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January 2009

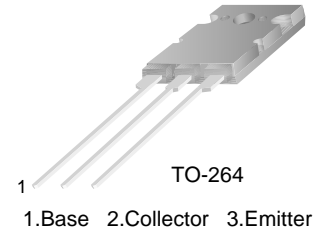
2SC5200/FJL4315 NPN Epitaxial Silicon Transistor

Applications

- High-Fidelity Audio Output Amplifier
- General Purpose Power Amplifier

Features

- High Current Capability: $I_C = 17A$.
- High Power Dissipation : 150watts.
- High Frequency : 30MHz.
- High Voltage : $V_{CEO}=250V$
- Wide S.O.A for reliable operation.
- Excellent Gain Linearity for low THD.
- Complement to 2SA1943/FJL4215.
- Thermal and electrical Spice models are available.
- Same transistor is also available in:
 - TO3P package, 2SC5242/FJA4313 : 130 watts
 - TO220 package, FJP5200 : 80 watts
 - TO220F package, FJPF5200 : 50 watts



Absolute Maximum Ratings* $T_a = 25^\circ C$ unless otherwise noted

| Symbol | Parameter | Ratings | Units |
|----------------|---|-------------|--------------------|
| BV_{CBO} | Collector-Base Voltage | 250 | V |
| BV_{CEO} | Collector-Emitter Voltage | 250 | V |
| BV_{EBO} | Emitter-Base Voltage | 5 | V |
| I_C | Collector Current(DC) | 17 | A |
| I_B | Base Current | 1.5 | A |
| P_D | Total Device Dissipation($T_C=25^\circ C$) Derate above $25^\circ C$ | 150 1.04 | W W/ $^\circ C$ |
| T_J, T_{STG} | Junction and Storage Temperature | - 50 ~ +150 | $^\circ C$ |

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

Thermal Characteristics* $T_a=25^\circ C$ unless otherwise noted

| Symbol | Parameter | Max. | Units |
|-----------------|--------------------------------------|------|--------------|
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case | 0.83 | $^\circ C/W$ |

* Device mounted on minimum pad size

h_{FE} Classification

| Classification | R | O |
|----------------|----------|----------|
| h_{FE1} | 55 ~ 110 | 80 ~ 160 |

Electrical Characteristics* $T_a=25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Units |
|----------------------|--------------------------------------|------------------------------------|------|------|------|---------------|
| BV_{CBO} | Collector-Base Breakdown Voltage | $I_C=5\text{mA}, I_E=0$ | 250 | | | V |
| BV_{CEO} | Collector-Emitter Breakdown Voltage | $I_C=10\text{mA}, R_{BE}=\infty$ | 250 | | | V |
| BV_{EBO} | Emitter-Base Breakdown Voltage | $I_E=5\text{mA}, I_C=0$ | 5 | | | V |
| I_{CBO} | Collector Cut-off Current | $V_{CB}=230\text{V}, I_E=0$ | | | 5.0 | μA |
| I_{EBO} | Emitter Cut-off Current | $V_{EB}=5\text{V}, I_C=0$ | | | 5.0 | μA |
| h_{FE1} | DC Current Gain | $V_{CE}=5\text{V}, I_C=1\text{A}$ | 55 | | 160 | |
| h_{FE2} | DC Current Gain | $V_{CE}=5\text{V}, I_C=7\text{A}$ | 35 | 60 | | |
| $V_{CE}(\text{sat})$ | Collector-Emitter Saturation Voltage | $I_C=8\text{A}, I_B=0.8\text{A}$ | | 0.4 | 3.0 | V |
| $V_{BE}(\text{on})$ | Base-Emitter On Voltage | $V_{CE}=5\text{V}, I_C=7\text{A}$ | | 1.0 | 1.5 | V |
| f_T | Current Gain Bandwidth Product | $V_{CE}=5\text{V}, I_C=1\text{A}$ | | 30 | | MHz |
| C_{ob} | Output Capacitance | $V_{CB}=10\text{V}, f=1\text{MHz}$ | | 200 | | pF |

* Pulse Test: Pulse Width=20 μs , Duty Cycle \leq 2%**Ordering Information**

| Part Number | Marking | Package | Packing Method | Remarks |
|-------------|---------|---------|----------------|--------------|
| 2SC5200RTU | C5200R | TO-264 | TUBE | hFE1 R grade |
| 2SC5200OTU | C5200O | TO-264 | TUBE | hFE1 O grade |
| FJL4315RTU | J4315R | TO-264 | TUBE | hFE1 R grade |
| FJL4315OTU | J4315O | TO-264 | TUBE | hFE1 O grade |

Typical Characteristics

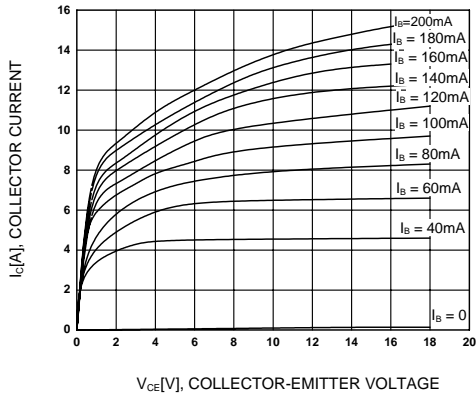


Figure 1. Static Characteristic

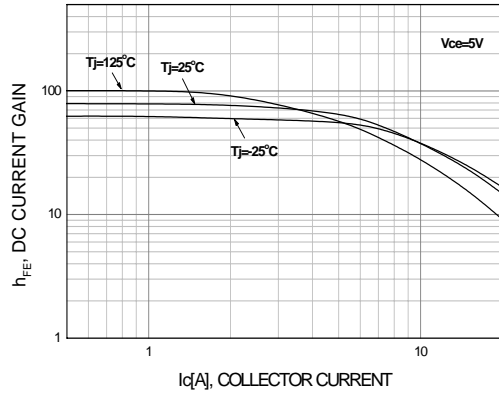


Figure 2. DC current Gain (R grade)

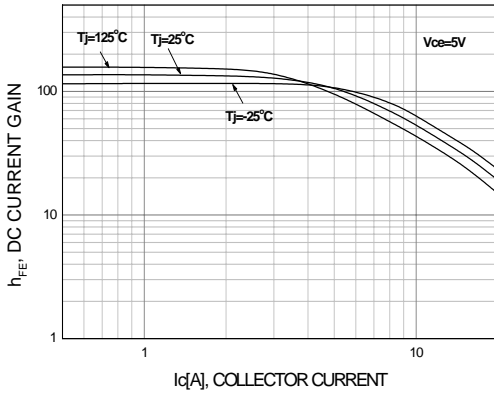


Figure 3. DC current Gain (O grade)

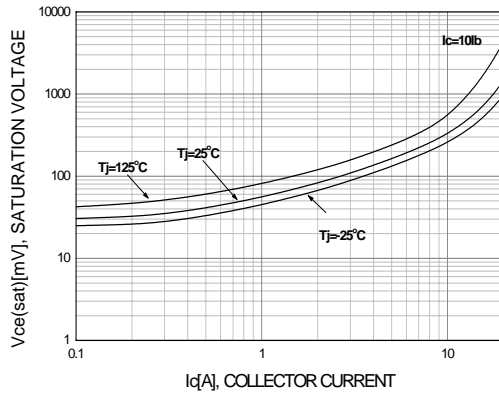


Figure 4. Collector-Emitter Saturation Voltage

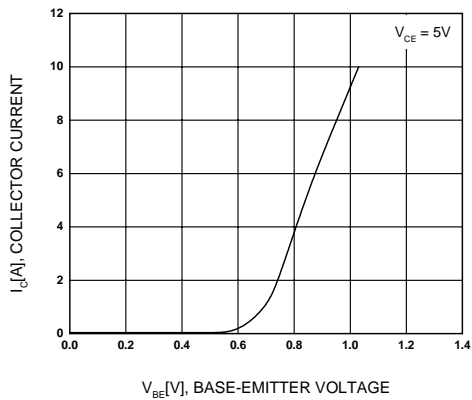


Figure 5. Base-Emitter On Voltage

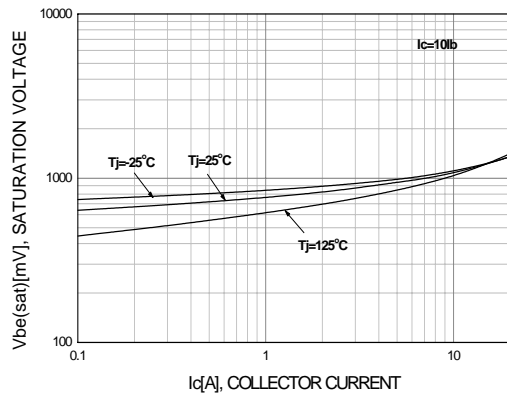


Figure 6. Base-Emitter Saturation Voltage

Typical Characteristics

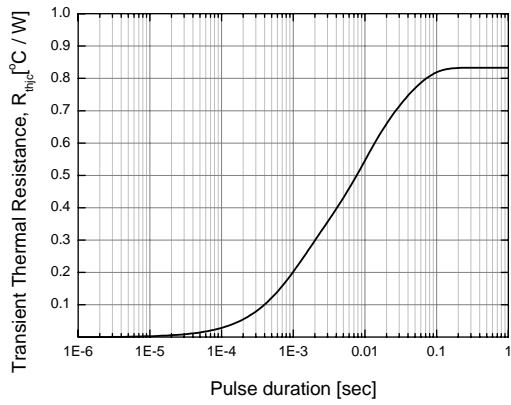


Figure 7. Power Derating

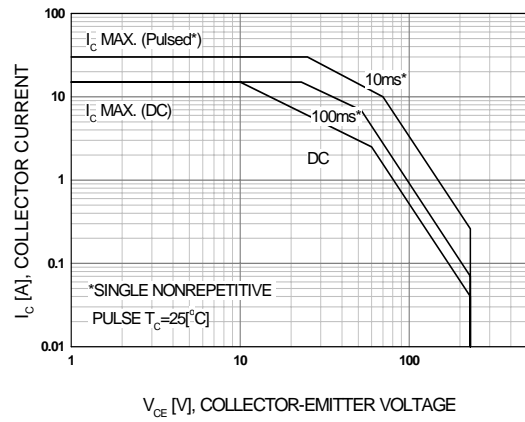


Figure 8. Safe Operating Area

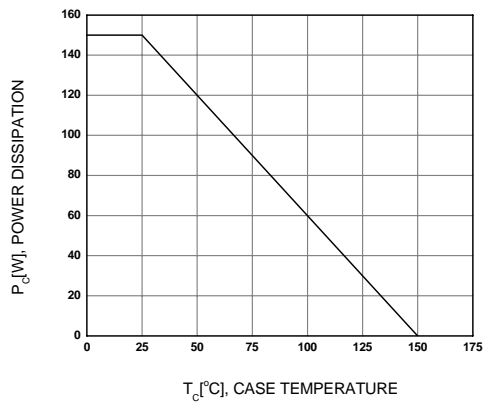
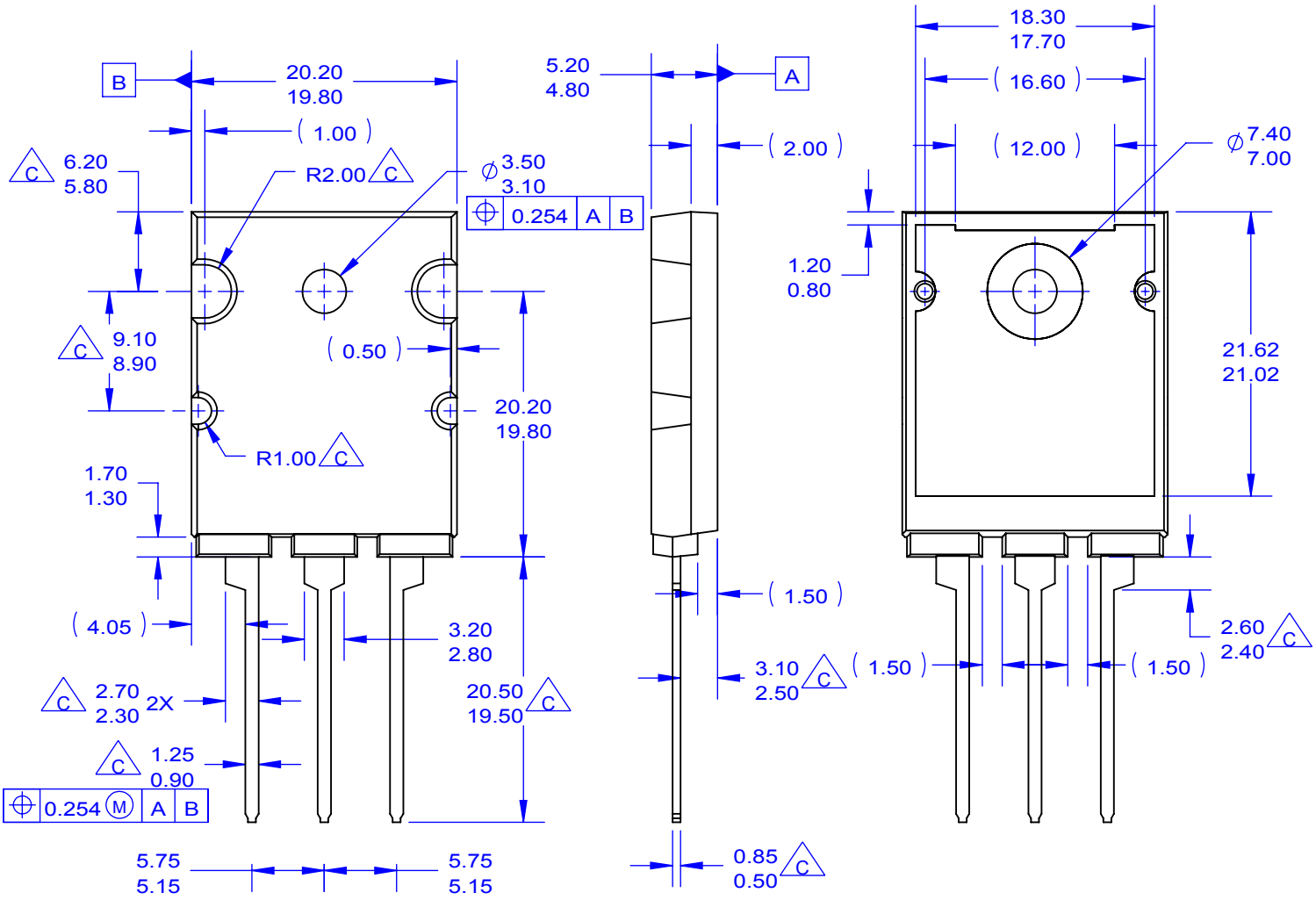


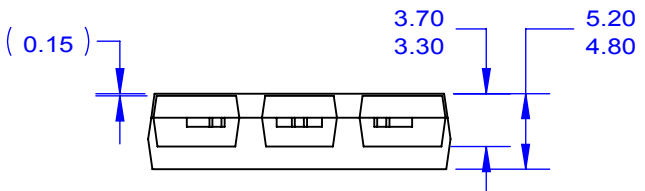
Figure 9. Power Derating



FRONT VIEW

SIDE VIEW

BACK VIEW



BOTTOM VIEW



NOTES:

- A. PACKAGE REFERENCE: JEDEC TO264 VARIATION AA.
- B. ALL DIMENSIONS ARE IN MILLIMETERS.
- $\triangle C$ OUT OF JEDEC STANDARD VALUE.
- D. DIMENSION AND TOLERANCE AS PER ASME Y14.5-1994.
- E. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS.
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- Поставка образцов и прототипов;
- Техническая поддержка проекта;
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