April 2015

D45H8 / NZT45H8
PNP Power Amplifier

Description

This device is designed for power amplifier, regulator, and switching circuits where speed is important. Sourced from process 5Q.

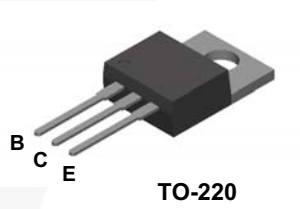

Figure 1. D45H8 Device Package

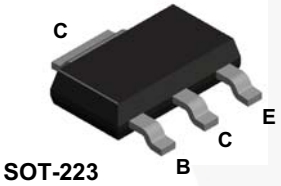

Figure 2. NZT45H8 Device Package

Ordering Information

Part Number	Marking	Package	Packing Method
D45H8	D45H8	TO-220 3L	Rail
NZT45H8	45H8	SOT-223 4L	Tape and Reel

Absolute Maximum Ratings(1),(2)

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Value	Unit
V_{CEO}	Collector-Emitter Voltage	-60	V
I_C	Collector Current - Continuous	-8	A
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	°C

Notes:

1. These ratings are based on a maximum junction temperature of 150°C.
2. These are steady-state limits. Fairchild Semiconductor should be consulted on applications involving pulsed or low-duty-cycle operations.

Thermal Characteristics[3]

Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Max.		Unit
		D45H8	NZT45H8	
P_D	Total Device Dissipation	60.0	1.5	W
	Derate Above 25°C	480	12	mW/°C
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	2.1		°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	62.5	83.3	°C/W

Notes:

3. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

Electrical Characteristics

Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Max.	Unit
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	I_C = -100 mA, I_B = 0	-60		V
I_{CBO}	Collector Cut-Off Current	V_{CB} = -60 V, I_E = 0		-10	µA
I_{EBO}	Emitter Cut-Off Current	V_{EB} = -5.0 V, I_C = 0		-100	µA
h_{FE}	DC Current Gain	I_C = -2.0 A, V_{CE} = -1.0 V	60		
		I_C = -4.0 A, V_{CE} = -1.0 V	40		
V_{CE}(sat)	Collector-Emitter Saturation Voltage	I_C = -8.0 A, I_B = -0.4 A		-1.0	V
V_{BE}(sat)	Base-Emitter Saturation Voltage	I_C = -8.0 A, I_B = -0.8 A		-1.5	V
V_{BE}(on)	Base-Emitter On Voltage	I_C = -10 mA, V_{CE} = -2.0 V	-0.54	-0.65	V
f_T	Current Gain - Bandwidth Product	I_C = -500 mA, V_{CE} = -10 V	40		MHz

Typical Performance Characteristics

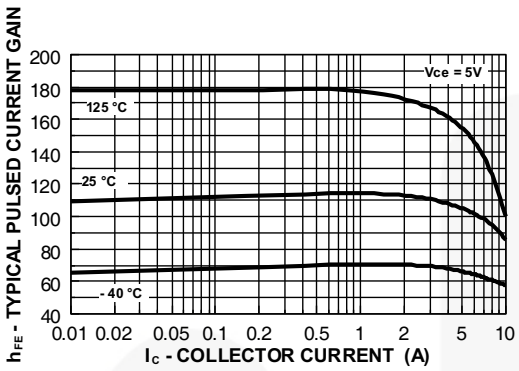

Figure 3. Typical Pulsed Current Gain vs. Collector Current

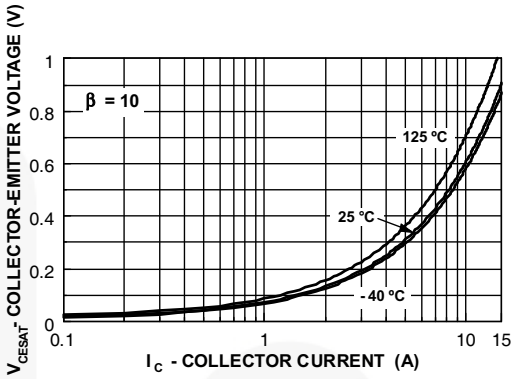

Figure 4. Collector-Emitter Saturation Voltage vs. Collector Current

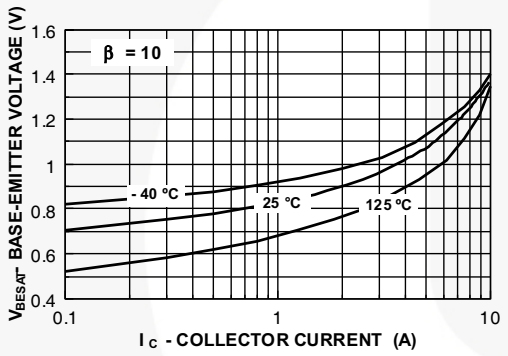

Figure 5. Base-Emitter Saturation Voltage vs. Collector Current

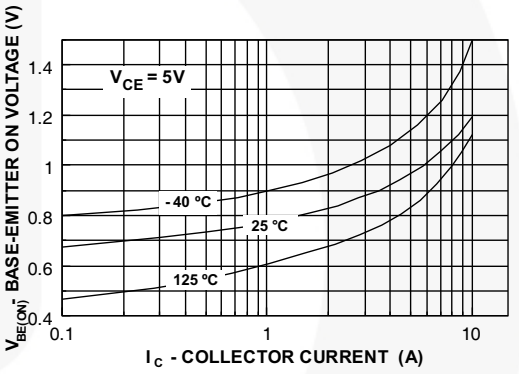

Figure 6. Base-Emitter On Voltage vs. Collector Current

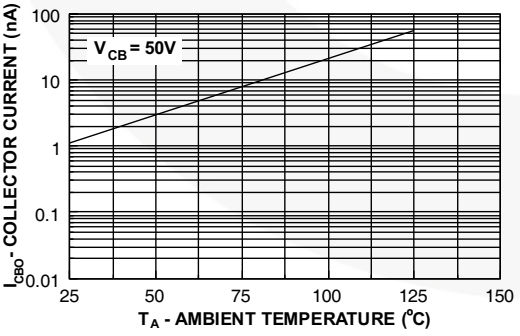

Figure 7. Collector Cut-Off Current vs. Ambient Temperature

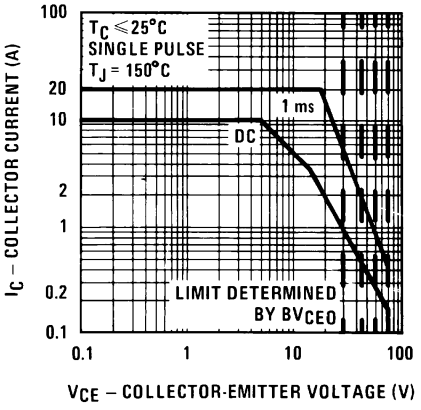

Figure 8. Safe Operating Area TO-220

Typical Performance Characteristics (Continued)

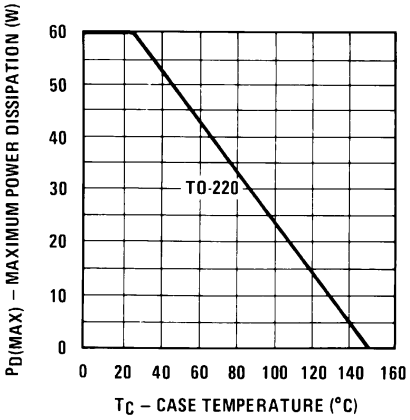

Figure 9. Maximum Power Dissipation vs. Case Temperature

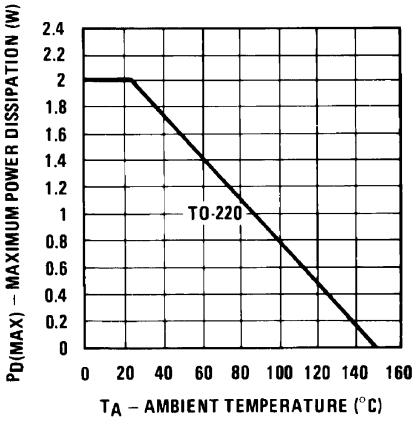

Figure 10. Maximum Power Dissipation vs. Ambient Temperature

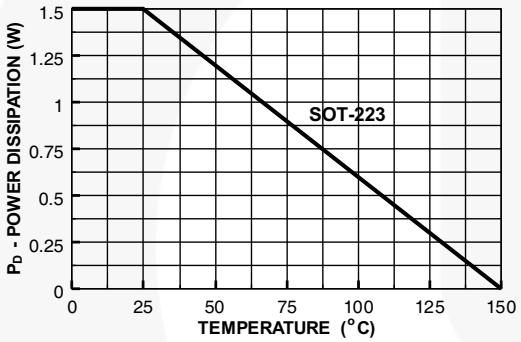

Figure 11. Power Dissipation vs. Ambient Temperature

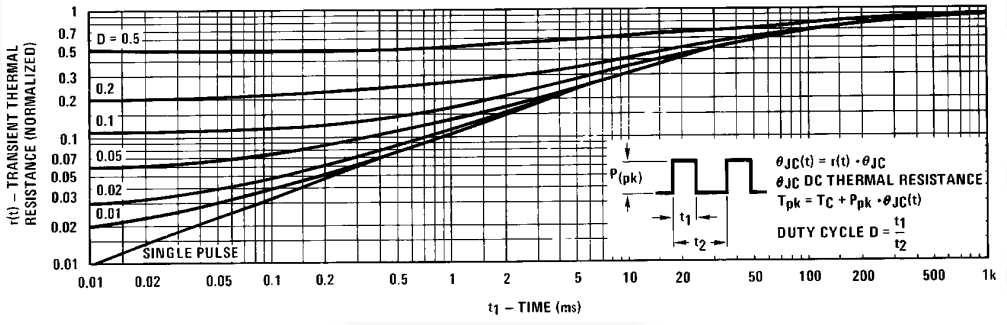

Figure 12. Thermal Response in TO-220 Package

Physical Dimensions

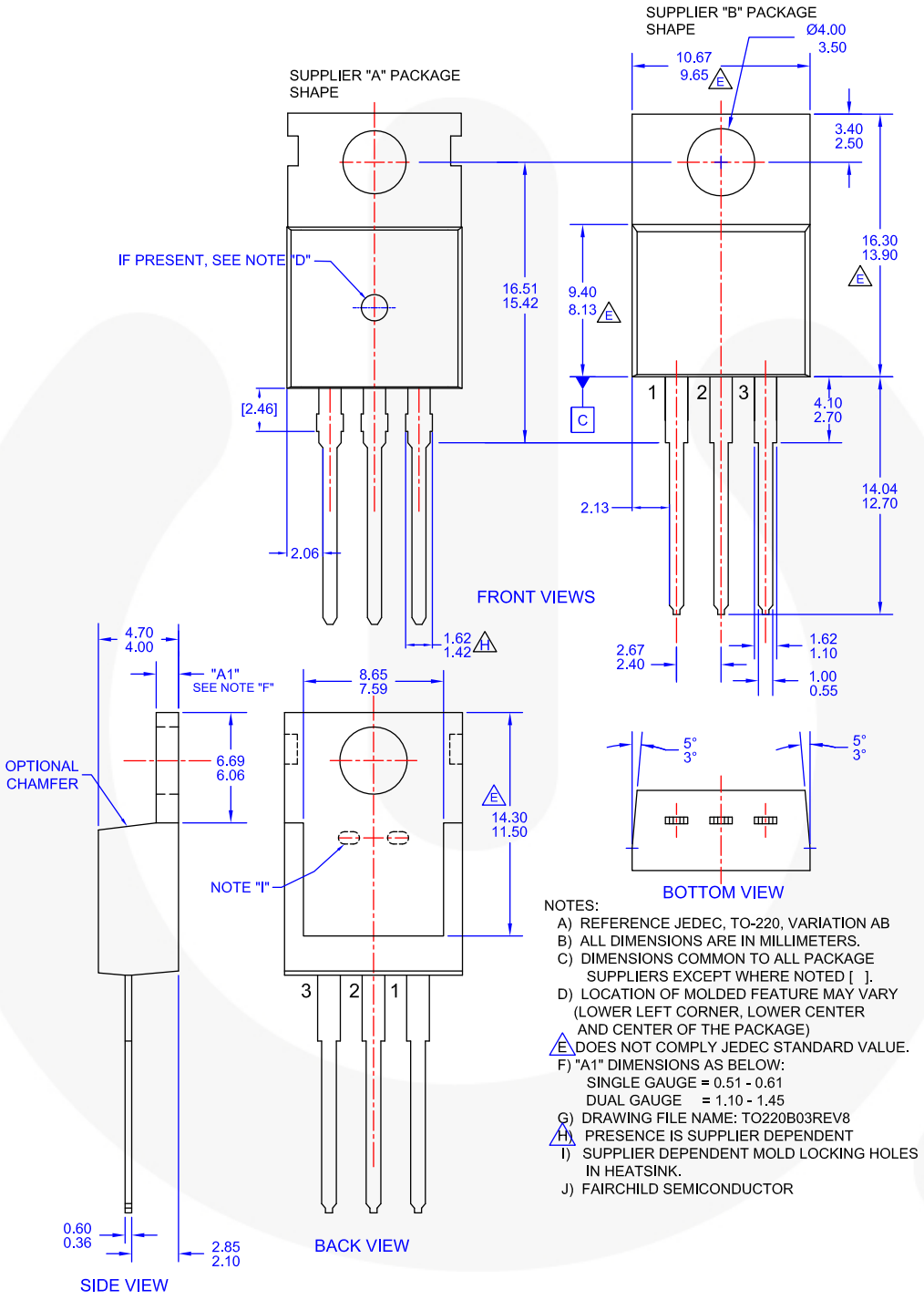

Figure 13. TO-220, MOLDED, 3-LEAD, JEDEC VARIATION AB

Physical Dimensions (Continued)

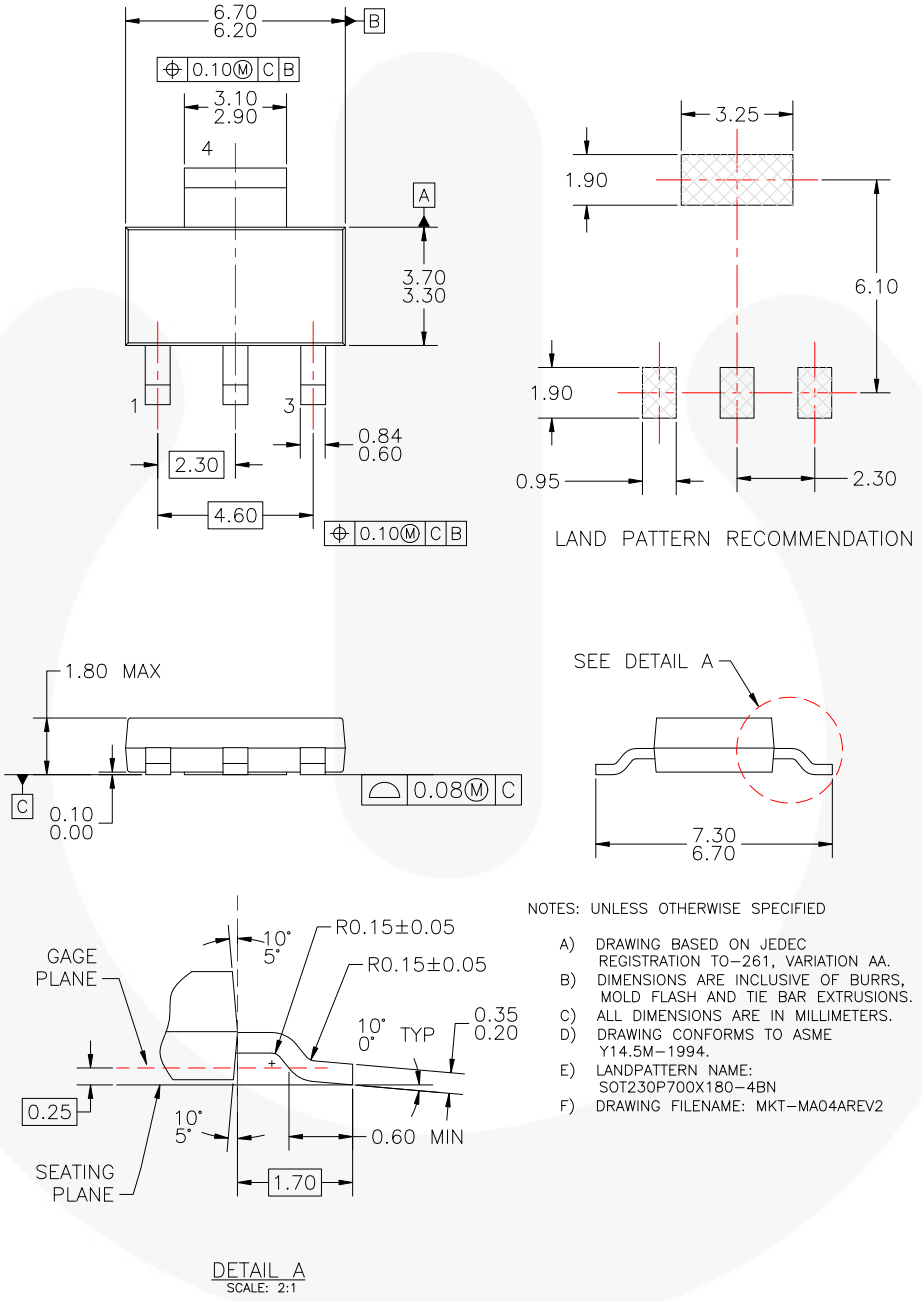

Figure 14. MOLDED PACKAGE, SOT-223, 4-LEAD

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