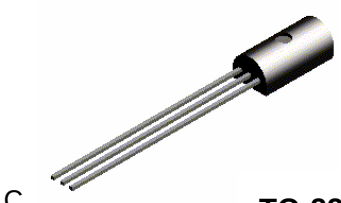
FAIRCHILD
SEMICONDUCTOR TM

# TN6716A




**TO-226**

## NPN General Purpose Amplifier

This device is designed for general purpose medium power amplifiers and switches requiring collector currents to 1.2A. Sourced from Process 38. See TN6715A for characteristics.

## Absolute Maximum Ratings*

$T_{A = 25°C}$ unless otherwise noted

| Symbol | Parameter | Value | Units |
|---|---|---|---|
| $V_{CEO}$ | Collector-Emitter Voltage | 60 | V |
| $V_{CBO}$ | Collector-Base Voltage | 60 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 5 | V |
| $I_C$ | Collector Current - Continuous | 2 | A |
| $T_{J, Tstg}$ | Operating and Storage Junction Temperature Range | -55 to +150 | °C |

*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:

1) These ratings are based on a maximum junction temperature of 150°C.

2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

## Thermal Characteristics

$T_{A = 25°C}$ unless otherwise noted

| Symbol | Characteristic | Max | Units |
|---|---|---|---|
| | | $T_A$=25°C | |
| $P_D$ | Total Device Dissipation<br>Derate above 25°C | 1<br>8 | W<br>mW/°C |
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case | 50 | °C/W |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 125 | °C/W |

## NPN General Purpose Amplifier
(continued)

### Electrical Characteristics
$T_{A = 25°C}$ unless otherwise noted

| Symbol | Parameter | Test Conditions | Min | Max | Units |
|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | |
| $BV_{CEO}$ | Collector-Emitter Breakdown Voltage | $I_C$ = 1 mA | 60 | | V |
| $BV_{CBO}$ | Collector-Base Breakdown Voltage | $I_C$ = 100 μA | 60 | | V |
| $BV_{EBO}$ | Emitter-Base Breakdown Voltage | $I_E$ = 1 mA | 5 | | V |
| $I_{CBO}$ | Collector Cutoff Current | $V_{CB}$ = 40 V | | 100 | nA |
| $I_{EBO}$ | Emitter Cutoff Current | $V_{EB}$ = 5 V | | 10 | uA |
| **ON CHARACTERISTICS** | | | | | |
| $h_{FE}$ | DC Current Gain | $I_C$ = 50 mA, $V_{CE}$ = 1 V<br>$I_C$ = 250 mA, $V_{CE}$ = 1 V<br>$I_C$ = 500 mA, $V_{CE}$ = 1 V | 80<br>50<br>20 | 250 | - |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C$ = 250 mA, $I_B$ = 10 mA<br>$I_C$ = 250 mA, $I_B$ = 25 mA | | 0.5<br>0.35 | V |
| $V_{BE(on)}$ | Base-Emitter On Voltage | $I_C$ = 250 mA, $V_{CE}$ = 1.0 V | | 1.2 | V |
| **SMALL SIGNAL CHARACTERISTICS** | | | | | |
| $C_{cb}$ | Output Capacitance | $V_{CB}$ = 10 V, $I_E$ = 0, f = 1MHz | | 30 | pF |
| hfe | Small Signal Current Gain | $I_C$ = 200 mA,$V_{CE}$ = 5 V,f=20MHz | 2.5 | 25 | MHz |

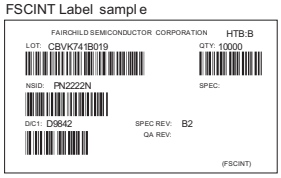
*Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 1.0%

# TO-226AE Tape and Reel Data and Package Dimensions

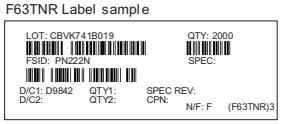
FAIRCHILD SEMICONDUCTOR™

TO-226AE Packaging Configuration: Figure 1.0

FSCINT Label sample

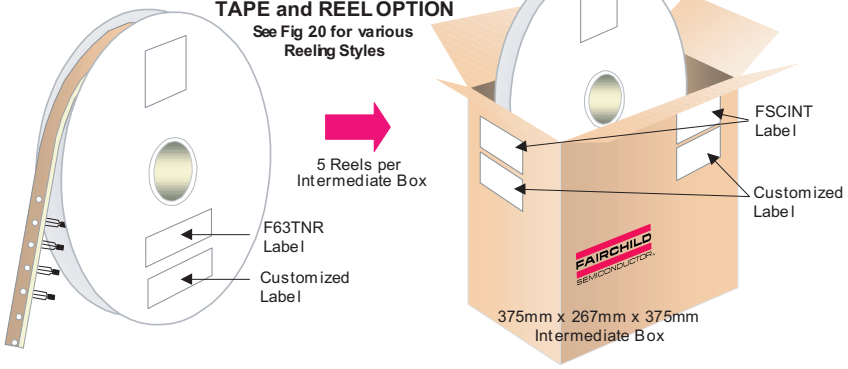



F63TNR Label sample




## TAPE and REEL OPTION

**See Fig 20 for various Reeling Styles**



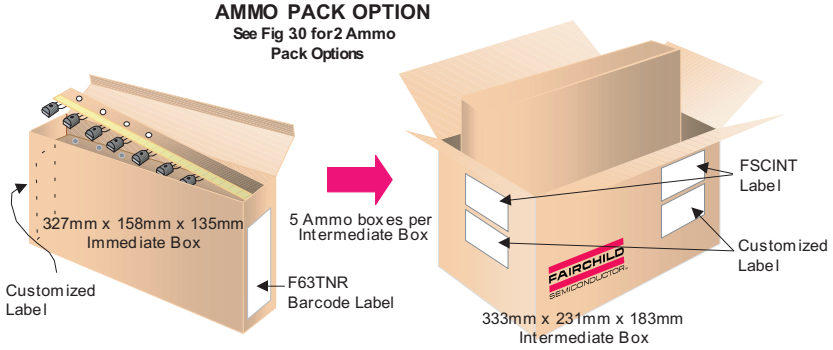

## AMMO PACK OPTION

**See Fig 30 for 2 Ammo Pack Options**

TO-226AE TNR/AMMO PACKING INFORMATION

| Packing | Style | Quantity | EOL code |
|---|---|---|---|
| Reel | A | 2,000 | D26Z |
| | E | 2,000 | D27Z |
| Ammo | M | 2,000 | D74Z |
| | P | 2,000 | D75Z |

Unit weight = 0.300gm
Reel weight with components = 0.868 kg
Ammo weight with components = 0.880 kg
Max quantity per intermediate box = 10,000 units

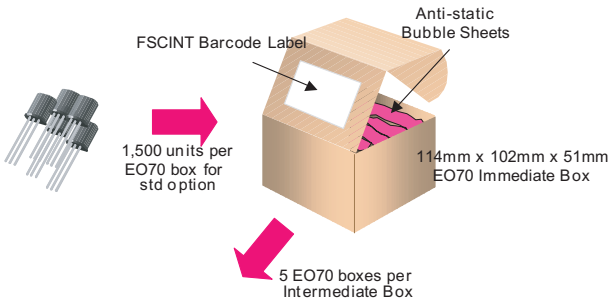


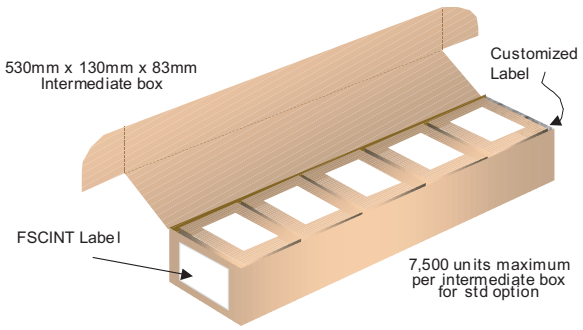

## BULK OPTION

**See Bulk Packing Information table**

(TO-226AE) BULK PACKING INFORMATION

| EOL CODE | DESCRIPTION | LEADCLIP DIMENSION | QUANTITY |
|---|---|---|---|
| J18Z | TO-18 OPTION STD | NO LEAD CLIP | 1.0 K / BOX |
| J05Z | TO-5 OPTION STD | NO LEAD CLIP | 1.0 K / BOX |
| NO EOL CODE | TO-226 STANDARD STRAIGHT | NO LEADCLIP | 1.5 K / BOX |

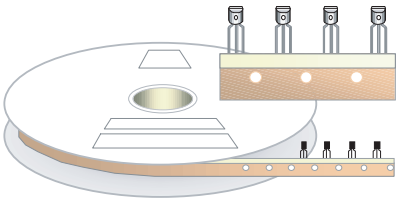


# TO-226AE Tape and Reel Data and Package Dimensions, continued

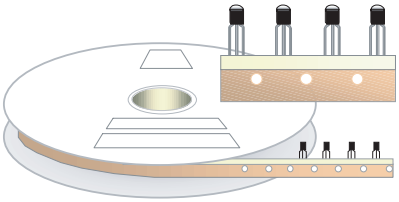
**TO-226AE Reeling Style**
**Configuration:** Figure 2.0

**Machine Option "A" (H)**



**Style "A", D26Z, D70Z (s/h)**

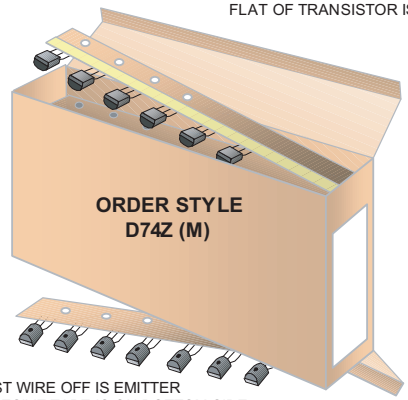
**Machine Option "E" (J)**



**Style "E", D27Z, D71Z (s/h)**

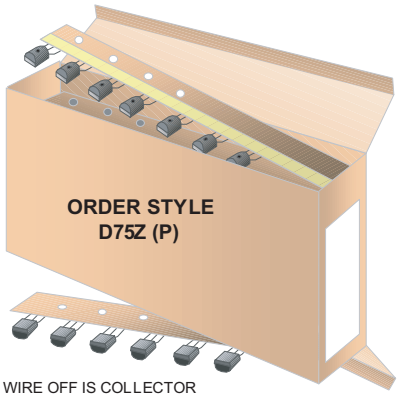
**TO-226AE Radial Ammo Packaging**
**Configuration:** Figure 3.0

FIRST WIRE OFF IS COLLECTOR (ON PKG. 92)
ADHESIVE TAPE IS ON THE TOP SIDE
FLAT OF TRANSISTOR IS ON TOP




FIRST WIRE OFF IS EMITTER
ADHESIVE TAPE IS ON BOTTOM SIDE
FLAT OF TRANSISTOR IS ON BOTTOM

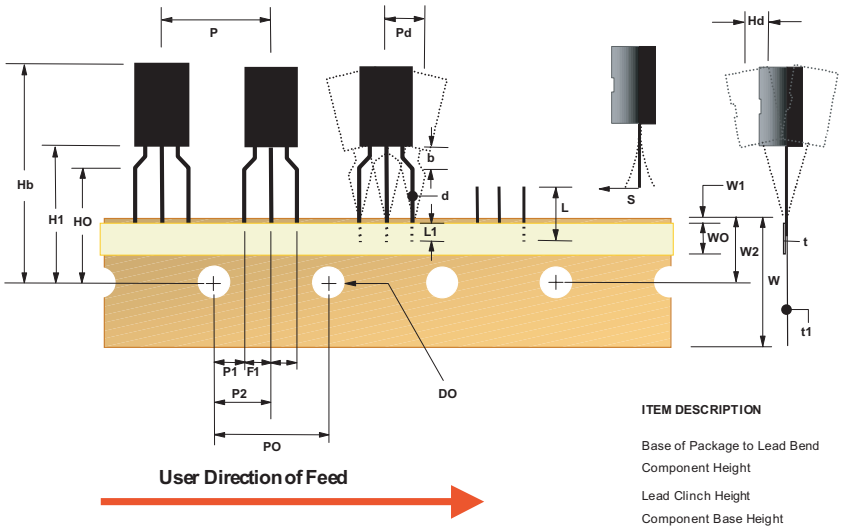
FIRST WIRE OFF IS EMITTER (ON PKG. 92)
ADHESIVE TAPE IS ON THE TOP SIDE
FLAT OF TRANSISTOR IS ON BOTTOM




FIRST WIRE OFF IS COLLECTOR
ADHESIVE TAPE IS ON BOTTOM SIDE
FLAT OF TRANSISTOR IS ON TOP

# TO-226AE Tape and Reel Data and Package Dimensions, continued

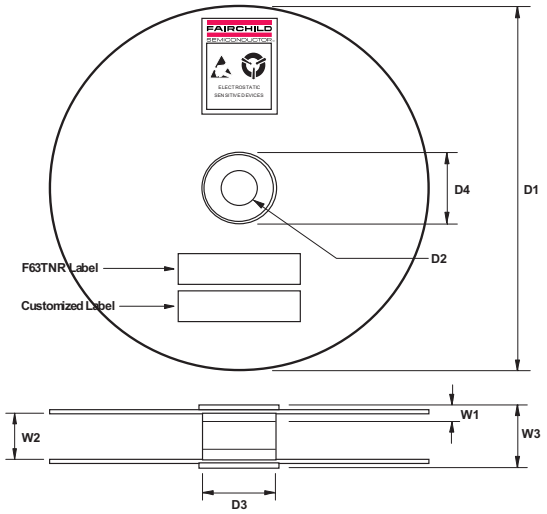
## TO-226AE Tape and Reel Taping Dimension Configuration: Figure 4.0




| ITEM DESCRIPTION | SYMBOL | DIMENSION |
|---|---|---|
| Base of Package to Lead Bend | b | 0.098 (max) |
| Component Height | Hb | 1.078 (+/- 0.050) |
| Lead Clinch Height | HO | 0.630 (+/- 0.020) |
| Component Base Height | H1 | 0.748 (+/- 0.020) |
| Component Alignment ( side/side ) | Pd | 0.040 (max) |
| Component Alignment ( front/back ) | Hd | 0.031 (max) |
| Component Pitch | P | 0.500 (+/- 0.020) |
| Feed Hole Pitch | PO | 0.500 (+/- 0.008) |
| Hole Center to First Lead | P1 | 0.150 (+0.009, -0.010) |
| Hole Center to Component Center | P2 | 0.247 (+/- 0.007) |
| Lead Spread | F1/F2 | 0.104 (+/- 0 .010) |
| Lead Thickness | d | 0.018 (+0.002, -0.003) |
| Cut Lead Length | L | 0.429 (max) |
| Taped Lead Length | L1 | 0.209 (+0.051, -0.052) |
| Taped Lead Thickness | t | 0.032 (+/- 0.006) |
| Carrier Tape Thickness | t1 | 0.021 (+/- 0.006) |
| Carrier Tape Width | W | 0.708 (+0.020, -0.019) |
| Hold - down Tape Width | WO | 0.236 (+/- 0.012) |
| Hold - down Tape position | W1 | 0.035 (max) |
| Feed Hole Position | W2 | 0.360 (+/- 0.025) |
| Sprocket Hole Diameter | DO | 0.157 (+0.008, -0.007) |
| Lead Spring Out | S | 0.004 (max) |

Note : All dimensions are in inches.

## TO-226AE Reel Configuration: Figure 5.0

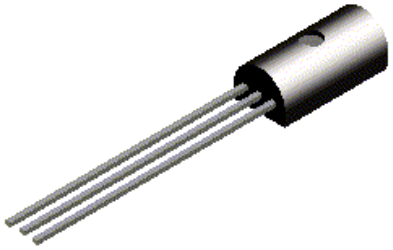


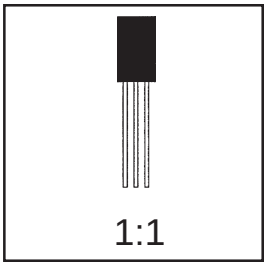

| ITEM DESCRIPTION | SYMBOL | MINIMUM | MAXIMUM |
|---|---|---|---|
| Reel Diameter | D1 | 13.975 | 14.025 |
| Arbor Hole Diameter (Standard) | D2 | 1.160 | 1.200 |
| (Small Hole) | D2 | 0.650 | 0.700 |
| Core Diameter | D3 | 3.100 | 3.300 |
| Hub Recess Inner Diameter | D4 | 2.700 | 3.100 |
| Hub Recess Depth | W1 | 0.370 | 0.570 |
| Flange to Flange Inner Width | W2 | 1.630 | 1.690 |
| Hub to Hub Center Width | W3 | | 2.090 |

Note: All dimensions are inches

## TO-226AE Tape and Reel Data and Package Dimensions, continued

# TO-226AE (FS PKG Code 95, 99)

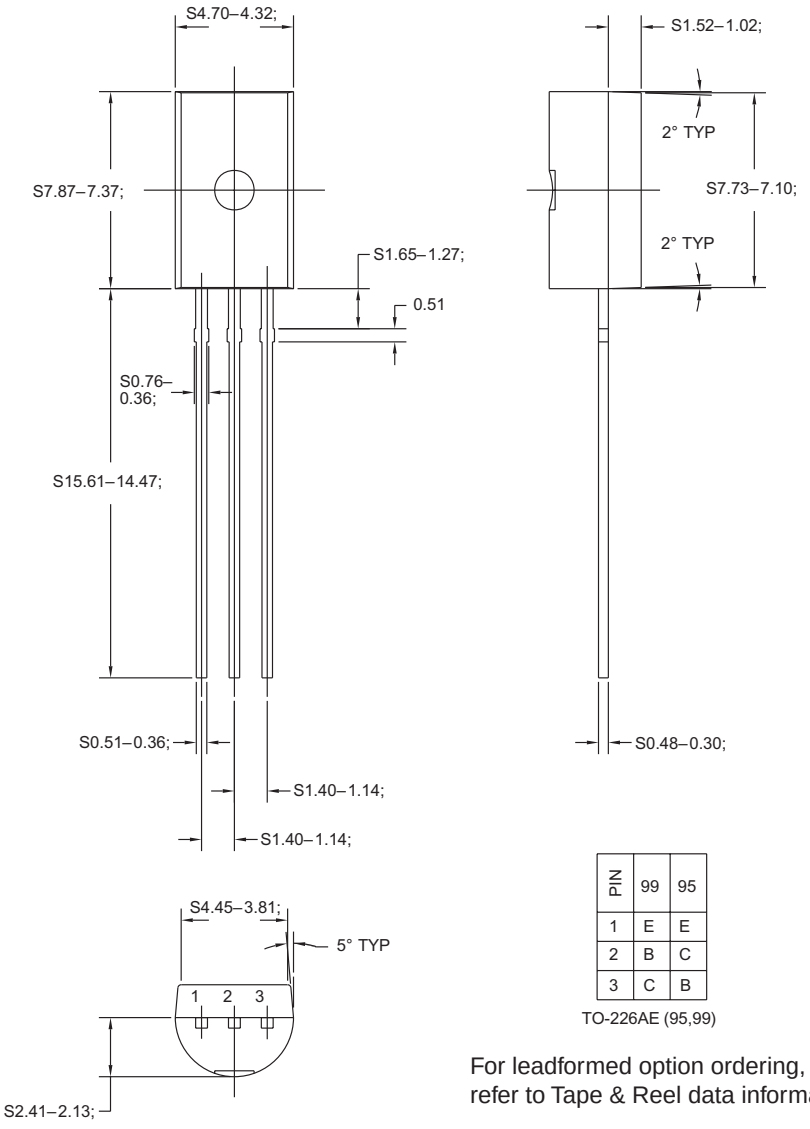





Scale 1:1 on letter size paper

Dimensions shown below are in:
inches [millimeters]

Part Weight per unit (gram): 0.300




| PIN | 99 | 95 |
|---|---|---|
| 1 | E | E |
| 2 | B | C |
| 3 | C | B |

TO-226AE (95,99)

For leadformed option ordering,
refer to Tape & Reel data information.

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