

**1AMP. FAST RECOVERY RECTIFIERS**
**VOLTAGE RANGE**  
50 to 1000 Volts  
**CURRENT**  
1.0 Ampere

**FEATURES**

- Low cost
- Diffused junction
- Low leakage
- Low forward voltage drop
- High current capability
- Easily cleaned with Freon, Alcohol, Chlorothene and similar solvents
- The plastic material carries U/L recognition 94V-0

**MECHANICAL DATA**

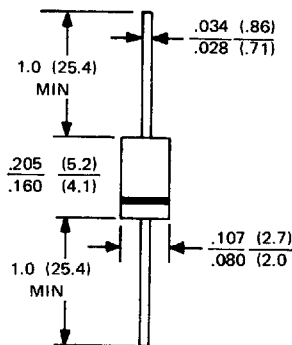
Case: JEDEC DO-41, molded plastic

Terminals: Plated axial leads, solderable per MIL-STD-202, Method 208

Polarity: Color band denotes cathode

Weight: 0.012 ounce, 0.3 grams

Mounting position: Any

**DO-41**


Dimensions in inches and (millimeters)

**MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS**

Ratings at 25° C ambient temperature unless otherwise specified.

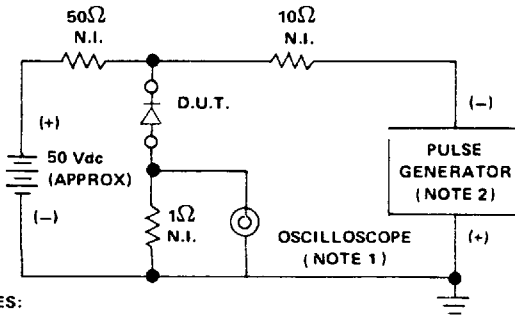
Single phase, half wave, 60Hz, resistive or inductive load,

For capacitive load, derate current by 20%.

|                                                                                                                                   |                   | PR1001        | PR1002 | PR1003 | PR1004 | PR1005 | PR1006 | PR1007 | UNITS    |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------|--------|--------|--------|--------|--------|--------|----------|
| Maximum Recurrent Peak Reverse Voltage                                                                                            | V <sub>RRM</sub>  | 50            | 100    | 200    | 400    | 600    | 800    | 1000   | V        |
| Maximum RMS Voltage                                                                                                               | V <sub>RMS</sub>  | 35            | 70     | 140    | 280    | 420    | 560    | 700    | V        |
| Maximum DC Blocking Voltage                                                                                                       | V <sub>DC</sub>   | 50            | 100    | 200    | 400    | 600    | 800    | 1000   | V        |
| Maximum Average Forward Rectified Current<br>.375" (9.5mm) Lead Lengths @ T <sub>A</sub> = 75° C                                  | I <sub>(AV)</sub> | 1.0           |        |        |        |        |        |        | A        |
| Peak Forward Surge Current @ T <sub>J</sub> = 125° C<br>8.3 ms single half-sine-wave<br>superimposed on rated load (JEDEC Method) | I <sub>FSM</sub>  | 30            |        |        |        |        |        |        | A        |
| Maximum Forward Voltage at 1.0A DC                                                                                                | V <sub>F</sub>    | 1.2           |        |        |        |        |        |        | V        |
| Maximum DC Reverse Current @ T <sub>A</sub> = 25° C<br>at Rated DC Blocking Voltage @ T <sub>A</sub> = 100° C                     | I <sub>R</sub>    | 5<br>100      |        |        |        |        |        |        | uA<br>uA |
| Maximum Reverse Recovery Time<br>(Note 1) @ T <sub>A</sub> = 25° C                                                                | t <sub>RR</sub>   | 150           |        |        |        | 250    | 500    |        | ns       |
| Typical Junction Capacitance (Note 2)                                                                                             | C <sub>J</sub>    | 15            |        |        |        | 8      |        |        | pF       |
| Typical Thermal Resistance (Note 3)                                                                                               | R <sub>θJA</sub>  | 50            |        |        |        |        |        |        | °C/W     |
| Operating Temperature Range                                                                                                       | T <sub>J</sub>    | -65 to + 150  |        |        |        |        |        |        | °C       |
| Storage Temperature Range                                                                                                         | T <sub>STG</sub>  | - 65 to + 175 |        |        |        |        |        |        | °C       |

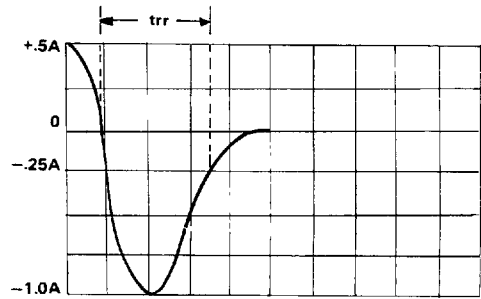
NOTES: 1. Measured with  $I_F = 0.5A$ ,  $I_R = 1A$ ,  $I_{rr} = 0.25A$   
2. Measured at 1.0 MHz and applied reverse voltage of 4.0V DC  
3. Thermal Resistance Junction to Ambient.

FIG. 1— REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT DIAGRAM



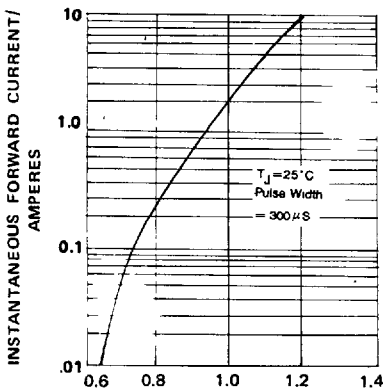
NOTES:

1. RISE TIME = 7n SEC MAX, INPUT IMPEDANCE = 1 MEGOHM, 22pF
2. RISE TIME = 10n SEC MAX, SOURCE IMPEDANCE = 50 OHM,



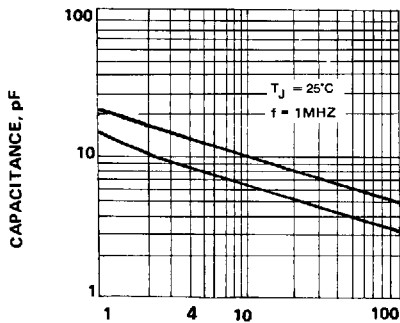
SET TIME BASE FOR 50/100 ns/cm

FIG. 2 — TYPICAL FORWARD CHARACTERISTIC



INSTANTANEOUS FORWARD VOLTAGE, VOLTS

FIG. 4— TYPICAL JUNCTION CAPACITANCE



REVERSE VOLTAGE, VOLTS

FIG. 3— FORWARD DERATING CURVE

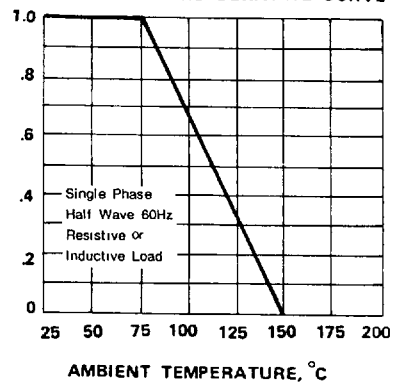
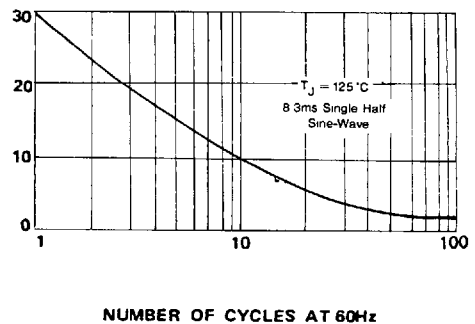


FIG. 5— PEAK FORWARD SURGE CURRENT



## Embossed Carrier Dimensions

8, 12, 16, 24mm Tape Only

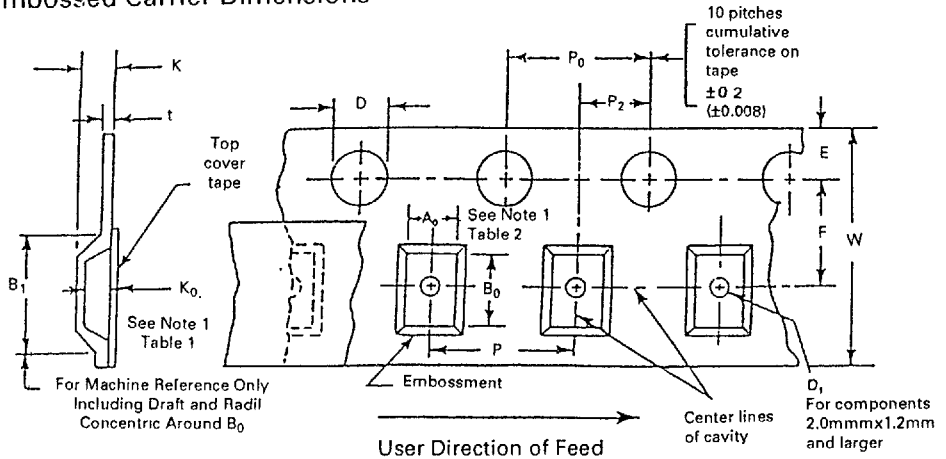


TABLE 1

### EMBOSSED TAPE

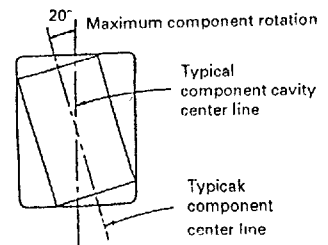
ALL DIMENSION IN MILLIMETERS AND (INCHES)

| TAPE SIZE | D                                                    | E                                       | P <sub>0</sub>                         | t (MAX)         | AoBoKo     | CONSTANT DIMENSION |
|-----------|------------------------------------------------------|-----------------------------------------|----------------------------------------|-----------------|------------|--------------------|
| 12.16 mm  | $1.5^{+0.10}_{-0.0}$<br>(0.059 $^{+0.004}_{-0.00}$ ) | $1.75 \pm 0.10$<br>(0.069 $\pm 0.004$ ) | $4.0 \pm 0.10$<br>(0.157 $\pm 0.004$ ) | 0.40<br>(0.016) | SEE NOTE 1 |                    |

| PRODUCT TYPE | TAPE SIZE | B1 MAX         | D1 MIN        | F                       | K MAX          | P2                      | R MIN        | M                       | P                       | VARIABLE DIMENSIONS |
|--------------|-----------|----------------|---------------|-------------------------|----------------|-------------------------|--------------|-------------------------|-------------------------|---------------------|
| SM1          | 12mm      | 8.2<br>(.323)  | 1.5<br>(.059) | 5.5±0.05<br>(.217± 002) | 4.5<br>(.177)  | 2.0±0.05<br>(.079± 002) | 30<br>(1.81) | 12.0±.30<br>(.472±.012) | 4.0±.10<br>(.157±.004)  |                     |
| SMB          |           |                |               |                         | 2.67<br>(.105) |                         |              |                         | 8.0±.10<br>(.315±.004)  |                     |
| DFS          | 16mm      | 12.1<br>(.476) |               | 7.5±0.10<br>(.295±.004) | 3.7<br>(.146)  | 4.0±.10<br>(.157±.004)  |              | 16.0±.30<br>(.630±.012) | 12.0±.10<br>(.472±.004) |                     |
| SMDF         |           |                |               |                         | 4.9<br>(.193)  | 6.0±.10<br>(.287±.004)  |              |                         |                         |                     |

Notes: 1. AoBoKo are determined by component size. The clearance between the component and the cavity must be within 0.05 (.002) min. to 0.50 (.020) max. for 8mm tape. 0.05 (.002) min. to 0.65 (.025) max. for 12mm tape. 0.05 (.002) min. to 0.90 (.035) max. for 16mm tape and 0.05 (.002) min. to 1.00 (.039) max. for 24mm tape and larger. The component cannot rotate more than 20° within the determined cavity, see sketch "A" below.

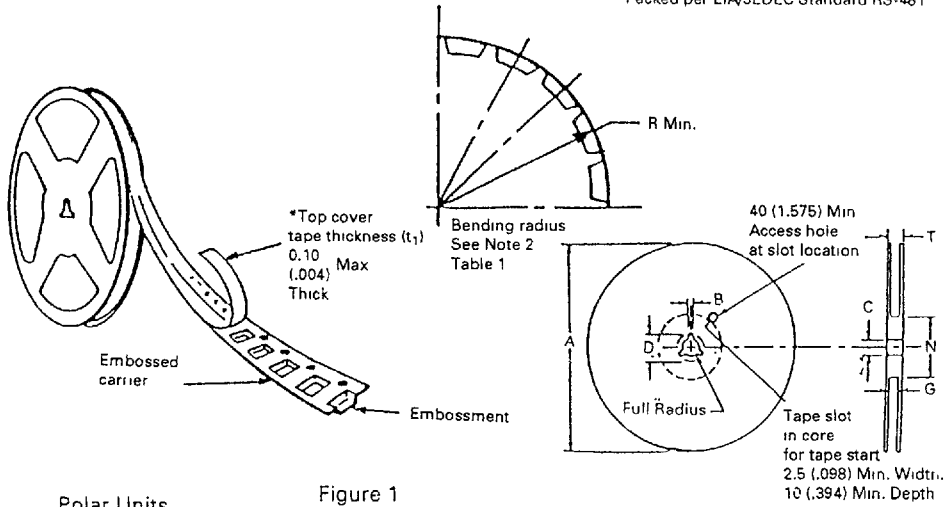
2. Tape and components shall pass around radius "R" without damage.



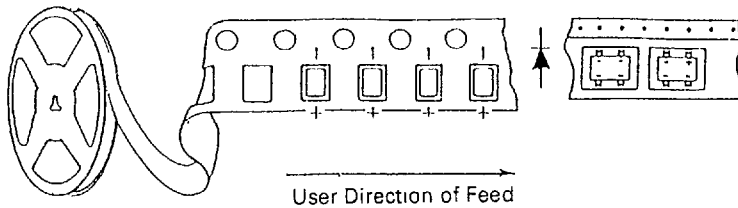
Sketch "A"

# SURFACE MOUNT PACKAGING

Packed per EIA/JEDEC Standard RS-481



Polar Units



## REEL DIMENSIONS

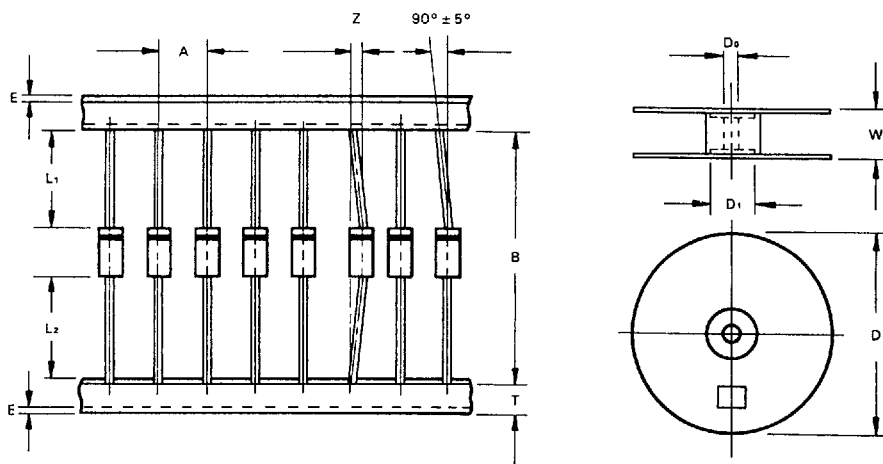
| TAPE SIZE | A<br>MAX.       | B<br>MAX.     | C                       | D<br>MIN       | N<br>MIN       | G                                                                                 | T<br>MAX.      |
|-----------|-----------------|---------------|-------------------------|----------------|----------------|-----------------------------------------------------------------------------------|----------------|
| 12mm      | 330<br>(12.992) | 1.5<br>(.059) | 13.0±0.5<br>(.512±.020) | 20.2<br>(.795) | 5.0<br>(1.969) | 12.4 <sup>+2.0</sup> <sub>-0.0</sub><br>(.488 <sup>+0.078</sup> <sub>-0.0</sub> ) | 18.4<br>(.724) |
| 16mm      | 360<br>(14.173) | 1.5<br>(.059) | 13.0±0.5<br>(.512±.020) | 20.2<br>(.795) | 5.0<br>(1.969) | 16.4 <sup>+2.0</sup> <sub>-0.0</sub><br>(.646 <sup>+0.078</sup> <sub>-0.0</sub> ) | 22.4<br>(.882) |

## PACKING:

| DEVICE TYPE | Q'TY/REEL<br>(PCCS) | REEL DIA.<br>(Mmm) | BOX SIZE<br>(mm) | Q'TY/BOX | CARTON SIZE<br>(mm) | Q'TY/CARTON<br>(PCS) |
|-------------|---------------------|--------------------|------------------|----------|---------------------|----------------------|
| SMI         | 1500                | 178                | 188x188x68       | 6000     | 337x337x350         | 30000                |
|             | 5000                | 330                | 337x337x40       | 10000    |                     | 80000                |
| SMB         | 500                 | 175                | 188x188x68       | 1000     |                     | 14000                |
|             | 3000                | 330                | 337x337x40       | 6000     |                     | 48000                |
| DF-S        | 1000                |                    |                  | 8000     |                     |                      |
| SMDF        |                     |                    |                  |          |                     |                      |

Axial lead devices are packed in accordance with EIA standard RS-296-D and specifications given below.

| COMPONENT<br>OUTLINE | COMPONENT<br>PITCH A<br>$\pm 0.5\text{mm}$ (.020") | INNER TAPE<br>PITCH B<br>$\pm 1.5\text{mm}$ (.059") | CUMULATIVE PITCH<br>TOLERANCE |
|----------------------|----------------------------------------------------|-----------------------------------------------------|-------------------------------|
| A-405                | 5.0mm                                              | 26.0mm                                              | 2.0mm/20pitch                 |
| A-405                | 5.0mm                                              | 52.4mm                                              | 2.0mm/10pitch                 |
| DO-41                | 5.0mm                                              | 26.0mm                                              | 2.0mm/20pitch                 |
| DO-41                | 5.0mm                                              | 52.4mm                                              | 2.0mm/10pitch                 |
| DO 15                | 5.0mm                                              | 52.4mm                                              | 2.0mm/10pitch                 |
| DO-201AD             | 10.0mm                                             | 52.4mm                                              | 2.0mm/10pitch                 |
| R-6                  | 10.0mm                                             | 52.4mm                                              | 2.0mm/10pitch                 |



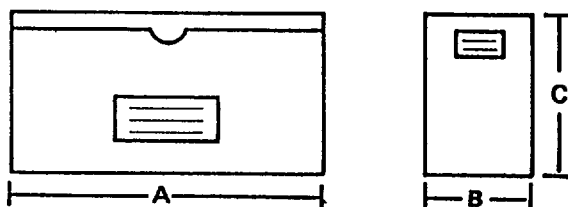
| ITEM                  | SYMBOL         | SPECIFICATIONS (mm) | SPECIFICATIONS (inch) |
|-----------------------|----------------|---------------------|-----------------------|
| Component alignment   | Z              | 1.2 max.            | 0.048 max.            |
| Tape width            | T              | $6.0 \pm 0.4$       | $0.236 \pm 0.016$     |
| Exposed adhesive      | E              | 0.8 max.            | 0.032 max.            |
| Body eccentricity     | $ L_1 - L_2 $  | 1.0 max.            | 0.040 max.            |
| Reel outside diameter | D              | 330.0               | 13.0                  |
| Reel inner diameter   | D <sub>1</sub> | $85.7 \pm 0.3$      | $3.375 \pm 0.012$     |
| Feed hole diameter    | D <sub>0</sub> | $16.6 \pm 0.4$      | $0.655 \pm 0.016$     |
| Reel width            | W              | $79.0 \pm 1.0$      | $3.110 \pm 0.040$     |

NOTE. 1. Each component lead shall be sandwiched between tapes for a minimum of 3.2mm (0.126").  
2. The reel width 'W' for 26mm taping is  $50.0 \pm 1.0\text{mm}$  (1.97"  $\pm$  0.040").

# BULK PACKAGING

| DEVICE TYPE    | PACKAGING SIZE (MM) |                 | QUANTITY (EA) |        | APPROX GROSS WEIGHT (KG) |        |
|----------------|---------------------|-----------------|---------------|--------|--------------------------|--------|
|                | BOX                 | CARTON          | BOX           | CARTON | BOX                      | CARTON |
| DO 41L         | 196 x 84 x 20       | 450 x 210 x 250 | 1000          | 50K    | 0.38                     | 20     |
| DO-41<br>DO-15 | 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     |
| R-6            | 305 x 93 x 59       | 355 x 355 x 355 | 500           | 10K    | 1.2                      | 24.5   |
| PBM            | 238 x 235 x 50      | 500 x 250 x 290 | 1000          | 10K    | 1.5                      | 16.2   |
| PBDF /DF       | 495 x 155 x 145     | 500 x 325 x 305 | 5000          | 20K    | 7.1                      | 28.4   |
| PBP            | 220 x 170 x 55      | 450 x 210 x 310 | 400           | 4K     | 1.1                      | 11     |
| PBL            | 238 x 235 x 50      | 500 x 250 x 290 | 300           | 3K     | 1.9                      | 19.5   |
| PBPC-3/PBPC-6  | 205 x 205 x 55      | 450 x 210 x 310 | 200           | 2K     | 0.9                      | 8.9    |
| PBPC-8         | 200 x 200 x 55      | 450 x 210 x 310 | 150           | 1.5K   | 1.7                      | 7.5    |
| KBPC/MP        | 205 x 205 x 55      | 450 x 210 x 310 | 50            | 0.5K   | 1.9                      | 16     |
| KBPC W/MP W    |                     | 340 x 330 x 280 | 100           | 0.8K   | 3.5                      | 28     |
| TO-220         | 555 x 165 x 95      | 570 x 355 x 215 | 2000          | 8K     | 5.8                      | 24     |
| TO-3P          | 550 x 200 x 120     | 570 x 230 x 265 | 1200          | 2.4K   | 11                       | 23     |
| SMDF /DF-S     | 495 x 155 x 145     | 500 x 325 x 305 | 9000          | 36K    | 6.5                      | 26.5   |

# 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, T-1, A-405                       | 255           | 50            | 107           | 3K             |
| 52MM Horizontal Ammo Pack | DO-41, A-405, T-1<br>DO-15,<br>DO-201AD | 250           | 75            | 107           | 3K<br>2K<br>1K |

## CARTON SIZE

Unit: m. m.

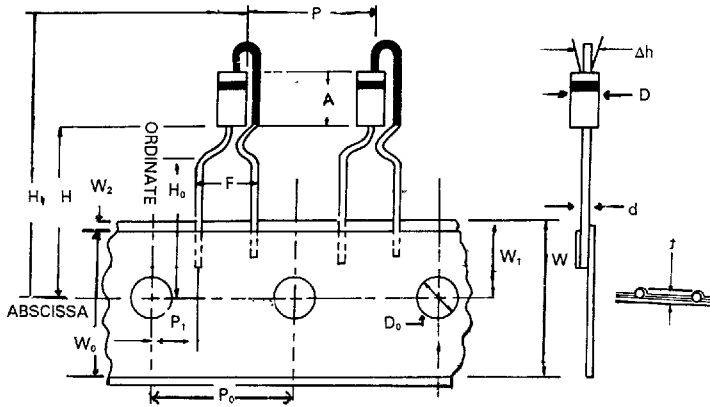
| Packaging                 | Products Outline                        | Length | Width | Height | Q'ty Per Carton   |
|---------------------------|-----------------------------------------|--------|-------|--------|-------------------|
| 26MM Horizontal Ammo Pack | DO-41, T-1, A-405                       | 530    | 300   | 280    | 54K               |
| 52MM Horizontal Ammo Pack | DO-41, A-405, T-1<br>DO-15,<br>DO-201AD | 530    | 300   | 280    | 36K<br>24K<br>12K |

## PANASERT PACKAGE

- LITE-ON supplies panasert taping/packing to satisfy customer requirement
- All dimensions follow EIA-481 standard

| Products | QTY/Reel | QTY/Ammo Box |
|----------|----------|--------------|
| A-405    | 2.5K     | 2K           |

### PANASERT PACKAGING OUTLINES



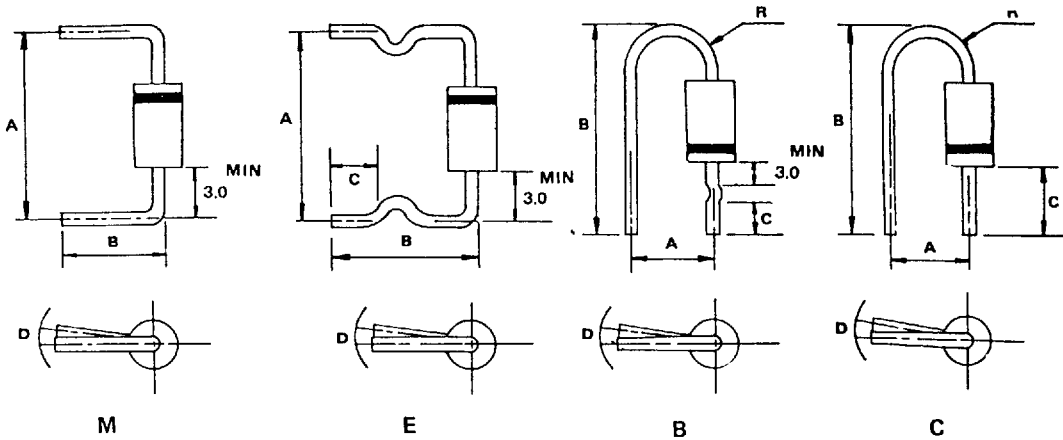
#### PACKING:

- Maximum fanfold (Ammunition box).  
340 x 340 x 55 mm
- Maximum reel size:  
360mm diameter x 55 mm overall width:
- Packaging method code:
  1. Cathode up, anode first off ammo pack
  2. Cathode up, cathode first off ammo pack
  3. Cathode up, anode first off reel
  4. Cathode up, cathode first off reel
  5. Cathode down, anode first off ammo pack
  6. Cathode down, cathode first off ammo pack
  7. Cathode down, anode first off reel
  8. Cathode down, cathode first off reel

| ITEM                                   | SYMBOL         | A-405 mm (INCH)                                                                |
|----------------------------------------|----------------|--------------------------------------------------------------------------------|
| Body height                            | A              | 5.2 (0.205) max.                                                               |
| Body diameter                          | D              | 2.7 (0.107) max.                                                               |
| Lead wire diameter                     | d              | 0.59±0.05 (0.023±0.002)                                                        |
| Pitch of component                     | P              | 12.7±1.0 (0.500±0.01)                                                          |
| Sprocket hole pitch                    | P <sub>0</sub> | 12.7±1.0 (0.500±0.04)                                                          |
| Sprocket hole center to lead           | P <sub>1</sub> | 3.85±0.70 (0.152±0.028)                                                        |
| Carrier tape width                     | W              | 18.0±0.5 (0.709±0.020)                                                         |
| Hold down tape width                   | W <sub>0</sub> | 12.5±1.0 (0.492±0.014)                                                         |
| Sprocket hole position                 | W <sub>1</sub> | 9.0± <sup>0.75</sup> <sub>0.50</sub> (0.351± <sup>0.03</sup> <sub>0.02</sub> ) |
| Hold down tape position                | W <sub>2</sub> | 0.6 (0.024) max.                                                               |
| Sprocket hole diameter                 | D <sub>0</sub> | 4.0±0.2 (0.157±0.008)                                                          |
| Height of component from tape position | H              | 19.5±1.0 (0.768±0.040)                                                         |
| Lead wire clinch height                | H <sub>0</sub> | 16.0±0.5 (0.630±0.020)                                                         |
| Overall height above abscissa          | H <sub>1</sub> | 32.25 (1.27) max.                                                              |
| Component lead spacing                 | F              | 5.0±0.5 (0.197±0.020)                                                          |
| Total tape thickness                   | t              | 1.5 (0.059) max.                                                               |
| Deflection                             | Δh             | ±1.0 (±0.040)                                                                  |

- NOTE: 1. Lead insulation coating allow to be exposed 1.5 mm (0.059 inch) max. from body.  
 2. Non insulation lead coating type is also available.  
 3. Lead protrusion shall not exceed 0.6mm (0.024) max.

# PREFORMED LEAD DRAWING



| Case type       | Performed Type | A —(mm)   |           | B —(mm)   |           | C —(mm)  |           | D —(mm) |           | R (M00) |           |
|-----------------|----------------|-----------|-----------|-----------|-----------|----------|-----------|---------|-----------|---------|-----------|
|                 |                | range     | tolerance | range     | tolerance | range    | tolerance | range   | tolerance | range   | tolerance |
| DO-41<br>DO-41L | M              | 9.0—20.0  | ±0.5      | 8.0—22.0  | ±0.5      | —        | —         | 1.5     | max.      | —       | —         |
|                 | E              | 11.0—20.0 | ±0.5      | 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       |
| DO-15           | M              | 9.0—20.0  | ±0.5      | 8.0—22.0  | ±0.5      | —        | —         | 1.5     | max.      | —       | —         |
|                 | E              | 11.0—20.0 | ±0.5      | 11.0—16.0 | ±1.0      | 4.0—5.0  | ±0.5      | 1.5     | max.      | —       | —         |
| DO201AD         | 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.      | —       | —         |
| R-6             | M              | 15.0—20.0 | ±1.0      | 8.0—22.0  | ±1.0      | —        | —         | 2.0     | max.      | —       | —         |

\*Press Forming Also Available.