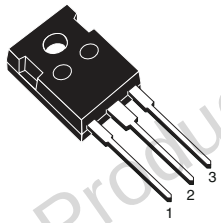
2STW4468

High power NPN epitaxial planar bipolar transistor

Features

- High breakdown voltage V_{CEO} = 140 V
- Complementary to 2STW1695
- Fast-switching speed
- Typical f_t = 20 MHz
- Fully characterized at 125 °C



TO-247

Applications

- Audio power amplifier

Description

The device is a NPN 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

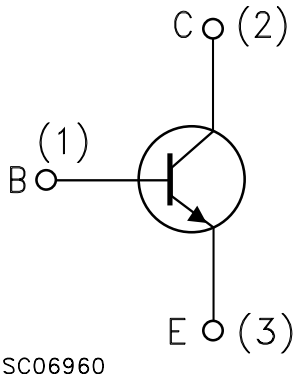


Table 1. Device summary

Order code	Marking	Package	Packaging
2STW4468	2STW4468	TO-247	Tube

1 Electrical ratings

Table 2. Absolute maximum rating

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base voltage (I_E = 0)	200	V
V_{CEO}	Collector-emitter voltage (I_B = 0)	140	V
V_{EBO}	Emitter-base voltage (I_C = 0)	6	V
I_C	Collector current	10	A
I_{CM}	Collector peak current (t_P < 5 ms)	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 3. Thermal data

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

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} = 200 V			0.1	µA
I_{EBO}	Emitter cut-off current (I_C = 0)	V_{EB} = 6 V			0.1	µA
$V_{(BR)CEO}$ (1)	Collector-emitter breakdown voltage (I_B = 0)	I_C = 50 mA	140			V
$V_{(BR)CBO}$	Collector-base breakdown voltage (I_E = 0)	I_C = 100 µA	200			V
$V_{(BR)EBO}$ (1)	Emitter-base breakdown voltage (I_C = 0)	I_E = 1 mA	6			V
$V_{CE(sat)}$ (1)	Collector-emitter saturation voltage	I_C = 5 A I_B = 500 mA I_C = 7 A I_B = 700 mA			0.5 0.7	V V
V_{BE}	Base-emitter voltage	V_{CE} = 5 V I_C = 5 A			1.3	V
h_{FE}	DC current gain	I_C = 3 A V_{CE} = 4 V I_C = 5 A V_{CE} = 4 V	70 50		140	
f_T	Transition frequency	I_C = 0.5 A V_{CE} = 12 V		20		MHz
C_{CBO}	Collector-base capacitance (I_E = 0)	V_{CB} = 10 V f = 1 MHz		150		pF
	Resistive Load					
t_{on}	Turn-on time	V_{CC} = 60 V I_C = 5 A		0.22		µs
t_{stg}	Storage time	I_{B1} = -I_{B2} = 0.5 A		4.3		µs
t_f	Fall time			0.5		µs

1. Pulse duration = 300 µs, duty cycle ≤ 1.5 %

2.1 Electrical characteristics (curves)

Figure 2. Safe operating area

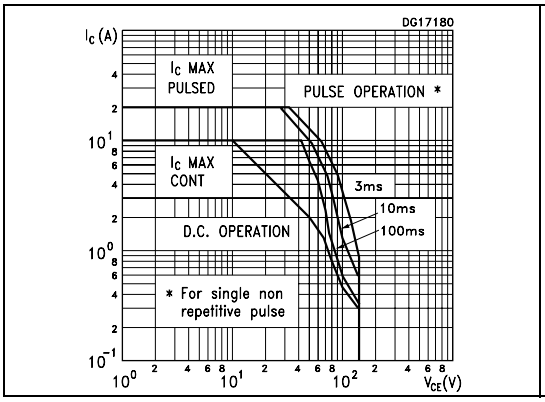


Figure 3. Output characteristics

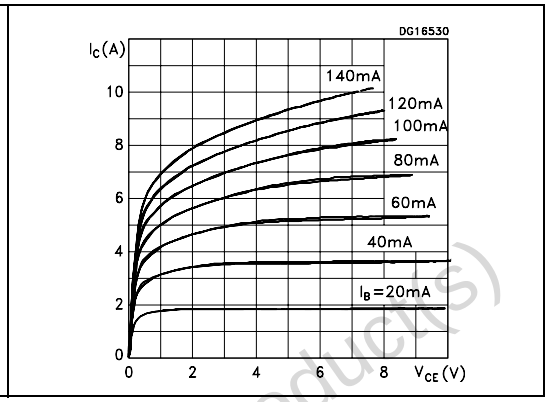


Figure 4. DC current gain

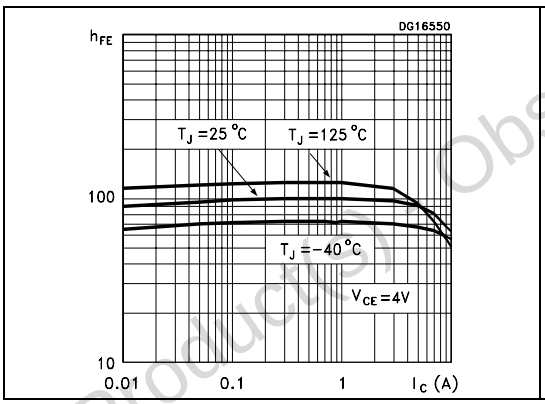


Figure 5. Collector-emitter saturation voltage

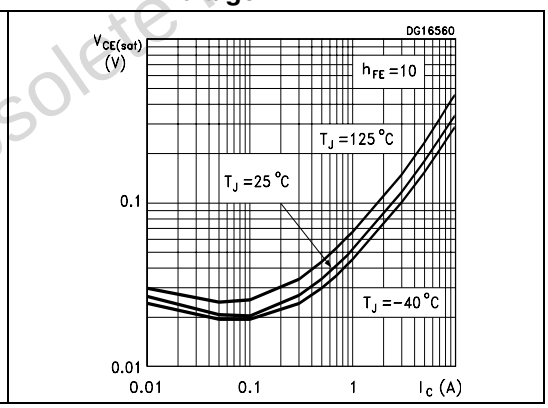


Figure 6. Base-emitter voltage

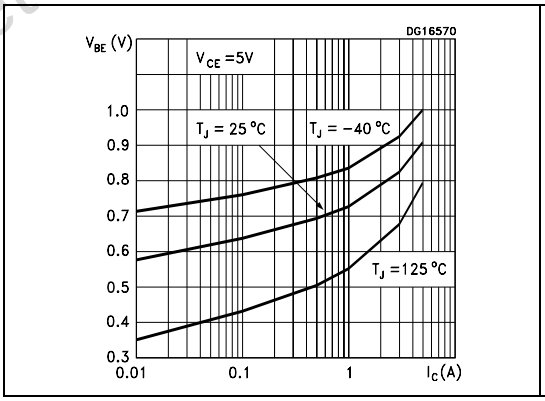
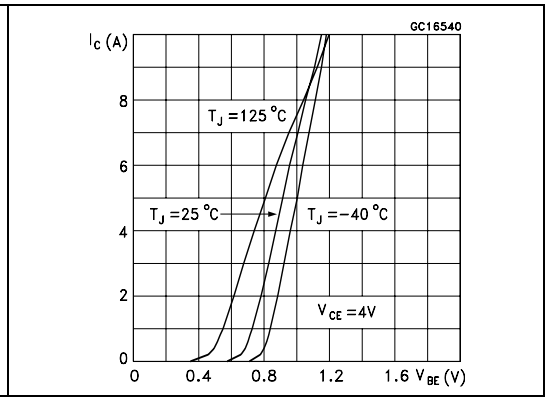
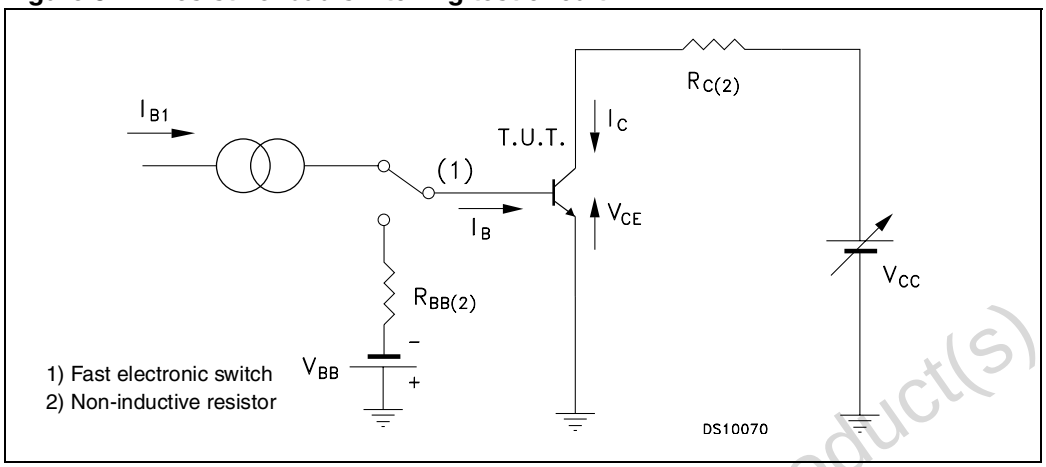


Figure 7. Base-emitter voltage



2.2 Test circuit

Figure 8. Resistive load switching test circuit

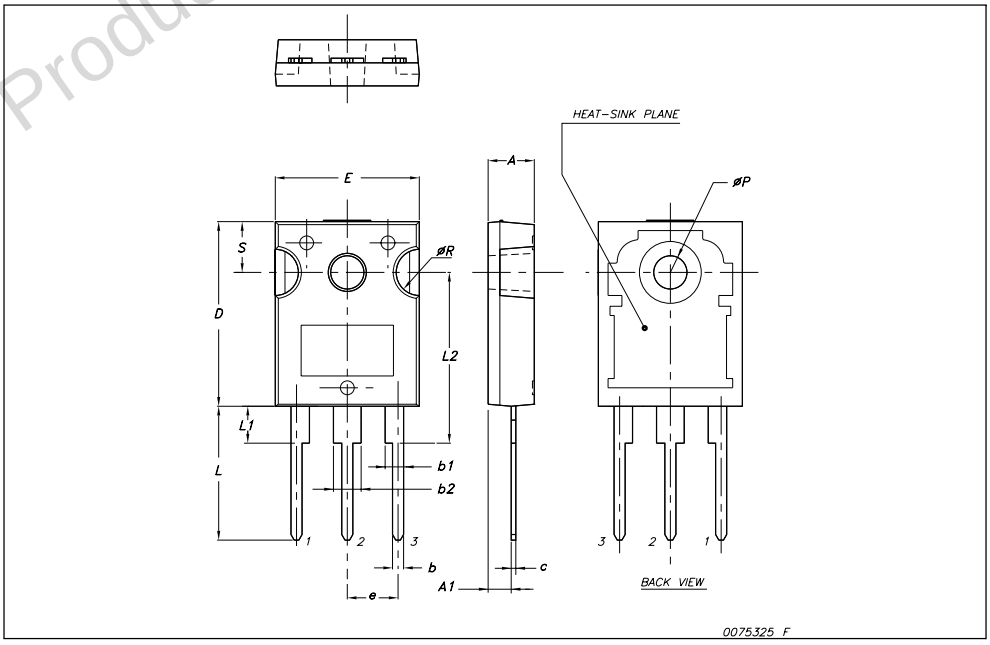


3 Package mechanical data

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-247 Mechanical data

Dim.	mm.		
	Min.	Typ	Max.
A	4.85		5.15
A1	2.20		2.60
b	1.0		1.40
b1	2.0		2.40
b2	3.0		3.40
c	0.40		0.80
D	19.85		20.15
E	15.45		15.75
e		5.45	
L	14.20		14.80
L1	3.70		4.30
L2		18.50	
øP	3.55		3.65
øR	4.50		5.50
S		5.50	



4 Revision history

Table 5. Document revision history

Date	Revision	Changes
23-Oct-2006	1	Initial release
09-Feb-2007	2	New graphics
20-Feb-2007	3	Document status promoted from preliminary data to datasheet.
13-Oct-2008	4	Content reworked to improve readability, no technical changes.

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