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January 2009

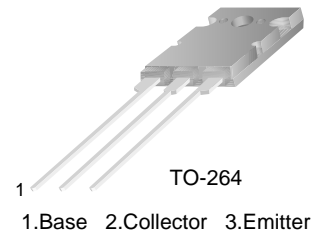
2SA1943/FJL4215 PNP Epitaxial Silicon Transistor

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 2SC5200/FJL4315.
- Full thermal and electrical Spice models are available.
- Same transistor is also available in:
 - TO3P package, 2SA1962/FJA4213 : 130 watts
 - TO220 package, FJP1943 : 80 watts
 - TO220F package, FJPF1943 : 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 | -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 | $V_{CB}=-10\text{V}, f=1\text{MHz}$ | | 360 | | pF |

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

| Part Number | Marking | Package | Packing Method | Remarks |
|-------------|---------|---------|----------------|--------------|
| 2SA1943RTU | A1943R | TO-264 | TUBE | hFE1 R grade |
| 2SA1943OTU | A1943O | TO-264 | TUBE | hFE1 O grade |
| FJL4215RTU | J4215R | TO-264 | TUBE | hFE1 R grade |
| FJL4215OTU | J4215O | TO-264 | TUBE | hFE1 O grade |

Typical Characteristics

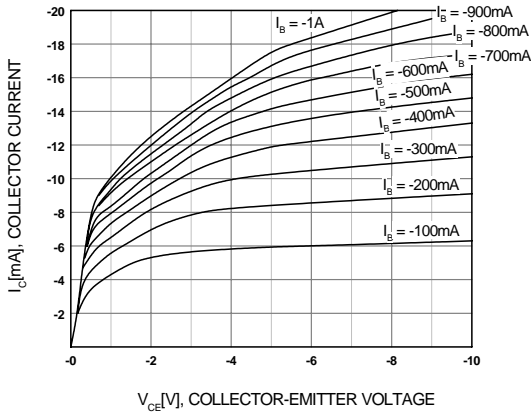


Figure 1. Static Characteristic

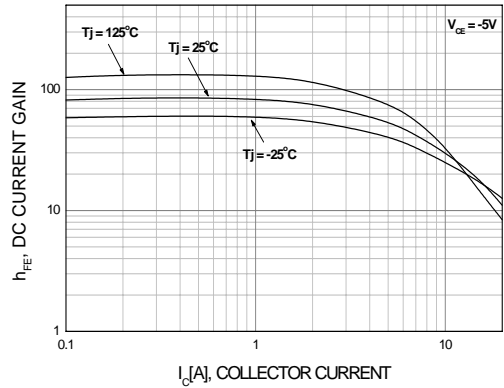


Figure 2. DC current Gain (R Grade)

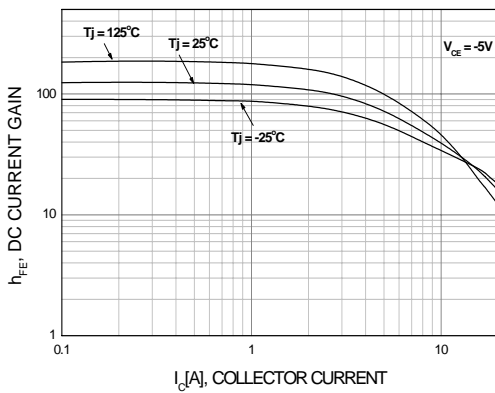


Figure 3. DC current Gain (O Grade)

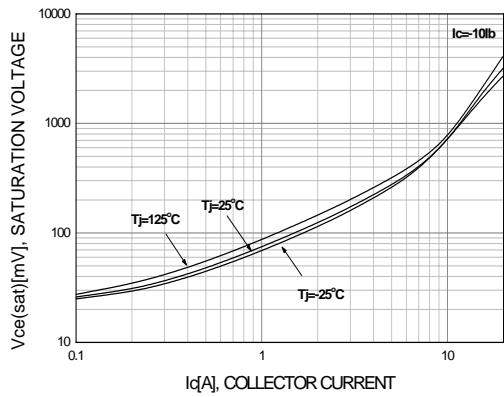


Figure 4. Collector-Emitter Saturation Voltage

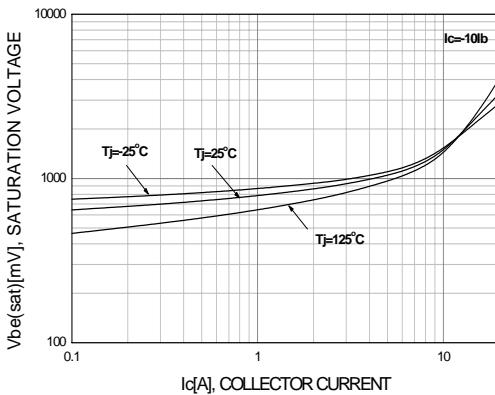


Figure 5. Base-Emitter Saturation Voltage

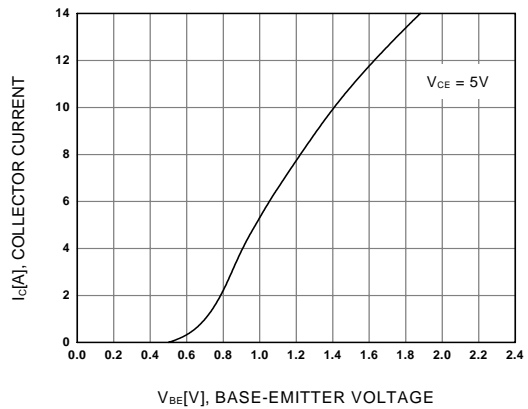


Figure 6. Base-Emitter On Voltage

Typical Characteristics

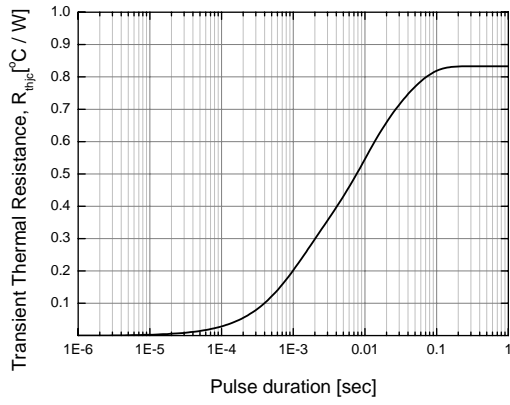


Figure 7. Thermal Resistance

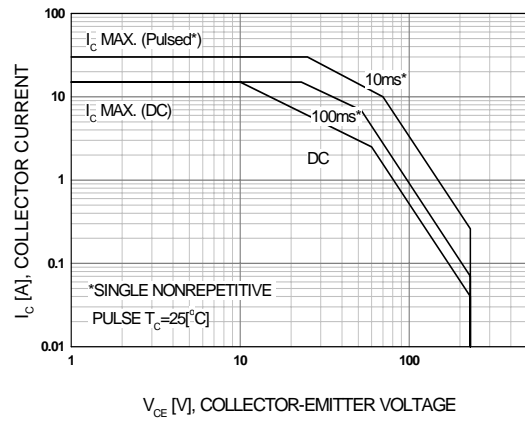


Figure 8. Safe Operating Area

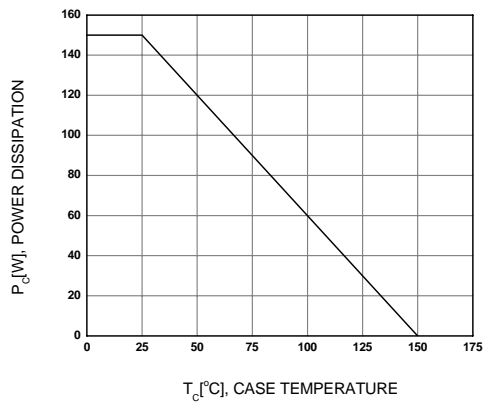
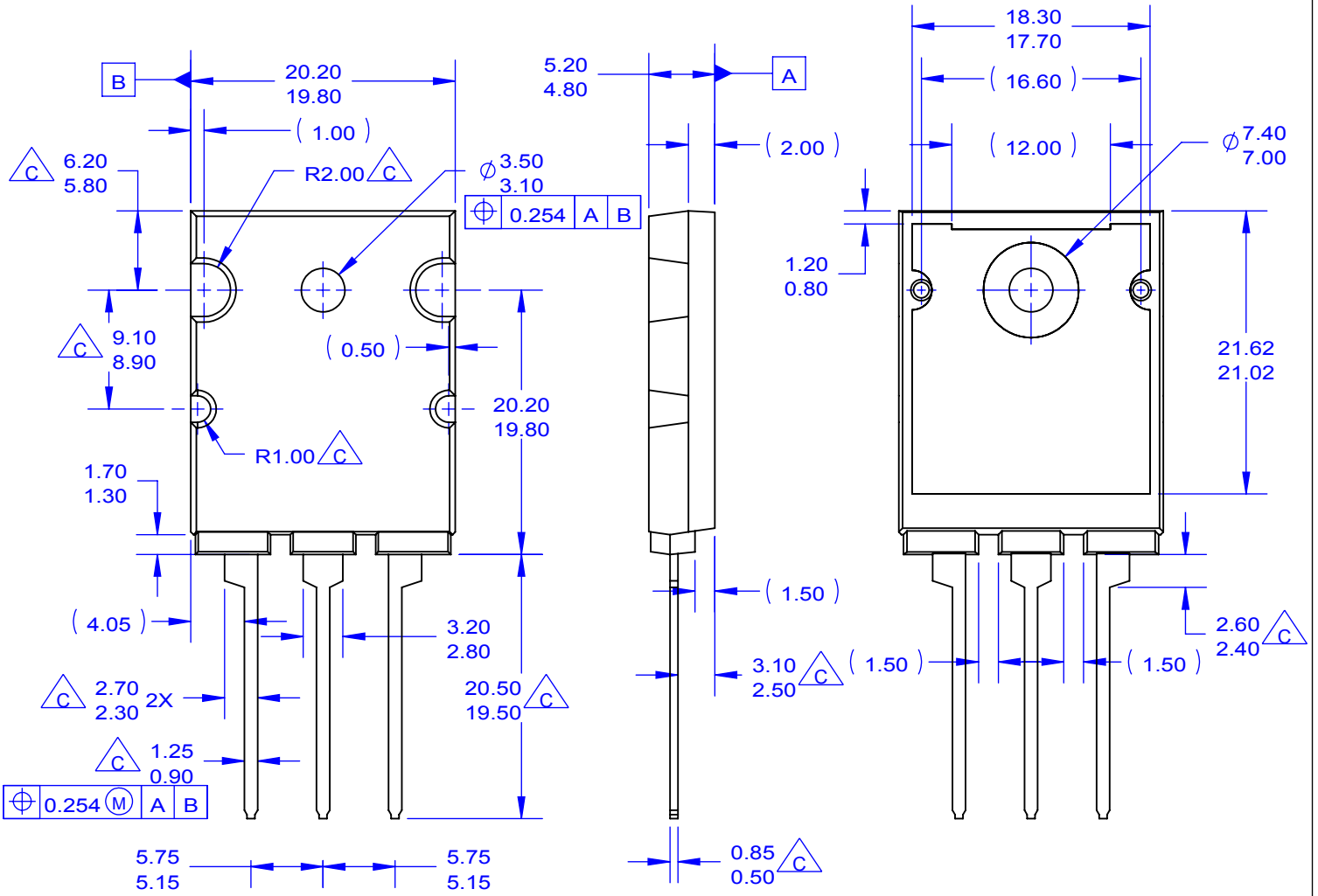


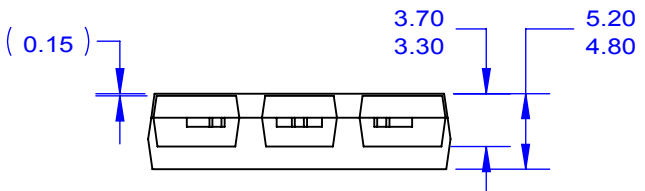
Figure 9. Power Derating



FRONT VIEW

SIDE VIEW

BACK VIEW



BOTTOM VIEW



NOTES:

- A. PACKAGE REFERENCE: JEDEC TO264 VARIATION AA.
- B. ALL DIMENSIONS ARE IN MILLIMETERS.
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