

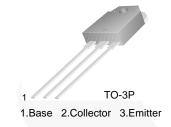
July 2013

FJA13009

High-Voltage Switch Mode Application

Features

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



Ordering Information

| Part Number | Part Number Marking | | 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 $T_C = 25^{\circ}C$ 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 | Α | |
| Ι _Β | Base Current | 6 | Α | |
| P _D | Total Device Dissipation (T _C = 25°C) | 130 | W | |
| T _J | Junction Temperature | 150 | °C | |
| T _{STG} | Storage Temperature | - 65 to +150 | °C | |

1

Electrical Characteristics(1)

Values are at $T_C = 25^{\circ}C$ unless otherwise noted.

| Parameter | Test Condition | Min. | Тур. | Max. | Units |
|--------------------------------------|--|------|------|------|-------|
| Collector-Emitter Sustaining Voltage | $I_C = 10 \text{ mA}, I_B = 0$ | 400 | | | V |
| Emitter Cut-Off Current | $V_{EB} = 7 \text{ V, } I_{C} = 0$ | | | 1 | mA |
| DC Current Gain | $V_{CE} = 5 \text{ V}, I_{C} = 5 \text{ A}$ | 8 | | 40 | |
| DC Current Gain | $V_{CE} = 5 \text{ V}, I_{C} = 8 \text{ A}$ | 6 | | 30 | |
| | $I_C = 5 \text{ A}, I_B = 1 \text{ A}$ | | | 1.0 | |
| Collector-Emitter Saturation Voltage | $I_C = 8 \text{ A}, I_B = 1.6 \text{ A}$ | | | 1.5 | ٧ |
| | $I_C = 12 \text{ A}, I_B = 3 \text{ A}$ | | | 3.0 | |
| Page Emitter Caturation Valtage | $I_C = 5 \text{ A}, I_B = 1 \text{ A}$ | | | 1.2 | V |
| base-Emilier Saluration voltage | $I_C = 8 \text{ A}, I_B = 1.6 \text{ A}$ | | | 1.6 | v |
| Output Capacitance | $V_{CB} = 10 \text{ V}, f = 0.1 \text{ MHz}$ | | 180 | | pF |
| Current Gain Bandwidth Product | $V_{CE} = 10 \text{ V}, I_{C} = 0.5 \text{ A}$ | 4 | | | MHz |
| Turn-On Time | $V_{CC} = 125 \text{ V}, I_{C} = 8 \text{ A}$ | | | 1.1 | |
| Storage Time | $I_{B1} = -I_{B2} = 1.6 \text{ A}$ | | | 3.0 | μs |
| Fall Time | $R_L = 15.6 \Omega$ | | | 0.7 | |
| | Collector-Emitter Sustaining Voltage Emitter Cut-Off Current DC Current Gain Collector-Emitter Saturation Voltage Base-Emitter Saturation Voltage Output Capacitance Current Gain Bandwidth Product Turn-On Time Storage Time | | | | |

Note:

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

Typical Performance Characteristics

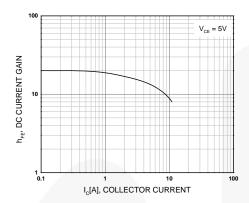


Figure 1. DC Current Gain

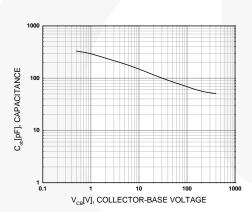


Figure 3. Collector Output Capacitance

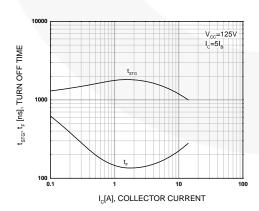


Figure 5. Turn-Off Time

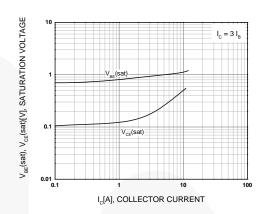


Figure 2. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage

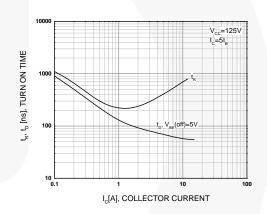


Figure 4. Turn-On Time

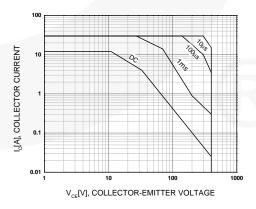


Figure 6. Forward Bias Safe Operating Area

Typical Performance Characteristics (continued)

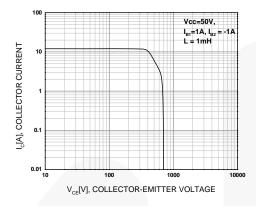


Figure 7. Reverse Bias Safe Operating Area

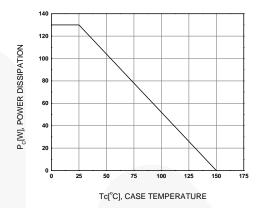
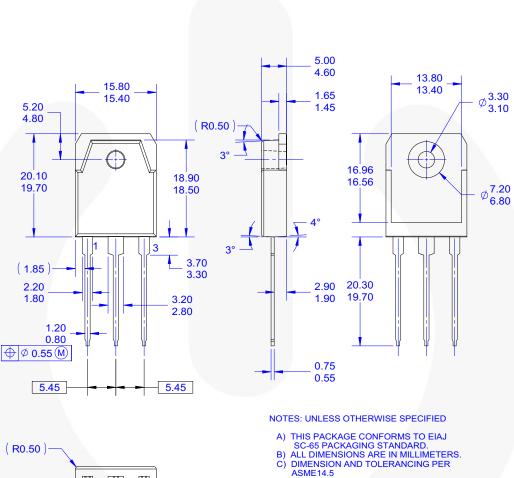


Figure 8. Power Derating

Physical Dimensions

TO-3P



- ASME 14.5
 D) DIMENSIONS ARE EXCLUSSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSSIONS.
 E) THIS PACKAGE IS INTENDED ONLY FOR TO3PN.
 F) DRAWING FILE NAME: TO3P03AREV4.

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

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