

V_{CEO} = 230 V, I_C = 15 A
Silicon NPN Epitaxial Planar Transistor
2SC6145

Description

The 2SC6145 is an NPN transistor of 230 V, 15 A. The product has constant h_{FE} characteristics in a wide current range, providing high-quality audio sounds.

Features

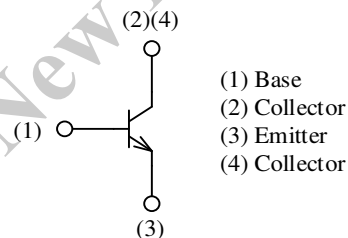
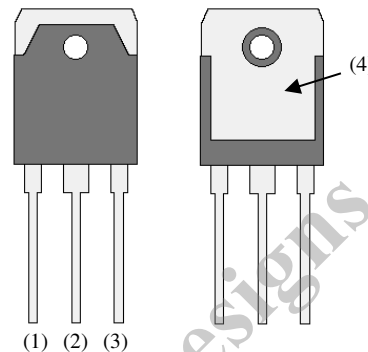
- Complementary to 2SA2223
 - LAPT (Linear Amplifier Power Transistor)
 - High Transition Frequency
 - Bare Lead Frame: Pb-free (RoHS Compliant)
- V_{CEO}----- 230 V
• I_C----- 15 A
• f_T----- 60 MHz
• P_C----- 160 W

Application

- Audio Power Amplifier

Package

TO3P-3L



Not to scale

Absolute Maximum Ratings

Unless otherwise specified, $T_A = 25\text{ }^\circ\text{C}$.

Parameter	Symbol	Conditions	Rating	Unit
Collector to Base Voltage	V_{CBO}		230	V
Collector to Emitter Voltage	V_{CEO}		230	V
Emitter to Base Voltage	V_{EBO}		5	V
Collector Current	I_C		15	A
Base Current	I_B		4	A
Collector Power Dissipation	P_C	$T_C = 25\text{ }^\circ\text{C}$	160	W
Operating Junction Temperature	T_J		150	$^\circ\text{C}$
Storage Temperature	T_{STG}		-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Unless otherwise specified, $T_A = 25\text{ }^\circ\text{C}$.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Thermal Resistance (Junction to Case)	$R_{\theta JC}$		—	—	0.78	$^\circ\text{C/W}$
Thermal Resistance (Junction to Ambient)	$R_{\theta JA}$		—	—	35.7	$^\circ\text{C/W}$

Electrical Characteristics

Unless otherwise specified, $T_A = 25\text{ }^\circ\text{C}$.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector Cut-off Current	I_{CBO}	$V_{CB} = 230\text{ V}, I_E = 0\text{ A}$	—	—	10	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 5\text{ V}, I_C = 0\text{ A}$	—	—	10	μA
Collector to Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 25\text{ mA}$	230	—	—	V
DC Current Gain	h_{FE}	$V_{CE} = 4\text{ V}, I_C = 5\text{ A}$	40	—	140	—
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 5\text{ A}, I_B = 0.5\text{ A}$	—	—	0.5	V
Transition Frequency	f_T	$V_{CE} = 12\text{ V}, I_E = -2\text{ A}$	—	60	—	MHz
Collector Output Capacitance	C_{OB}	$V_{CB} = 10\text{ V}, I_E = 0\text{ A},$ $f = 1\text{ MHz}$	—	250	—	pF

h_{FE} Rank

For the marking area of the rank, see the Marking Diagram.

Rank	R	O	Y
h_{FE}	40 to 80	50 to 100	70 to 140

Rating and Characteristic Curves

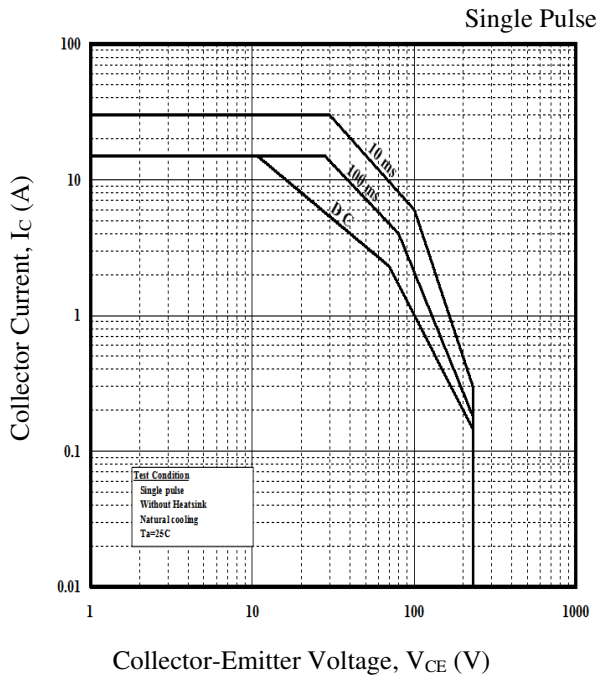


Figure 1. Safe Operating Area

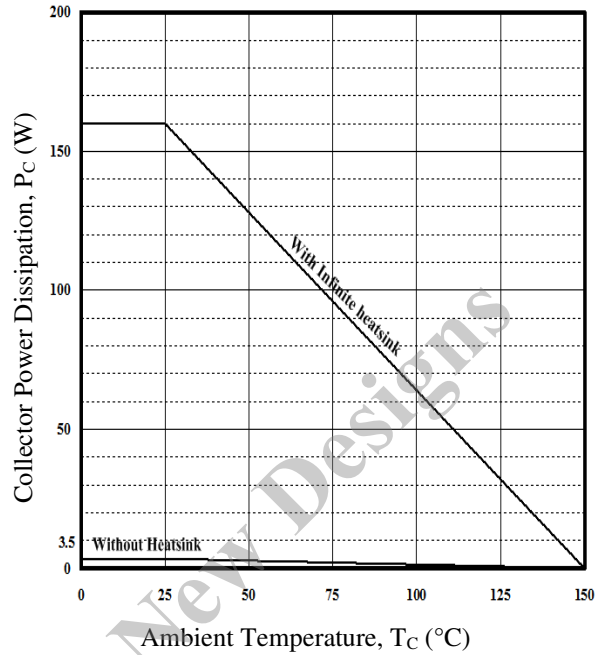


Figure 2. Power Dissipation vs. Ambient Temperature

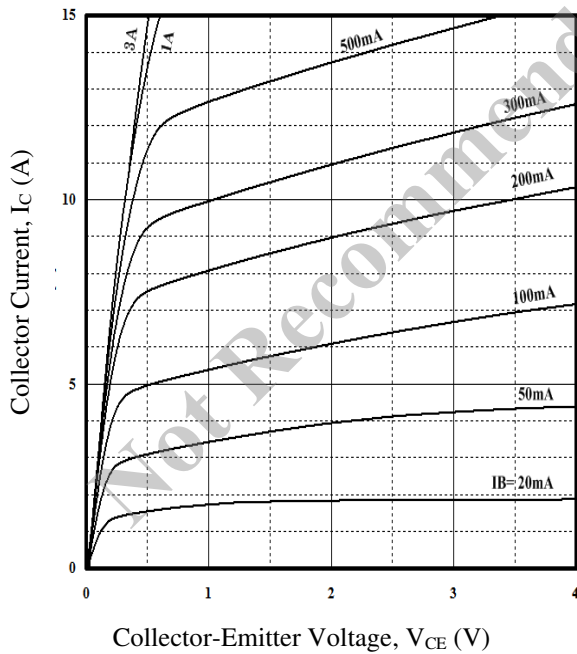


Figure 3. Collector Current vs. Collector-Emitter Voltage

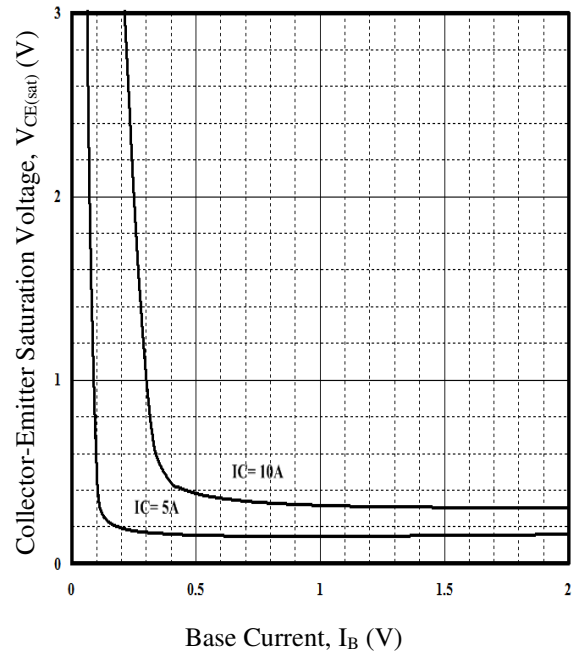


Figure 4. Collector-Emitter Saturation Voltage vs. Base Current

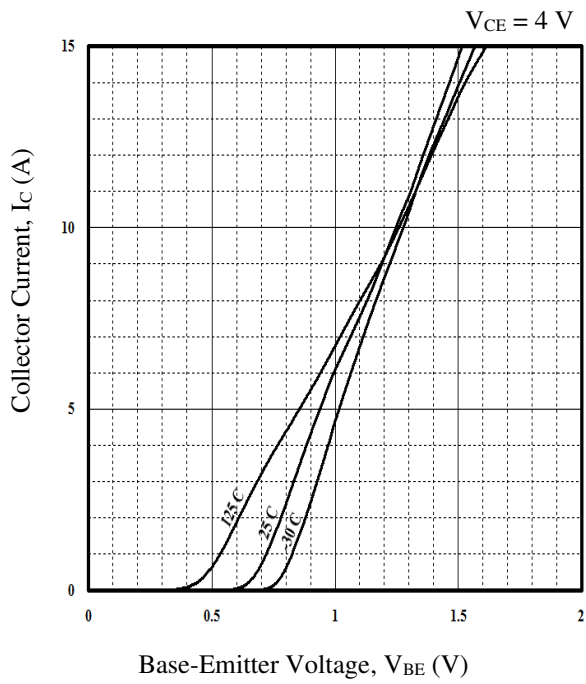


Figure 5. Collector Current vs. Base-Emitter Voltage

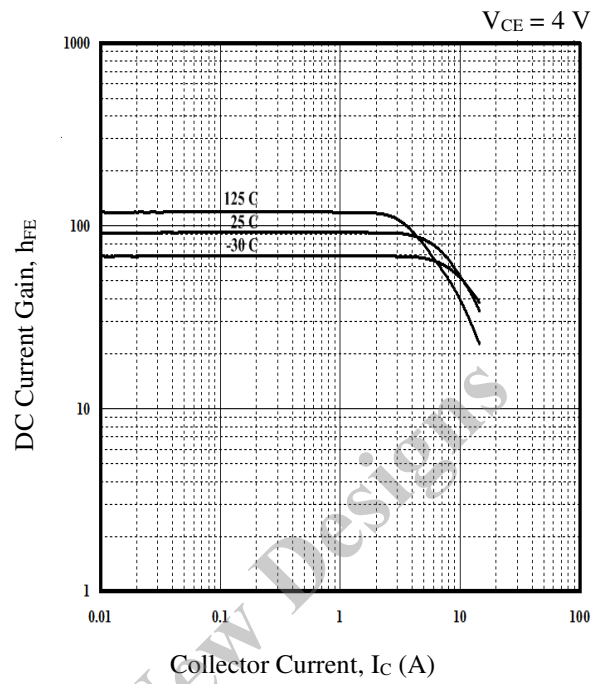


Figure 6. DC Current Gain vs. Collector Current

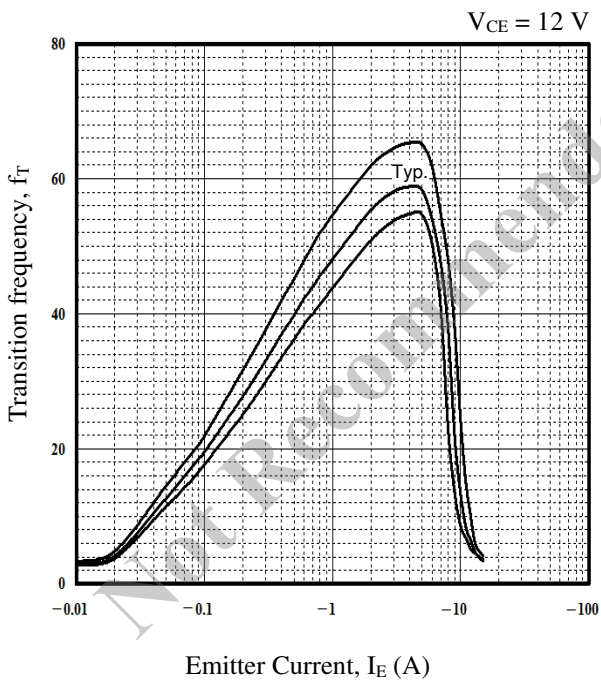


Figure 7. Transition Frequency vs. Emitter Current

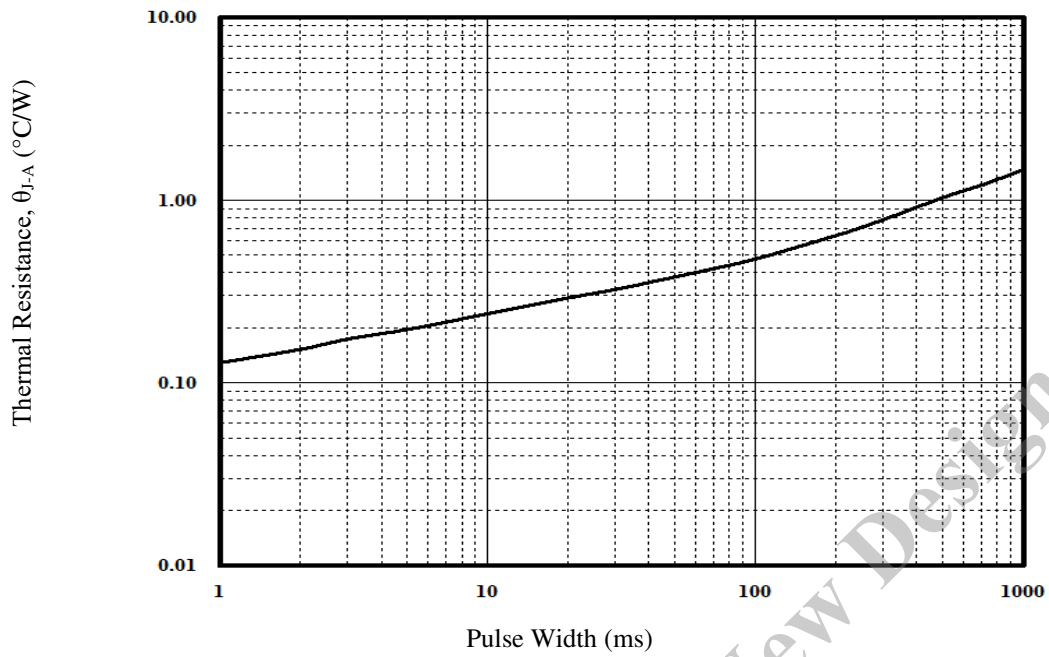
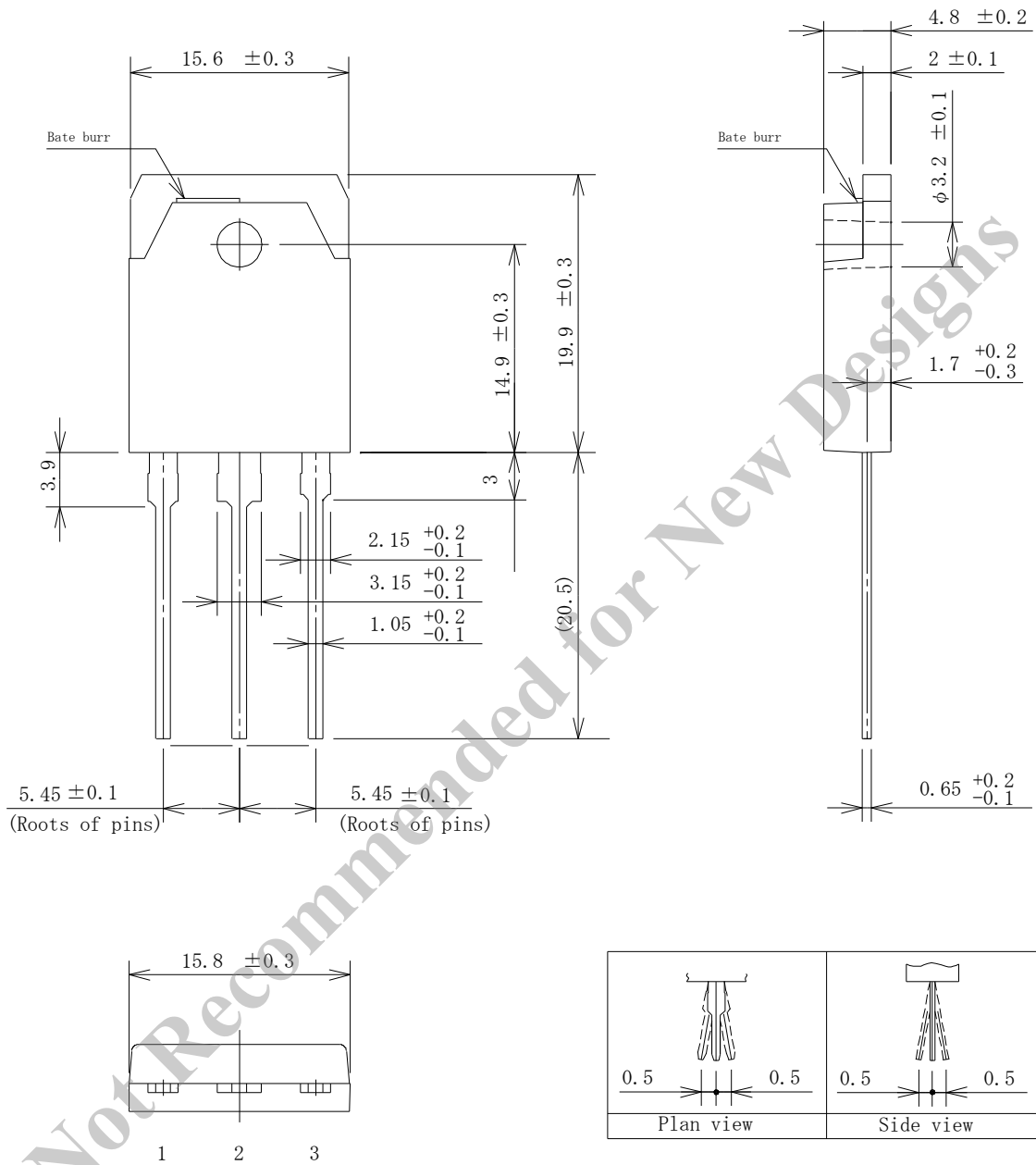


Figure 8. Transient Thermal Resistance

Not Recommended for New Designs

Physical Dimensions

● TO3P-3L



NOTES:

- Gate burr: 0.3 mm (max.)
- All dimensions in millimeters
- Bare lead frame: Pb-free (RoHS compliant)
- When soldering the product, be sure to minimize the working time within the following limits:

$260 \pm 5 \text{ }^\circ\text{C}$	$10 \pm 1 \text{ s}$, 2 times (flow)
$380 \pm 10 \text{ }^\circ\text{C}$	$3.5 \pm 0.5 \text{ s}$, 1 time (soldering iron)
- Soldering should be at a distance of at least 1.5 mm from the body of the product.
- The recommended screw torque for TO3P: 0.686 N·m to 0.882 N·m (7 kgf·cm to 9 kgf·cm)

Marking Diagram

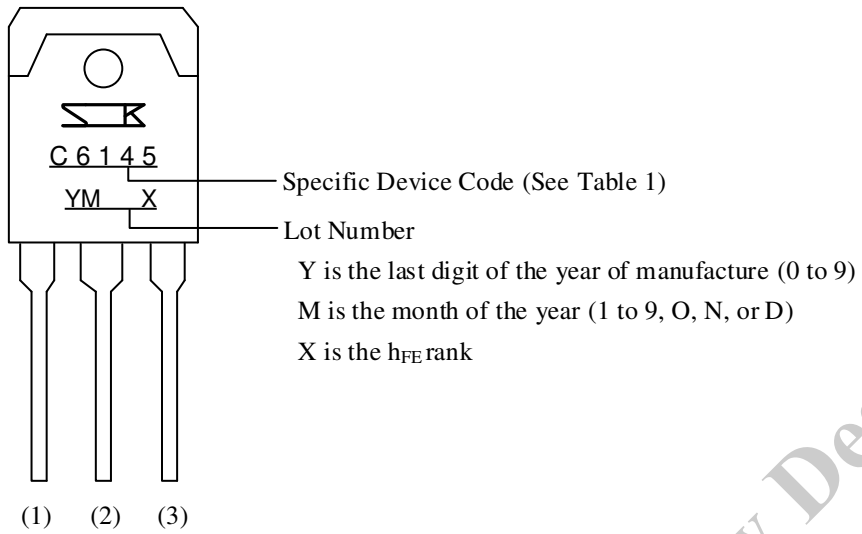


Table 1. Specific Device Code

Specific Device Code	Part Number
C6145	2SC6145

Not Recommended for New Designs

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