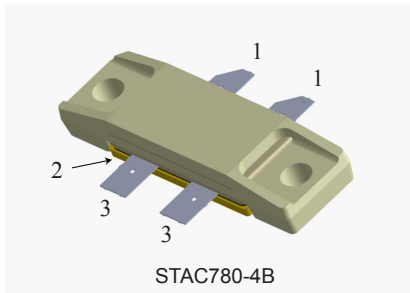


HF/VHF/UHF RF power N-channel MOSFET



Pin connection	
Pin	Connection
1	Drain
2	Source (bottom side)
3	Gate

Features

Order code	Frequency	V _{DD}	P _{OUT}	Gain	Efficiency
STAC4932B	123 MHz	100 V	1000 W	24.6 dB	60 %

- Excellent thermal stability
- Common source push-pull configuration
- P_{OUT} = 1000 W min. (1200 W typ.) with 24.6 dB gain at 123 MHz
- Pulse conditions: 1ms, 10%
- In compliance with the 2002/95/EC European directive
- ST air-cavity STAC package technology

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.



Product status	
STAC4932B	
Product summary	
Order code	STAC4932B
Marking	STAC4932
Package	STAC780-4B
Packing	Box
Base / Bulk qty	20 / 80

1 Electrical data

1.1 Maximum ratings

Table 1. Absolute maximum ratings ($T_{CASE} = 25\text{ °C}$)

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$	Drain source voltage ($V_{GS} = 0\text{ V}$, $T_J = 150\text{ °C}$)	200	V
V_{DGR}	Drain-gate voltage ($R_{GS} = 1\text{ M}\Omega$)	200	V
V_{GS}	Gate-source voltage	± 20	V
T_J	Maximum operating junction temperature	200	$^{\circ}\text{C}$
T_{STG}	Storage temperature range	-65 to +150	$^{\circ}\text{C}$

1.2 Thermal data

Table 2. Thermal data (1ms, 10%)

Symbol	Parameter	Value	Unit
R_{thJC}	Junction - case thermal resistance	0.075	$^{\circ}\text{C/W}$

1.3 ESD protection characteristics

Table 3. ESD protection

Symbol	Test Methodology	Class
HBM	Human Body Model (per JESD22-A114)	2

2 Electrical characteristics

($T_{CASE} = +25\text{ °C}$, unless otherwise noted)

2.1 Static

Table 4. Static

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain-source breakdown voltage	$V_{GS} = 0\text{ V}$, $I_{DS} = 100\text{ mA}$, $T_J = 150\text{ °C}$	200	250		V
I_{DSS}	Zero gate voltage drain leakage current	$V_{GS} = 0\text{ V}$, $V_{DS} = 100\text{ V}$			1	mA
I_{GSS}	Gate-source leakage current	$V_{GS} = 20\text{ V}$, $V_{DS} = 0\text{ V}$			250	nA
$V_{DS(ON)}$	Drain-source on voltage	$V_{GS} = 10\text{ V}$, $I_D = 10\text{ A}$			3.6	V
V_{TH}	Gate-source threshold voltage	$I_{DS} = 250\text{ mA}$	2		4	V
G_{FS}	Forward transconductance	$V_{DS} = 10\text{ V}$, $I_D = 2.5\text{ A}$		6		S
C_{ISS}	Input capacitance	$V_{GS} = 0\text{ V}$, $V_{DS} = 100\text{ V}$, $f = 1\text{ MHz}$		570		pF
C_{OSS}	Output capacitance			134		pF
C_{RSS}	Reverse transfer capacitance			8		pF

2.2 Dynamic

Table 5. Dynamic ⁽¹⁾

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
P_{OUT}	Output power		1000	1200	-	W
η_D	Drain efficiency	$P_{OUT} = 1000\text{ W}$		60	-	%
G_{ps}	Power gain	$P_{OUT} = 1000\text{ W}$		26	-	dB

1. $V_{DD} = 100\text{ V}$, $I_{DQ} = 2 \times 250\text{ mA}$, $f = 123\text{ MHz}$, $PW = 1\text{ ms}$, $DC = 10\%$

3 Impedance

Figure 1. Current conventions

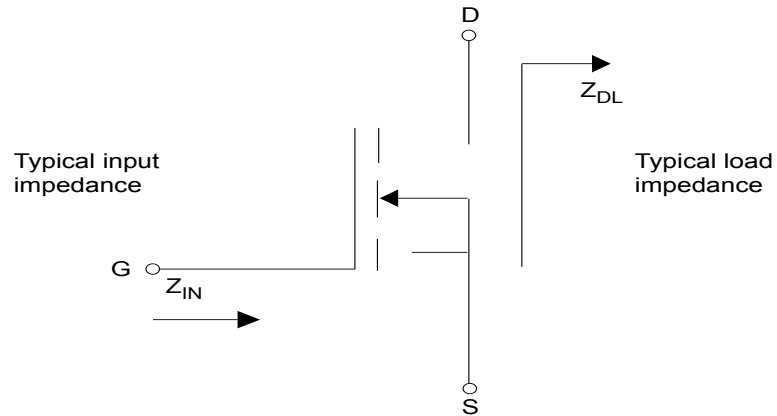


Table 6. Impedance data

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

Note: Measured gate-to-gate and drain-to-drain, respectively (balanced configuration).

4 Typical performance

Figure 2. Safe operating area

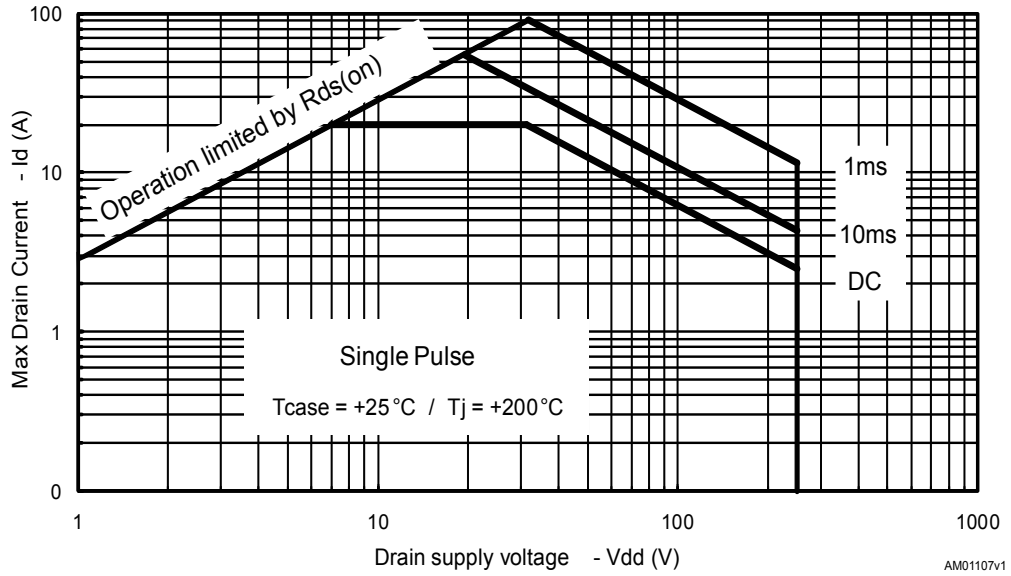


Figure 3. Transient thermal impedance

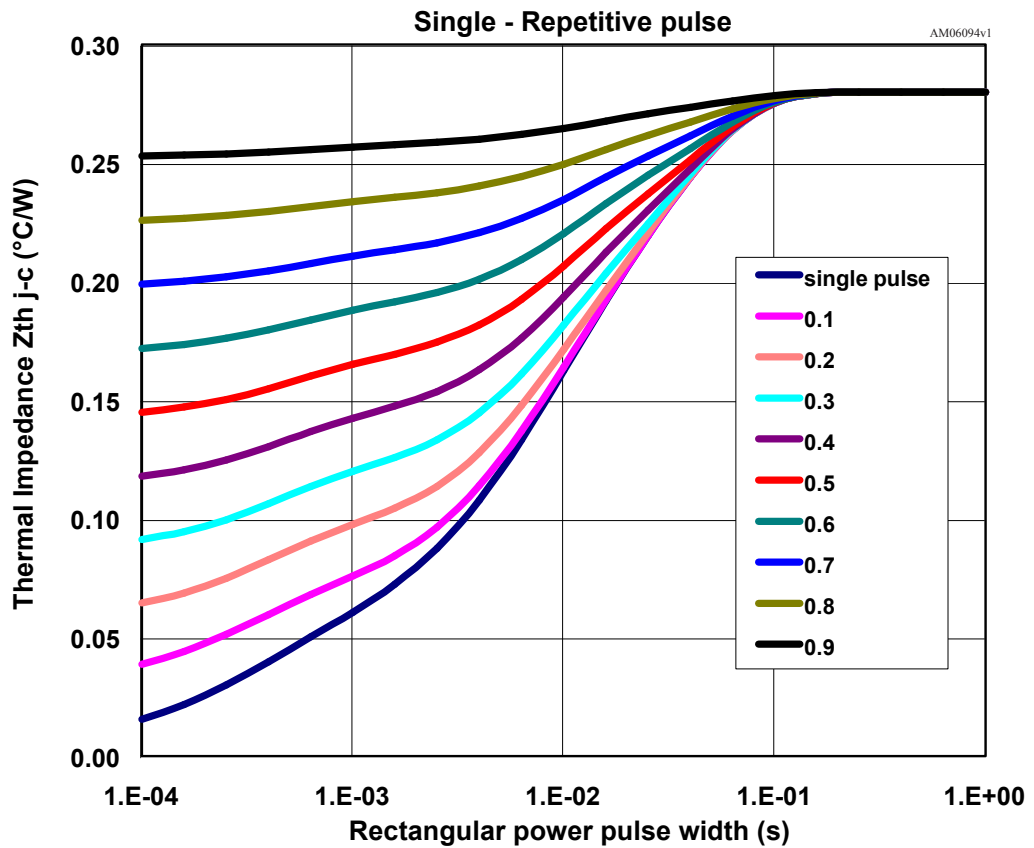
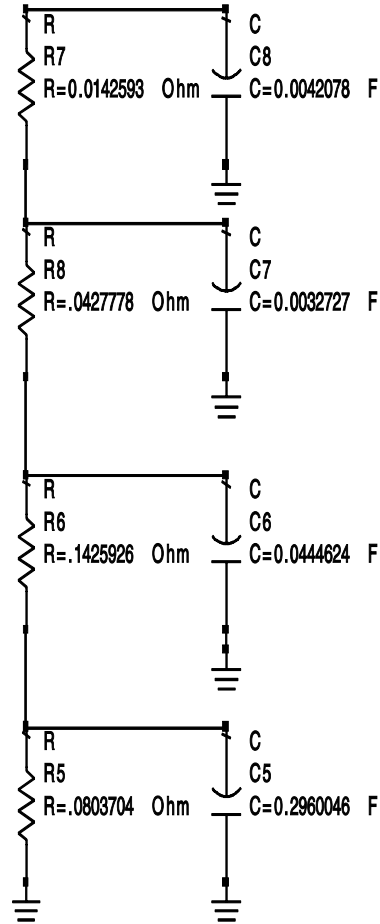
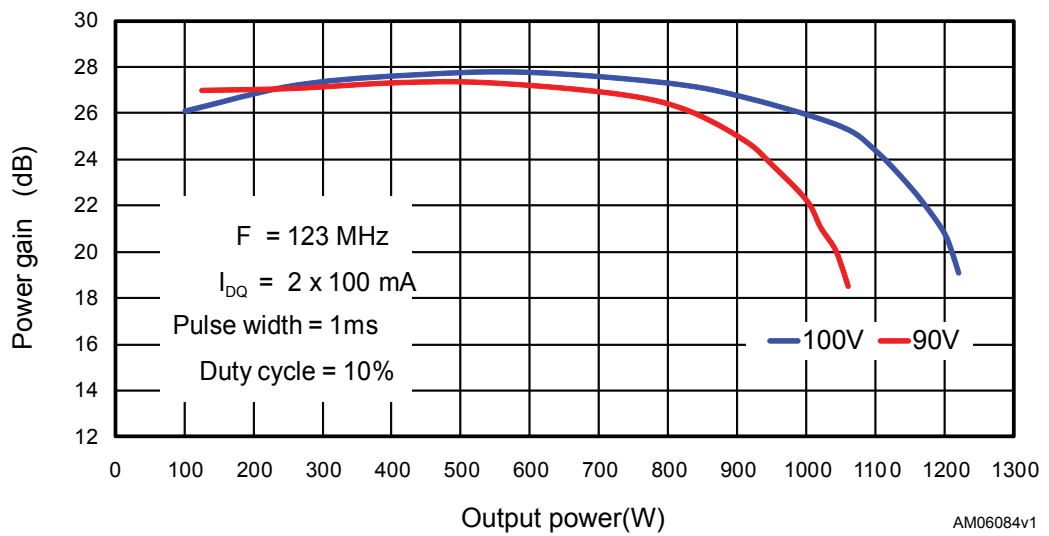


Figure 4. Transient thermal model



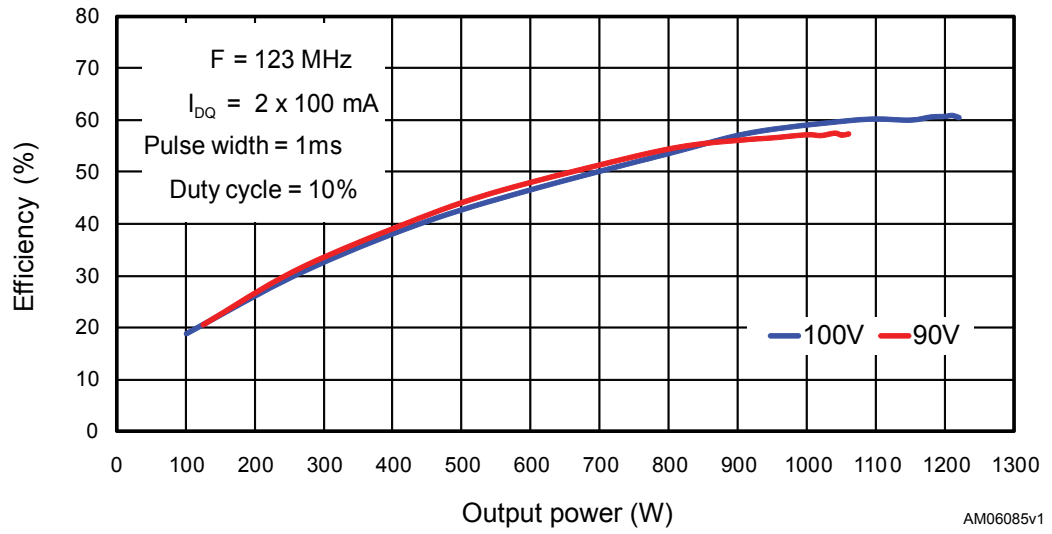
AM06106V1

Figure 5. Power gain vs. output power



AM06084v1

Figure 6. Efficiency vs. output power

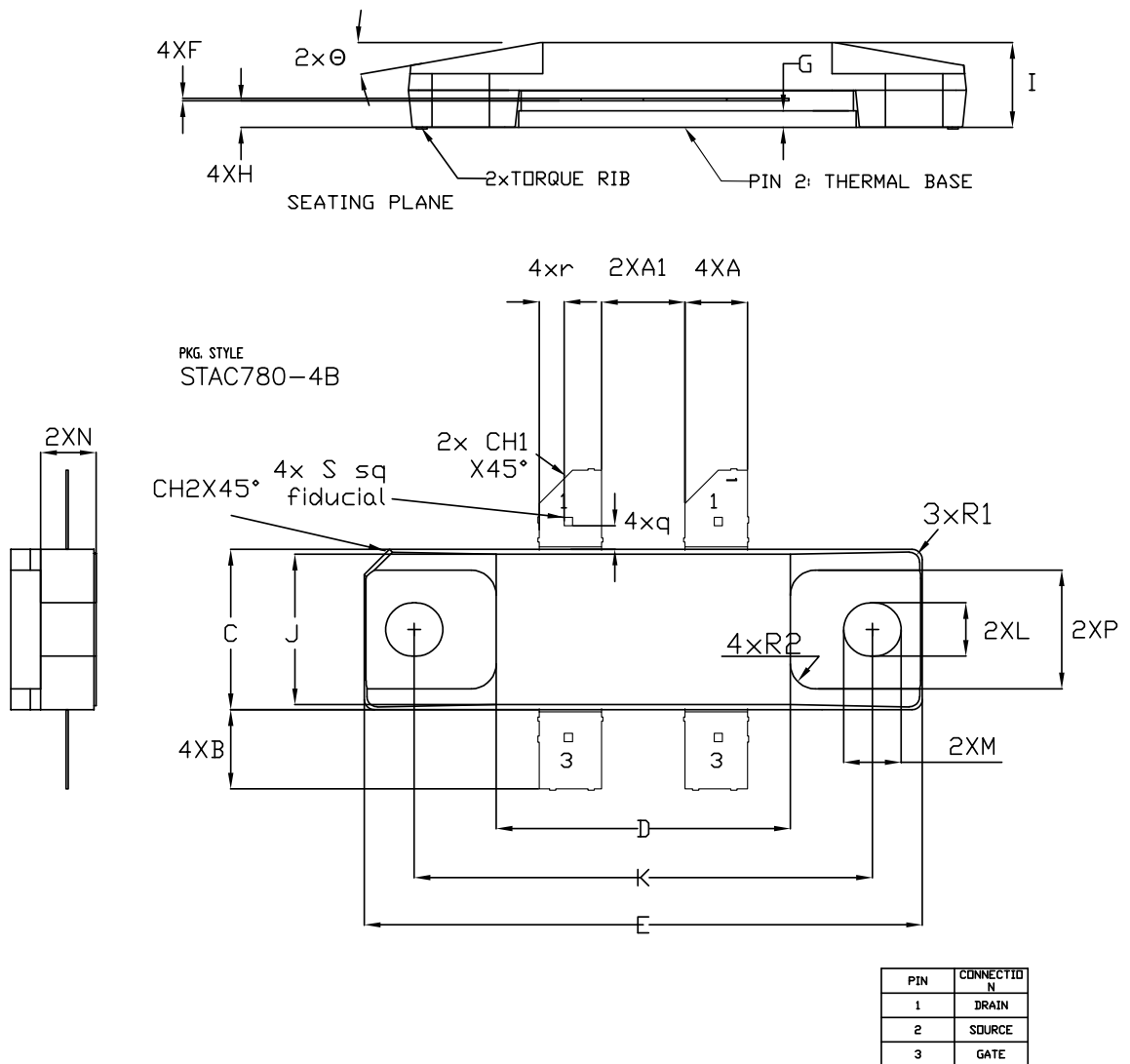


5 Package information

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.

5.1 STAC780-4B package information

Figure 7. STAC780-4B package outline



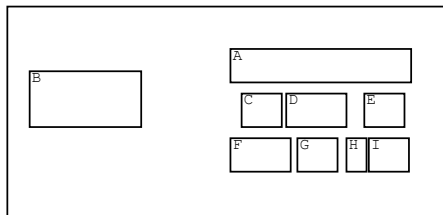
DM00481937 rev.2

Table 7. STAC780-4B mechanical data

Symbol	Millimeters		
	Min	Typ	Max
A	3.76		3.86
A1	5.03		5.13
B	4.57		5.08
C	9.65		9.91
D	17.78		18.08
E	33.88		34.19
F	0.13		0.18
G	0.97		1.14
H	1.52		1.70
I	4.83		5.33
J	9.52		9.78
K	27.69		28.19
L	3.20	3.25	3.30
M	3.43	3.51	3.58
M	3.30	3.38	3.45
p	7.14	7.21	7.29
q		1.45	
R1		0.64	
R2		1.52	
r		1.52	
s		0.51	
Θ		10°	
CH1		2.03	
CH2		1.52	

5.2 Marking information

PACKAGE FACE : TOP



LEGEND

- Marking Composition Field
- A - MARKING AREA
 - B - ST LOGO
 - C - Assy Plant
(PP)
 - D - BE Sequence
(LLL)
 - E - Diffusion Traceability Plant
(WX)
 - F - COUNTRY OF ORIGIN
(MAX CHAR ALLOWED = 3)
 - G - Test & Finishing Plant
(TF)
 - H - Assy Year
(Y)
 - I - Assy Week
(WW)

Revision history

Table 8. 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.
27-Jan-2014	7	Modified pin labeling in Figure 1: Pin connection.
09-Apr-2020	8	Updated package information. Added Section 1.3 ESD protection characteristics .

Contents

1	Electrical data	2
1.1	Maximum ratings	2
1.2	Thermal data	2
1.3	ESD protection characteristics	2
2	Electrical characteristics	3
2.1	Static	3
2.2	Dynamic	3
3	Impedance	4
4	Typical performance	5
5	Package information	8
5.1	STAC780-4B package information	8
5.2	Marking information	10
	Revision history	11

IMPORTANT NOTICE – PLEASE READ CAREFULLY

STMicroelectronics NV and its subsidiaries (“ST”) reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST’s terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers’ products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. For additional information about ST trademarks, please refer to www.st.com/trademarks. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2020 STMicroelectronics – All rights reserved