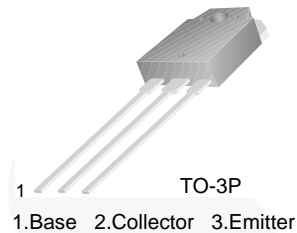


FJA13009

High-Voltage Switch Mode Application

Features

- High-Speed Switching
- Suitable for Switching Regulator and Motor Control



Ordering Information

Part Number	Marking	Package	Packing Method
FJA13009TU	J13009	TO-3P	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 $T_C = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Value	Units
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)	12	A
I_{CP}	Collector Current (Pulse)	24	A
I_B	Base Current	6	A
P_D	Total Device Dissipation ($T_C = 25^\circ\text{C}$)	130	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	- 65 to +150	$^\circ\text{C}$

Electrical Characteristics⁽¹⁾Values are at $T_C = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage	$I_C = 10 \text{ mA}, I_B = 0$	400			V
I_{EBO}	Emitter Cut-Off Current	$V_{EB} = 7 \text{ V}, I_C = 0$			1	mA
h_{FE}	DC Current Gain	$V_{CE} = 5 \text{ V}, I_C = 5 \text{ A}$	8		40	
		$V_{CE} = 5 \text{ V}, I_C = 8 \text{ A}$	6		30	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 5 \text{ A}, I_B = 1 \text{ A}$			1.0	V
		$I_C = 8 \text{ A}, I_B = 1.6 \text{ A}$			1.5	
		$I_C = 12 \text{ A}, I_B = 3 \text{ A}$			3.0	
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 5 \text{ A}, I_B = 1 \text{ A}$			1.2	V
		$I_C = 8 \text{ A}, I_B = 1.6 \text{ A}$			1.6	
C_{ob}	Output Capacitance	$V_{CB} = 10 \text{ V}, f = 0.1 \text{ MHz}$		180		pF
f_T	Current Gain Bandwidth Product	$V_{CE} = 10 \text{ V}, I_C = 0.5 \text{ A}$	4			MHz
t_{ON}	Turn-On Time	$V_{CC} = 125 \text{ V}, I_C = 8 \text{ A}$			1.1	μs
t_{STG}	Storage Time	$I_{B1} = - I_{B2} = 1.6 \text{ A}$			3.0	
t_F	Fall Time	$R_L = 15.6 \Omega$			0.7	

Note:

1. Pulse test: pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2\%$.

Typical Performance Characteristics

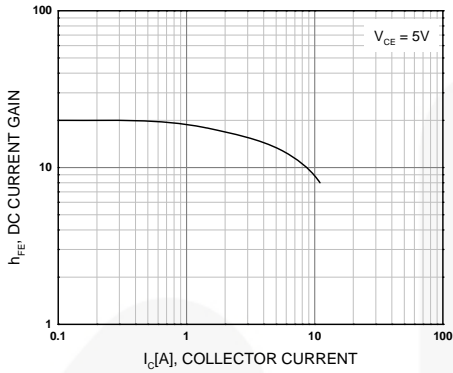


Figure 1. DC Current Gain

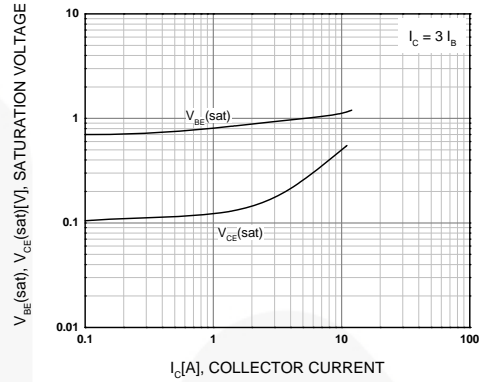


Figure 2. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

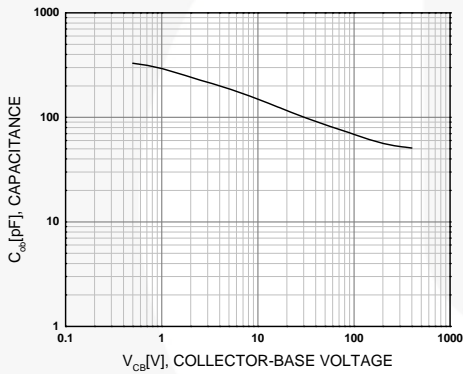


Figure 3. Collector Output Capacitance

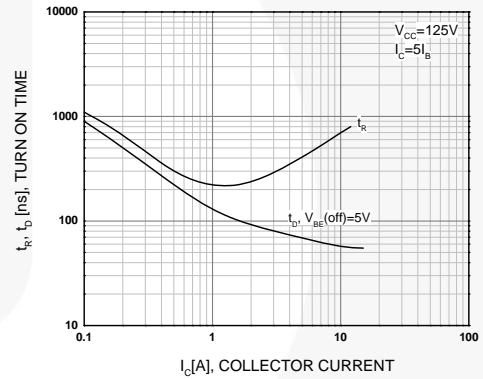


Figure 4. Turn-On Time

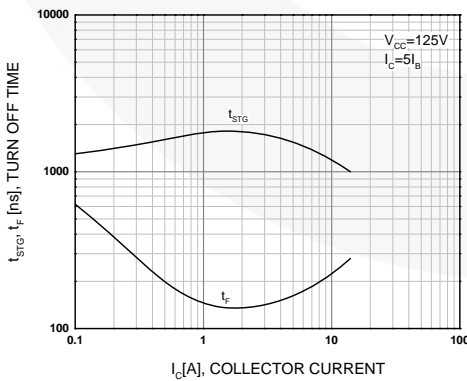


Figure 5. Turn-Off Time

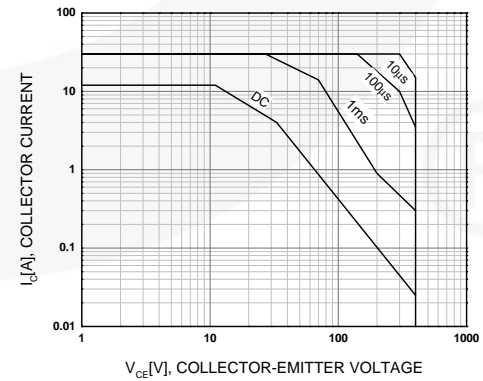


Figure 6. Forward Bias Safe Operating Area

Typical Performance Characteristics (continued)

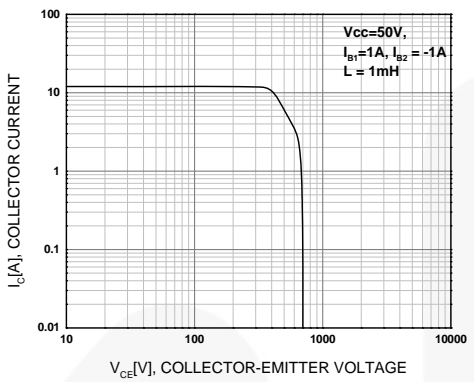


Figure 7. Reverse Bias Safe Operating Area

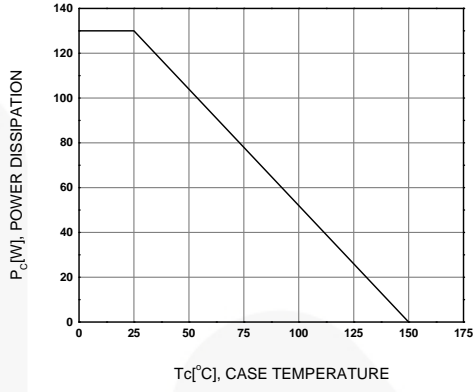


Figure 8. Power Derating



Physical Dimensions

TO-3P

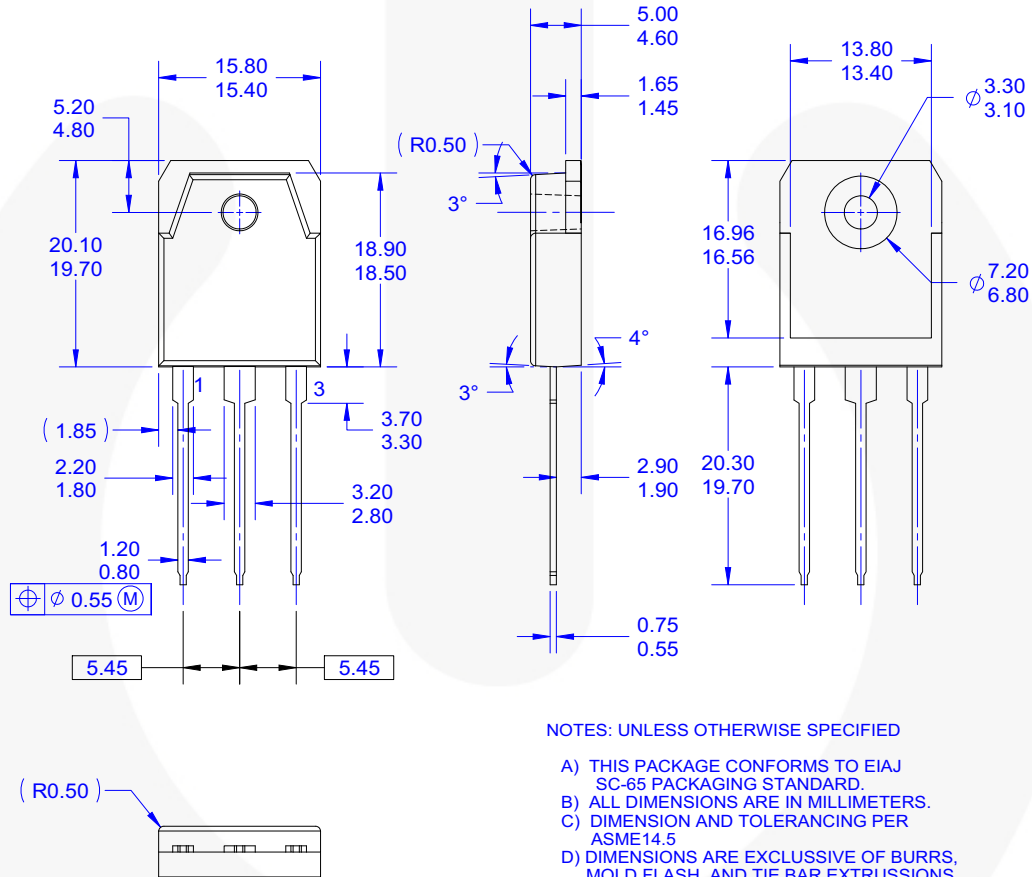


Figure 9. 3-LEAD, T03, PLASTIC, EIAJ SC-65 (ACTIVE)

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