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January 2009

# 2SA1943/FJL4215

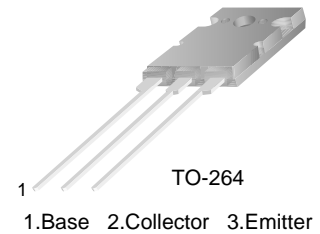
## PNP Epitaxial Silicon Transistor

### 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<sub>a</sub>=25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
BV <sub>CBO</sub>	Collector-Base Breakdown Voltage	I <sub>C</sub> =-5mA, I <sub>E</sub> =0	-250			V
BV <sub>CEO</sub>	Collector-Emitter Breakdown Voltage	I <sub>C</sub> =-10mA, R <sub>BE</sub> =∞	-250			V
BV <sub>EBO</sub>	Emitter-Base Breakdown Voltage	I <sub>E</sub> =-5mA, I <sub>C</sub> =0	-5			V
I <sub>CBO</sub>	Collector Cut-off Current	V <sub>CB</sub> =-230V, I <sub>E</sub> =0			-5.0	μA
I <sub>EBO</sub>	Emitter Cut-off Current	V <sub>EB</sub> =-5V, I <sub>C</sub> =0			-5.0	μA
h <sub>FE1</sub>	DC Current Gain	V <sub>CE</sub> =-5V, I <sub>C</sub> =-1A	55		160	
h <sub>FE2</sub>	DC Current Gain	V <sub>CE</sub> =-5V, I <sub>C</sub> =-7A	35	60		
V <sub>CE(sat)</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> =-8A, I <sub>B</sub> =-0.8A		-0.4	-3.0	V
V <sub>BE(on)</sub>	Base-Emitter On Voltage	V <sub>CE</sub> =-5V, I <sub>C</sub> =-7A		-1.0	-1.5	V
f <sub>T</sub>	Current Gain Bandwidth Product	V <sub>CE</sub> =-5V, I <sub>C</sub> =-1A		30		MHz
C <sub>ob</sub>	Output Capacitance	V <sub>CB</sub> =-10V, f=1MHz		360		pF

\* Pulse Test: Pulse Width=20μs, Duty Cycle≤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

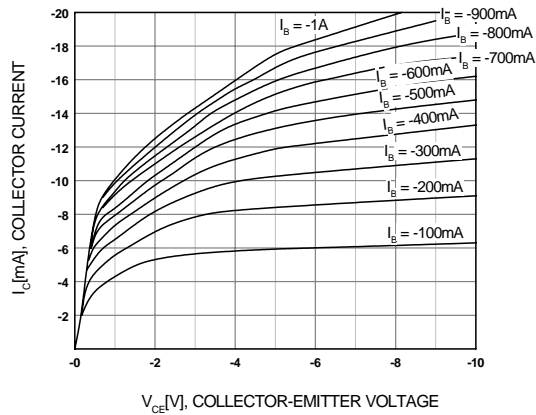


Figure 1. Static Characteristic

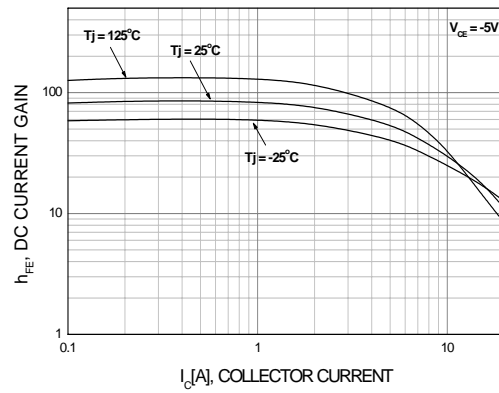


Figure 2. DC current Gain ( R Grade )

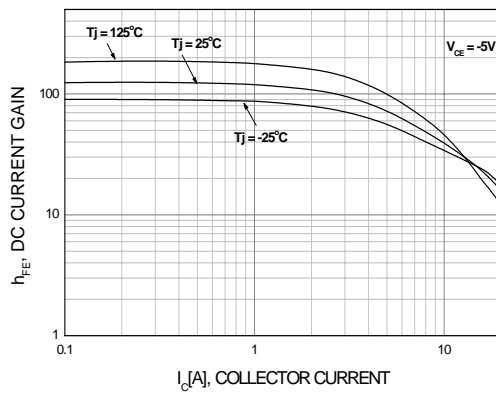


Figure 3. DC current Gain ( O Grade )

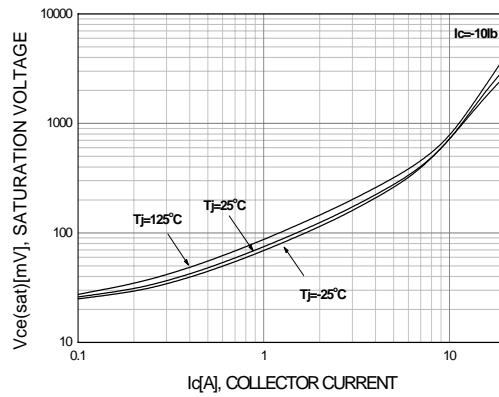


Figure 4. Collector-Emitter Saturation Voltage

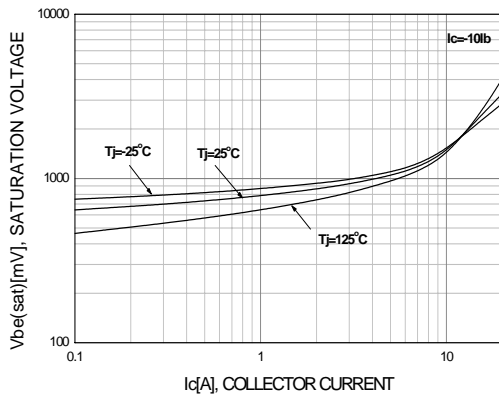


Figure 5. Base-Emitter Saturation Voltage

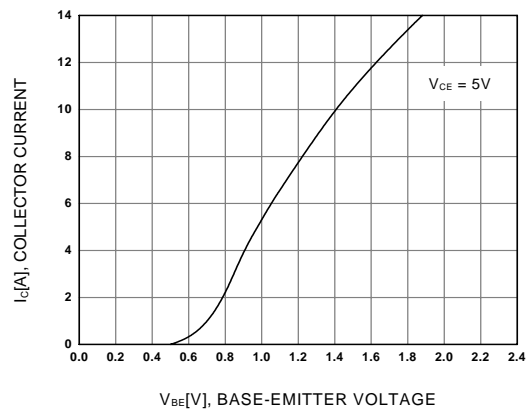


Figure 6. Base-Emitter On Voltage

## Typical Characteristics

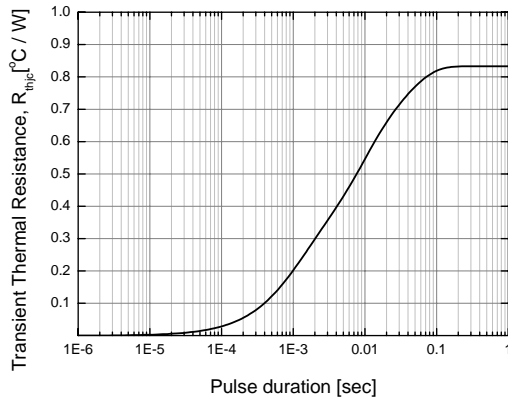


Figure 7. Thermal Resistance

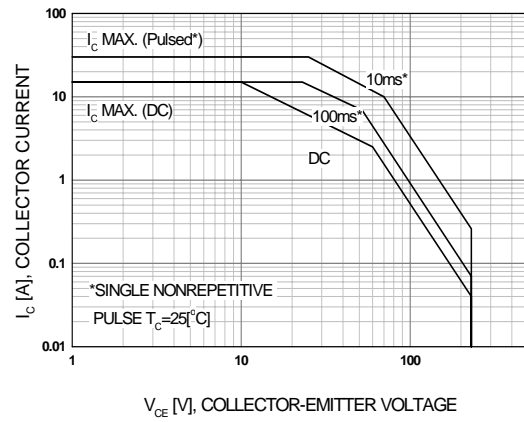


Figure 8. Safe Operating Area

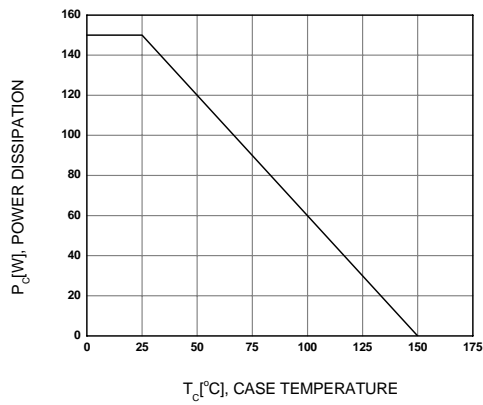
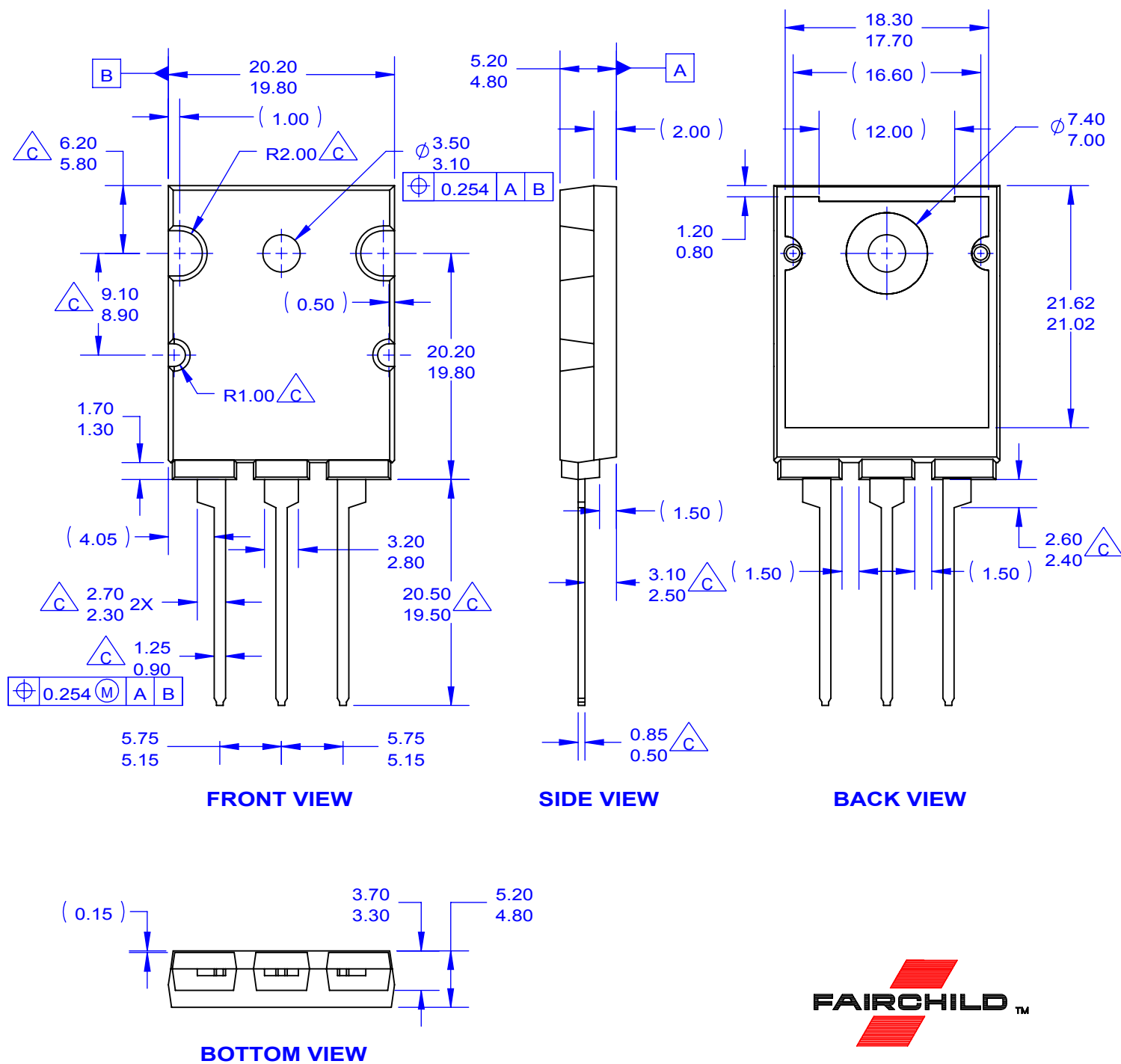


Figure 9. Power Derating



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