2SC5200

High power NPN epitaxial planar bipolar transistor

Preliminary data

Features

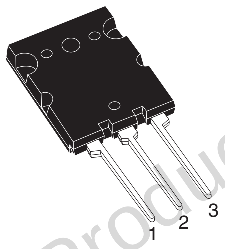
- High breakdown voltage V_{CEO} = 230 V
- Typical f_T = 30 MHz

Application

- Audio power amplifier

Description

This device is a NPN transistor manufactured using new BiT-LA (bipolar transistor for linear amplifier) technology. The resulting transistor shows good gain linearity behaviour.



TO-264

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Figure 1. Internal schematic diagram

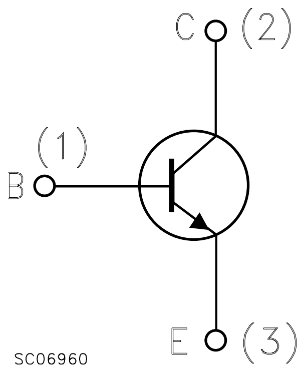

Table 1. Device summary

Order code	Marking	Package	Packaging
2SC5200	2SC5200	TO-264	Tube

This is preliminary information on a new product now in development or undergoing evaluation. Details are subject to change without notice.

1 Electrical ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base voltage ($I_E = 0$)	230	V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	230	V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	5	V
I_C	Collector current	15	A
I_{CM}	Collector peak current	30	A
P_{TOT}	Total dissipation at $T_C = 25$ °C	150	W
T_{STG}	Storage temperature	-55 to 150	°C
T_J	Operating junction temperature	150	°C

Table 3. Thermal data

Symbol	Parameter	Value	Unit
R_{thJC}	Thermal resistance junction-case max	0.83	°C/W

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2 Electrical characteristics

T_{case} = 25 °C unless otherwise specified

Table 4. Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cut-off current ($I_E = 0$)	$V_{CB} = 230$ V			5	µA
I_{EBO}	Emitter cut-off current ($I_C = 0$)	$V_{EB} = 5$ V			5	µA
$V_{(BR)CEO}$ (1)	Collector-emitter breakdown voltage ($I_B = 0$)	$I_C = 50$ mA	230			V
$V_{(BR)CBO}$	Collector-base breakdown voltage ($I_E = 0$)	$I_C = 100$ µA	230			V
$V_{(BR)EBO}$ (1)	Emitter-base breakdown voltage ($I_C = 0$)	$I_E = 1$ mA	5			V
$V_{CE(sat)}$ (1)	Collector-emitter saturation voltage	$I_C = 8$ A $I_B = 800$ mA			3	V
V_{BE}	Base-emitter voltage	$I_C = 7$ A $V_{CE} = 5$ V			1.5	V
h_{FE}	DC current gain	$I_C = 1$ A $V_{CE} = 5$ V $I_C = 7$ A $V_{CE} = 5$ V	55 35	80	120	
t_{on} t_s t_f	Resistive load Turn-on time Storage time Fall time	$V_{CC} = 60$ V $I_C = 5$A $I_{B1} = -I_{B2} = 0.5$ A		0.24 4.7 0.6		µs µs µs
f_T	Transition frequency	$I_C = 1$ A $V_{CE} = 5$ V		30		MHz
C_{CBO}	Collector-base capacitance ($I_E = 0$)	$V_{CB} = 10$ V f = 1 MHz		150		pF

1. Pulsed: pulse duration = 300 µs, duty cycle ≤ 1.5%

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2.1 Electrical characteristics (curves)

Figure 2. Safe operating area

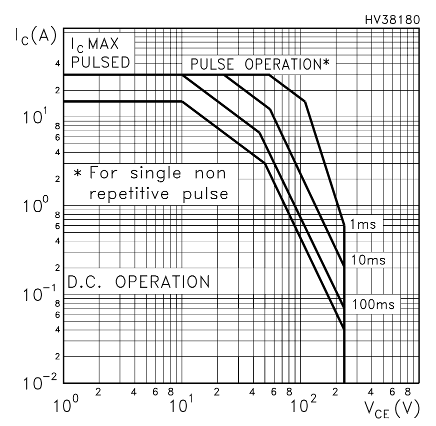
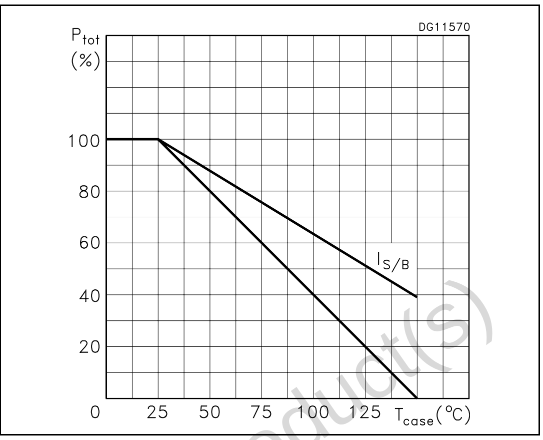
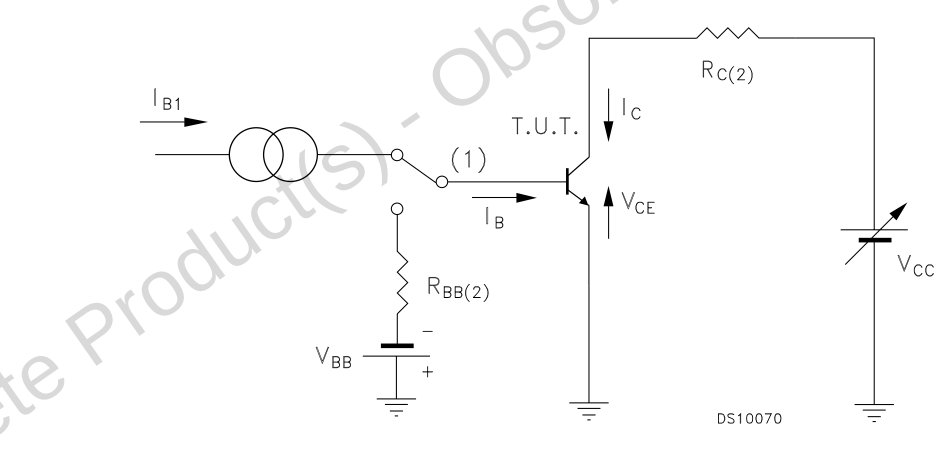


Figure 3. Derating curve



2.2 Test circuit

Figure 4. Resistive load switching test circuit



1. Fast electronic switch
2. Non-inductive resistor

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3 Package mechanical data

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TO-264 Mechanical data

Dim.	mm.		
	Min.	**Typ**	**Max.**
A	4.80		5.20
A1	2.50		3.10
b	0.90	1.0	1.25
b1		2.5	
b2		2.8	
c	0.50	0.60	0.85
D	25.6		26.4
E	19.80		20.20
e	5.15		5.75
L	19.50		20.50
L1	2.30		2.70
øP	3.55		3.65

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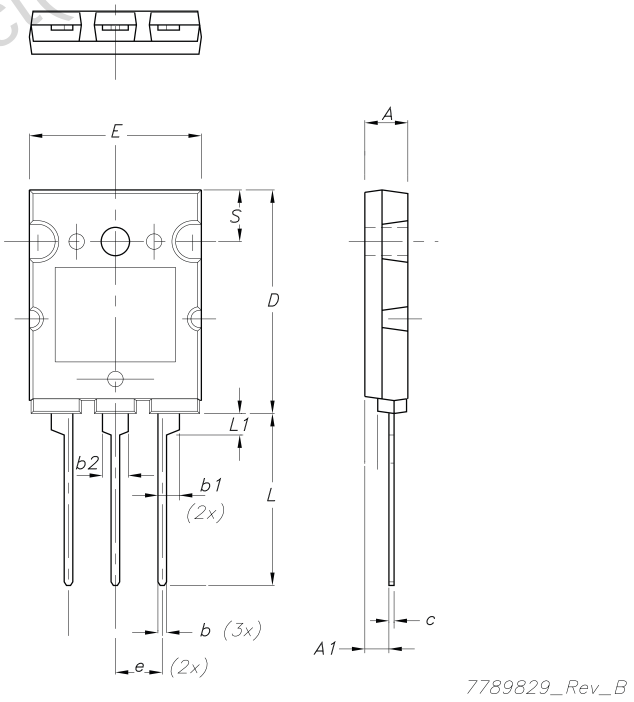

4 Revision history

Table 5. Document revision history

Date	Revision	Changes
28-Sep-2009	1	Initial release.

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