

2STC5200

High power NPN epitaxial planar bipolar transistor

Features

- High breakdown voltage V_{CEO} > 230V
- Complementary to 2STA1943
- Fast-switching speed
- 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.

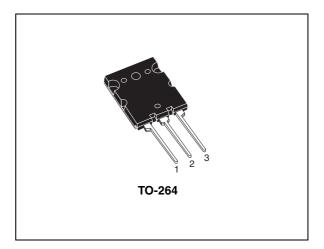


Figure 1. Internal schematic diagram

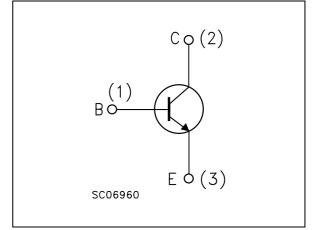


Table 1. Device summary

Order code	Marking	Package	Packaging
2STC5200	2STC5200 2STC5200		Tube

1 Electrical 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
۱ _C	Collector current	15	А
I _{CM}	Collector peak current	30	А
P _{tot}	Total dissipation at $T_{C} = 25^{\circ}C$	150	W
T _{stg}	Storage temperature	-55 to 150	°C
Т _Ј	Operating junction temperature	150	°C

Table 3.Thermal data

Symbol	Parameter	Value	Unit
R _{thJ-case}	Thermal resistance junction-case Max	0.83	°C/W



2 Electrical characteristics

($T_{case} = 25^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Test conditions	Min.	Тур.	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	$I_{\rm C} = 7 \ {\rm A}$ $V_{\rm CE} = 5 \ {\rm V}$			1.5	V
h _{FE}	DC current gain	$I_{C} = 1 A$ $V_{CE} = 5 V$ $I_{C} = 7 A$ $V_{CE} = 5 V$	80 35		160	
t _{on} t _s t _f	Resistive load Turn-on time Storage time Fall time	$V_{CC} = 60 V I_C = 5A$ $I_{B1} = -I_{B2} = 0.5 A$		0.24 4.7 0.6		μs μs μs
f _T	Transition frequency	$I_{\rm C} = 1 \ {\rm A}$ $V_{\rm CE} = 5 \ {\rm V}$		30		MHz
C _{CBO}	Collector-base capacitance $(I_E = 0)$	V _{CB} = 10 V f = 1 MHz		150		pF

Table 4. Electrical characteristics

1. Pulsed: pulse duration = 300 μ s, duty cycle $\leq 1.5\%$



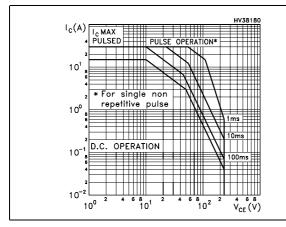
DG11570

ls∕B

75 100 125 T_{case}(°C)

2.1 Electrical characteristics (curves)

Figure 2. Safe operating area







25 50

Derating curve

Figure 3.

P_{tot} (%)

100

80

60

40

20

0

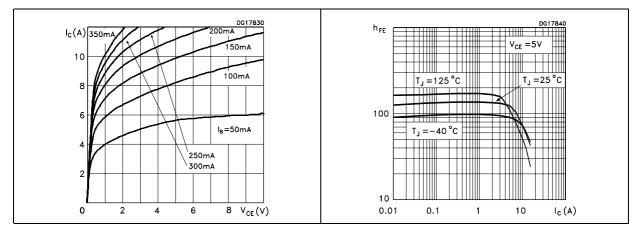
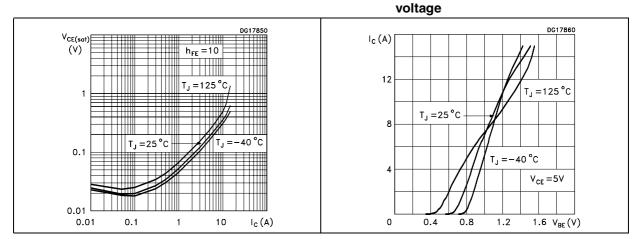


Figure 6. Collector-emitter saturation voltage Figure 7. Collector current vs base-emitter



2.2 Test circuit

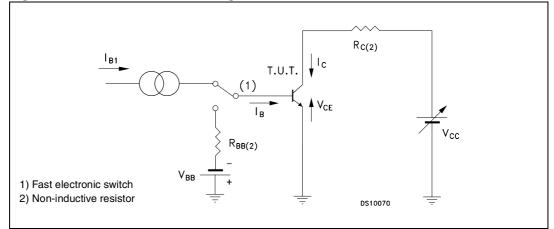


Figure 8. Resistive load switching test circuit



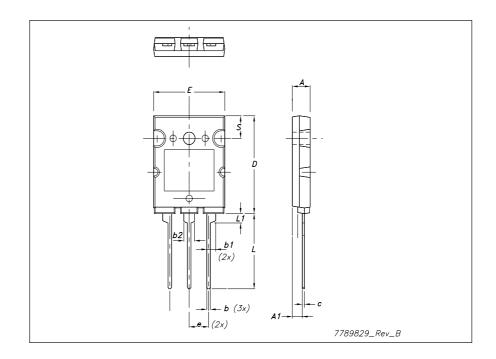
3 Package mechanical data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect . The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com



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	TO-264 Mechanical data		
Dim.		mm.	
2	Min.	Тур	Max.
А	4.80		5.20
A1	2.50		3.10
b	0.90	1.0	1.25
b1		2.5	
b2		2.8	
С	0.50	0.60	0.85
D	25.6		26.4
E	19.80		20.20
е	5.15		5.75
L	19.50		20.50
L1	2.30		2.70
øР	3.55		3.65





4 Revision history

Table 5.Document revision history

Date	Revision	Changes
19-Jun-2007	1	Initial release.
11-Dec-2007	2	Document promoted from preliminary data to datasheet.



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