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January 2009

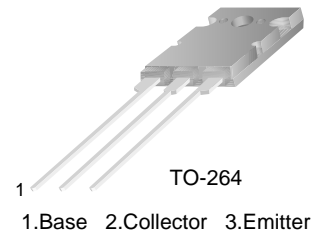
# 2SA1943/FJL4215 PNP Epitaxial Silicon Transistor

## 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	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-off Current	$V_{EB}=-5\text{V}$ , $I_C=0$			-5.0	$\mu\text{A}$
$h_{FE1}$	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 $\mu\text{s}$ , 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

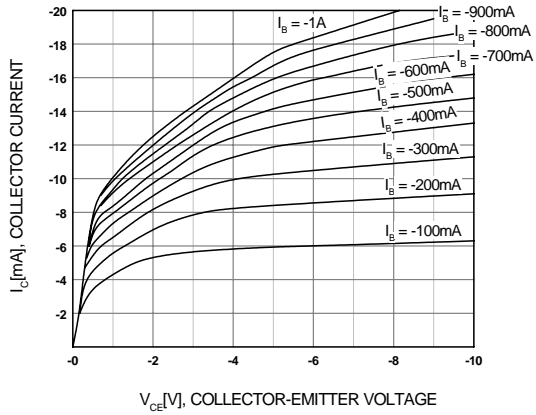


Figure 1. Static Characteristic

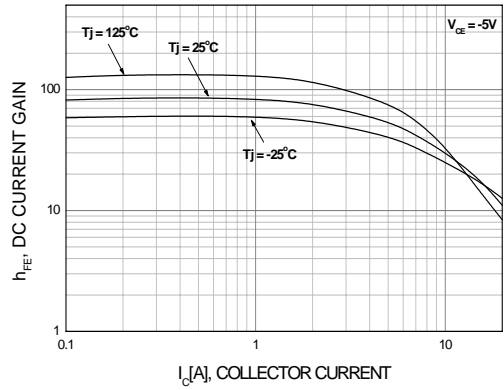


Figure 2. DC current Gain ( R Grade )

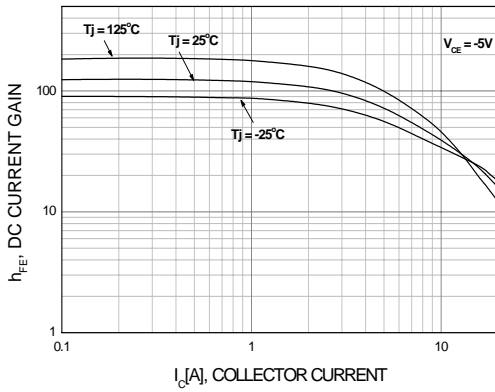


Figure 3. DC current Gain ( O Grade )

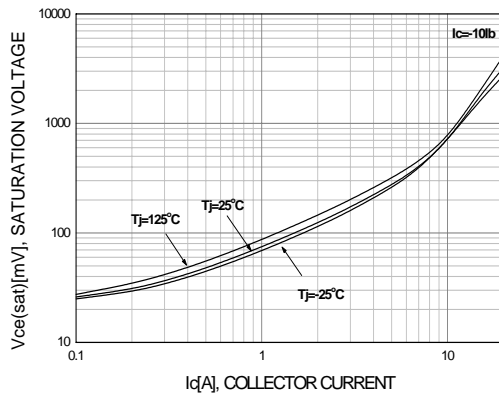


Figure 4. Collector-Emitter Saturation Voltage

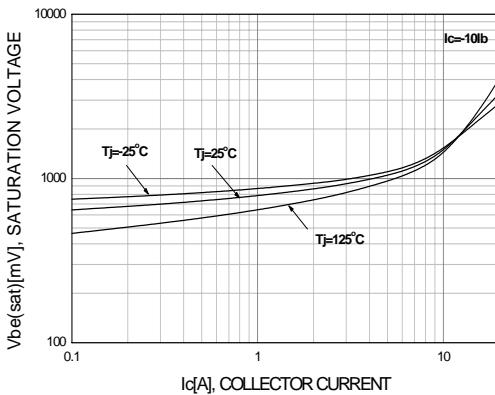


Figure 5. Base-Emitter Saturation Voltage

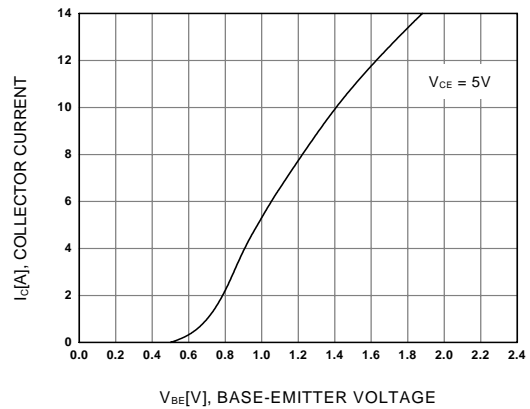


Figure 6. Base-Emitter On Voltage

# Typical Characteristics

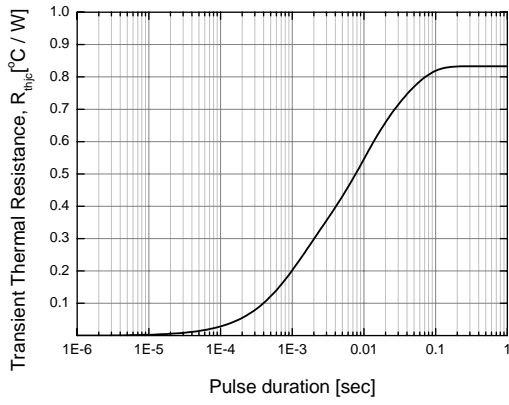


Figure 7. Thermal Resistance

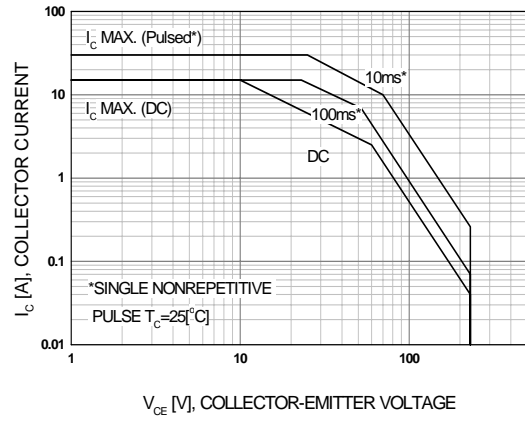


Figure 8. Safe Operating Area

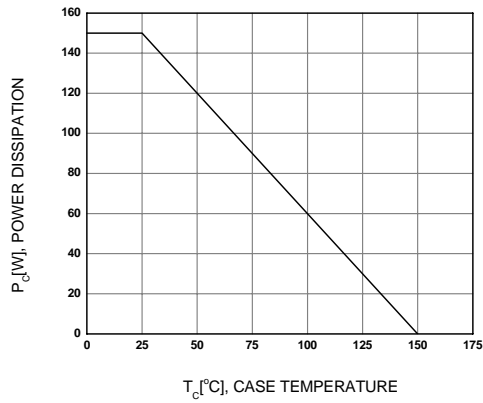
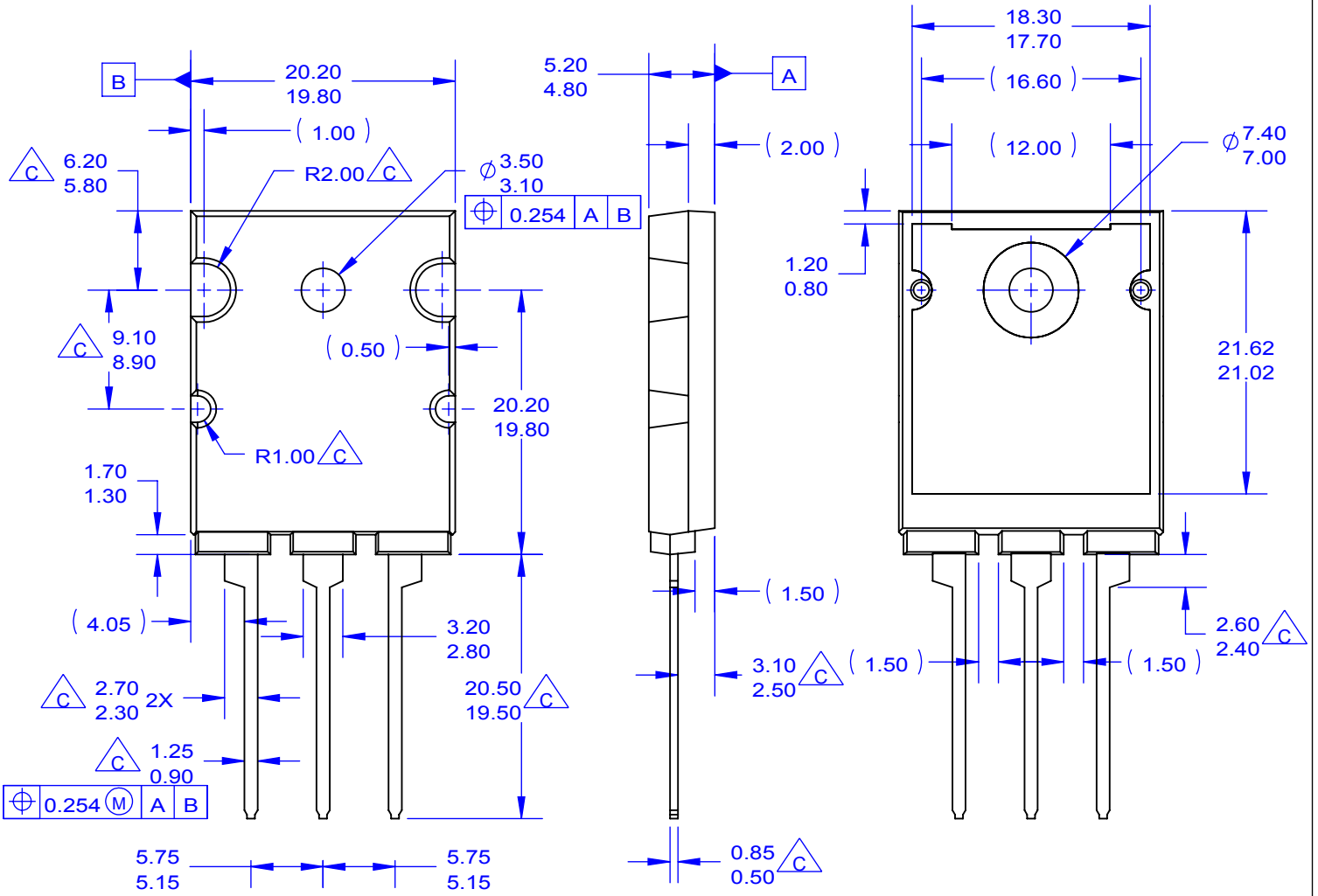


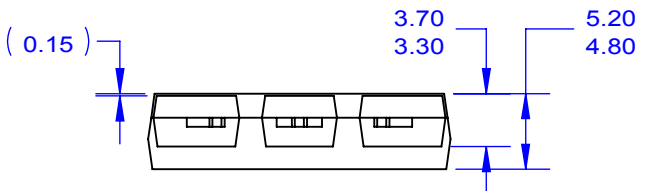
Figure 9. Power Derating



**FRONT VIEW**

**SIDE VIEW**

**BACK VIEW**



**BOTTOM VIEW**



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