

High power PNP epitaxial planar bipolar transistor

Features

- High breakdown voltage V_{CEO} > -230V
- Complementary to 2STC5200
- 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.

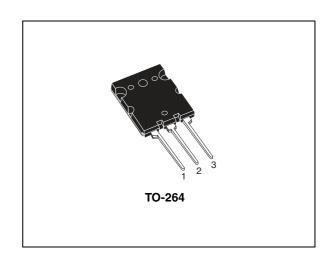


Figure 1. Internal schematic diagram

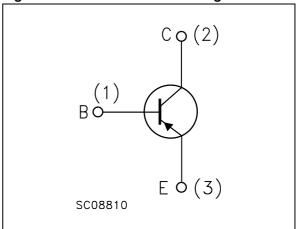


Table 1. Device summary

Order code	Marking	Package	Packaging
2STA1943	2STA1943	TO-264	Tube

Electrical ratings 2STA1943

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	Α
I _{CM}	Collector peak current	-30	Α
P _{tot}	Total dissipation at T _C = 25°C	150	W
T _{stg}	Storage temperature	-55 to 150	°C
TJ	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°C unless otherwise specified)

Table 4. Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Тур.	Max.	Unit
I _{CBO}	Collector cut-off current (I _E = 0)	V _{CB} = -230 V			-5	μΑ
I _{EBO}	Emitter cut-off current (I _C = 0)	V _{EB} = -5 V			-5	μΑ
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	$I_C = -8 \text{ A}$ $I_B = -800 \text{ mA}$			-3	V
V _{BE}	Base-emitter voltage	$I_C = -7 \text{ A}$ $V_{CE} = -5 \text{ V}$			-1.5	V
h _{FE}	DC current gain	$I_C = -1 \text{ A}$ $V_{CE} = -5 \text{ V}$ $I_C = -7 \text{ A}$ $V_{CE} = -5 \text{ V}$	80 35		160	
t _{on} t _s	Resistive load Turn-on time Storage time Fall time	$V_{CC} = -60 \text{ V} I_{C} = -5\text{A}$ $I_{B1} = -I_{B2} = -0.5 \text{ A}$		0.24 1.2 0.21		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		225		pF

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

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Electrical characteristics 2STA1943

2.1 Electrical characteristics (curves)

Figure 2. Safe operating area

Figure 3. Derating curve

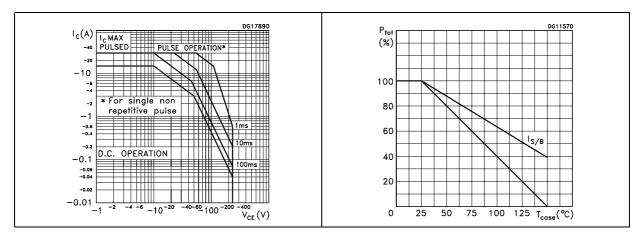


Figure 4. Output characteristics

Figure 5. DC current gain

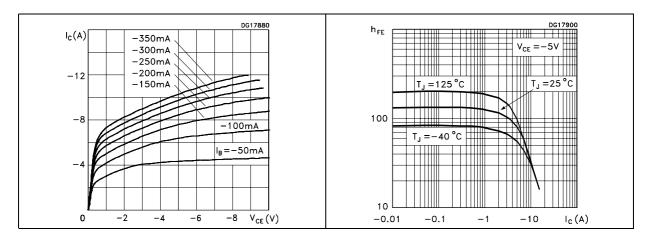
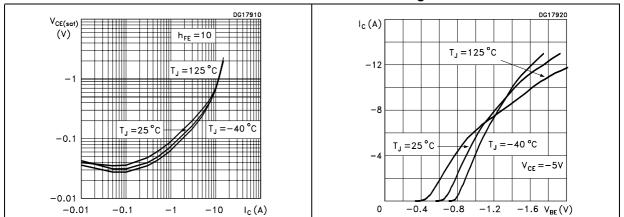


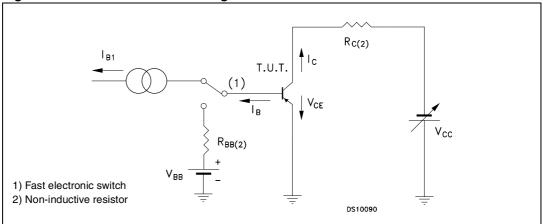
Figure 6. Collector-emitter saturation voltage Figure 7. Collector current vs base-emitter voltage



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2.2 Test circuit

Figure 8. Resistive load switching test circuit

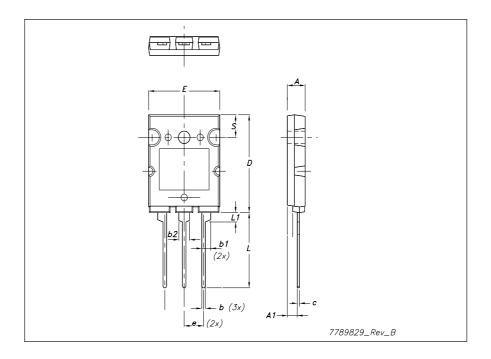


3 Package mechanical data

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

TO-264 Mechanical data

Dim.		mm.			
	Min.	Тур	Max.		
Α	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		
Е	19.80		20.20		
е	5.15		5.75		
L	19.50		20.50		
L1	2.30		2.70		
øΡ	3.55		3.65		



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Revision history 2STA1943

4 Revision history

Table 5. Document revision history

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

2STA1943 Revision history

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