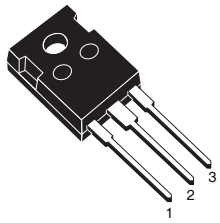
2STW1695

High power PNP epitaxial planar bipolar transistor

General features

- High breakdown voltage V_{CEO} = -140V
- Complementary to 2STW4468
- Typical f_t =20MHz
- Fully characterized at 125 °C
- In compliance with the 2002/93/EC European Directive



TO-247

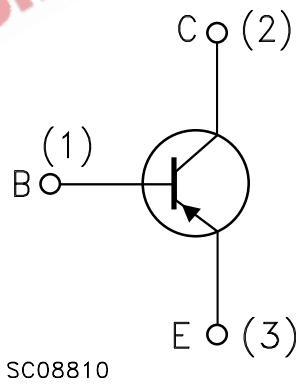
Applications

- 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 70W to 100W high fidelity audio frequency amplifier output stage.

Internal schematic diagram



Order codes

Part Number	Marking	Package	Packing
2STW1695	2STW1695	TO-247	Tube

Electrical ratings

Table 1. Absolute maximum rating

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-emitter voltage (I_E = 0)	-140	V
V_{CEO}	Collector-emitter voltage (I_B = 0)	-140	V
V_{EBO}	Collector-base voltage (I_C = 0)	-6	V
I_C	Collector current	-10	A
I_{CM}	Collector peak current (t_P < 5ms)	-20	A
P_{TOT}	Total dissipation at T_c = 25°C	100	W
T_{stg}	Storage temperature	-65 to 150	°C
T_J	Max. operating junction temperature	150	°C

Table 2. Thermal data

Symbol	Parameter		Value	Unit
$R_{thj\text{-}case}$	Thermal resistance junction-case	max	1.25	°C/W

1 Electrical characteristics

(T_{CASE} = 25°C; unless otherwise specified)

Table 3. Electrical characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cut-off current (I_E = 0)	V_{CB} = -140V			-0.1	µA
I_{EBO}	Emitter cut-off current (I_C = 0)	V_{EB} = -6V			-0.1	µA
$V_{(BR)CEO}$(1)	Collector-emitter breakdown voltage (I_B = 0)	I_C = -50mA	-140			V
$V_{(BR)CBO}$	Collector-emitter breakdown voltage (I_E = 0)	I_C = -100µA	-140			V
$V_{(BR)EBO}$(1)	Collector-emitter breakdown voltage (I_C = 0)	I_E = -1mA	-6			V
$V_{CE(sat)}$ (1)	Collector-emitter saturation voltage	I_C = -5A I_B = -500mA I_C = -7A I_B = -700mA			-0.5 -0.7	V V
V_{BE} (1)	Base-emitter voltage	V_{CE} = -5V I_C = -5A			-1.3	V
h_{FE}	DC current gain	I_C = -3A V_{CE} = -4V I_C = -5A V_{CE} = -4V	70 50		140	
f_T	Transition frequency	I_C = -0.5A V_{CE} = -12V		20		MHz
C_{CBO}	Collector-base capacitance	I_E = 0 V_{CB} = -10V f = 1MHz		225		pF
	Resistive load					
t_{on}	Turn-on time	I_C = -5A V_{CC} = -60V		0.24		µs
t_{stg}	Storage time	I_{B1} = -I_{B2} = -0.5A		1.2		µs
t_{off}	Fall time			0.24		µs

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

1.1 Electrical characteristics (curves)

Figure 1. Safe operating area

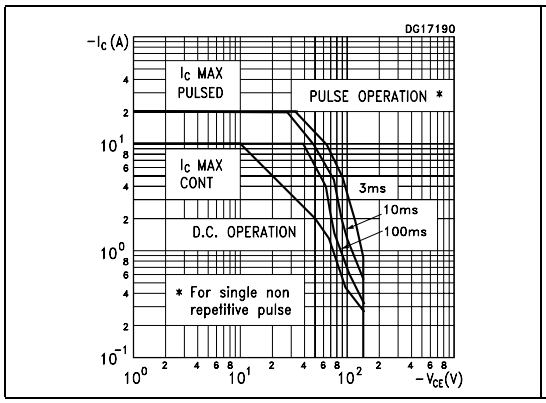


Figure 2. Output characteristics

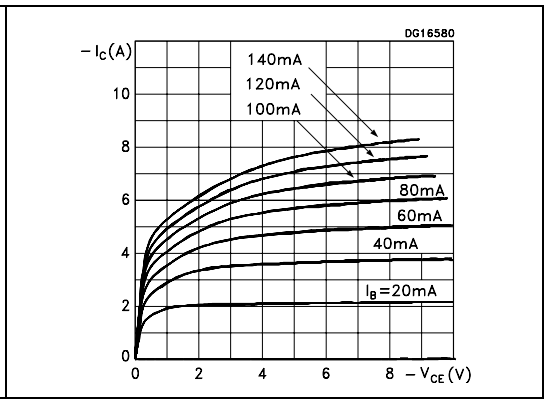


Figure 3. DC current gain

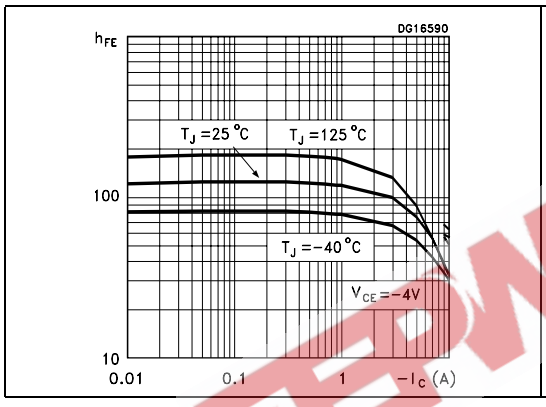


Figure 4. Collector-emitter saturation voltage

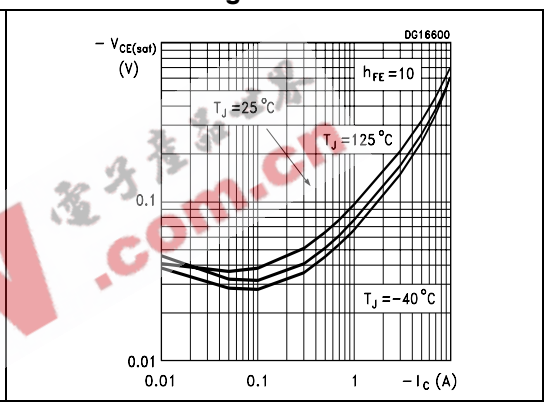


Figure 5. Base-emitter on voltage

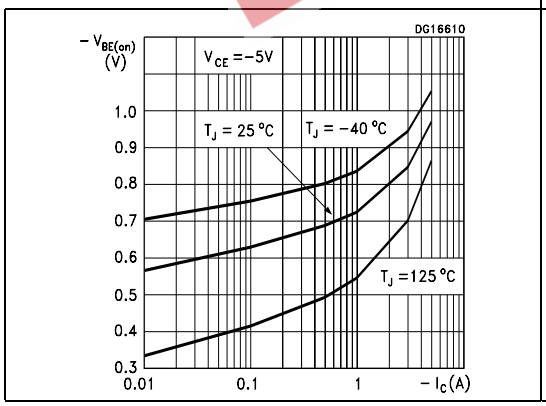
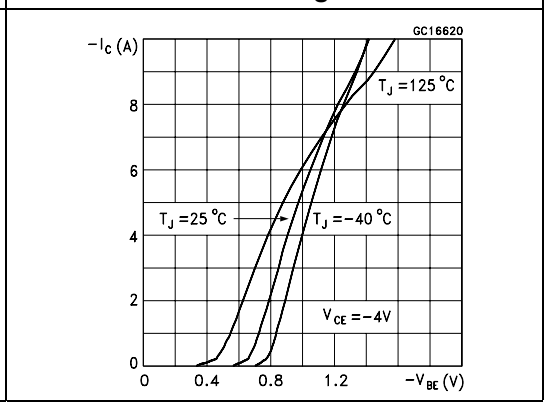
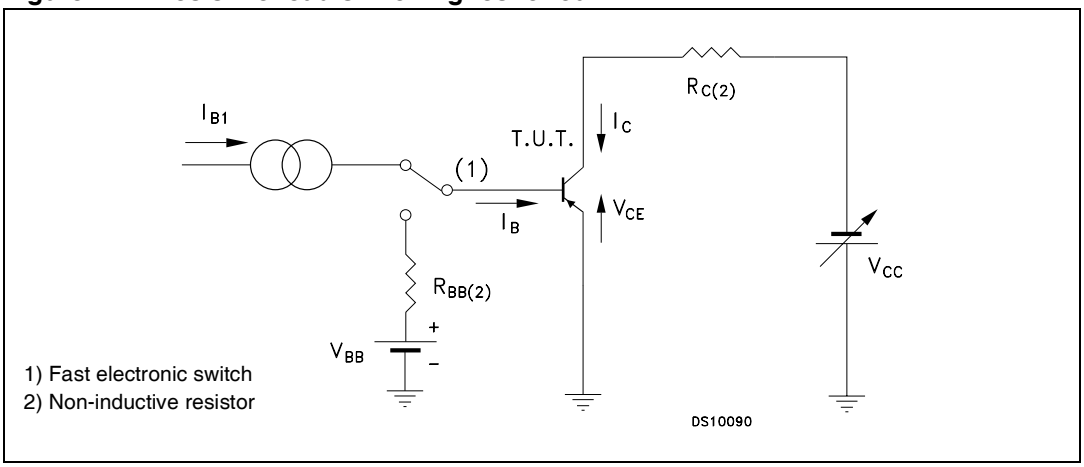


Figure 6. Collector current vs base-emitter voltage



1.2 Test circuit

Figure 7. Resistive load switching test circuit



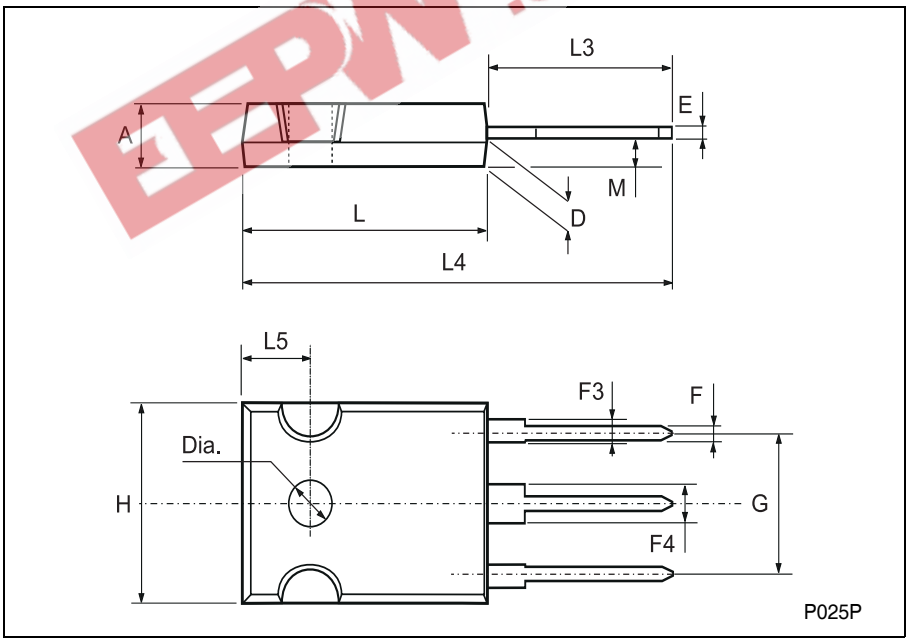
1) Fast electronic switch
2) Non-inductive resistor

2 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-247 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.7		5.3	0.185		0.209
D	2.2		2.6	0.087		0.102
E	0.4		0.8	0.016		0.031
F	1		1.4	0.039		0.055
F3	2		2.4	0.079		0.094
F4	3		3.4	0.118		0.134
G		10.9			0.429	
H	15.3		15.9	0.602		0.626
L	19.7		20.3	0.776		0.779
L3	14.2		14.8	0.559		0.582
L4		34.6			1.362	
L5		5.5			0.217	
M	2		3	0.079		0.118



3 Revision history

Table 4. Revision history

Date	Revision	Changes
23-Oct-2006	1	First release
09-Feb-2007	2	New graphics
20-Feb-2007	3	The device's commercial code has been changed from preliminary to full.

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