

# MPSA29



# **NPN Darlington Transistor**

This device is designed for applications requiring extremely high current gain at collector currents to 500 mA. Sourced from Process 03. See MPSA28 for characteristics.

## **Absolute Maximum Ratings\***

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
$V_{CES}$	Collector-Emitter Voltage	100	V
V <sub>CBO</sub>	Collector-Base Voltage	100	V
$V_{EBO}$	Emitter-Base Voltage	12	V
Ic	Collector Current - Continuous	800	mA
T <sub>J</sub> , T <sub>stg</sub>	Operating and Storage Junction Temperature Range	-55 to +150	°C

<sup>\*</sup>These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

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
		MPSA29	
$P_D$	Total Device Dissipation Derate above 25°C	625 5.0	mW mW/°C
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	83.3	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	200	°C/W

# NPN Darlington Transistor (continued)

Symbol	Parameter	Test Conditions	Min	Max	Units
OFF CHA	RACTERISTICS				
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage*	$I_{\rm C} = 100  \mu \text{A},  I_{\rm B} = 0$	100		V
V <sub>(BR)CBO</sub>	Collector-Base Breakdown Voltage	$I_C = 100  \mu A, I_E = 0$	100		V
V <sub>(BR)EBO</sub>	Emitter-Base Breakdown Voltage	$I_E = 10 \mu\text{A}, I_C = 0$	12		V
I <sub>CBO</sub>	Collector Cutoff Current	$V_{CB} = 80 \text{ V}, I_{E} = 0$		100	nA
I <sub>CES</sub>	Collector Cutoff Current	$V_{CE} = 80 \text{ V}, I_{E} = 0$		500	nA
I <sub>EBO</sub>	Emitter Cutoff Current	$V_{EB} = 10 \text{ V}, I_{C} = 0$		100	nA
	RACTERISTICS*  DC Current Gain	$V_{CE} = 5.0 \text{ V}, I_{C} = 10 \text{ mA}$ $V_{CE} = 5.0 \text{ V}, I_{C} = 100 \text{ mA}$	10,000 10,000		
h <sub>FE</sub>		$V_{CE} = 5.0 \text{ V}, I_{C} = 100 \text{ mA}$ $I_{C} = 10 \text{ mA}, I_{B} = 0.01 \text{ mA}$	-,	1.2 1.5	V
ON CHAF $h_{FE}$ $V_{CE(sat)}$ $V_{BE(On)}$	DC Current Gain	$V_{CE} = 5.0 \text{ V}, I_{C} = 100 \text{ mA}$	-,		1
$h_{FE}$ $V_{CE(Sat)}$ $V_{BE(On)}$	DC Current Gain  Collector-Emitter Saturation Voltage	$V_{CE} = 5.0 \text{ V}, I_{C} = 100 \text{ mA}$ $I_{C} = 10 \text{ mA}, I_{B} = 0.01 \text{ mA}$ $I_{C} = 100 \text{ mA}, I_{B} = 0.1 \text{ mA}$	-,	1.5	V

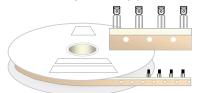
<sup>\*</sup>Pulse Test: Pulse Width  $\leq$  300  $\mu$ s, Duty Cycle  $\leq$  2.0%

### **TO-92 Tape and Reel Data** FAIRCHILD SEMICONDUCTOR TM **TO-92 Packaging** Configuration: Figure 1.0 **TAPE and REEL OPTION** FSCINT Label sample See Fig 2.0 for various Reeling Styles CBVK//418019 **FSCINT** Label 5 Reels per Intermediate Box Customized F63TNR Label sample Label F63TNR LOT: CBVK741B019 QTY: 2000 FSID: PN222N Customized QTY1: QTY2: Label 375mm x 267mm x 375mm Intermediate Box TO-92 TNR/AMMO PACKING INFROMATION **AMMO PACK OPTION** See Fig 3.0 for 2 Ammo Packing Style Quantity EOL code **Pack Options** 2,000 D26Z Е 2,000 D27Z Ammo М 2,000 D74Z D75Z 2,000 **FSCINT** 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 Label 5 Ammo boxes per Intermediate Box 327mm x 158mm x 135mm Immediate Box Customized F63TNR Customized Label Label 333mm x 231mm x 183mm Intermediate Box (TO-92) BULK PACKING INFORMATION **BULK OPTION** See Bulk Packing DESCRIPTION QUANTITY Information table J18Z TO-18 OPTION STD 2.0 K / BOX Anti-static Bubble Sheets TO-5 OPTION STD NO LEAD CLIP 1.5 K / BOX J05Z **FSCINT Label** NO EOL TO-92 STANDARD STRAIGHT FOR: PKG 92, NO LEADCLIP 2.0 K / BOX 94 (NON PROELECTRON SERIES), 96 TO-92 STANDARD STRAIGHT FOR: PKG 94 (PROELECTRON SERIES BCXXX, BFXXX, BSRXXX), 97, 98 L34Z NO LEADCLIP 2.0 K / BOX 2000 units per 114mm x 102mm x 51mm EO70 box for std option Immediate Box 5 EO70 boxes per intermediate Box 530mm x 130mm x 83mm Customized Intermediate box Label FSCINT Label 10,000 units maximum per intermediate box for std option

# TO-92 Tape and Reel Data, continued

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

### Machine Option "A" (H)

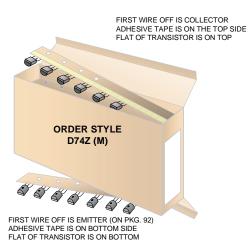


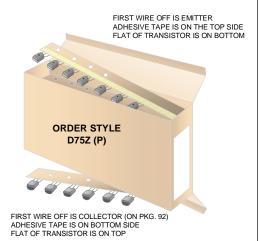
Style "A", D26Z, D70Z (s/h)

# Machine Option "E" (J)

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

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



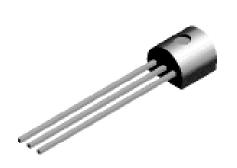


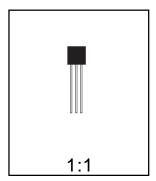


# **TO-92 Package Dimensions**



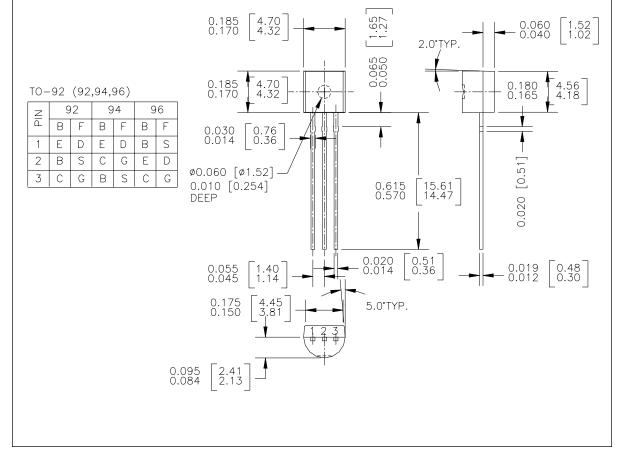
# TO-92 (FS PKG Code 92, 94, 96)





Scale 1:1 on letter size paper
Dimensions shown below are in:
inches [millimeters]

Part Weight per unit (gram): 0.1977



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