



**Complementary
ThermalTrak™ Transistors**

The ThermalTrak family of devices has been designed to eliminate thermal equilibrium lag time and bias trimming in audio amplifier applications. They can also be used in other applications as transistor die protection devices.

Features

- Thermally Matched Bias Diode
- Instant Thermal Bias Tracking
- Absolute Thermal Integrity
- High Safe Operating Area
- Pb-Free Packages are Available*

Benefits

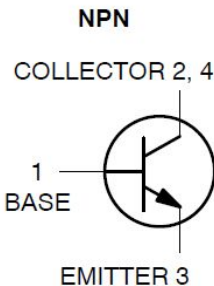
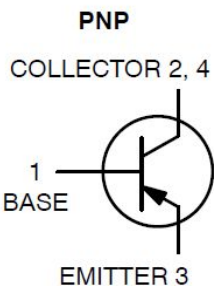
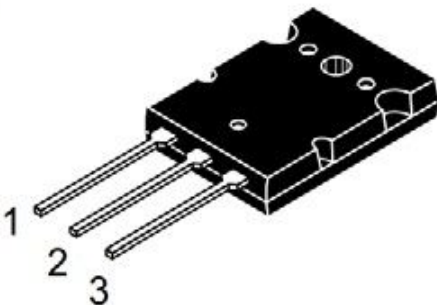
- Eliminates Thermal Equilibrium Lag Time and Bias Trimming
- Superior Sound Quality Through Improved Dynamic Temperature Response
- Significantly Improved Bias Stability
- Simplified Assembly
 - ◆ Reduced Labor Costs
 - ◆ Reduced Component Count
- High Reliability

Applications

- High-End Consumer Audio Products
 - ◆ Home Amplifiers
 - ◆ Home Receivers
- Professional Audio Amplifiers
 - ◆ Theater and Stadium Sound Systems
 - ◆ Public Address Systems (PAs)

**BIPOLAR POWER
TRANSISTORS
15 AMP, 230 VOLT,150 WATT**

TO-3PL



ORDERING INFORMATION

Device	Package
SJB7150	TO-3PL
SJB6150	TO-3PL





MAXIMUM RATINGS (T_J = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	230	V _{dc}
Collector-Base Voltage	V _{CBO}	230	V _{dc}
Emitter-Base Voltage	V _{EBO}	5	V _{dc}
Collector-Emitter Voltage – 1.5 V	V _{CEX}	230	V _{dc}
Collector Current– Continuous – Peak (Note 1)	I _C	15	A _{dc}
		25	
Base Current – Continuous	I _B	1.5	A _{dc}
Total Power Dissipation @ T _C = 25 °C	P _D	150	W
Operating and Storage Junction Temperature Range	T _J , T _{stg}	– 55 to +150	°C
Average Rectified Forward Current	I _F (A _V)	1	A

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case	R _{qjc}	0.833	°C/W

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. Pulse Test: Pulse Width = 5 ms, Duty Cycle < 10%.

ATTRIBUTES

Characteristic	Value
ESD Protection	Human Body Model Machine Model >8000 V > 400 V
Flammability Rating	UL 94 V-0 @ 0.125 in





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

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Sustaining Voltage ($I_C = 100\text{ mAdc}$, $I_B = 0$)	$V_{CEO(sus)}$	230	–	Vdc
Collector Cutoff Current ($V_{CB} = 230\text{ Vdc}$, $I_E = 0$)	I_{CBO}	–	10	mAdc
Emitter Cutoff Current ($V_{EB} = 5\text{ Vdc}$, $I_C = 0$)	I_{EBO}	–	5	mAdc

ON CHARACTERISTICS

DC Current Gain ($I_C = 500\text{ mAdc}$, $V_{CE} = 5\text{ Vdc}$) ($I_C = 1\text{ Adc}$, $V_{CE} = 5\text{ Vdc}$) ($I_C = 3\text{ Adc}$, $V_{CE} = 5\text{ Vdc}$)	h_{FE}	80 80 80	160 160 160	
Collector-Emitter Saturation Voltage ($I_C = 8\text{ Adc}$, $I_B = 0.8\text{ Adc}$)	$V_{CE(sat)}$	–	3	Vdc
Base-Emitter On Voltage ($I_C = 7\text{ Adc}$, $V_{CE} = 5\text{ Vdc}$)	$V_{CE(on)}$	–	1.5	Vdc

DYNAMIC CHARACTERISTICS

Current-Gain – Bandwidth Product ($I_C = 1\text{ Adc}$, $V_{CE} = 5\text{ Vdc}$, $f_{test} = 1\text{ MHz}$)	f_T	30	–	MHz
Output Capacitance ($V_{CB} = 10\text{ Vdc}$, $I_E = 0$, $f_{test} = 1\text{ MHz}$)	C_{ob}	–	400	pF
Maximum Instantaneous Forward Voltage (Note 2) ($i_F = 1.0\text{ A}$, $T_J = 25^\circ\text{C}$) ($i_F = 1.0\text{ A}$, $T_J = 150^\circ\text{C}$)	V_F	1.1 0.93		V
Maximum Instantaneous Reverse Current (Note 2) (Rated dc Voltage, $T_J = 25^\circ\text{C}$) (Rated dc Voltage, $T_J = 150^\circ\text{C}$)	i_R	10 100		μA
Maximum Reverse Recovery Time ($i_F = 1.0\text{ A}$, $di/dt = 50\text{ A/ms}$)	t_{rr}	100		ns

2. Diode Pulse Test: Pulse Width = 300 ms, Duty Cycle $\leq 2.0\%$.



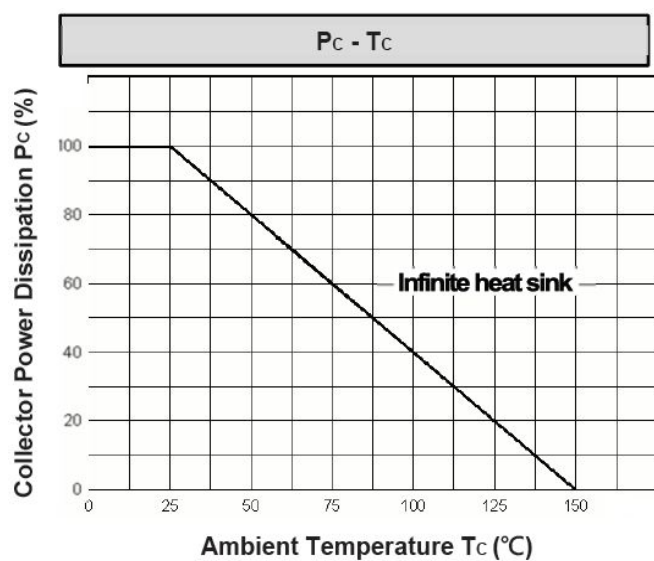


Figure 1. Power Derating

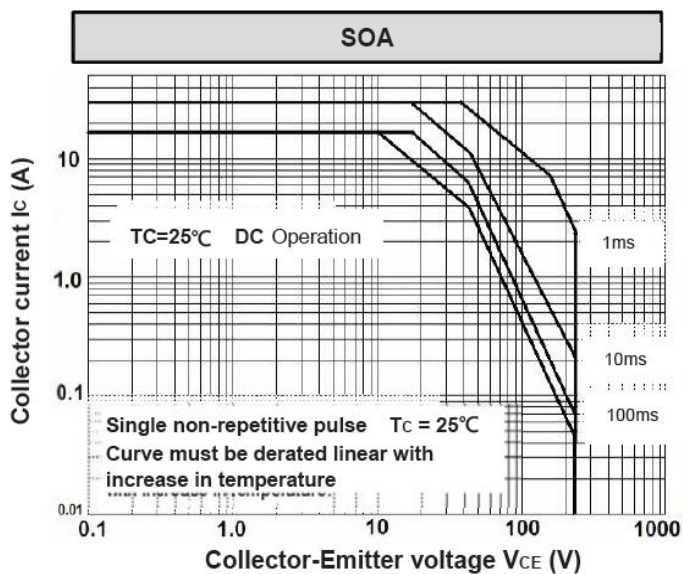


Figure 2. Safe Operating Area

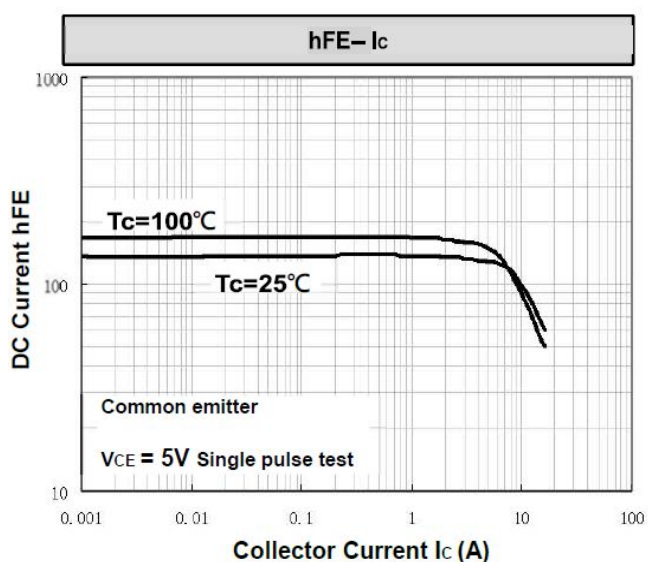


Figure 3.SJB6150 DC Current Gain

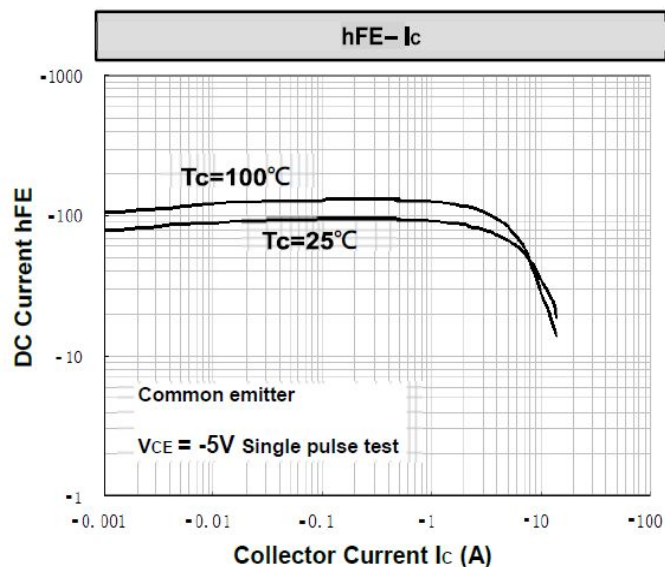


Figure 4. SJB7150 DC Current Gain



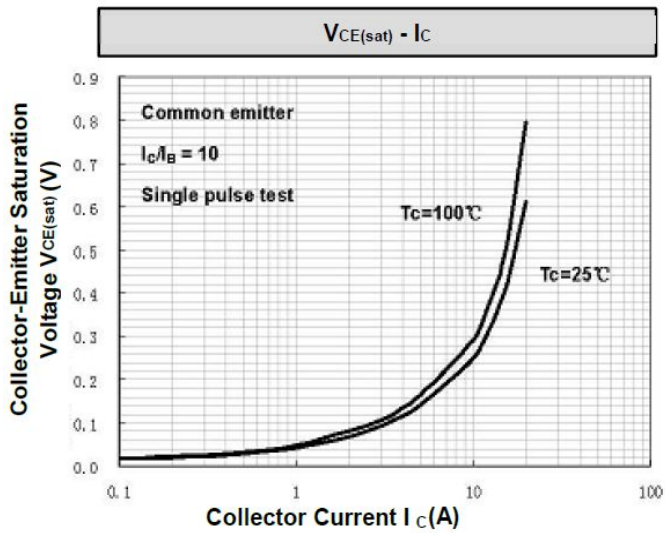


Figure 5. SJB6150 Base-Emitter Voltage

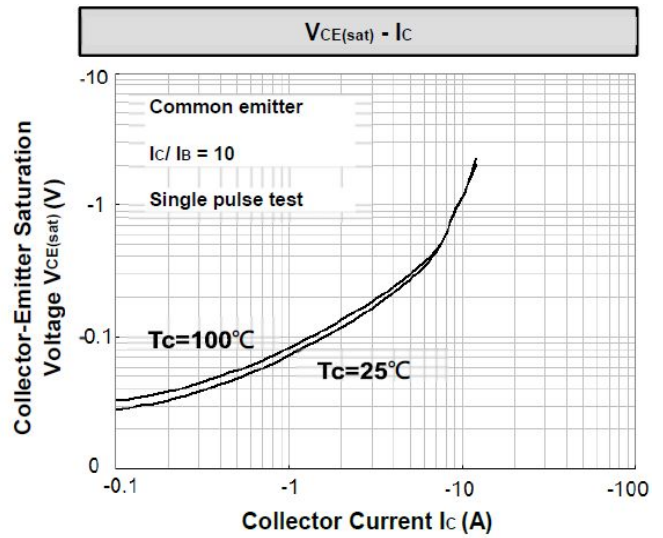


Figure 6. SJB7150 Base-Emitter Voltage

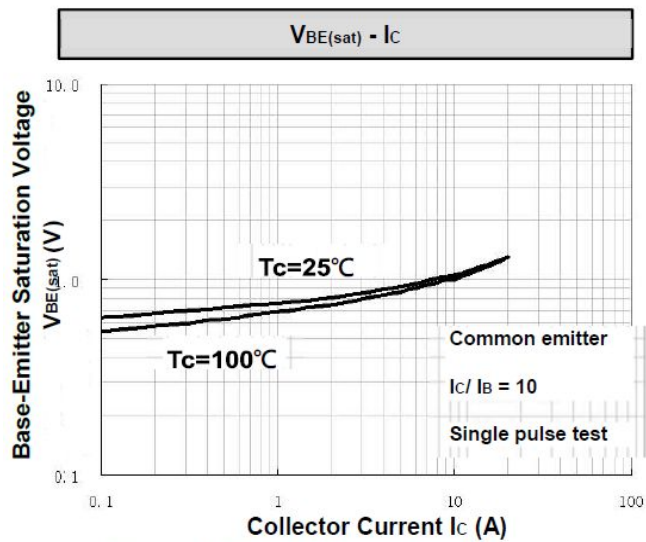


Figure 7. SJB6150 Saturation Voltage

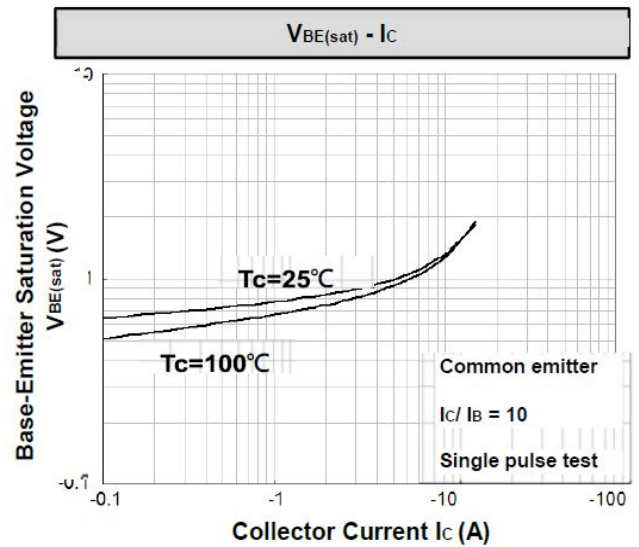


Figure 8. SJB7150 Saturation Voltage





PACKAGE DIMENSIONS

T0-3PL

Unit: mm

