

High power PNP epitaxial planar bipolar transistor

Features

- High breakdown voltage V_{CEO} = -140 V
- Complementary to 2STW4468
- Typical f_t = 20 MHz
- Fully characterized at 125 °C

Applications

Audio power amplifier

Description

The device is a PNP transistor manufactured using new BiT-LA (Bipolar transistor for linear amplifier) technology. The resulting transistor shows good gain linearity behaviour. Recommended for 70 W to 100 W high fidelity audio frequency amplifier output stage.

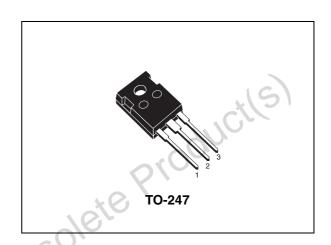


Figure 1. Internal schematic diagram

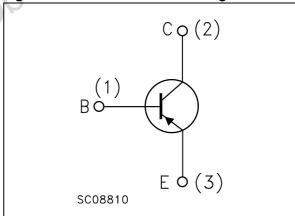


Table 1. Device summary

Order code	Marking	Package	Packaging	
2STW1695	2STW1695	TO-247	Tube	

Electrical ratings 2STW1695

Electrical ratings 1

Table 2. **Absolute maximum rating**

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base voltage (I _E = 0)	-140 V	
V_{CEO}	Collector-emitter voltage (I _B = 0)	-140 V	
V_{EBO}	Emitter-base voltage $(I_C = 0)$	e voltage ($I_C = 0$) -6 V	
I _C	Collector current -10		А
I _{CM}	Collector peak current (t _P < 5 ms) -20		Α
P _{tot}	Total dissipation at T _c = 25 °C	pation at T _c = 25 °C 100 W	
T _{stg}	Storage temperature	-65 to 150	°C
TJ	Max. operating junction temperature	150	°C
Table 3. Thermal data			
Symbol	Parameter	Value	Unit

Table 3. Thermal data

	Symbol	Parameter	Value	Unit
	R _{thj-case}	Thermal resistance junction-case max	1.25	°C/W
		ci(s) Obsole	1.25	°C/W
Obsole	ic P			

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Electrical characteristics 2

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

Electrical characteristics

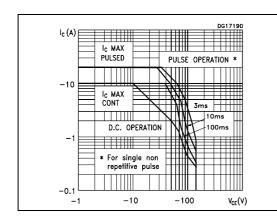
Symbol	Parameter	Test conditions	Min.	Тур.	Max.	Unit
I _{CBO}	Collector cut-off current (I _E = 0)	V _{CB} = -140 V			-0.1	μA
I _{EBO}	Emitter cut-off current (I _C = 0)	V _{EB} = -6 V			-0.1	μΑ
V _{(BR)CEO}	Collector-emitter breakdown voltage (I _B = 0)	I _C = -50 mA	-140		1/5	V
V _{(BR)CBO}	Collector-base breakdown voltage (I _E = 0)	I _C = -100 μA	-140	UC		V
	Emitter-base breakdown voltage (I _C = 0)	I _E = -1 mA	-6	<i>J</i> .		V
V _{CE(sat)} (1)	Collector-emitter saturation voltage	$I_C = -5 \text{ A}$ $I_B = -500 \text{ mA}$ $I_C = -7 \text{ A}$ $I_B = -700 \text{ mA}$			-0.5 -0.7	V V
V _{BE} ⁽¹⁾	Base-emitter voltage	$V_{CE} = -5 \text{ V}$ $I_{C} = -5 \text{ A}$			-1.3	V
h _{FE}	DC current gain	$I_{C} = -3 \text{ A}$ $V_{CE} = -4 \text{ V}$ $I_{C} = -5 \text{ A}$ $V_{CE} = -4 \text{ V}$	70 50		140	
f _T	Transition frequency	$I_C = -0.5 \text{ A}$ $V_{CE} = -12 \text{ V}$		20		MHz
C _{CBO}	Collector-base capacitance $(I_E = 0)$	V _{CB} = -10 V		225		pF
	Resistive load					
t _{on}	Turn-on time	$I_C = -5 \text{ A}$ $V_{CC} = -60 \text{ V}$		0.24		μs
t _{stg}	Storage time	$I_{B1} = -I_{B2} = -0.5 \text{ A}$		1.2		μs
t _f	Fall time			0.24		μs
1. Pulsed: P	ulse duration = 300 μs, duty cycle	≤ 1.5 %				

Electrical characteristics 2STW1695

2.1 Electrical characteristics (curves)

Figure 2. Safe operating area

Figure 3. Output characteristics



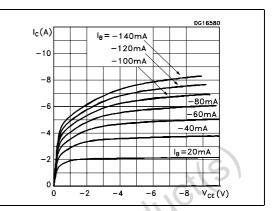
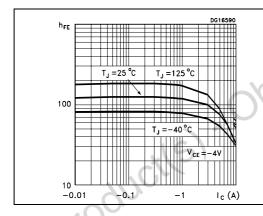


Figure 4. DC current gain

Figure 5. Collector-emitter saturation voltage



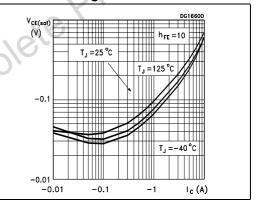
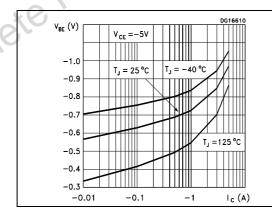
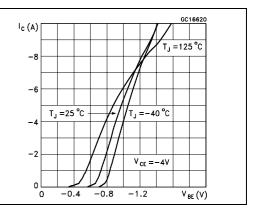


Figure 6. Base-emitter voltage

Figure 7. Base-emitter voltage

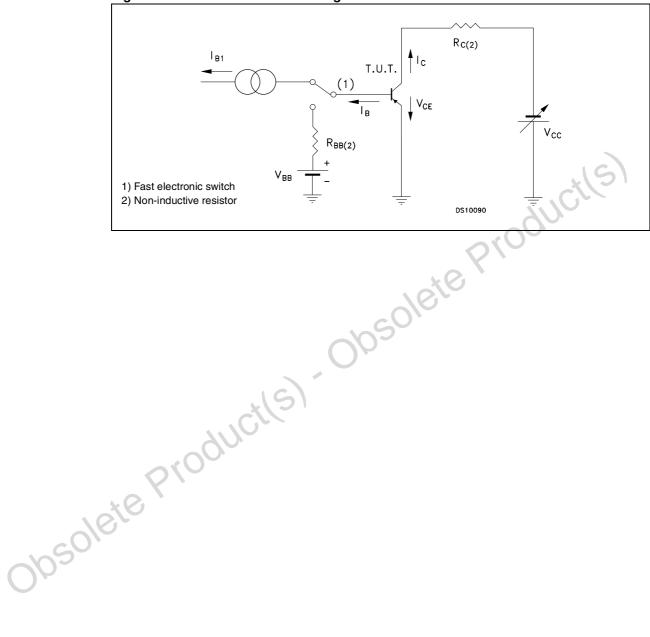




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2.2 Test circuit

Figure 8. Resistive load switching test circuit



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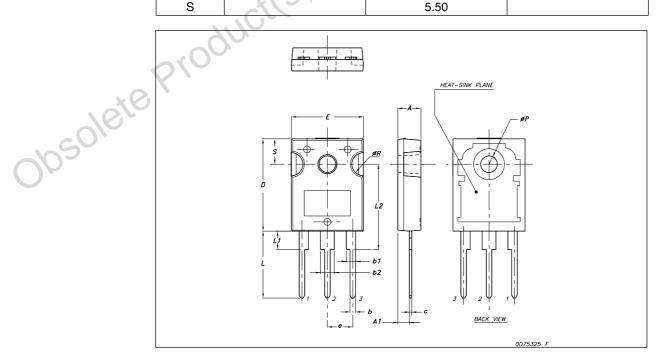
3 Package mechanical data

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

Obsolete Product(s). Obsolete Product(s)

TO-247 Mechanical data

Dim.	mm.				
Diiii.	Min.	Тур	Max.		
Α	4.85		5.15		
A1	2.20		2.60		
b	1.0		1.40		
b1	2.0		2.40		
b2	3.0		3.40		
С	0.40		0.80		
D	19.85	0,	20.15		
E	15.45	20,	15.75		
е		5.45			
L	14.20	60/	14.80		
L1	3.70	75	4.30		
L2		18.50			
øΡ	3.55		3.65		
øR	4.50		5.50		
S		5.50			



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Revision history 2STW1695

4 Revision history

Table 5. Document revision history

Date	Revision	Changes
23-Oct-2006	1	Initial release
23-Sep-2007	2	Added figures 2, 3, 4, 5, 6, 7.
20-Feb-2007	3	Document status promoted from preliminary data to datasheet.
06-Oct-2008	4	Content reworked to improve readability, no technical changes.
te Produ	cile	Document status promoted from preliminary data to datasheet. Content reworked to improve readability, no technical changes.

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