

# 2SA1962/FJA4213

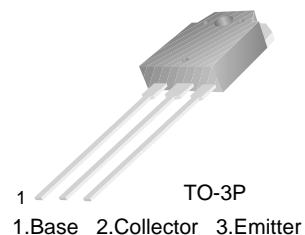
## PNP Epitaxial Silicon Transistor

### Applications

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

### Features

- High Current Capability:  $I_C = -15A$
- High Power Dissipation : 130watts
- High Frequency : 30MHz.
- High Voltage :  $V_{CEO} = -230V$
- Wide S.O.A for reliable operation.
- Excellent Gain Linearity for low THD.
- Complement to 2SC5242/FJA4313.
- Thermal and electrical Spice models are available.
- Same transistor is also available in:
  - TO264 package, 2SA1943/FJL4215 : 150 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	-230	V
$BV_{CEO}$	Collector-Emitter Voltage	-230	V
$BV_{EBO}$	Emitter-Base Voltage	-5	V
$I_C$	Collector Current	-15	A
$I_B$	Base Current	-1.5	A
$P_D$	Total Device Dissipation( $T_C=25^\circ C$ ) Derate above $25^\circ C$	130 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	0.96	$^\circ C/W$

\* Device mounted on minimum pad size

### $h_{FE}$ Classification

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

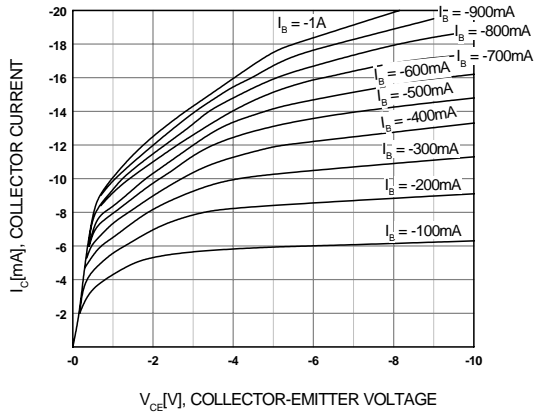
**Electrical Characteristics\***  $T_a=25^\circ\text{C}$  unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$BV_{CBO}$	Collector-Base Breakdown Voltage	$I_C=-5\text{mA}, I_E=0$	-230			V
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C=-10\text{mA}, R_{BE}=\infty$	-230			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

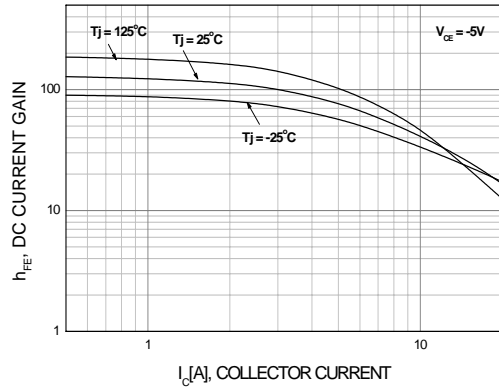
\* Pulse Test: Pulse Width=20 $\mu\text{s}$ , Duty Cycle $\leq$ 2%**Ordering Information**

Part Number	Marking	Package	Packing Method	Remarks
2SA1962RTU	A1962R	TO-3P	TUBE	hFE1 R grade
2SA1962OTU	A1962O	TO-3P	TUBE	hFE1 O grade
FJA4213RTU	J4213R	TO-3P	TUBE	hFE1 R grade
FJA4213OTU	J4213O	TO-3P	TUBE	hFE1 O grade

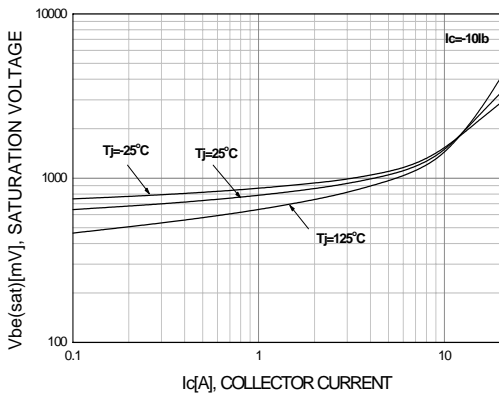
# Typical Characteristics



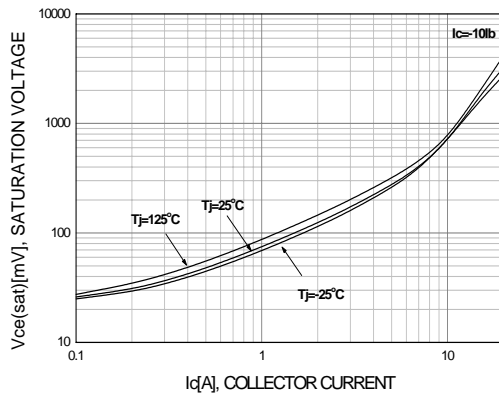
**Figure 1. Static Characteristic**



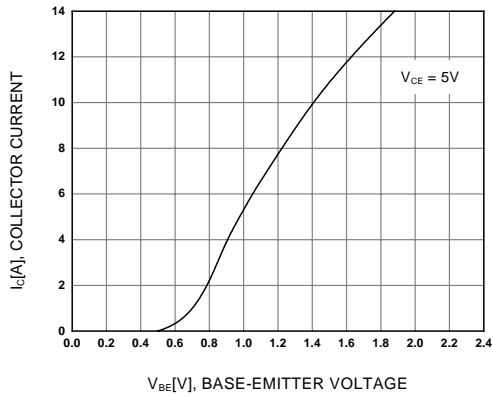
**Figure 2. DC current Gain**



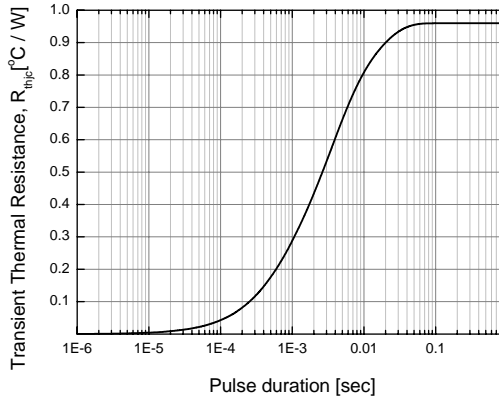
**Figure 3. Base-Emitter Saturation Voltage**



**Figure 4. Collector-Emitter Saturation Voltage**



**Figure 5. Base-Emitter On Voltage**



**Figure 6. Thermal Resistance**

# Typical Characteristics

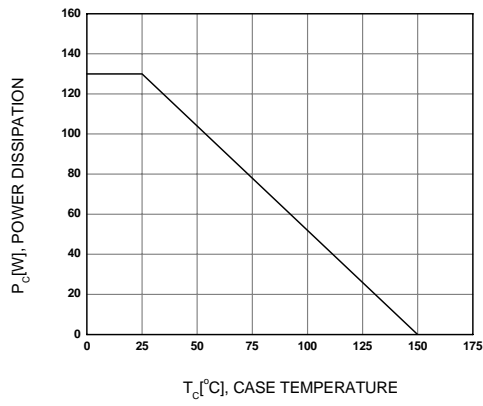


Figure 7. Power Derating

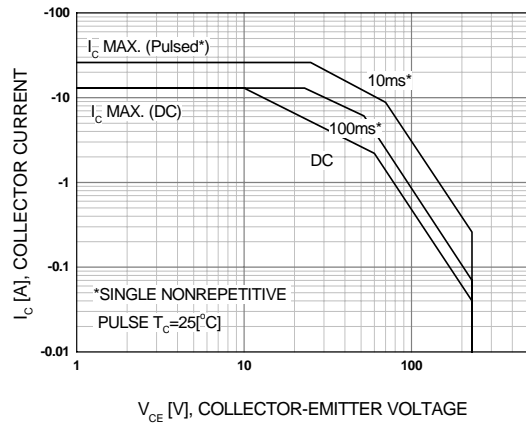
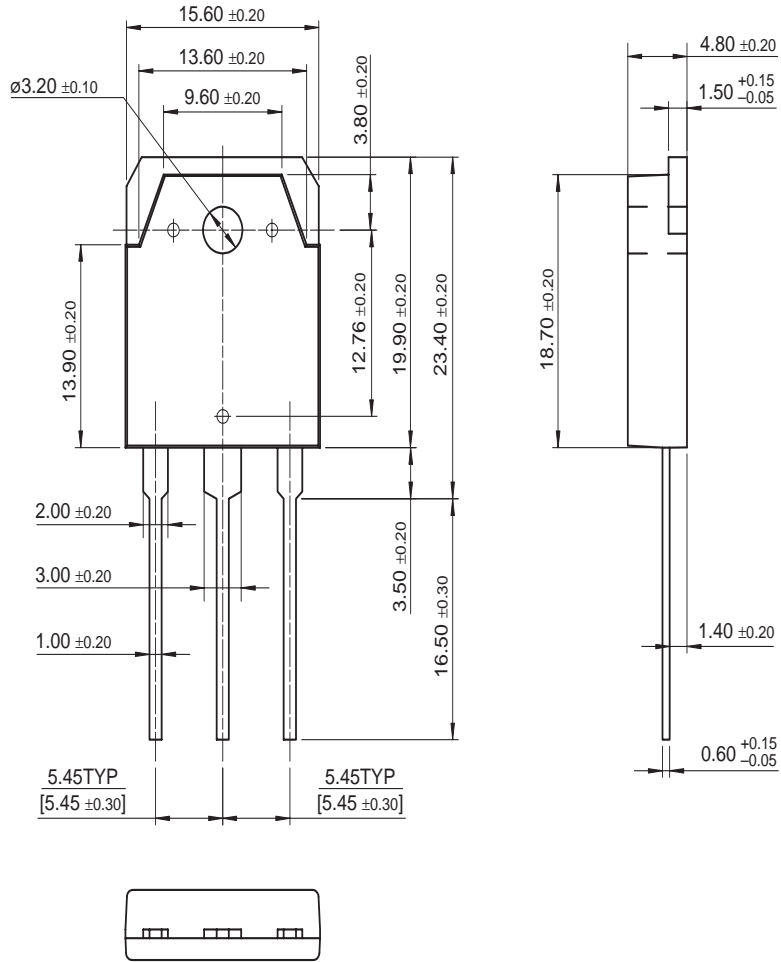


Figure 8. Safe Operating Area

# Package Dimensions

## TO-3P



Dimensions in Millimeters



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| Build it Now™   | Green FPS™ e-Series™  | POWEREDGE®                 | SyncFET™  |
| CorePLUS™   | GTO™  | Power-SPM™                 | The Power Franchise®  |
| CROSSVOLT™  | i-Lo™   | PowerTrench®               |  |
| CTL™  | IntelliMAX™   | Programmable Active Droop™ | TinyBoost™  |
| Current Transfer Logic™   | ISOPLANAR™  | QFET®                      | TinyBuck™   |
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| FastvCore™  | OPTOPLANAR®   | SuperFET™                  | UniFET™   |
| FPST™   |  | SuperSOT™-3                | VCX™  |
| FRFET®  | PDP-SPM™  | SuperSOT™-6                |   |
| Global Power Resource <sup>SM</sup>   | Power220®   |                            |   |

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