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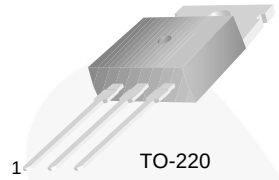
Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.

November 2014

FJP13007
High Voltage Fast-Switching NPN Power Transistor

Features

- High Voltage High Speed Power Switch Application
- High Voltage Capability
- High Switching Speed
- Suitable for Electronic Ballast and Switching Mode Power Supply



TO-220

1.Base 2.Collector 3.Emitter

Ordering Information

Part Number	Top Mark	Package	Packing Method
FJP13007TU	J13007	TO-220 3L (Dual Gauge)	Rail
FJP13007H1TU	J13007-1	TO-220 3L (Single Gauge)	Rail
FJP13007H1TU_F080	J13007-1	TO-220 3L (Dual Gauge)	Rail
FJP13007H2TU	J13007-2	TO-220 3L (Dual Gauge)	Rail
FJP13007H2TU_F080	J13007-2	TO-220 3L (Dual Gauge)	Rail

Absolute Maximum Ratings

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_C = 25°C unless otherwise noted.

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	700	V
V_{CEO}	Collector-Emitter Voltage	400	V
V_{EBO}	Emitter-Base Voltage	9	V
I_C	Collector Current (DC)	8	A
I_{CP}	Collector Current (Pulse)	16	A
I_B	Base Current (DC)	4	A
P_C	Collector Dissipation (T_C = 25°C)	80	W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature Range	-65 to 150	°C

Electrical Characteristics

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{CEO}	Collector-Emitter Breakdown Voltage	I_C = 10 mA, I_B = 0	400			V
I_{EBO}	Emitter Cut-Off Current	V_{EB} = 9 V, I_C = 0			1	mA
$h_{FE}1$	DC Current Gain(1)	V_{CE} = 5 V, I_C = 2 A	8		60	
$h_{FE}2$	DC Current Gain(1)	V_{CE} = 5 V, I_C = 5 A	5		30	
V_{CE}(sat)	Collector-Emitter Saturation Voltage	I_C = 2 A, I_B = 0.4 A			1.0	V
		I_C = 5 A, I_B = 1 A			2.0	
		I_C = 8 A, I_B = 2 A			3.0	
V_{BE}(sat)	Collector-Base Saturation Voltage	I_C = 2 A, I_B = 0.4 A			1.2	V
		I_C = 5 A, I_B = 1 A			1.6	
f_T	Current Gain Bandwidth Product	V_{CE} = 10 V, I_C = 0.5 A	4			MHz
C_{ob}	Output Capacitance	V_{CB} = 10 V, f = 0.1 MHz		110		pF
t_{ON}	Turn-On Time	V_{CC} = 125 V, I_C = 5 A, I_{B1} = -I_{B2} = 1 A, R_L = 25 Ω			1.6	µs
t_{STG}	Storage Time				3.0	µs
t_F	Fall Time				0.7	µs

Note:

1. Pulse test: pw ≤ 300 µs, duty cycle ≤ 2%.

h_{FE} Classification

Classification	H1	H2
$h_{FE}1$	15 ~ 28	26 ~ 39

Typical Performance Characteristics

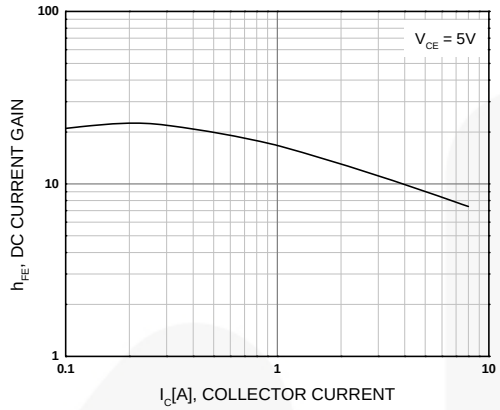


Figure 1. DC Current Gain

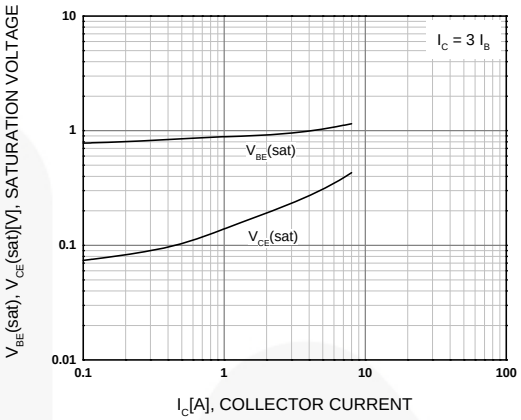


Figure 2. Saturation Voltage

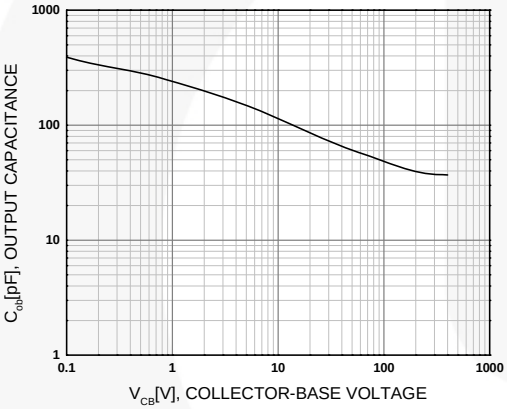


Figure 3. Collector Output Capacitance

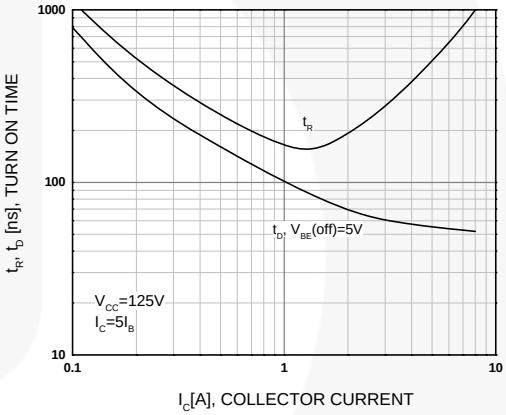


Figure 4. Turn-On Time

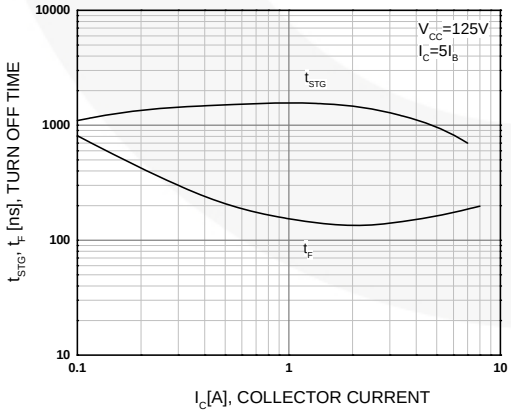


Figure 5. Turn-Off Time

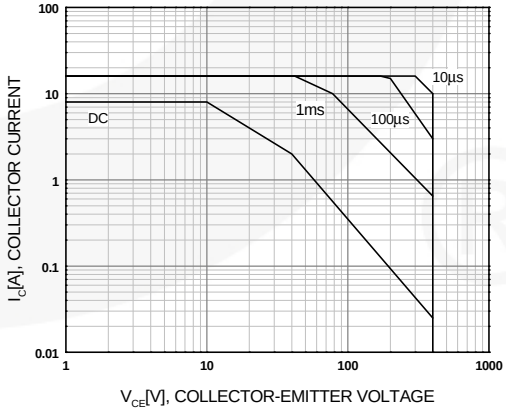


Figure 6. Forward Biased Safe Operating Area

Typical Performance Characteristics (Continued)

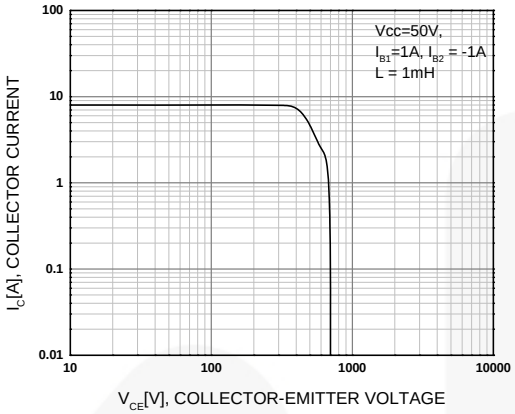


Figure 7. Reverse Biased Safe Operating Area

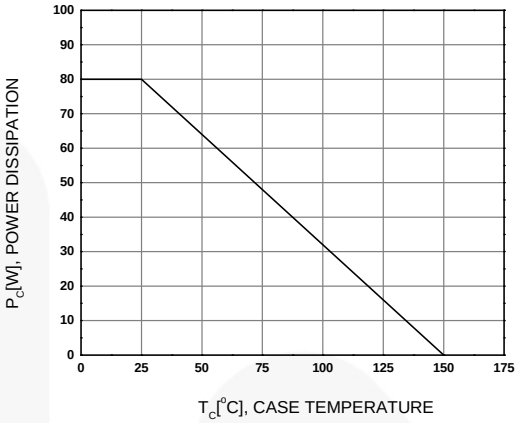
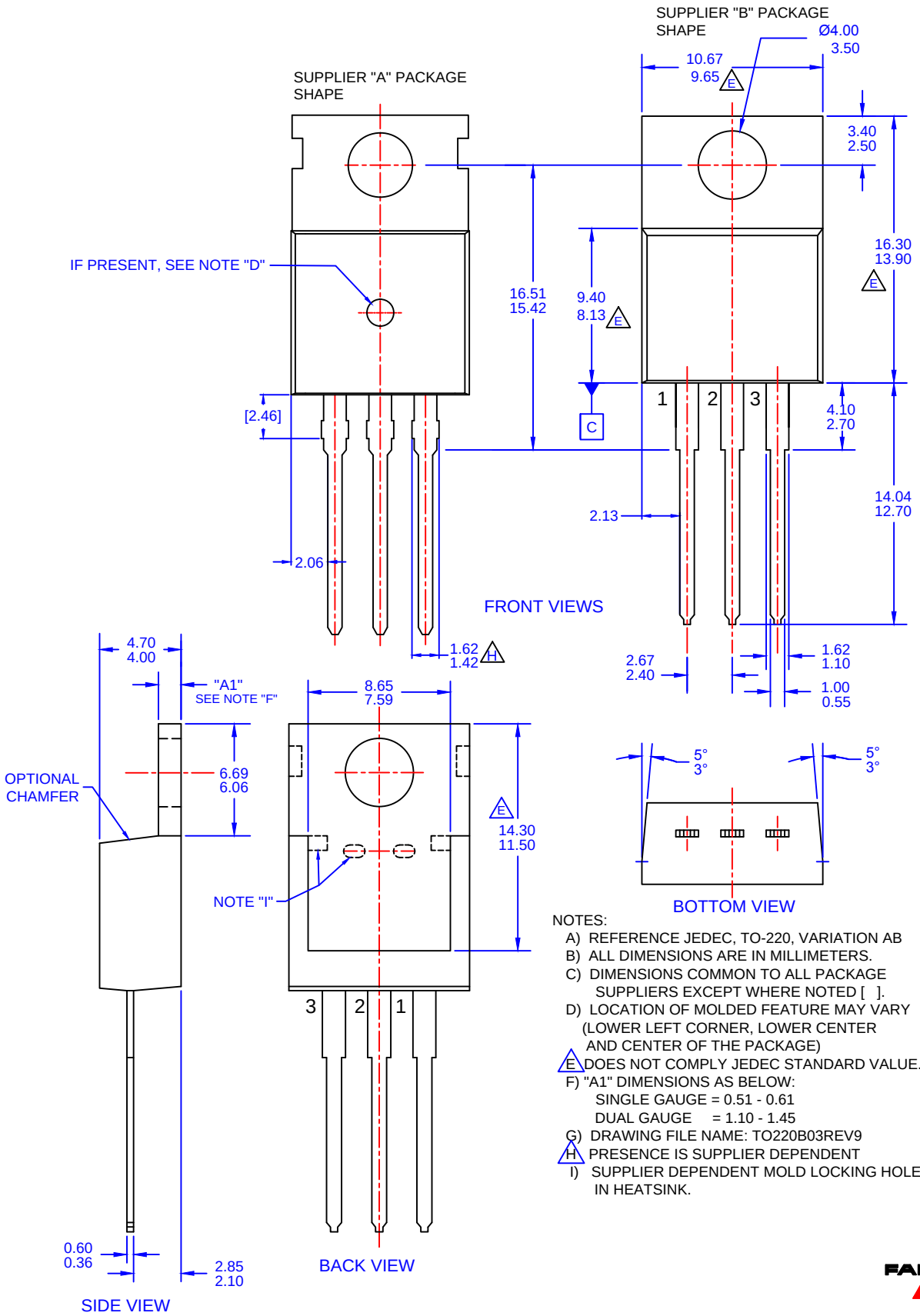


Figure 8. Power Derating



NOTES:

A) REFERENCE JEDEC, TO-220, VARIATION AB
B) ALL DIMENSIONS ARE IN MILLIMETERS.
C) DIMENSIONS COMMON TO ALL PACKAGE SUPPLIERS EXCEPT WHERE NOTED [ ].
D) LOCATION OF MOLDED FEATURE MAY VARY (LOWER LEFT CORNER, LOWER CENTER AND CENTER OF THE PACKAGE)
E DOES NOT COMPLY JEDEC STANDARD VALUE.
F) "A1" DIMENSIONS AS BELOW:
SINGLE GAUGE = 0.51 - 0.61
DUAL GAUGE = 1.10 - 1.45
G) DRAWING FILE NAME: TO220B03REV9
H PRESENCE IS SUPPLIER DEPENDENT
I) SUPPLIER DEPENDENT MOLD LOCKING HOLES IN HEATSINK.

FAIRCHILD

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA
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