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January 2009

# 2SC5200/FJL4315

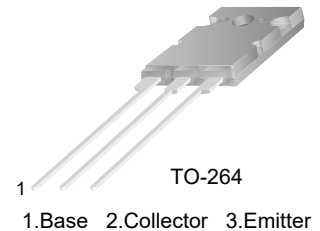
## NPN Epitaxial Silicon Transistor

### 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 :  $V_{CE0}=250V$
- 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	$\mu\text{A}$
$I_{EBO}$	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		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=8\text{A}$ , $I_B=0.8\text{A}$		0.4	3.0	V
$V_{BE(on)}$	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 $\mu\text{s}$ , 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

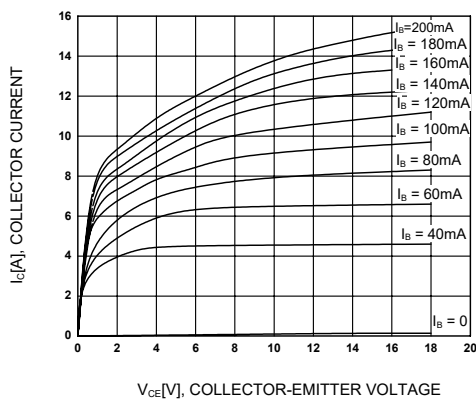


Figure 1. Static Characteristic

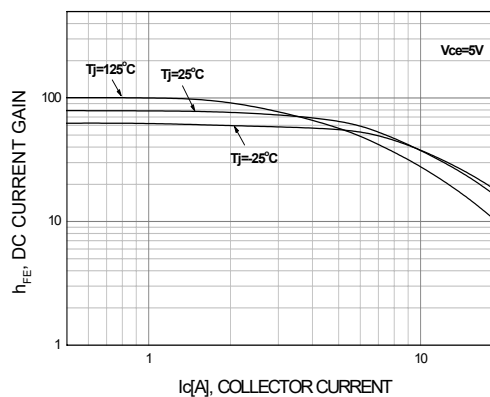


Figure 2. DC current Gain ( R grade )

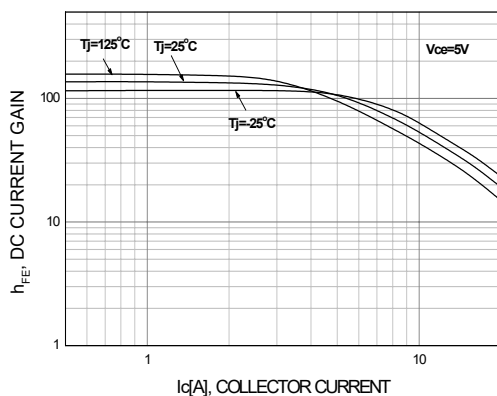


Figure 3. DC current Gain ( O grade )

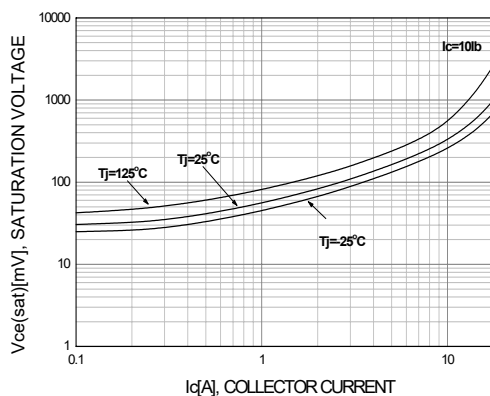


Figure 4. Collector-Emitter Saturation Voltage

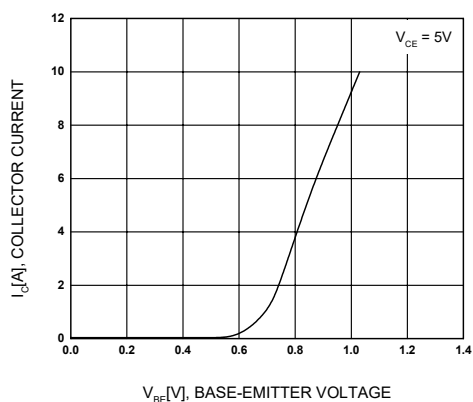


Figure 5. Base-Emitter On Voltage

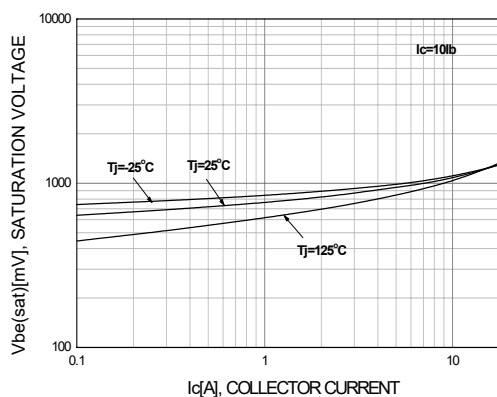


Figure 6. Base-Emitter Saturation Voltage

## Typical Characteristics

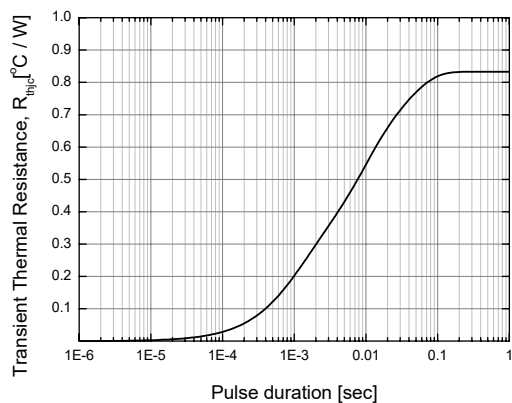


Figure 7. Power Derating

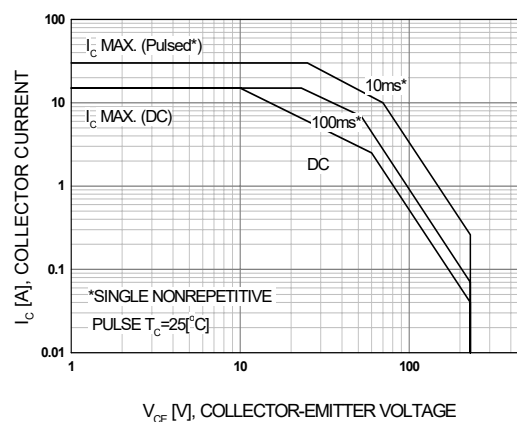


Figure 8. Safe Operating Area

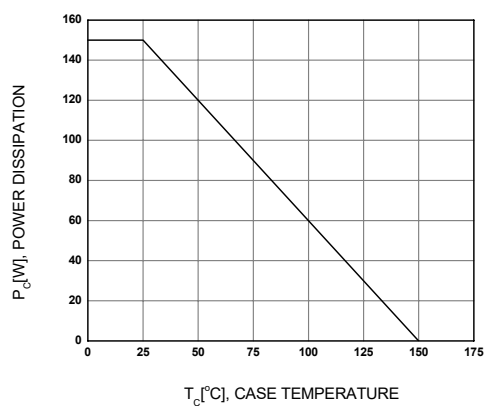
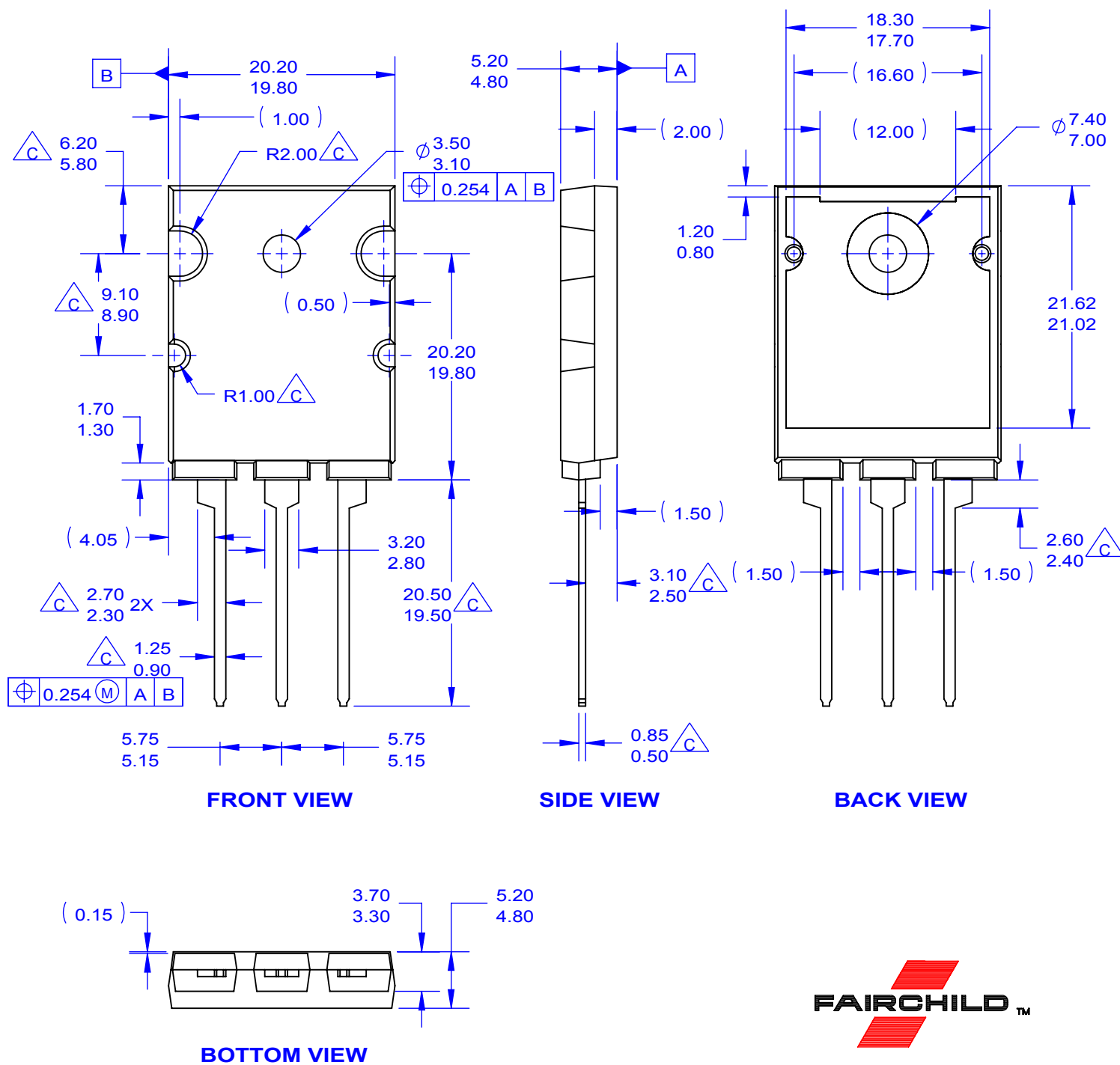



Figure 9. Power Derating



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