



January 2009

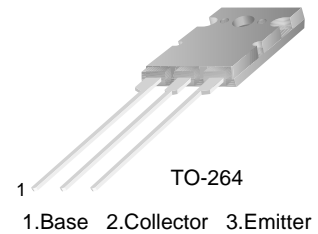
2SA1943/FJL4215 PNP Epitaxial Silicon Transistor

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

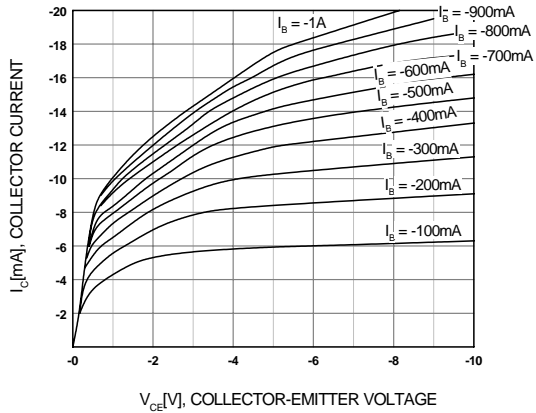


Figure 1. Static Characteristic

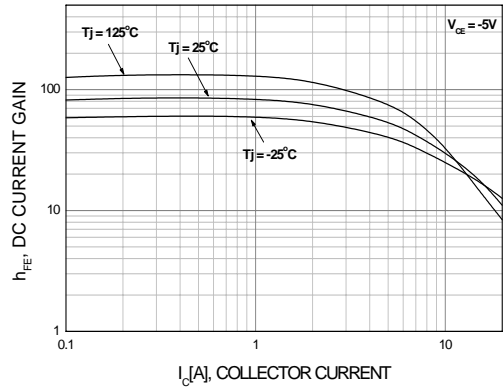


Figure 2. DC current Gain (R Grade)

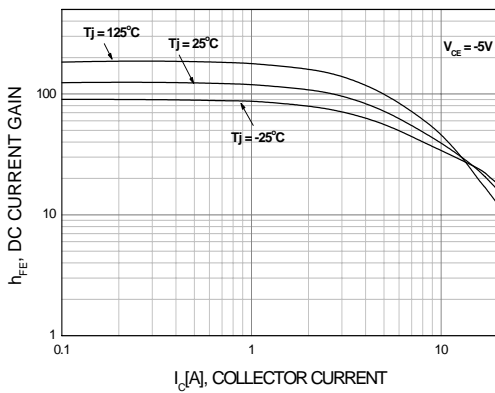


Figure 3. DC current Gain (O Grade)

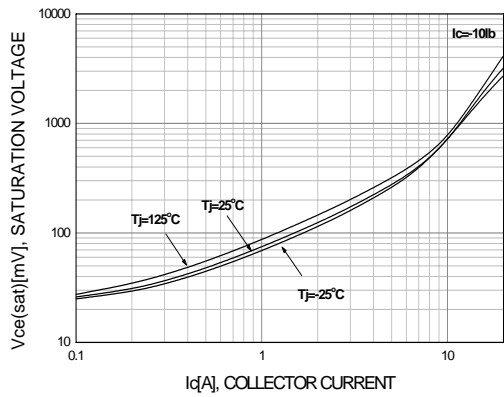


Figure 4. Collector-Emitter Saturation Voltage

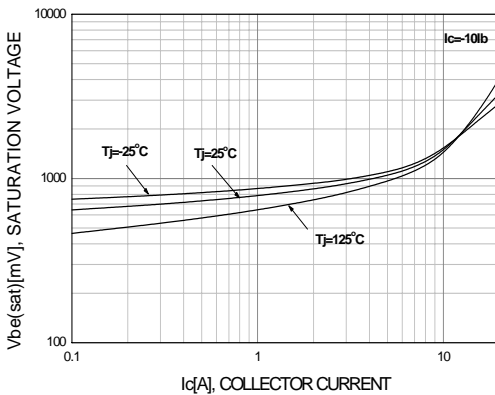


Figure 5. Base-Emitter Saturation Voltage

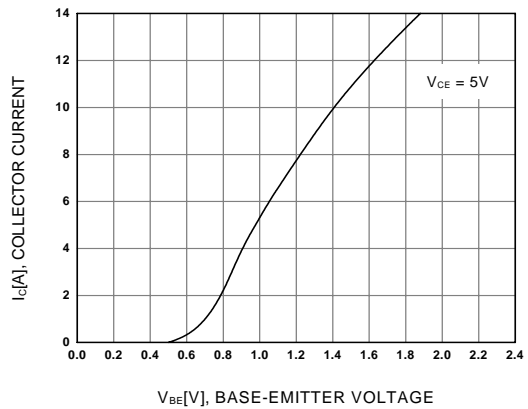


Figure 6. Base-Emitter On Voltage

Typical Characteristics

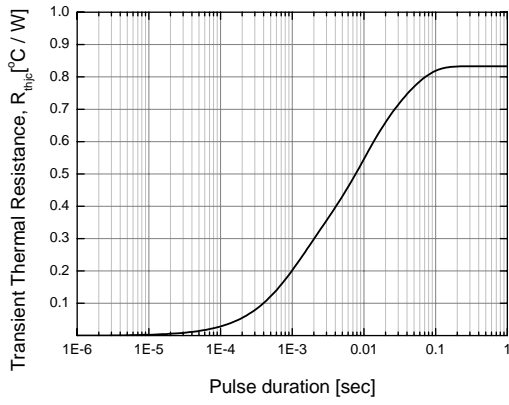


Figure 7. Thermal Resistance

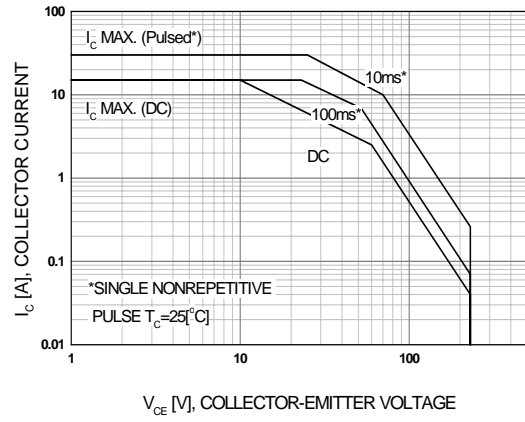


Figure 8. Safe Operating Area

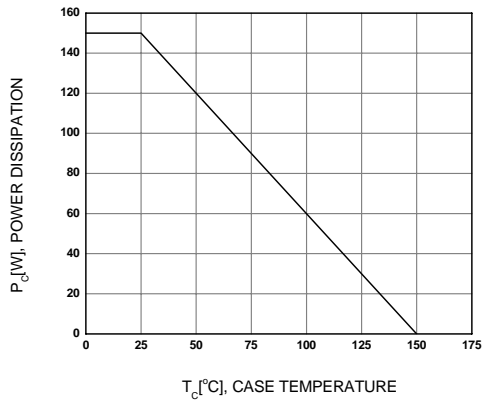


Figure 9. Power Derating



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| BitSiC™ | Green FPS™ | Programmable Active Droop™ | TinyLogic® |
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| CorePLUS™ | Gmax™ | QS™ | TinyPower™ |
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| CROSSVOL™ | IntelliMAX™ | RapidConfigure™ | TinyWire™ |
| CTL™ | ISOPLANAR™ | Saving our world, 1mW/W/kW at a time™ | TranSiC™ |
| Current Transfer Logic™ | Making Small Speakers Sound Louder and Better™ | SignalWise™ | TriFault Detect™ |
| DEUXPEED® | MegaBuck™ | SmartMax™ | TRUECURRENT®* |
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PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative / In Design	Datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	Datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.
No Identification Needed	Full Production	Datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.
Obsolete	Not In Production	Datasheet contains specifications on a product that is discontinued by Fairchild Semiconductor. The datasheet is for reference information only.

Rev. I77

2SC5200/FJL4315

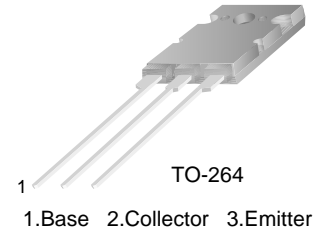
NPN Epitaxial Silicon Transistor

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
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I_C	Collector Current(DC)	17	A
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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.

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Symbol	Parameter	Max.	Units
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Classification	R	O
h_{FE1}	55 ~ 110	80 ~ 160

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I_{CBO}	Collector Cut-off Current	$V_{CB}=230\text{V}, I_E=0$			5.0	μA
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h_{FE1}	DC Current Gain	$V_{CE}=5\text{V}, I_C=1\text{A}$	55		160	
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$V_{CE}(\text{sat})$	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

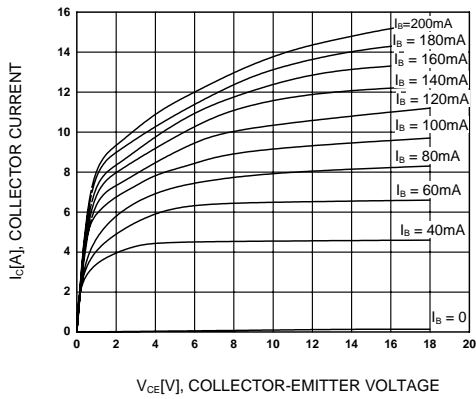


Figure 1. Static Characteristic

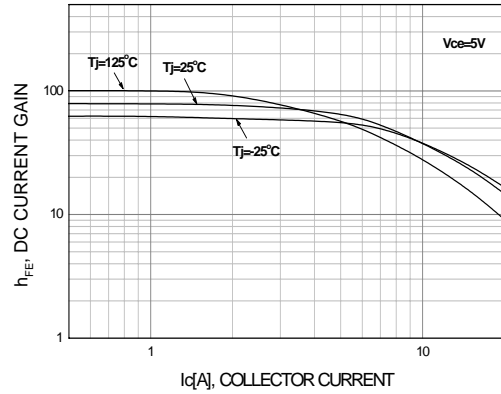


Figure 2. DC current Gain (R grade)

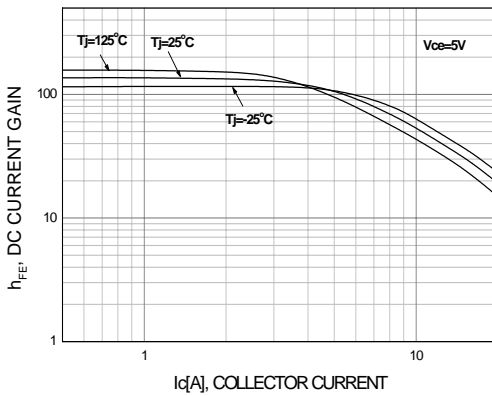


Figure 3. DC current Gain (O grade)

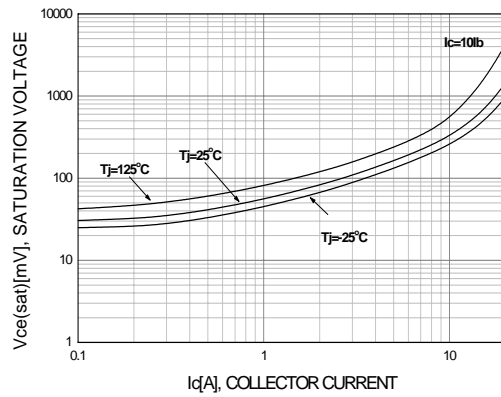


Figure 4. Collector-Emitter Saturation Voltage

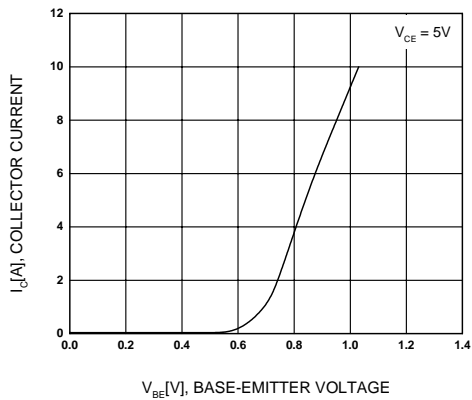


Figure 5. Base-Emitter On Voltage

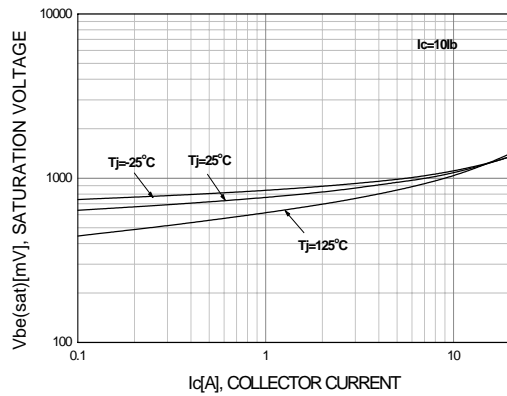


Figure 6. Base-Emitter Saturation Voltage

Typical Characteristics

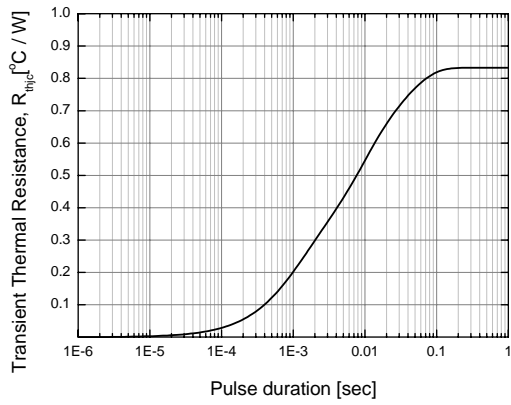


Figure 7. Power Derating

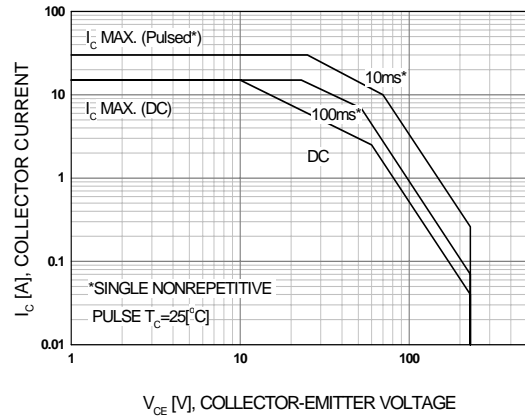


Figure 8. Safe Operating Area

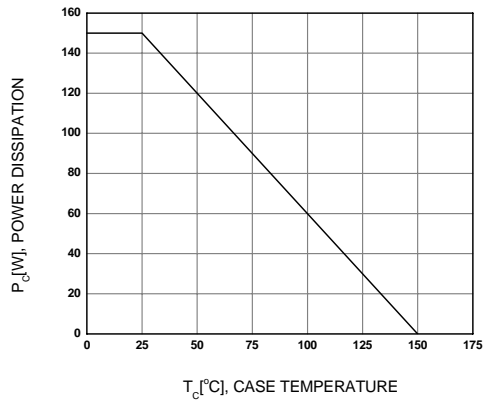






Figure 9. Power Derating



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Rev. I35