

# PNP Epitaxial Silicon Transistor

## FJL4215, 2SA1943

### Features

- High Current Capability:  $I_C = 17\text{ A}$
- High Power Dissipation: 150 W
- High Frequency: 30 MHz
- High Voltage:  $V_{CEO} = -250\text{ V}$
- Wide S.O.A. for Reliable Operation
- Excellent Gain Linearity for Low THD
- Complement to 2SC5200 / FJL4315
- 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
- These Devices are Pb-Free and are RoHS Compliant

### Applications

- High-Fidelity Audio Output Amplifier
- General Purpose Power Amplifier

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Ratings	Units
Collector-Base Voltage	$BV_{CBO}$	-250	V
Collector-Emitter Voltage	$BV_{CEO}$	-250	V
Emitter-Base Voltage	$BV_{EBO}$	-5	V
Collector Current (DC)	$I_C$	-17	A
Base Current	$I_B$	-1.5	A
Total Device Dissipation ( $T_C = 25^\circ\text{C}$ ) Derate Above $25^\circ\text{C}$	$P_D$	150 1.04	W W/ $^\circ\text{C}$
Junction and Storage Temperature	$T_J, T_{STG}$	-50 ~ +150	$^\circ\text{C}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### THERMAL CHARACTERISTICS (Note 1)

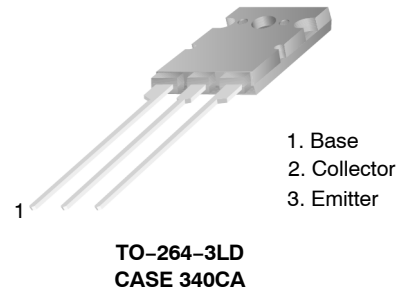
( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Parameter	Symbol	Max.	Units
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.83	$^\circ\text{C}/\text{W}$

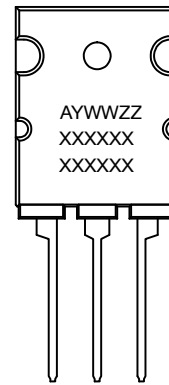
1. Device mounted on minimum pad size.

### $h_{FE}$ CLASSIFICATION

Classification	R	O
$h_{FE1}$	55 ~ 110	80 ~ 160



### MARKING DIAGRAM



A = Assembly Location  
 YWW = Date Code  
 ZZ = Assembly Lot  
 xxxxx = Specific Device Code  
 (J4215O or A1943O)

### ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

## FJL4215, 2SA1943

### ELECTRICAL CHARACTERISTICS (Note 2) ( $T_C = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{CBO}$	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	$V_{CB} = -10 \text{ V}, f = 1 \text{ MHz}$		360		pF

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

2. Pulse Test: Pulse Width = 20  $\mu\text{s}$ , Duty Cycle  $\leq 2\%$

### ORDERING INFORMATION

Part Number	Marking	Package	Shipping	Remarks
2SA1943OTU	A1943O	TO-264-3LD (Pb-Free)	375 Units / Tube	$h_{FE1}$ O grade
FJL4215OTU	J4215O	TO-264-3LD (Pb-Free)	375 Units / Tube	$h_{FE1}$ O grade

TYPICAL CHARACTERISTICS

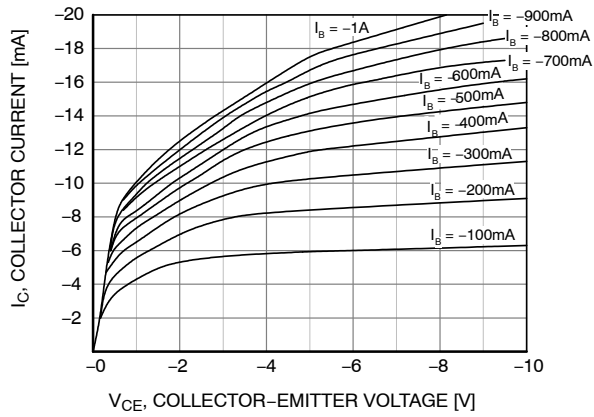


Figure 1. Static Characteristic

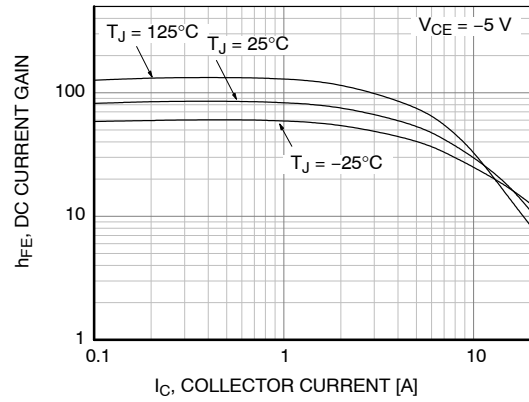


Figure 2. DC Current Gain (R Grade)

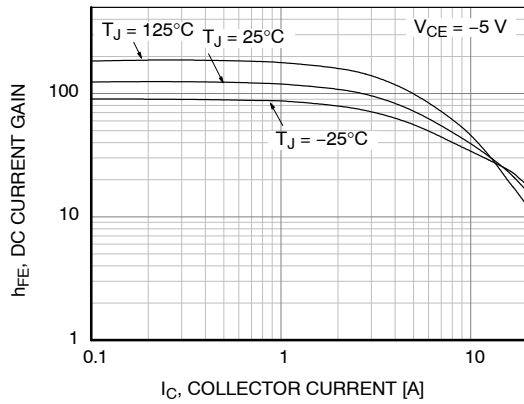


Figure 3. DC Current Gain (O Grade)

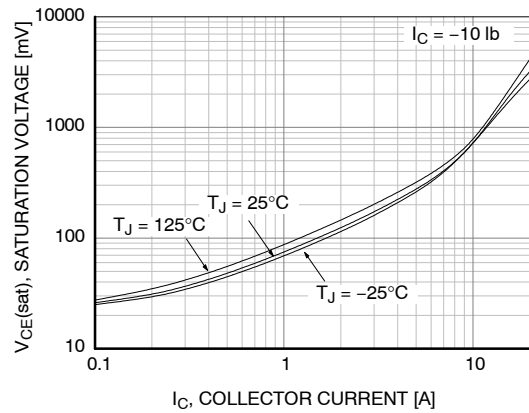


Figure 4. Collector-Emitter Saturation Voltage

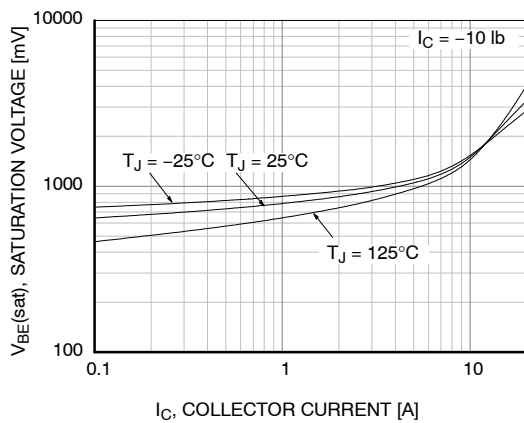


Figure 5. Base-Emitter Saturation Voltage

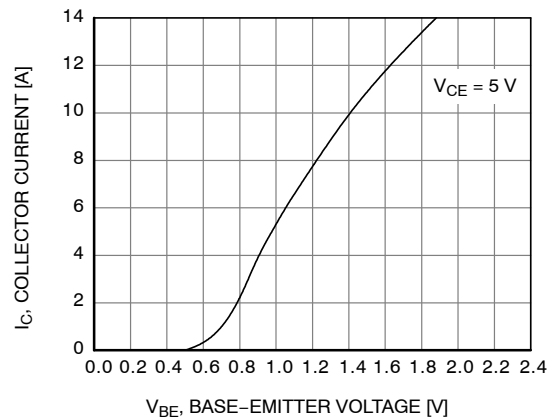


Figure 6. Base-Emitter On Voltage

TYPICAL CHARACTERISTICS

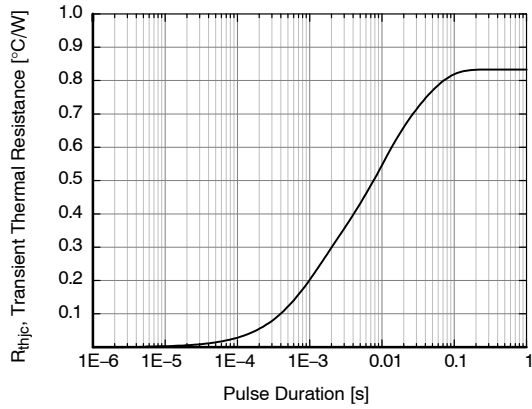


Figure 7. Thermal Resistance

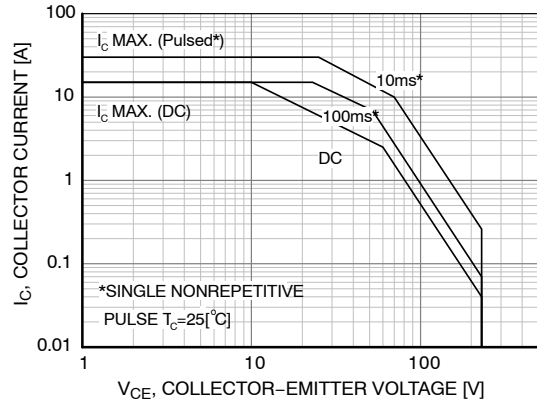


Figure 8. Safe Operating Area

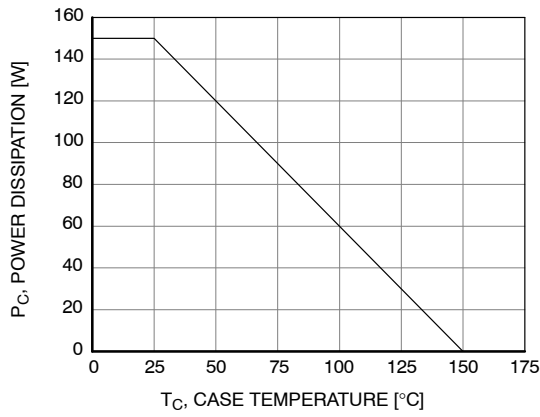
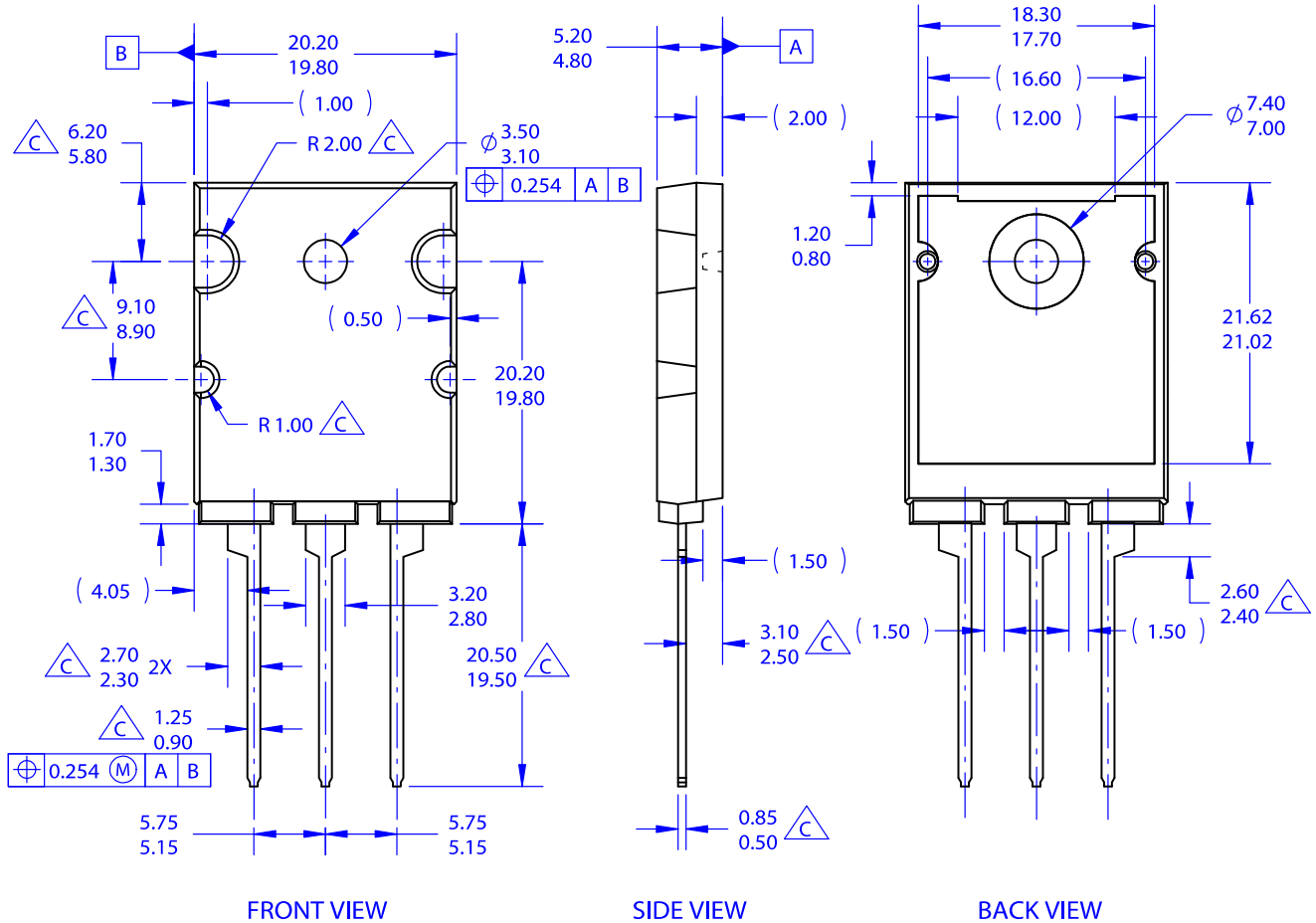


Figure 9. Power Derating

**TO-264-3LD**  
**CASE 340CA**  
**ISSUE O**

DATE 31 OCT 2016



**NOTES:**

- A. PACKAGE REFERENCE: JEDEC TO264 VARIATION AA.
- B. ALL DIMENSIONS ARE IN MILLIMETERS.
- C. OUT OF JEDEC STANDARD VALUE.
- D. DIMENSION AND TOLERANCE AS PER ASME Y14.5-1994.
- E. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS.

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