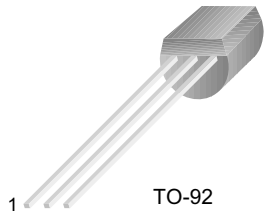
FAIRCHILD SEMICONDUCTOR™

# 2N5550

## Amplifier Transistor

- Collector-Emitter Voltage: $V_{CEO}$= 140V
- Collector Dissipation: $P_C$ (max)=625mW



TO-92

1. Emitter 2. Base 3. Collector

## NPN Epitaxial Silicon Transistor

### Absolute Maximum Ratings $T_a$=25°C unless otherwise noted

| Symbol | Parameter | Value | Units |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage | 160 | V |
| $V_{CEO}$ | Collector-Emitter Voltage | 140 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 6 | V |
| $I_C$ | Collector Current | 600 | mA |
| $P_C$ | Collector Dissipation | 625 | mW |
| $T_J$ | Junction Temperature | 150 | °C |
| $T_{STG}$ | Storage Temperature | -55 ~ 150 | °C |

• Refer to 2N5551 for graphs

### Electrical Characteristics $T_a$=25°C unless otherwise noted

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| $BV_{CBO}$ | Collector-Base Breakdown Voltage | $I_C$=100μA, $I_E$=0 | 160 | | | V |
| $BV_{CEO}$ | * Collector-Emitter Breakdown Voltage | $I_C$=1mA, $I_B$=0 | 140 | | | V |
| $BV_{EBO}$ | Emitter-Base Breakdown Voltage | $I_E$=10μA, $I_C$=0 | 6 | | | V |
| $I_{CBO}$ | Collector Cut-off Current | $V_{CB}$=100V, $I_E$=0 | | | 100 | nA |
| $I_{EBO}$ | Emitter Cut-off Current | $V_{EB}$= 4V, $I_C$=0 | | | 50 | nA |
| $h_{FE}$ | * DC Current Gain | $I_C$=1mA, $V_{CE}$=5V<br>$I_C$=10mA, $V_{CE}$=5V<br>$I_C$=50mA, $V_{CE}$=5V | 60<br>60<br>20 | | <br>250<br> | |
| $V_{CE}$ (sat) | * Collector-Emitter Saturation Voltage | $I_C$=10mA, $I_B$=1mA<br>$I_C$=50mA, $I_B$=5mA | | | 0.15<br>0.25 | V<br>V |
| $V_{BE}$ (sat) | * Base-Emitter Saturation Voltage | $I_C$=10mA, $I_B$=1mA<br>$I_C$=50mA, $I_B$=5mA | | | 1<br>1.2 | V<br>V |
| $f_T$ | Current Gain Bandwidth Product | $I_C$=10mA, $V_{CE}$=10V, f=100MHz | 100 | | 300 | MHz |
| $C_{ob}$ | Output Capacitance | $V_{CB}$=10V, $I_E$=0, f=1MHz | | | 6 | pF |
| NF | Noise Figure | $I_C$=250μA, $V_{CE}$=5V<br>$R_S$=1KΩ<br>f=10Hz to 15.7KHz | | | 10 | dB |

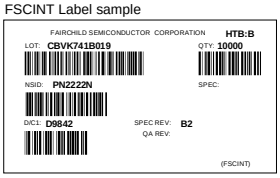
* Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

# TO-92 Tape and Reel Data

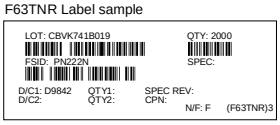
FAIRCHILD SEMICONDUCTOR TM

## TO-92 Packaging Configuration: Figure 1.0

FSCINT Label sample

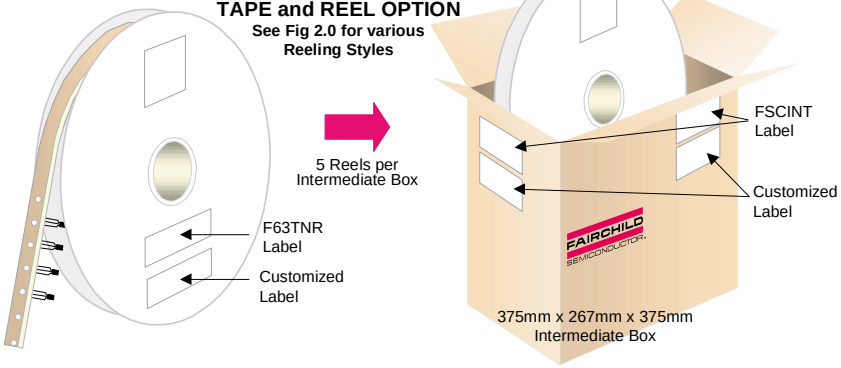



F63TNR Label sample




### TAPE and REEL OPTION

**See Fig 2.0 for various Reeling Styles**



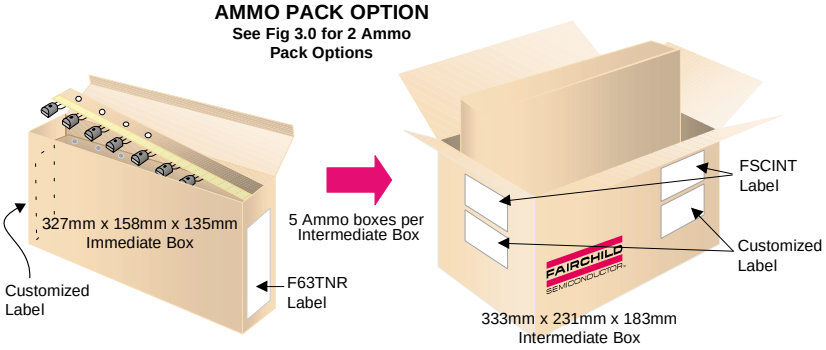

**TO-92 TNR/AMMO PACKING INFROMATION**

| 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 = 0.22 gm
Reel weight with components = 1.04 kg
Ammo weight with components = 1.02 kg
Max quantity per intermediate box = 10,000 units

### AMMO PACK OPTION

**See Fig 3.0 for 2 Ammo Pack Options**

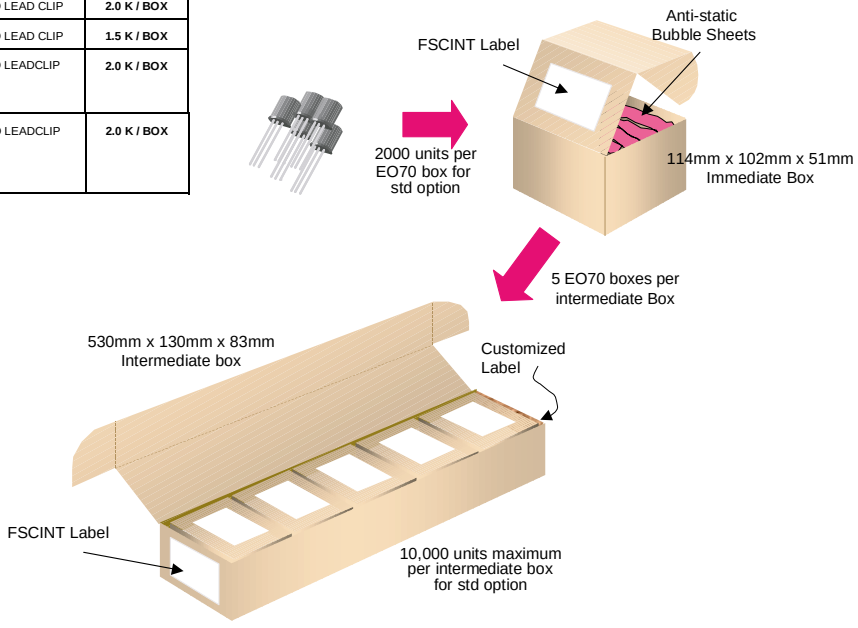



**(TO-92) BULK PACKING INFORMATION**

| EOL CODE | DESCRIPTION | LEADCLIP DIMENSION | QUANTITY |
|---|---|---|---|
| J18Z | TO-18 OPTION STD | NO LEAD CLIP | 2.0 K / BOX |
| J05Z | TO-5 OPTION STD | NO LEAD CLIP | 1.5 K / BOX |
| NO EOL CODE | TO-92 STANDARD STRAIGHT FOR: PKG 92, 94 (NON PROELECTRON SERIES), 96 | NO LEADCLIP | 2.0 K / BOX |
| L34Z | TO-92 STANDARD STRAIGHT FOR: PKG 94 (PROELECTRON SERIES BCXXX, BFXXX, BSRXXX), 97, 98 | NO LEADCLIP | 2.0 K / BOX |

### BULK OPTION

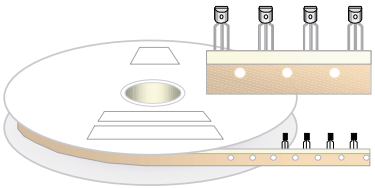
**See Bulk Packing Information table**



## TO-92 Tape and Reel Data, continued

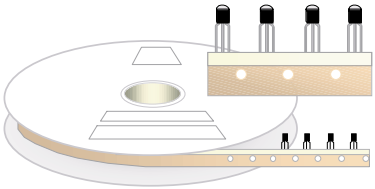
**TO-92 Reeling Style**
**Configuration:** Figure 2.0

**Machine Option “A” (H)**



**Style “A”, D26Z, D70Z (s/h)**

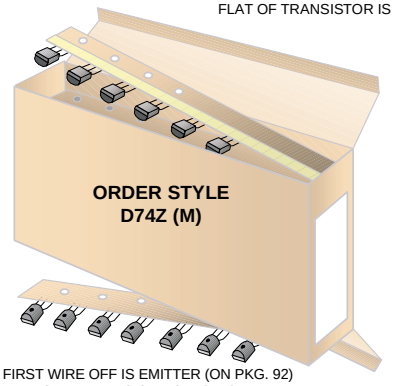
**Machine Option “E” (J)**



**Style “E”, D27Z, D71Z (s/h)**

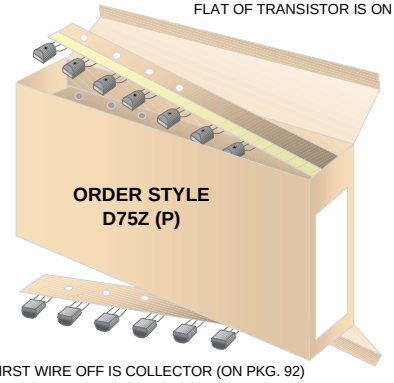
**TO-92 Radial Ammo Packaging**
**Configuration:** Figure 3.0

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




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

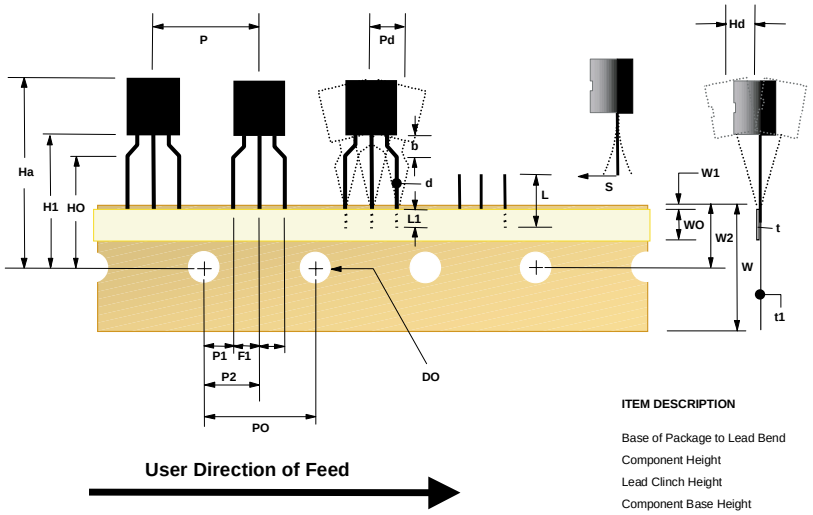
FIRST WIRE OFF IS EMITTER
ADHESIVE TAPE IS ON THE TOP SIDE
FLAT OF TRANSISTOR IS ON BOTTOM




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

# TO-92 Tape and Reel Data, continued

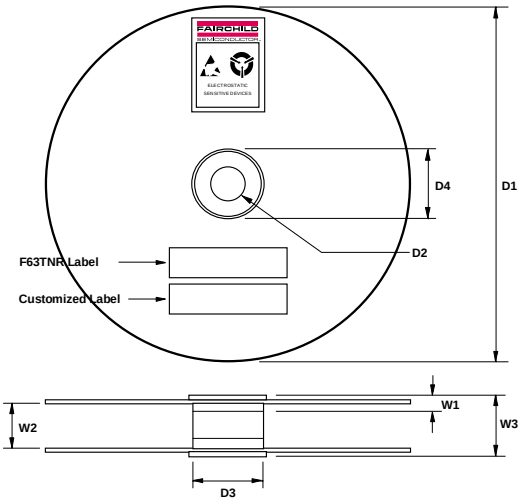
## TO-92 Tape and Reel Taping
**Dimension Configuration:** Figure 4.0




| ITEM DESCRIPTION | SYMBOL | DIMENSION |
|---|---|---|
| Base of Package to Lead Bend | b | 0.098 (max) |
| Component Height | Ha | 0.928 (+/- 0.025) |
| 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-92 Reel
**Configuration:** Figure 5.0

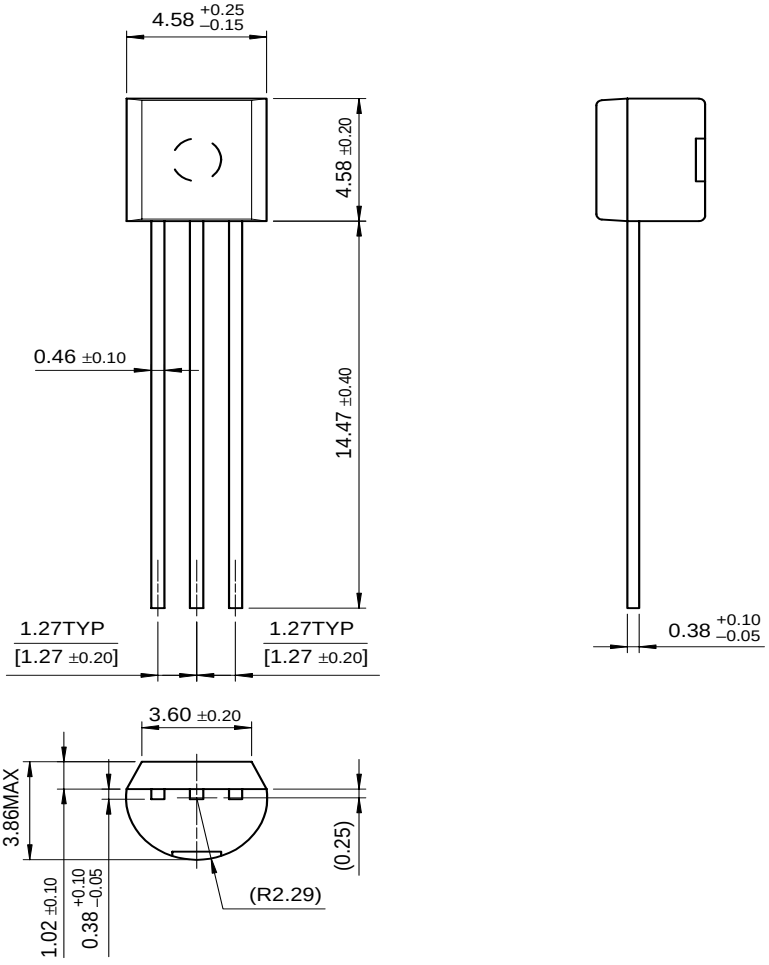



| ITEM DESCRIPTION | SYSMBOL | MINIMUM | MAXIMUM |
|---|---|---|---|
| Reel Diameter | D1 | 13.975 | 14.025 |
| Arbor Hole Diameter (Standard) | D2 | 1.160 | 1.200 |
| (Small Hole) | D2 | 0.650 | 0.700 |
| Core Diameter | D3 | 3.100 | 3.300 |
| Hub Recess Inner Diameter | D4 | 2.700 | 3.100 |
| Hub Recess 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

## Package Demensions

TO-92




Dimensions in Millimeters

## TRADEMARKS

The following are registered and unregistered trademarks Fairchild Semiconductor owns or is authorized to use and is not intended to be an exhaustive list of all such trademarks.

ACEx™
Bottomless™
CoolFET™
*CROSSVOLT*™
DOME™
$E^2CMOS^{TM}$
EnSigna™
FACT™
FACT Quiet Series™
FAST®
FASTr™
GlobalOptoisolator™
GTO™
HiSeC™
ISOPLANAR™
MICROWIRE™
OPTOLOGIC™
OPTOPLANAR™
PACMAN™
POP™
PowerTrench®
QFET™
QS™
QT Optoelectronics™
Quiet Series™
SILENT SWITCHER®
SMART START™
SuperSOT™-3
SuperSOT™-6
SuperSOT™-8
SyncFET™
TinyLogic™
UHC™
VCX™

## DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

## LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION.
As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, or (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.

2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

## PRODUCT STATUS DEFINITIONS

### Definition of Terms

| Datasheet Identification | Product Status | Definition |
|---|---|---|
| Advance Information | Formative or In Design | This datasheet contains the design specifications for product development. Specifications may change in any manner without notice. |
| Preliminary | First Production | This datasheet contains preliminary data, and supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design. |
| No Identification Needed | Full Production | This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design. |
| Obsolete | Not In Production | This datasheet contains specifications on a product that has been discontinued by Fairchild semiconductor. The datasheet is printed for reference information only. |

Rev. G