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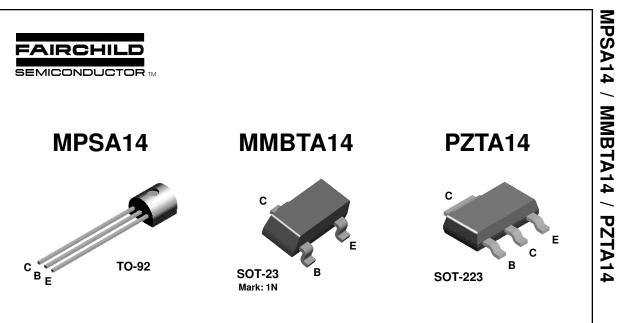
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### **NPN Darlington Transistor**

This device is designed for applications requiring extremely high current gain at collector currents to 1.0 A. Sourced from Process 05.

#### **Absolute Maximum Ratings\*** TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V <sub>CES</sub>	Collector-Emitter Voltage	30	V
V <sub>CBO</sub>	Collector-Base Voltage	30	V
V <sub>EBO</sub>	Emitter-Base Voltage	10	V
Ic	Collector Current - Continuous	1.2	А
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	Мах			Units
		MPSA14	*MMBTA14	**PZTA14	
P <sub>D</sub>	Total Device Dissipation Derate above 25°C	625 5.0	350 2.8	1,000 8.0	mW mW/∘C
$R_{\theta JC}$	Thermal Resistance, Junction to Case	83.3			°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	200	357	125	°C/W

\*Device mounted on FR-4 PCB 1.6" X 1.6" X 0.06."

\*\* Device mounted on FR-4 PCB 36 mm X 18 mm X 1.5 mm; mounting pad for the collector lead min. 6 cm<sup>2</sup>.

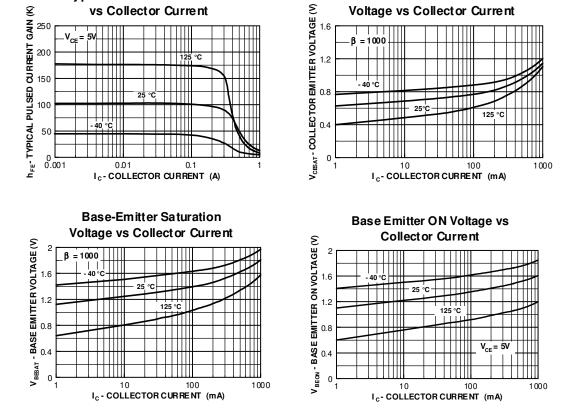
#### **NPN Darlington Transistor** (continued) **Electrical Characteristics** TA = 25°C unless otherwise noted Min Units Symbol Parameter **Test Conditions** Max **OFF CHARACTERISTICS** V<sub>(BR)CES</sub> Collector-Emitter Breakdown Voltage $I_{C} = 100 \ \mu A, I_{B} = 0$ 30 V Collector-Cutoff Current $V_{CB} = 30 V, I_E = 0$ 100 nA Emitter-Cutoff Current $V_{EB} = 10 \text{ V}, I_{C} = 0$ 100 nA **ON CHARACTERISTICS\*** DC Current Gain $I_{C} = 10 \text{ mA}, V_{CE} = 5.0 \text{ V}$ 10,000 $I_{\rm C} = 100 \text{ mA}, V_{\rm CE} = 5.0 \text{ V}$ 20,000 Collector-Emitter Saturation Voltage $I_{C} = 100 \text{ mA}, I_{B} = 0.1 \text{ mA}$ 1.5 $V_{\text{CE}(\text{sat})}$ v $I_{\rm C} = 100 \text{ mA}, V_{\rm CE} = 5.0 \text{ V}$ V<sub>BE(on)</sub> Base-Emitter On Voltage 2.0 V SMALL SIGNAL CHARACTERISTICS Current Gain - Bandwidth Product $I_{C} = 10 \text{ mA}, V_{CE} = 5 \text{ V},$ 125 MHz f = 100 MHz \*Pulse Test: Pulse Width $\leq$ 300 µs, Duty Cycle $\leq$ 2.0% **Typical Characteristics Typical Pulsed Current Gain Collector-Emitter Saturation** vs Collector Current Voltage vs Collector Current B = 1000125 40°C 25°C 125 °C TII 40

 $I_{CBO}$ 

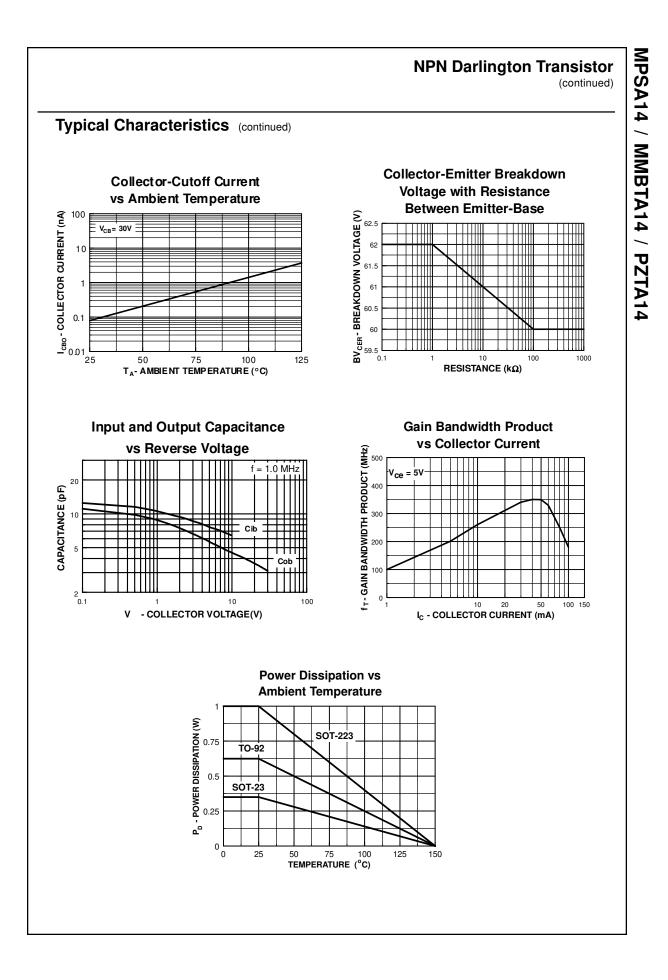
I<sub>EBO</sub>

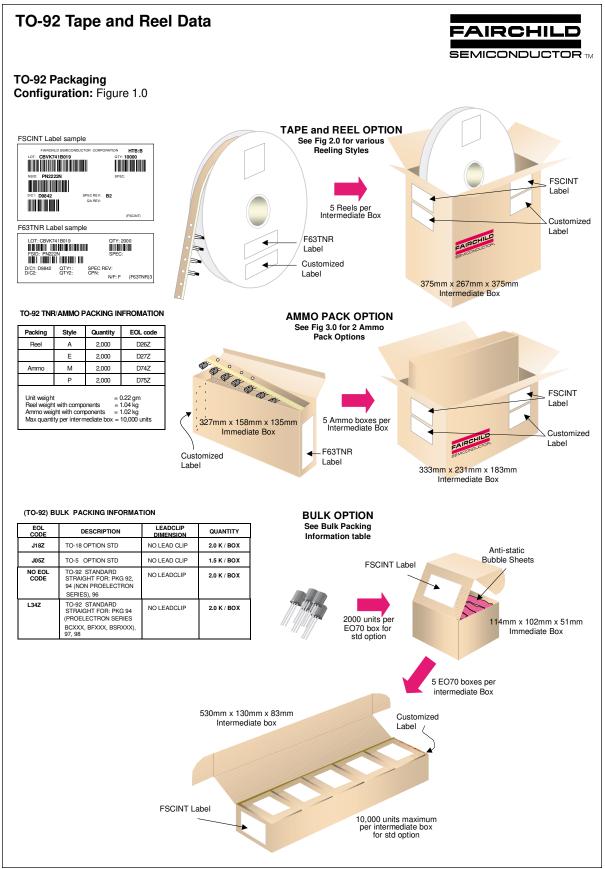
 $h_{FE}$ 

fт



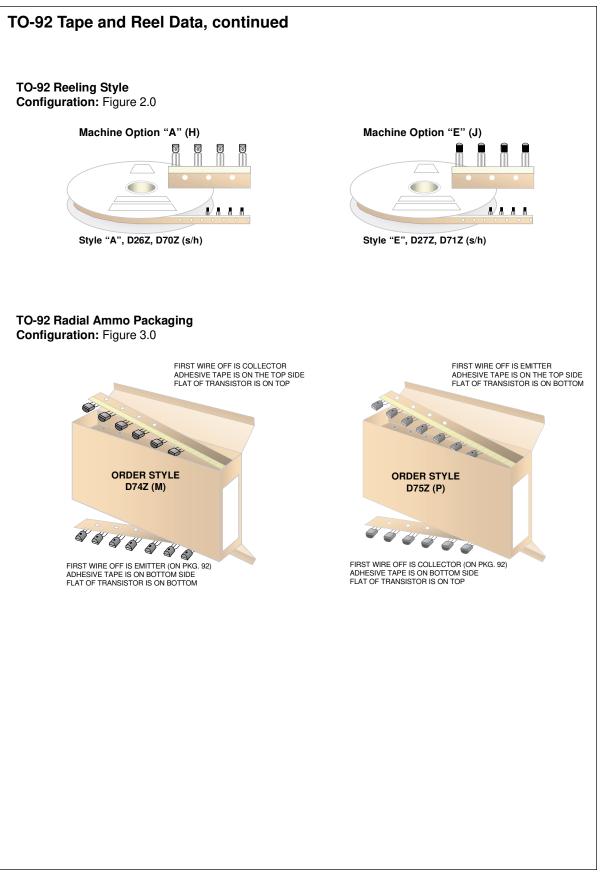
MPSA14 / MMBTA14 / PZTA14

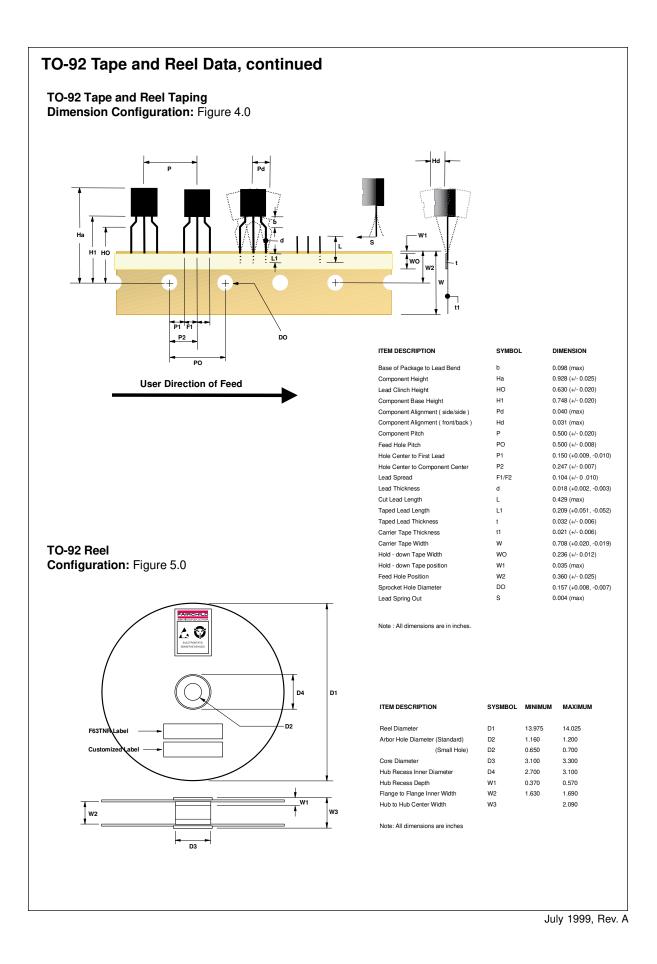


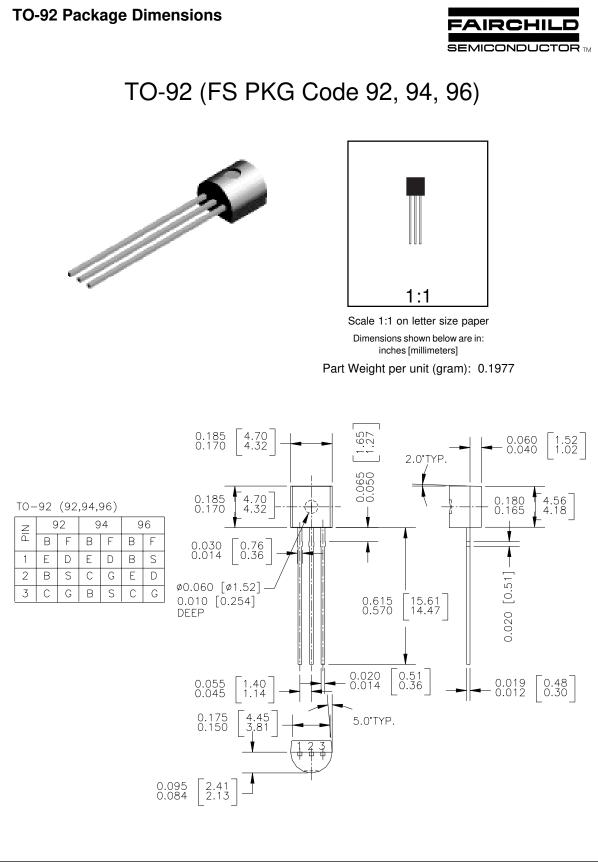


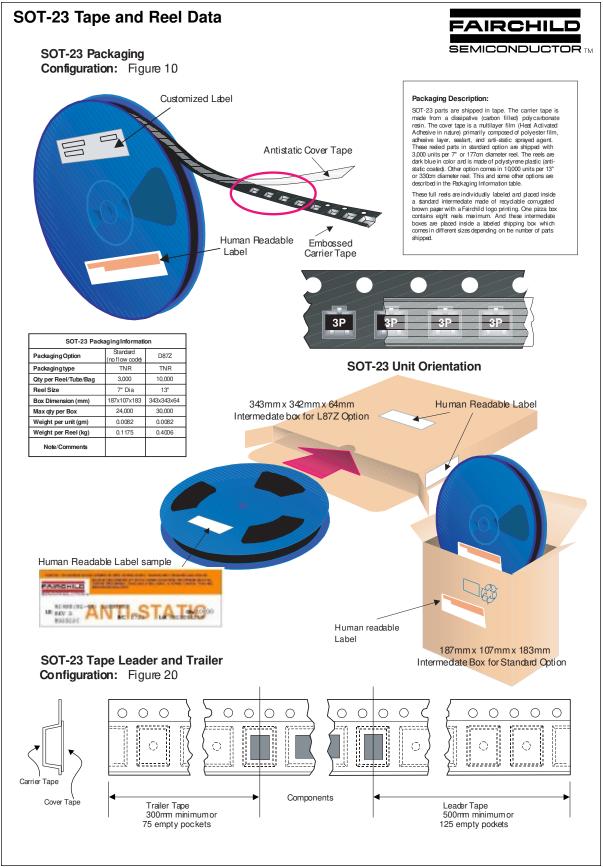
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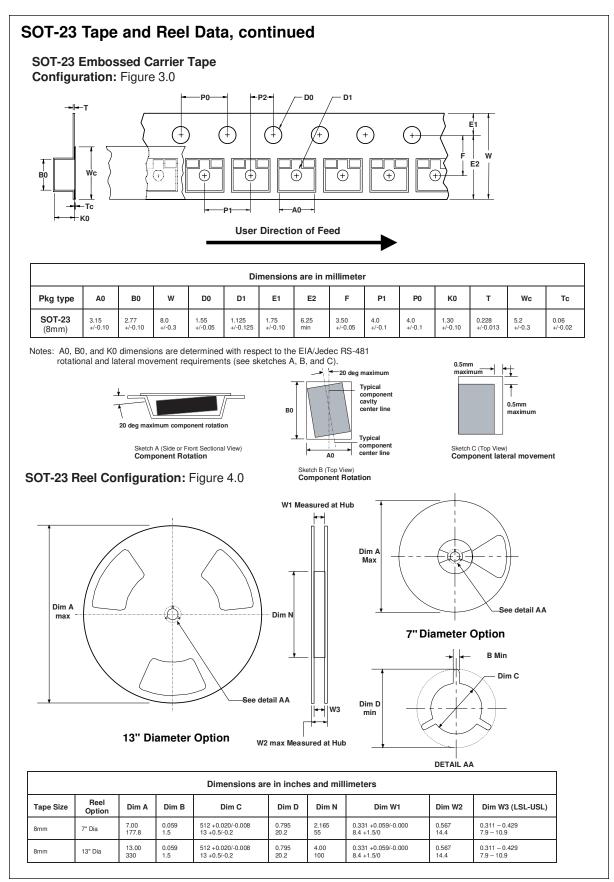




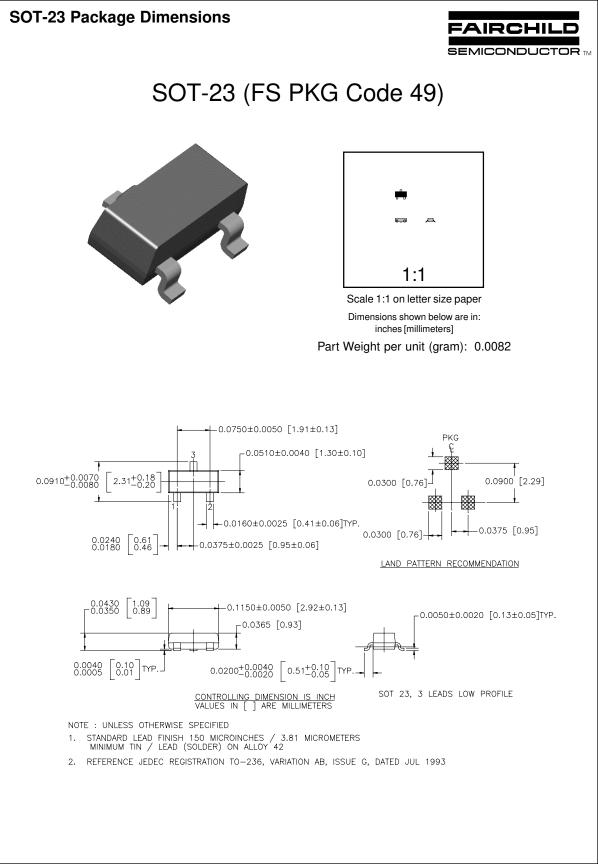


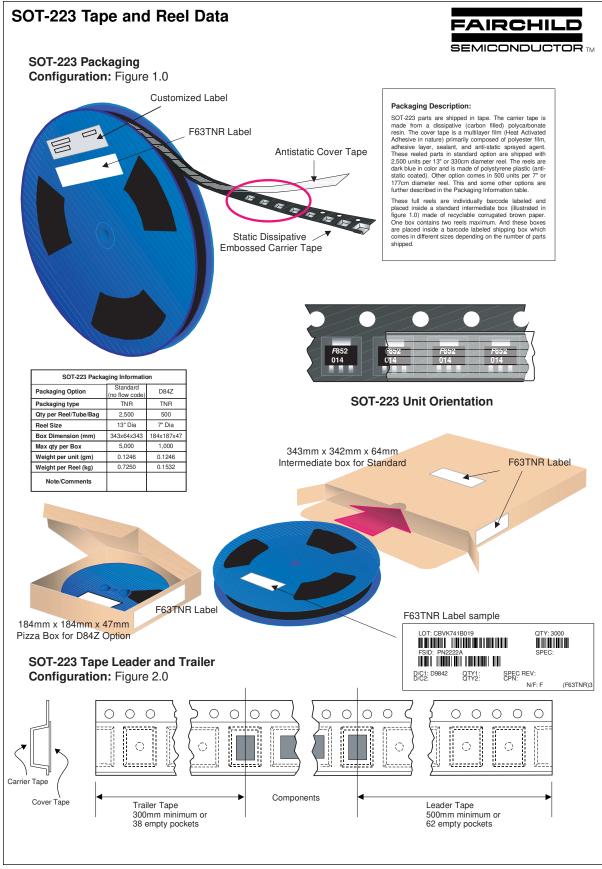
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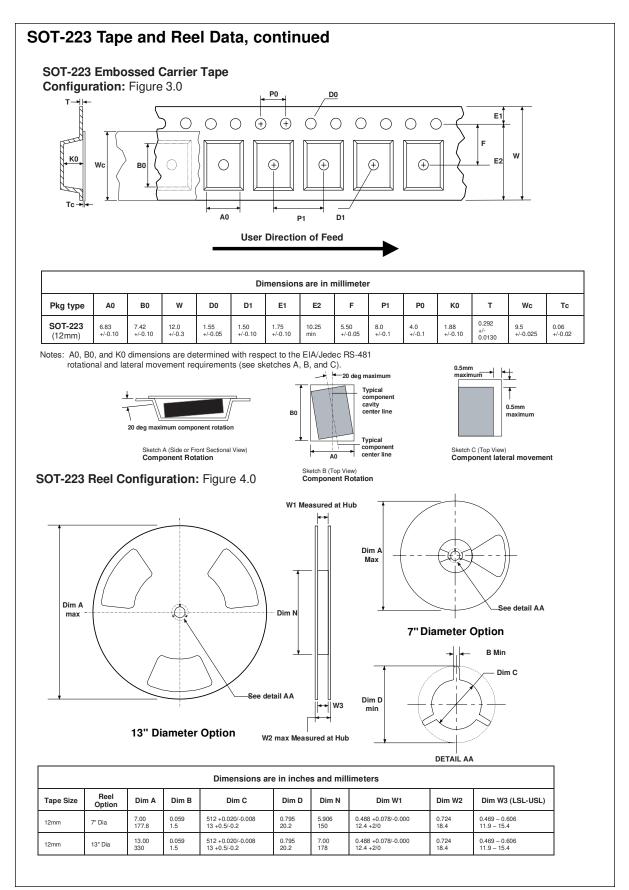
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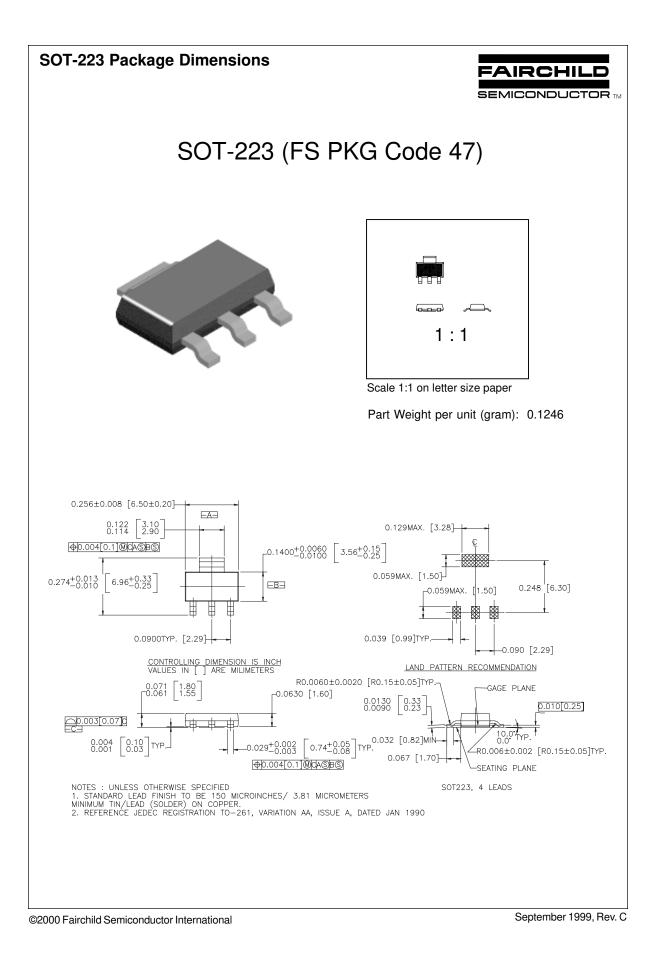




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