

## TN3440A



### NPN General Purpose Amplifier

This device is designed for use in horizontal driver, class A off-line amplifier and off-line switching applications. Sourced from Process 36.

#### Absolute Maximum Ratings\*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V <sub>CEO</sub>	Collector-Emitter Voltage	250	V
V <sub>CBO</sub>	Collector-Base Voltage	300	V
V <sub>EBO</sub>	Emitter-Base Voltage	7.0	V
I <sub>C</sub>	Collector Current - Continuous	100	mA
T <sub>J</sub> , T <sub>stg</sub>	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 degrees C.
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

#### Thermal Characteristics

TA = 25°C unless otherwise noted

Symbol	Characteristic	Max	Units
		TN3440A	
P <sub>D</sub>	Total Device Dissipation Derate above 25°C	1.0	W
		8.0	mW/°C
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	125	°C/W
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	50	°C/W

# NPN General Purpose Amplifier

(continued)

TN3440A

## Electrical Characteristics

TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
<b>OFF CHARACTERISTICS</b>					
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage*	$I_C = 50 \text{ mA}, I_B = 0$	250		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 100 \mu\text{A}, I_E = 0$	300		V
$I_{CEO}$	Collector-Cutoff Current	$V_{CE} = 200 \text{ V}, I_B = 0$		50	$\mu\text{A}$
$I_{CEX}$	Collector-Cutoff Current	$V_{CE} = 300 \text{ V}, V_{BE} = 1.5 \text{ V}$		500	$\mu\text{A}$
$I_{CBO}$	Collector-Cutoff Current	$V_{CB} = 250 \text{ V}, I_E = 0$		20	$\mu\text{A}$
$I_{EBO}$	Emitter-Cutoff Current	$V_{EB} = 5.0 \text{ V}, I_C = 0$		20	$\mu\text{A}$

## ON CHARACTERISTICS

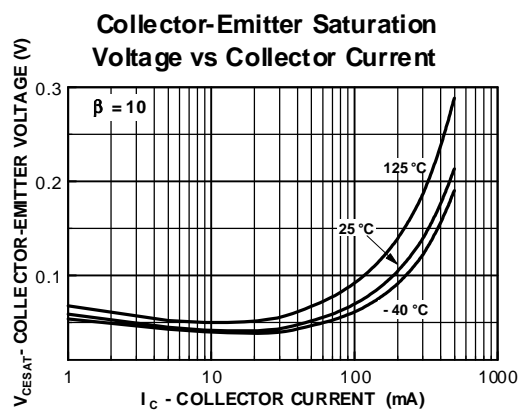
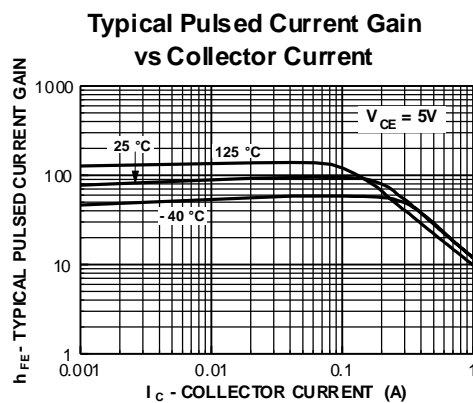
$h_{FE}$	DC Current Gain	$I_C = 2.0 \text{ mA}, V_{CE} = 10 \text{ V}$ $I_C = 20 \text{ mA}, V_{CE} = 10 \text{ V}$	30 40	160	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 50 \text{ mA}, I_B = 4.0 \text{ mA}$		0.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 50 \text{ mA}, I_B = 4.0 \text{ mA}$		1.3	V

## SMALL SIGNAL CHARACTERISTICS

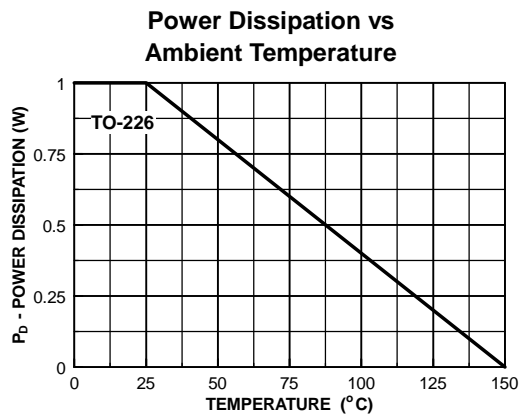
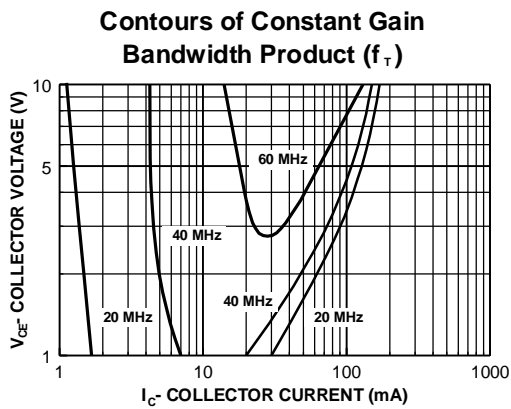
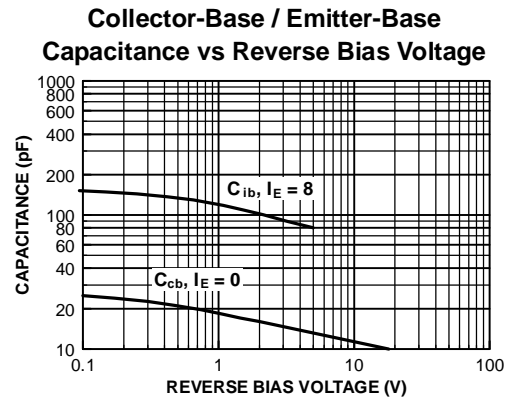
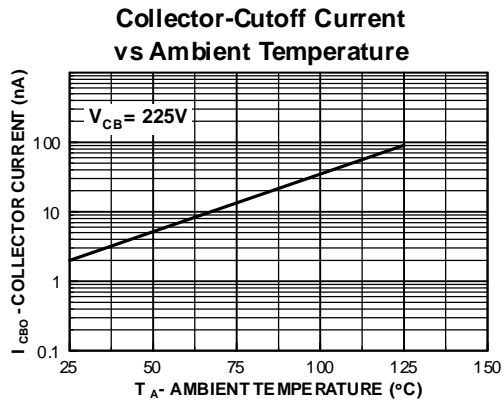
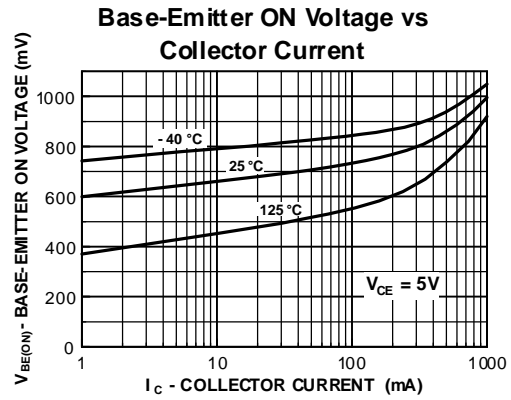
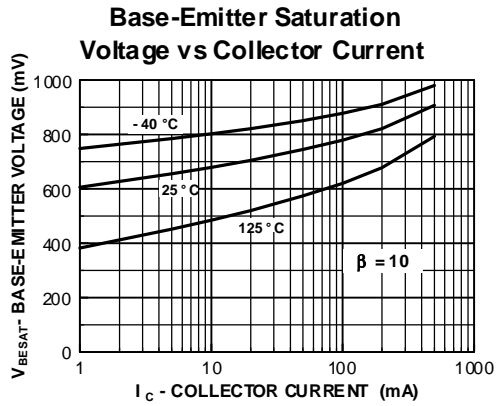
$f_T$	Current Gain - Bandwidth Product	$I_C = 10 \text{ mA}, V_{CE} = 10 \text{ V},$ $f = 5.0 \text{ MHz}$	15		MHz
$C_{obo}$	Output Capacitance	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1.0 \text{ MHz}$		10	pF
$C_{ibo}$	Input Capacitance	$V_{BE} = 5.0 \text{ V}, I_C = 0, f = 1.0 \text{ MHz}$		95	pF
$h_{fe}$	Small-Signal Current Gain	$I_C = 5.0 \text{ mA}, V_{CE} = 10 \text{ V},$ $f = 1.0 \text{ kHz}$	25		

\*Pulse Test: Pulse Width  $\leq 300 \mu\text{s}$ , Duty Cycle  $\leq 1.0\%$

## Typical Characteristics



Typical Characteristics (continued)

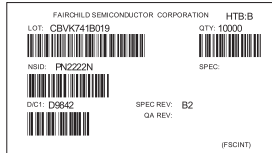


# TO-226AE Tape and Reel Data

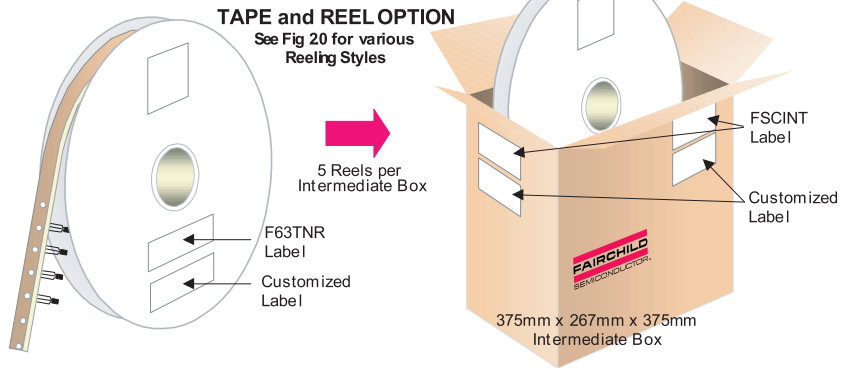


TO-226AE Packaging Configuration: Figure 1.0

### FSCINT Label sample



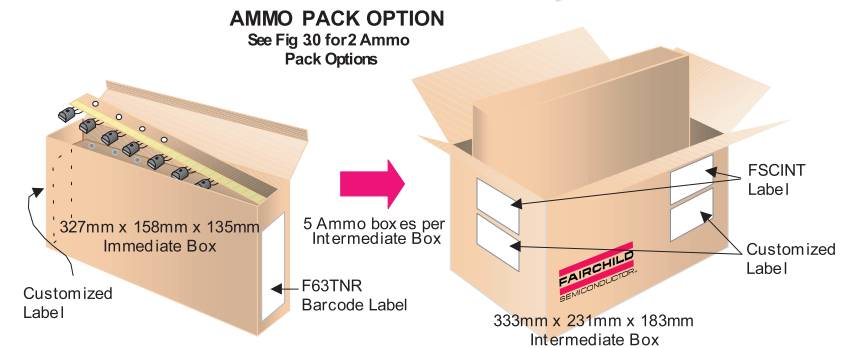
### F63TNR Label sample



### TO-226AE TNR/AMMO PACKING INFORMATION

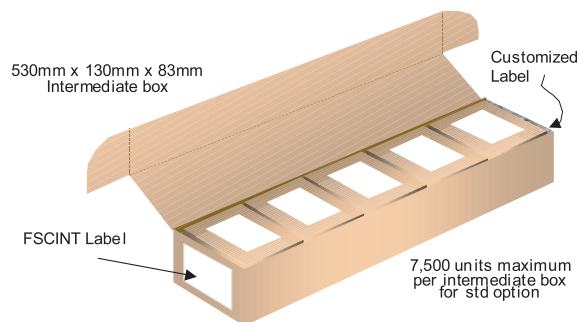
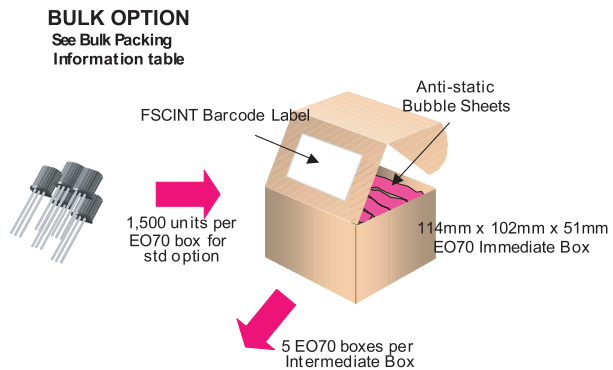
Packing	Style	Quantity	EOL code
Reel	A	2,000	D26Z
	E	2,000	D27Z
Ammo	M	2,000	D74Z
	P	2,000	D75Z

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



### (TO-226AE) BULK PACKING INFORMATION

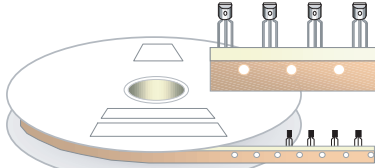
EOL CODE	DESCRIPTION	LEADCLIP DIMENSION	QUANTITY
J18Z	TO-18 OPTION STD	NO LEAD CLIP	1.0 K / BOX
J05Z	TO-5 OPTION STD	NO LEAD CLIP	1.0 K / BOX
NO EOL CODE	TO-226 STANDARD STRAIGHT	NO LEADCLIP	1.5 K / BOX



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

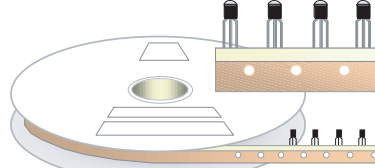
### TO-226AE Reeling Style Configuration: Figure 2.0

Machine Option "A"(H)



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

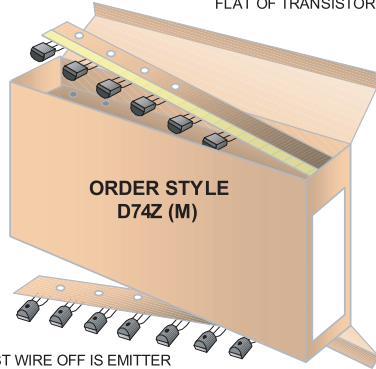
Machine Option "E"(J)



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

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

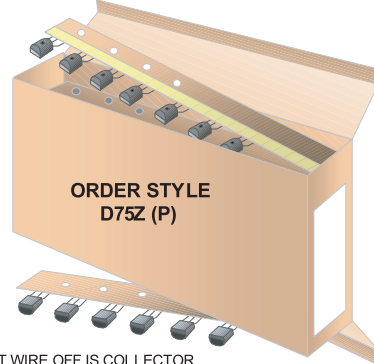
FIRST WIRE OFF IS COLLECTOR (ON PKG. 92)  
ADHESIVE TAPE IS ON THE TOP SIDE  
FLAT OF TRANSISTOR IS ON TOP



ORDER STYLE  
D74Z (M)

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

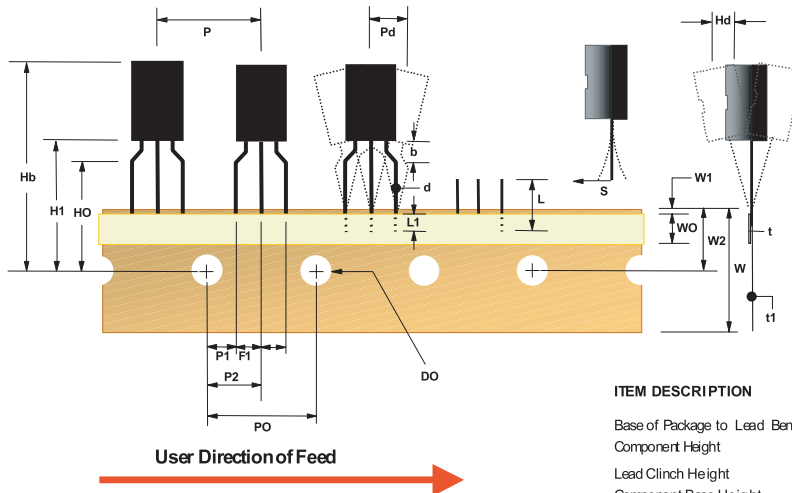


ORDER STYLE  
D75Z (P)

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

# TO-226AE Tape and Reel Data, continued

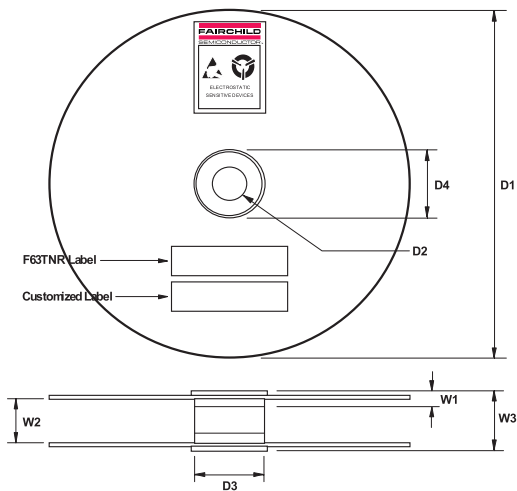
**TO-226AE Tape and Reel Taping  
Dimension Configuration:** Figure 4.0



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)
Out 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 (+0.02, -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	1.3975	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 in inches



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