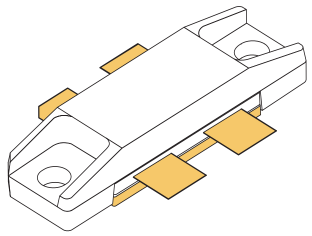
STAC4932B

HF/VHF/UHF RF power N-channel MOSFET

Datasheet - production data

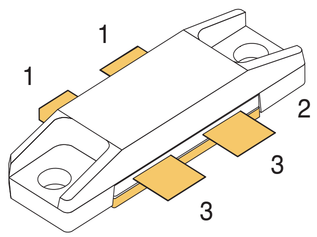


STAC244B
Air cavity

Features

- Excellent thermal stability
- Common source push-pull configuration
- P_{OUT} = 1000 W min. (1200 W typ.) with 26 dB gain @ 123 MHz
- Pulse conditions: 1 msec - 10%
- In compliance with the 2002/95/EC European directive
- ST air-cavity STAC® packaging technology

Figure 1. Pin connection



1. Drain
2. Source (bottom side)
3. Gate

Description

The STAC4932B is an N-channel MOS field-effect RF power transistor. It is intended for 100 V pulse applications up to 250 MHz. This device is suitable for use in industrial, scientific and medical applications. The STAC4932B benefits from the latest generation of efficient, patent-pending STAC® package technology.

Table 1. Device summary

Order code	Marking	Package	Packaging
STAC4932B	STAC4932(1)	STAC244B	Plastic tray

1. For more details please refer to *Chapter 6: Marking, packing and shipping specifications*.

Contents

1 Electrical data

1.1 Maximum ratings

Table 2. Absolute maximum ratings (T_{CASE} = 25 °C)

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$[1]	Drain source voltage	200	V
V_{DGR}	Drain-gate voltage (R_{GS} = 1 MΩ)	200	V
V_{GS}	Gate-source voltage	±20	V
T_J	Max. operating junction temperature	200	°C
T_{STG}	Storage temperature	-65 to +150	°C

1. T_J = 150 °C

1.2 Thermal data

Table 3. Thermal data (1 msec - 10%)

Symbol	Parameter	Value	Unit
R_{thJC}	Junction - case thermal resistance	0.075	°C/W

2 Electrical characteristics

T_{CASE} = +25 °C

2.1 Static

Table 4. Static (per side)

Symbol	Test conditions			Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$[1]	V_{GS} = 0 V	I_{DS} = 100 mA		200	250		V
I_{DSS}	V_{GS} = 0 V	V_{DS} = 100 V				1	mA
I_{GSS}	V_{GS} = 20 V	V_{DS} = 0 V				250	nA
V_{TH}	I_D = 250 mA			2.0		4.0	V
$V_{DS(ON)}$	V_{GS} = 10 V	I_D = 10 A				3.6	V
G_{FS}	V_{DS} = 10 V	I_D = 2.5 A			6		S
C_{ISS}	V_{GS} = 0 V	V_{DS} = 100 V	f = 1 MHz		570		pF
C_{OSS}	V_{GS} = 0 V	V_{DS} = 100 V	f = 1 MHz		134		pF
C_{RSS}	V_{GS} = 0 V	V_{DS} = 100 V	f = 1 MHz		8		pF

1. T_J = 150 °C

2.2 Dynamic

Table 5. Pulse / 1 msec - 10%

Symbol	Test conditions	Min.	Typ.	Max.	Unit
P_{OUT}	V_{DD} = 100 V, I_{DQ} = 2 x 250 mA, f = 123 MHz	1000	1200	-	W
h_D	V_{DD} = 100 V, I_{DQ} = 2 x 250 mA, P_{OUT} = 1000 W, f = 123 MHz		60	-	%
Gain	V_{DD} = 100 V, I_{DQ} = 2 x 250 mA, P_{OUT} = 1000 W, f = 123 MHz		26	-	dB

3 Impedance

Figure 2. Current conventions

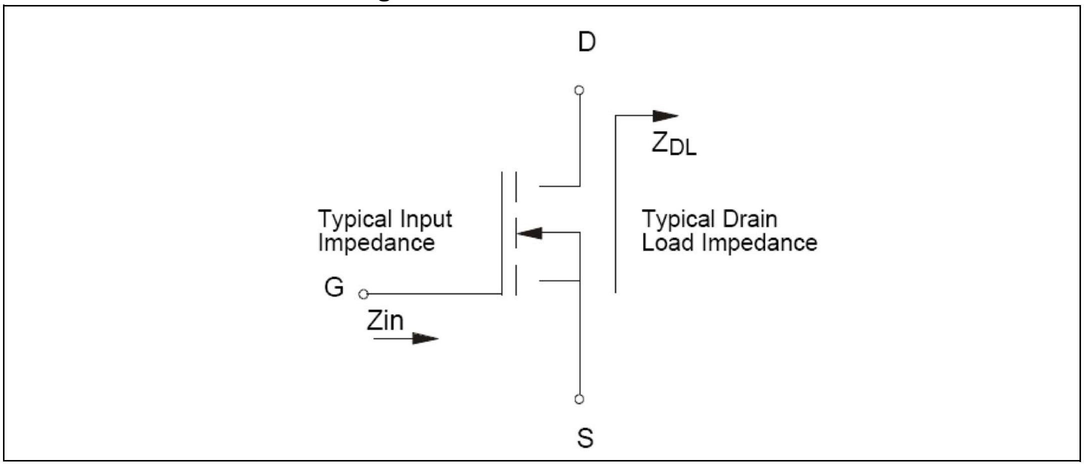


Table 6. Impedance data

Freq. (MHz)	Z_{IN} (Ω)	Z_{DL}(Ω)
123 MHz (pulsed)	1.3 - j 2.8	7.7 - j 9.4

Note: Measured gate-to-gate and drain-to-drain, respectively.

4 Typical performance

Figure 3. Maximum safe operating area

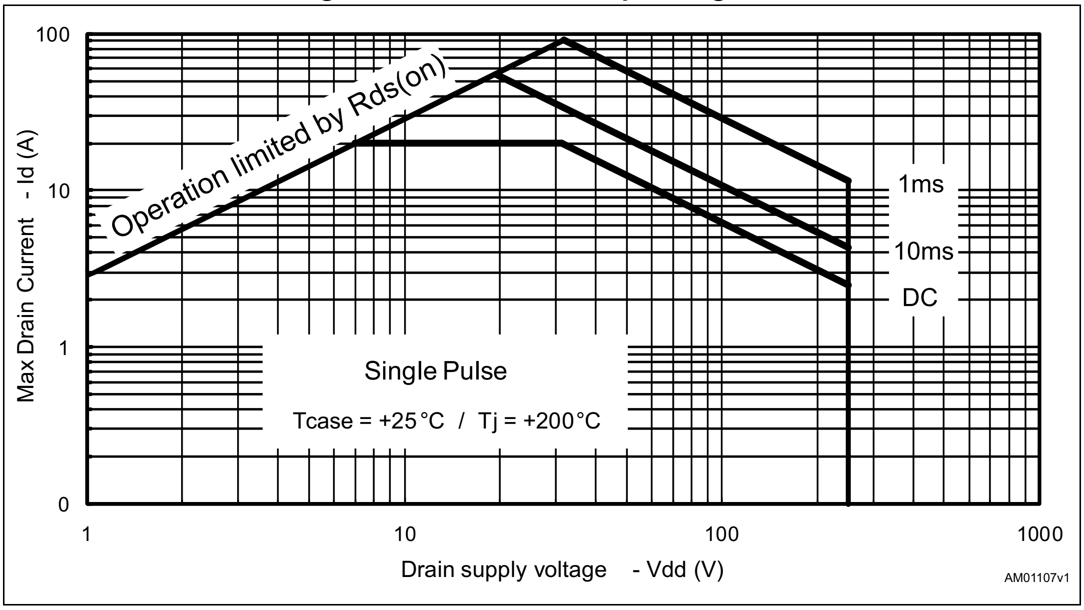


Figure 4. Transient thermal impedance

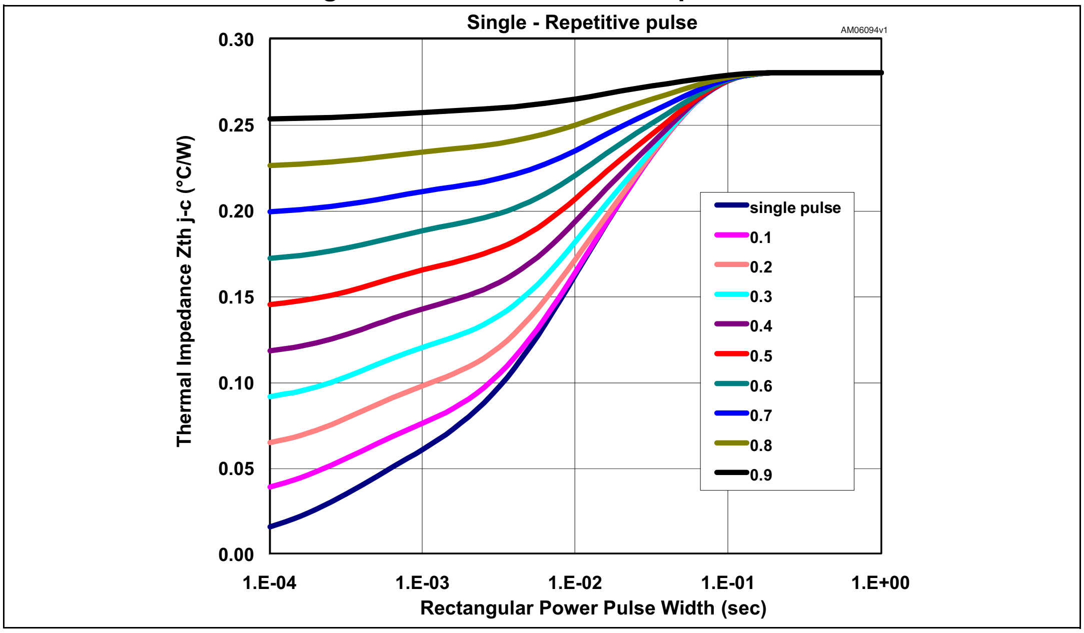


Figure 5. Transient thermal model

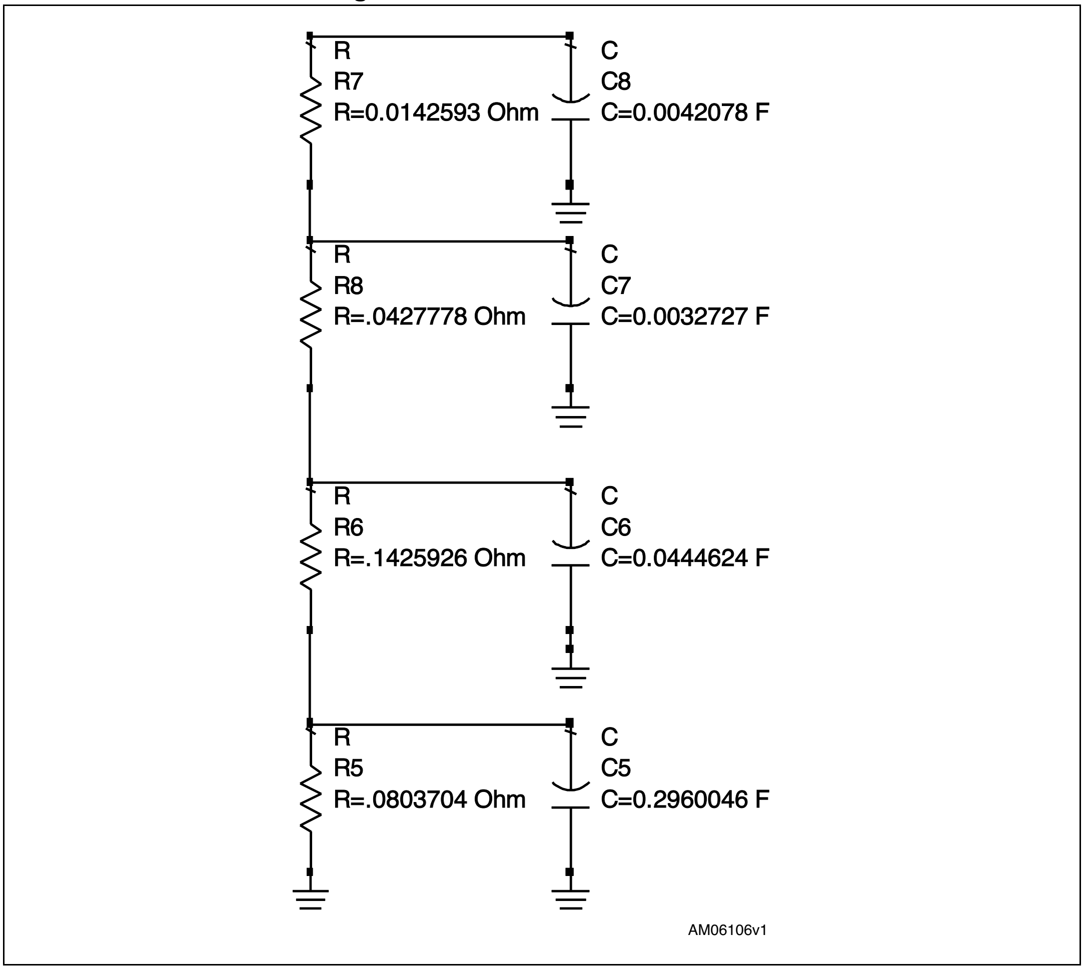


Figure 6. Power gain vs. output power

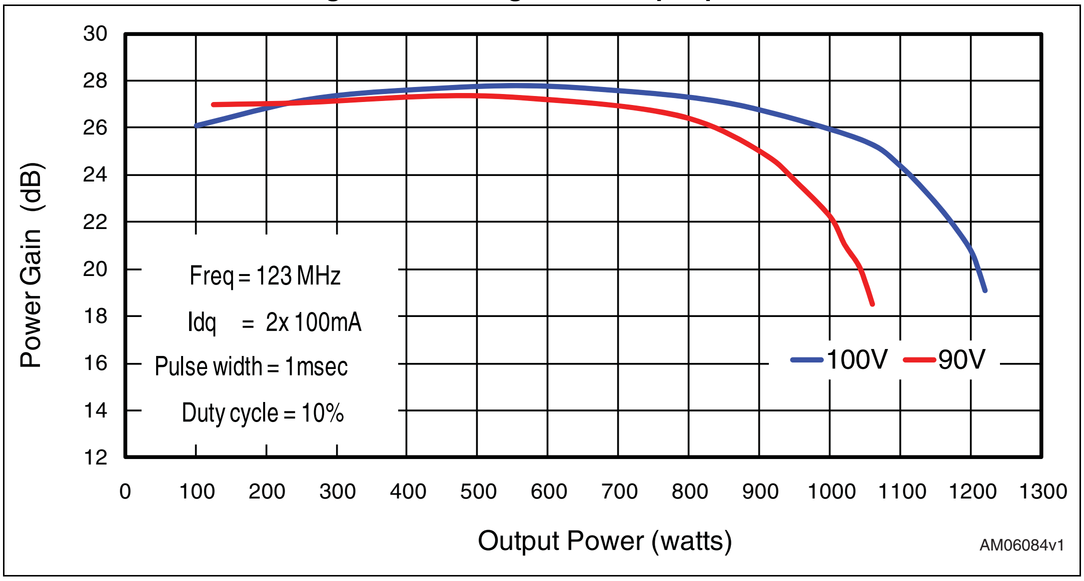
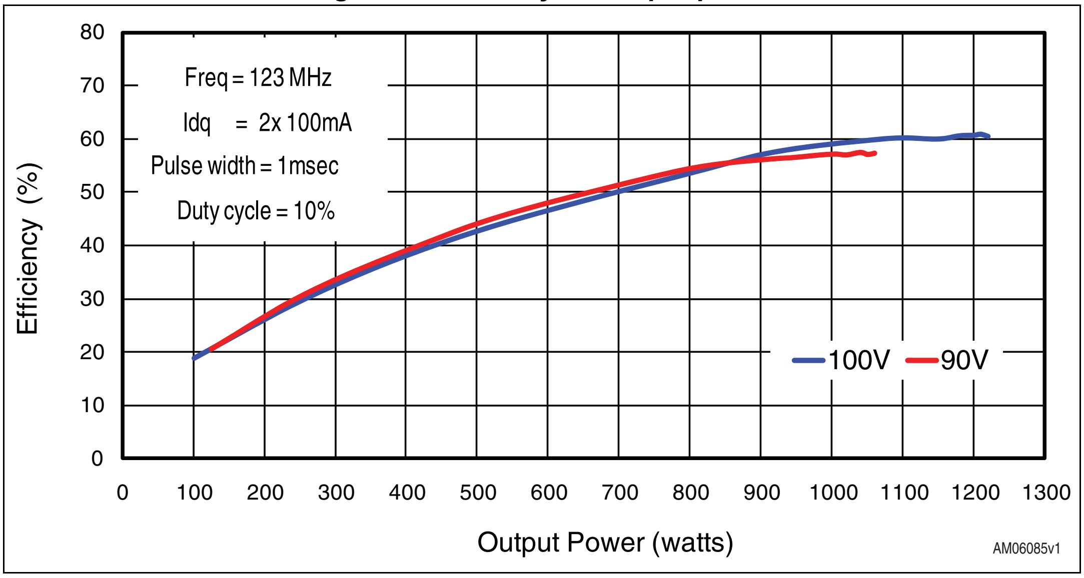


Figure 7. Efficiency vs. output power



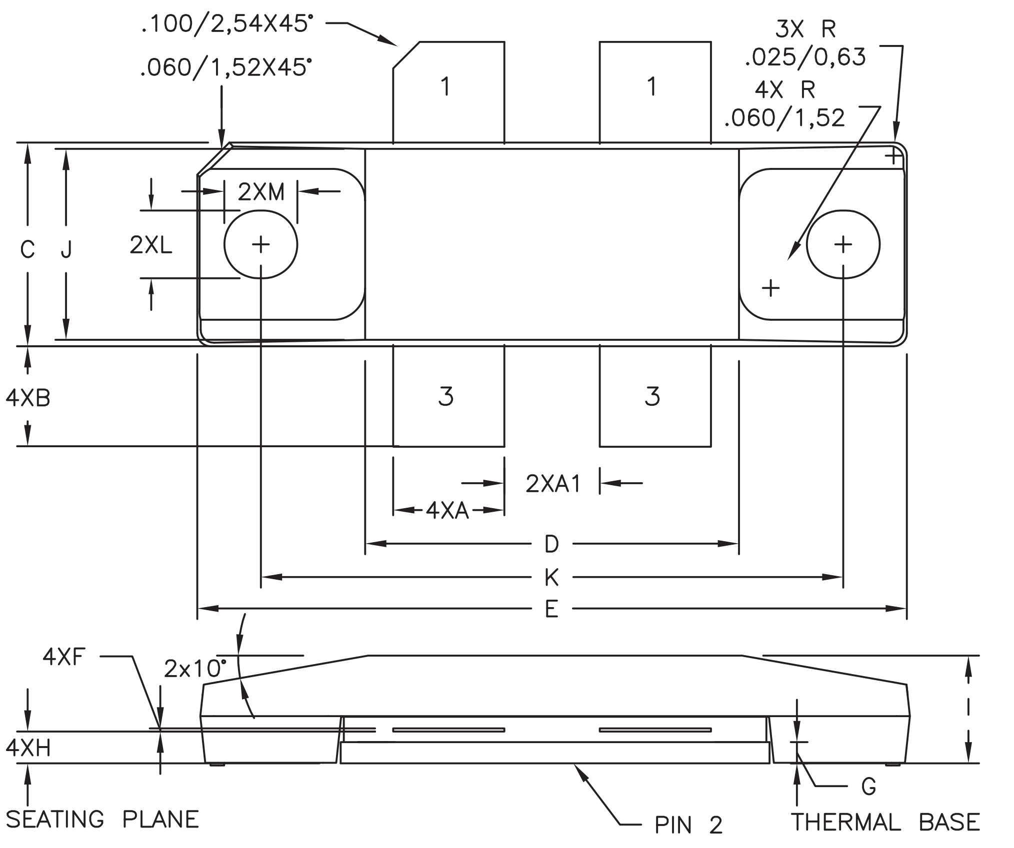
5 Package mechanical data

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK is an ST trademark.

Table 7. STAC244B mechanical data

Dim.	mm		
	Min.	Typ.	Max.
A	5.08		5.59
A1	4.32		4.83
B	4.32		5.33
C	9.65		9.91
D	17.78		18.08
E	33.88		34.19
F	0.10		0.15
G		1.02	
H	1.45		1.70
I	4.83		5.33
J	9.27		9.52
K	27.69		28.19
L	3.12	3.23	3.33
M	3.35	3.45	3.56

Figure 8. Package dimensions



6 Marking, packing and shipping specifications

Table 8. Packing and shipping specifications

Order code	Packaging	Pcs per tray	Dry pack humidity	Lot code
STAC4932B	Tray	20	< 10%	Not mixed

Figure 9. Marking layout

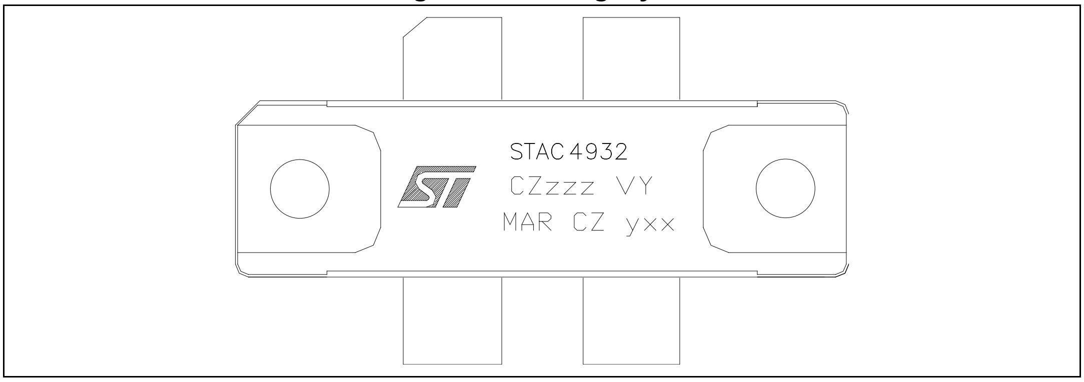


Table 9. Marking specifications

Symbol	Description
CZ	Assembly plant
zzz	Last 3 digits of diffusion lot
VY	Diffusion plant
MAR	Country of origin
CZ	Test and finishing plant
y	Assembly year
xx	Assembly week

7 Revision history

Table 10. Document revision history

Date	Revision	Changes
19-Feb-2010	1	First release.
26-May-2010	2	Document status promoted from preliminary data to datasheet.
03-Aug-2010	3	Updated description on cover page and *Table 3*.
03-Sep-2010	4	Updated figures: *3*, *4* and *5*.
12-Sep-2011	5	Inserted new *Section 6: Marking, packing and shipping specifications*. Updated *Table 6*. Minor text changes.
01-Jul-2013	6	Modified pin labeling in *Figure 1: Pin connection*. Modified document title. Minor text corrections throughout document.