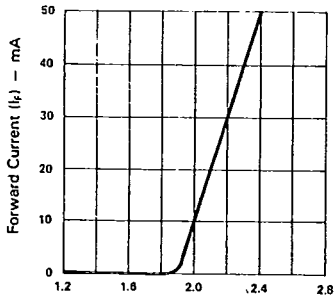


Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.

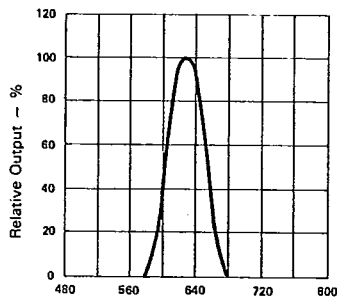


Fig. 2 SPECTRAL RESPONSE.

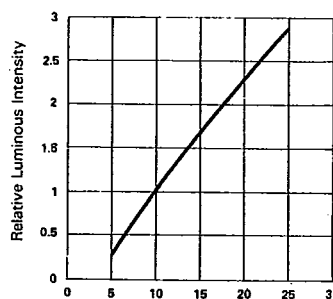


Fig. 3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).

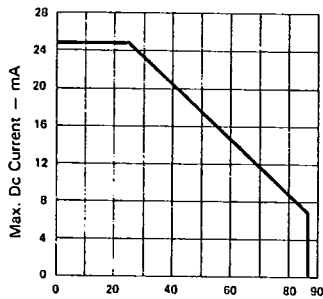


Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.

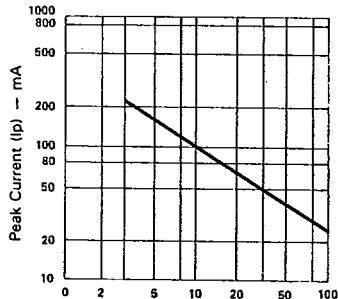


Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE.% (REFRESH RATE - F = 1 KHz)

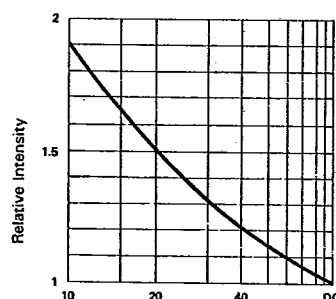


Fig. 6 LUMINOUS INTENSITY Vs. DUTY CYCLE% (AVERAGE $I_F = 10 \text{ mA PER SEG.}$)

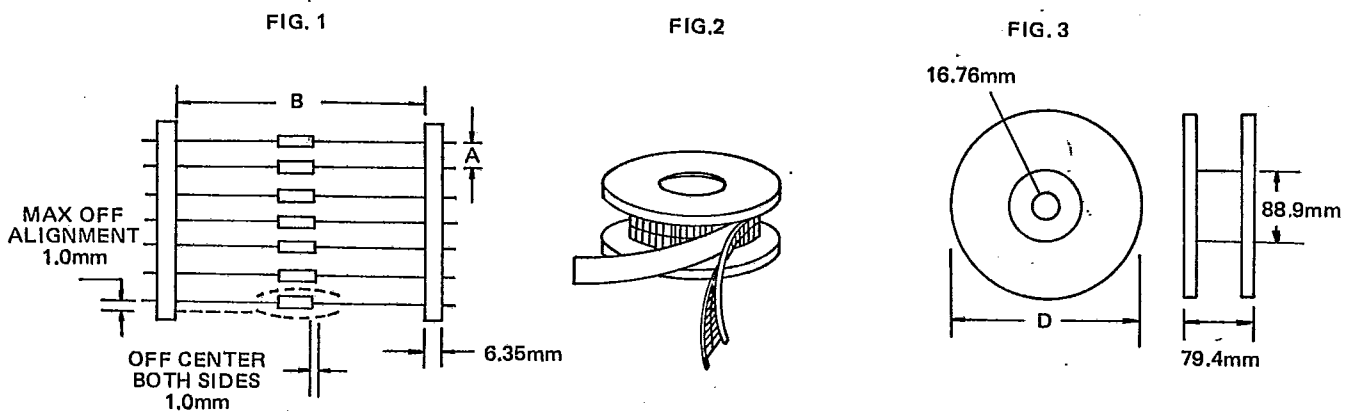
PACKAGING

T-90-20

Reel Packaging (Axial Lead Units)

| DEVICE TYPE | COMPONENT SPACE (MM) "A" | TAPE SPACE (MM) "B" | REEL DIA (MM) "D" | QUANTITY (EA) | | CARTON | |
|-----------------|-----------------------------|------------------------|----------------------|---------------|--------|-----------------|-------------|
| | | | | REEL | CARTON | SIZE (MM) | WEIGHT (KG) |
| DO-41 DO-41L | 5±0.5 | 52.4±1.5 | 326~336 | 5000 | 20K | 355 x 355 x 355 | 10.5 |
| DO-201AD | 10±0.5 | 52.4±1.5 | 326~336 | 1200 | 4.8K | 355 x 355 x 355 | 9.0 |
| P6(Aleg) | 10±0.5 | 52.4±1.5 | 326~336 | 700 | 2.8K | 355 x 355 x 355 | 8.8 |

The C dimension of Fig. 3 is between 3.17m.m. and 635mm greater than the length of the component involved.

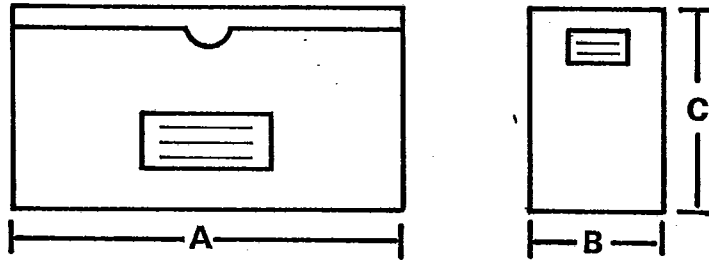


Bulk Packaging (Axial Lead Devices and Bridge Rectifiers)

| DEVICE TYPE | PACKAGING SIZE (MM) | | QUANTITY (EA) | | APPROX GROSS WEIGHT (KG) | |
|-----------------|---------------------|-----------------|---------------|--------|--------------------------|--------|
| | BOX | CARTON | BOX | CARTON | BOX | CARTON |
| DO-41 DO-41L | 196 x 84 x 20 | 450 x 210 x 250 | 1000 | 50K | 0.38 | 20 |
| DO-201AD | 305 x 93 x 59 | 355 x 355 x 355 | 1000 | 20K | 1.35 | 28 |
| P6(Aleg) | 305 x 93 x 59 | 355 x 355 x 355 | 500 | 10K | 1.2 | 24.5 |
| PBM | 357 x 125 x 60 | 530 x 360 x 340 | 1000 | 20K | 1.5 | 32.3 |
| PBDF | 495 x 155 x 145 | 500 x 325 x 305 | 5000 | 20K | 5.1 | 21.5 |
| PBP | 357 x 125 x 60 | 530 x 360 x 340 | 500 | 10K | 1.5 | 31.5 |
| PBL | 375 x 220 x 155 | 470 x 385 x 455 | 1000 | 5K | 5.7 | 30.5 |
| PBPC-6 | 357 x 125 x 60 | 560 x 360 x 340 | 250 | 5K | 1.1 | 22 |
| PBPC-8 | 357 x 125 x 60 | 560 x 360 x 340 | 250 | 5K | 1.7 | 35 |
| KBPC | 375 x 220 x 365 | 470 x 390 x 385 | 500 | 1K | 15.1 | 31.5 |
| KBPC-W | 375 x 220 x 365 | 470 x 390 x 385 | 500 | 1K | 14.5 | 30.0 |

AMMO BOX PACKAGING

BOX SIZE



Unit:m. m.

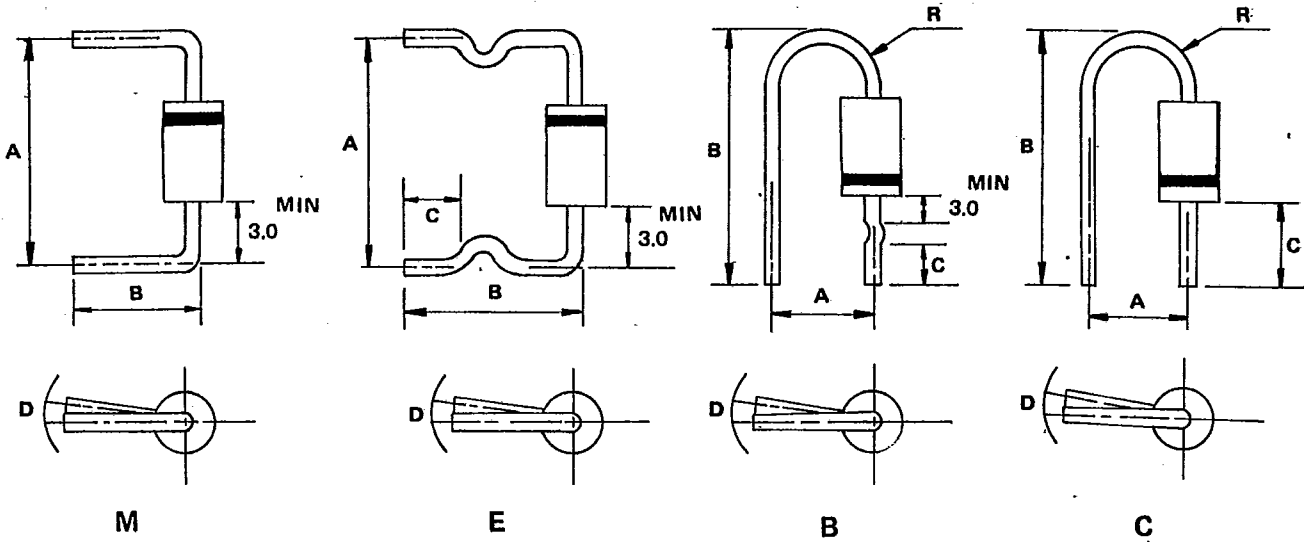
| Packaging | Products Outline | Dimension *A* | Dimension *B* | Dimension *C* | Q'ty per BOX |
|---------------------------|-----------------------------|---------------|---------------|---------------|--------------|
| 26MM Horizontal Ammo Pack | DO-41 DO-41L(0.6mm Lead) | 255 | 50 | 95 | 3K |
| | | | | | 3K |
| 52MM Horizontal Ammo Pack | DO-41and DO-41L DO 201AD | 250 | 75 | 92 | 3K |
| | | | | | 0.8K |

CARTON SIZE

Unit:m. m.

| Packaging | Products Outline | length | Width | High | Q'ty Per Carton |
|---------------------------|-----------------------------|--------|-------|------|-----------------|
| 26MM Horizontal Ammo Pack | DO-41 DO-41L(0.6mm Lead) | 330 | 310 | 268 | 42K |
| | | | | | 48K |
| 52MM Horizontal Ammo Pack | DO-41and DO-41L DO 201AD | 355 | 355 | 340 | 12K |

PREFORMED LEAD DRAWING



| Case type | Preformed type | A (mm) | | B (mm) | | C (mm) | | D (mm) | | R (mm) | |
|-----------|----------------|-----------|-----------|-----------|-----------|----------|-----------|--------|-----------|---------|-----------|
| | | range | tolerance | range | tolerance | range | tolerance | range | tolerance | range | tolerance |
| D041 | M | 9.0-20.0 | 1.0 | 8.0-22.0 | ±0.5 | - | - | 1.5 | max | - | - |
| | E | 11.0-20.0 | ±1.0 | 11.0-16.0 | ±1.0 | 4.0-5.0 | ±0.5 | 1.5 | max | - | - |
| | B | 7.5 | ±0.5 | 19.0-22.0 | ±0.5 | 7.5 | ±0.5 | 1.5 | max | 2.5-4.0 | Typ |
| | C | 4.5 | ±0.8 | 18.0-19.0 | ±0.5 | 9.0 | ±0.5 | 1.5 | max | 2.5-4.0 | Typ |
| D0201AD | M | 15.0-20.0 | ±1.0 | 8.0-22.0 | ±1.0 | - | - | 2.0 | max | - | - |
| | E | 15.0-20.0 | ±1.0 | 10.0-22.0 | ±1.0 | 3.0-15.0 | ±0.5 | 2.0 | max | - | - |
| P6(Aleg) | M | 15.0-20.0 | ±1.0 | 8.0-22.0 | ±1.0 | - | - | 2.0 | max | - | - |