2STW4466

High power NPN epitaxial planar bipolar transistor

Features

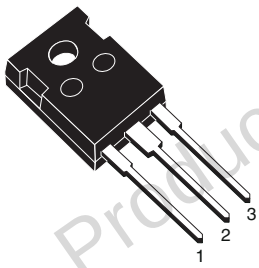
- High breakdown voltage V_{CEO} = 80 V
- Complementary to 2STW1693
- Typical f_t = 20 MHz
- Fully characterized at 125 °C

Applications

- Audio power amplifier

Description

The device is a NPN transistor manufactured in low voltage planar technology using base island layout. The resulting transistor shows good gain linearity coupled with low $V_{CE(sat)}$ behaviour. Recommended for 40 W to 70 W high fidelity audio frequency amplifier output stage.



TO-247

Figure 1. Internal schematic diagram

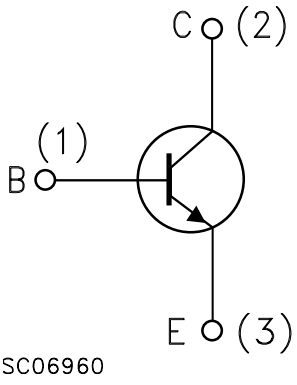


Table 1. Device summary

Order code	Marking	Package	Packaging
2STW4466	2STW4466	TO-247	Tube

1 Electrical ratings

Table 2. Absolute maximum rating

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base voltage (I_E = 0)	100	V
V_{CEO}	Collector-emitter voltage (I_B = 0)	80	V
V_{EBO}	Emitter-base voltage (I_C = 0)	6	V
I_C	Collector current	6	A
I_{CM}	Collector peak current (t_P < 5 ms)	12	A
P_{TOT}	Total dissipation at T_c = 25 °C	60	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	2.08	°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} = 100 V			0.1	µA
I_{EBO}	Emitter cut-off current (I_C = 0)	V_{EB} = 6 V			0.1	µA
$V_{(BR)EBO}$	Emitter-base breakdown voltage (I_C = 0)	I_E = 1 mA	6			V
$V_{(BR)CBO}$	Collector-base breakdown voltage (I_E = 0)	I_C = 100 µA	100			V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage (I_B = 0)	I_C = 50 mA	80			V
$V_{CE(sat)}$ (1)	Collector-emitter saturation voltage	I_C = 2 I_B = 200 mA I_C = 6 A I_B = 600 mA			0.6 1.5	V V
V_{BE} (1)	Base-emitter voltage	V_{CE} = 4 V I_C = 6 A			1.5	V
h_{FE}	DC current gain	I_C = 2 A V_{CE} = 4 V	50		120	
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		50		pF
	Resistive load					
t_{on}	Turn-on time	I_C = 3 A V_{CC} = 30 V		0.15		ns
t_{stg}	Storage time	I_{B1} = -I_{B2} = 0.3 A		1.5		ns
t_f	Fall time			0.1		ns

Pulsed duration = 300 µs, duty cycle ≤ 1.5%

2.1 Electrical characteristics (curves)

Figure 2. DC current gain

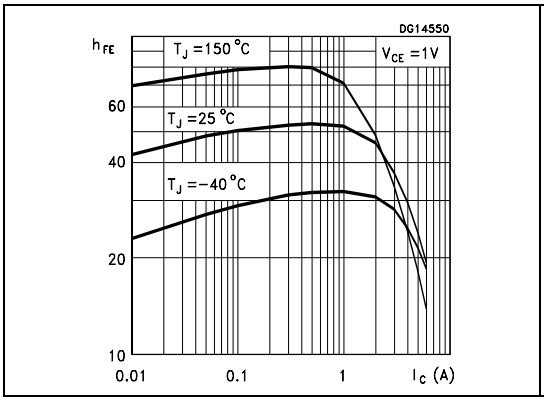


Figure 3. DC current gain

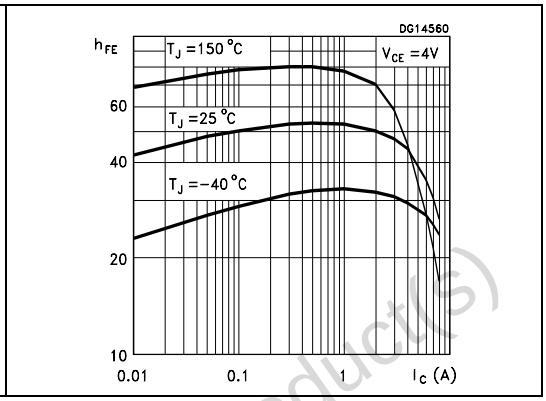


Figure 4. Collector-emitter saturation voltage

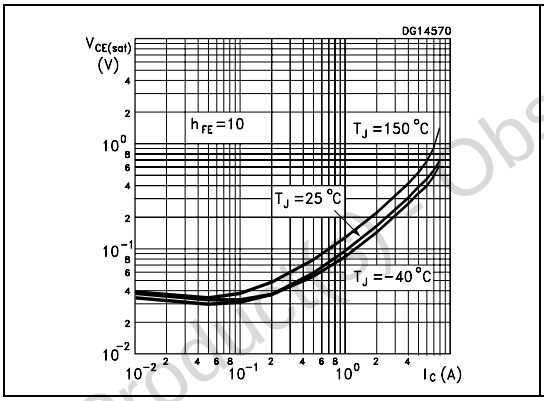


Figure 5. Base-emitter saturation voltage

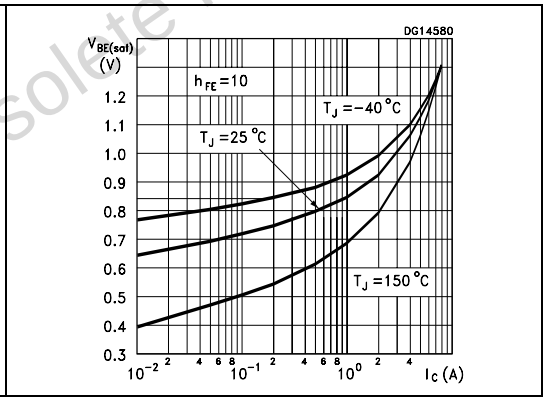


Figure 6. Base emitter voltage

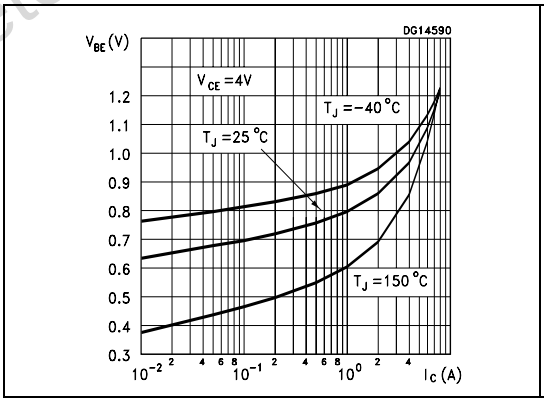


Figure 7. Resistive load switching time (on)

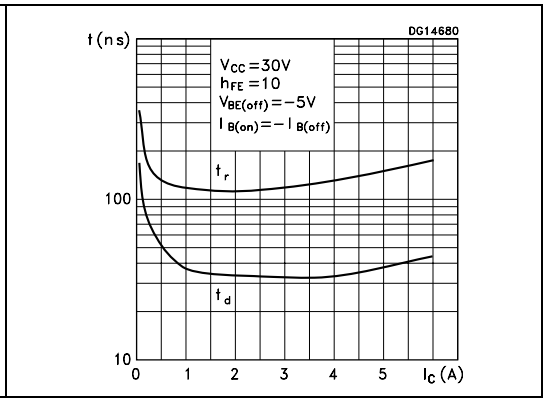


Figure 8. Resistive load switching time (off)

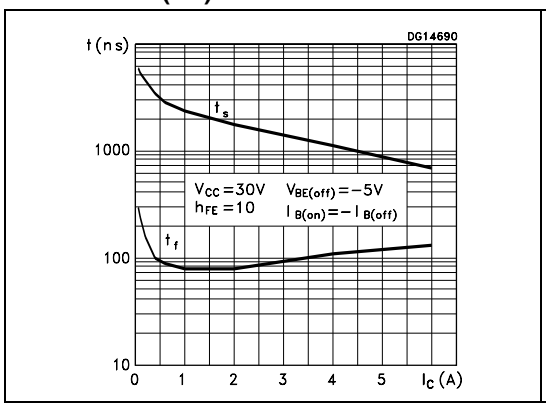
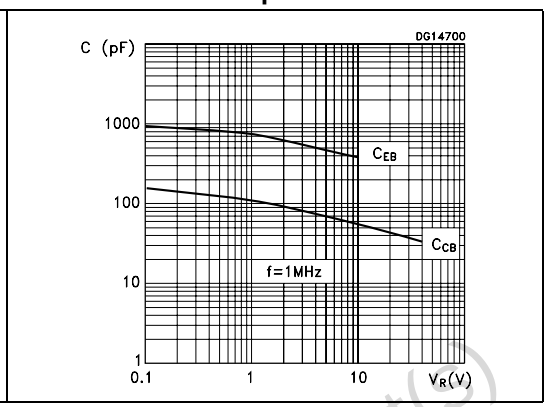


Figure 9. Emitter-base and collector-base capacitance

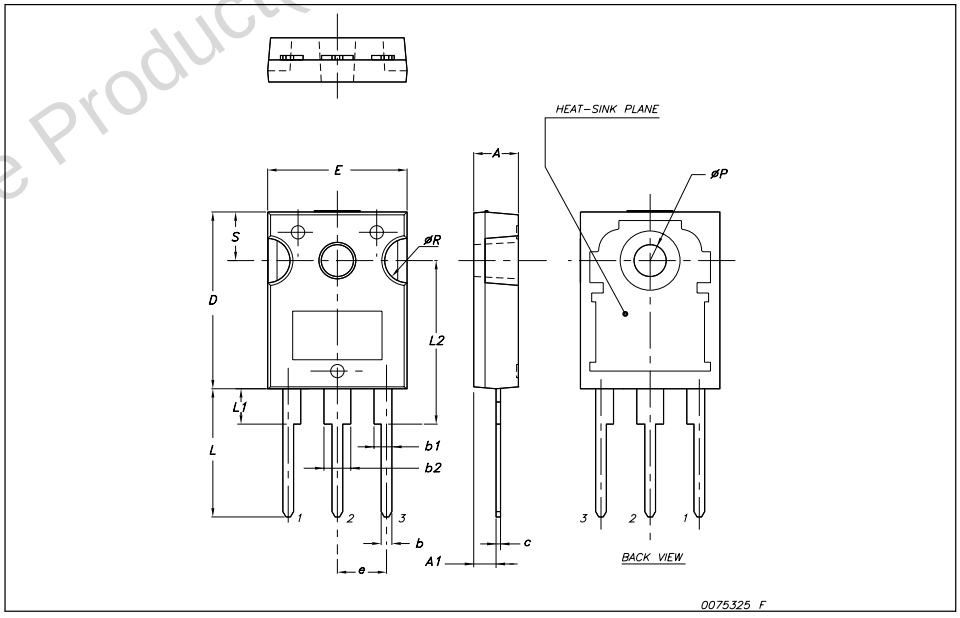


3 Package mechanical data

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
11-Oct-2007	1	First release
25-Sep-2008	2	Content reworked to improve readability, no technical changes.

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