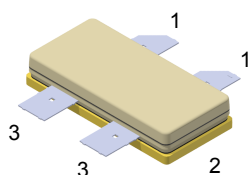


RF power transistors HF/VHF/UHF N-channel MOSFET



STAC780-4F

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

Features

Order code	Frequency	V _{DD}	P _{OUT}	Gain	Efficiency
STAC4932F	123 MHz	100 V	1000 W	26 dB	60 %

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

Description

The **STAC4932F** is a 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 **STAC4932F** benefits from the latest generation of efficient, patent-pending package technology, otherwise known as STAC.



Product status link
STAC4932F

Product summary	
Order code	STAC4932F
Marking	STAC4932F
Package	STAC780-4F
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	°C
T_{STG}	Storage temperature range	-65 to +150	°C

1.2 Thermal data

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

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

$T_{CASE} = +25\text{ }^{\circ}\text{C}$ (unless otherwise specified)

2.1 Static

Table 4. Static

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain - source Breakdown voltage	$V_{GS} = 0\text{ V}$, $I_{DS} = 100\text{ mA}$, $T_J = 150\text{ }^{\circ}\text{C}$	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_{TH}	Gate - source threshold voltage	$I_{DS} = 250\text{ mA}$	2		4	V
$V_{DS(ON)}$	Drain - source on voltage	$V_{GS} = 10\text{ V}$, $I_D = 10\text{ A}$			3.6	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

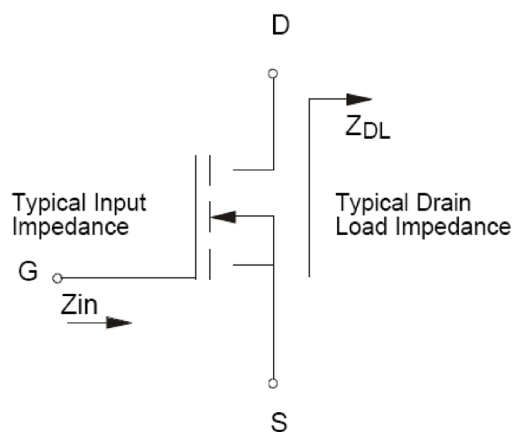
Table 5. Dynamic ⁽¹⁾

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



GADG170720191138MT

Table 6. Impedance data

Freq. (MHz)	$Z_{IN} (\Omega)$	$Z_{DL} (\Omega)$
123	TBD	$7.63 + j 2.92$

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

4 Typical performance

Figure 2. Safe operating area

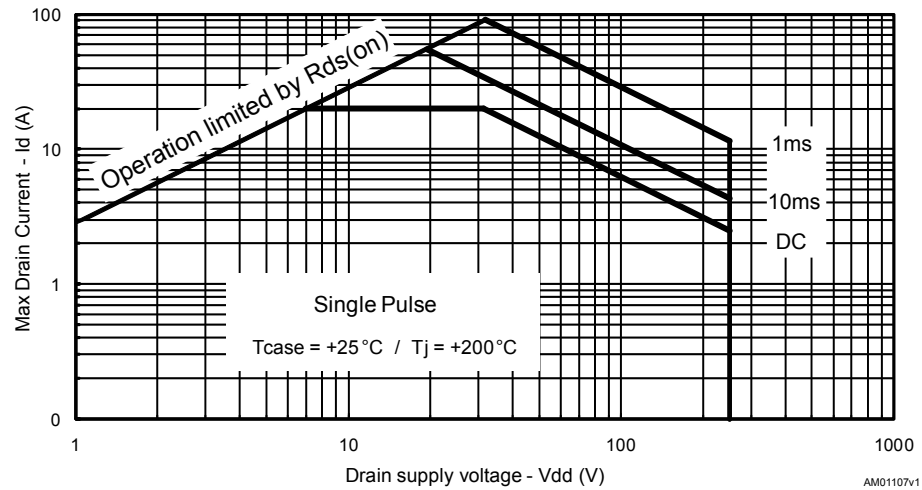


Figure 3. Transient thermal impedance

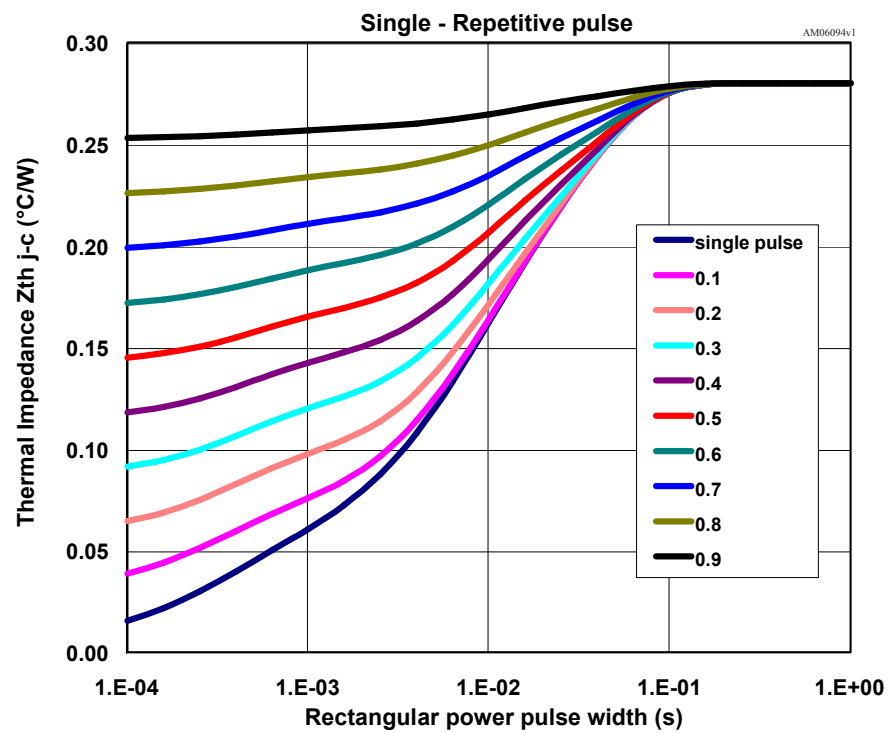
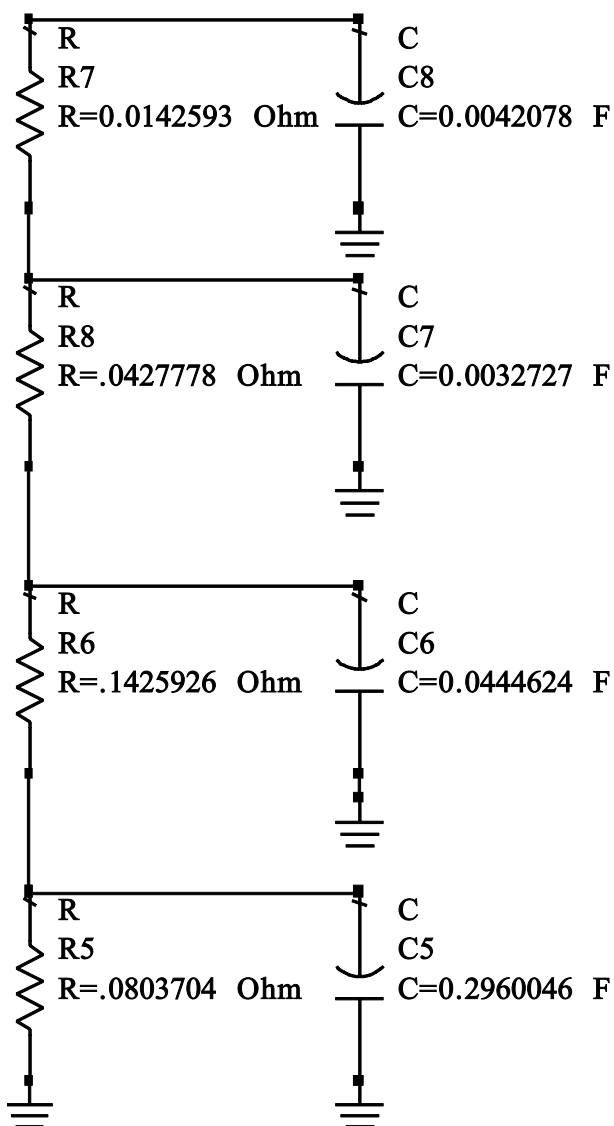


Figure 4. Transient thermal model



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Figure 5. Power gain versus output power

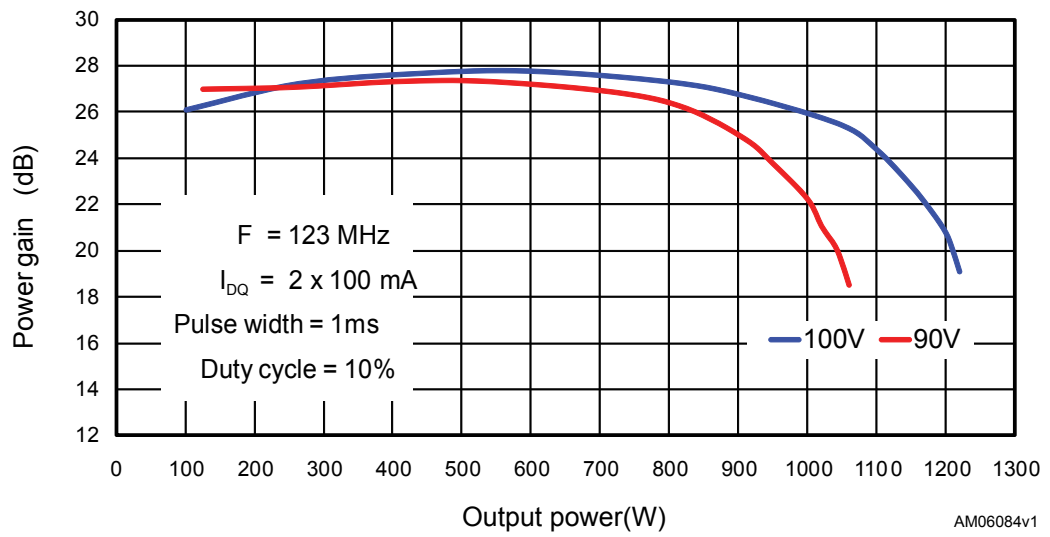
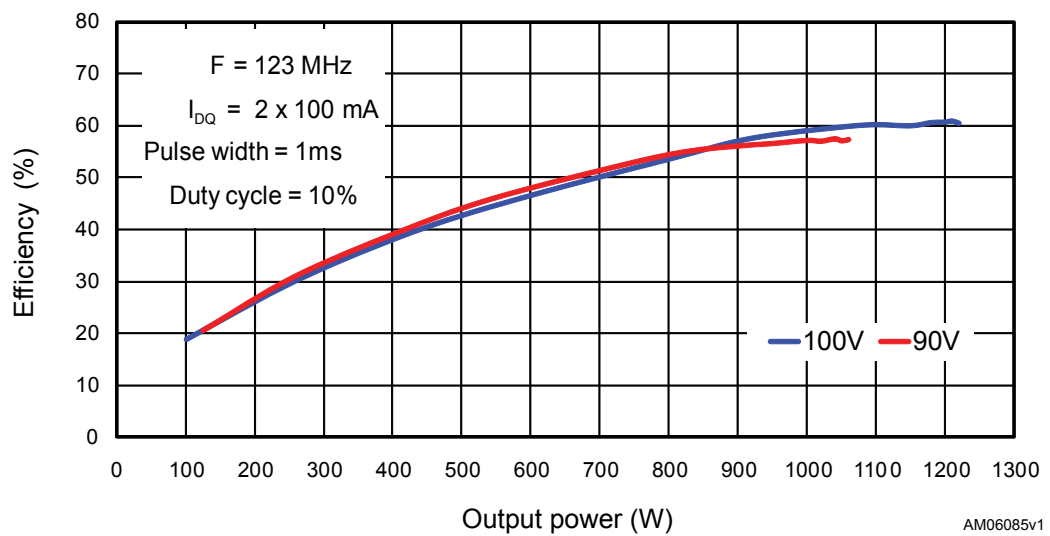


Figure 6. Efficiency versus output power

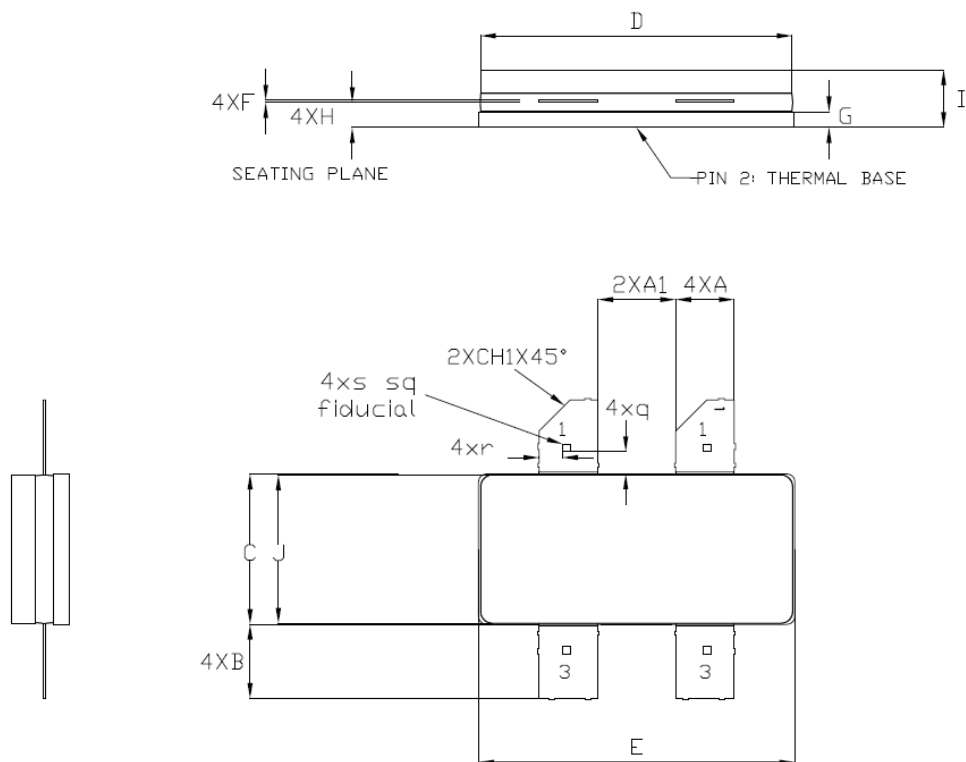


5 Package information

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 STAC780-4F package information

Figure 7. STAC780-4F package outline



PIN	CONNECTIO N
1	DRAIN
2	SOURCE
3	GATE

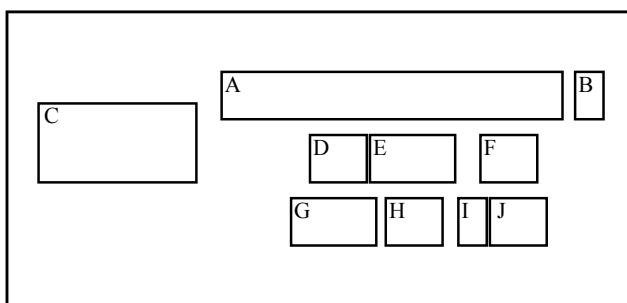
DM00481940-1

Table 7. STAC780-4F mechanical data

Ref.	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	20.17		20.37
E	20.45		20.70
F	0.11		0.17
G	0.97		1.14
H	1.52		1.70
I	3.18		4.32
J	9.52		9.78
q		1.37	
r		1.52	
s		0.51	
CH1		2.03	

5.2 Marking information

PACKAGE FACE TOP



LEGEND

-  Marking Composition Field
- A - MARKING AREA
- B - ADDITIONAL INFORMATION
(MAX CHAR ALLOWED = 1)
- C - STANDARD ST LOGO
- D - Assy Plant
(PP)
- E - FE Sequence
(nnn)
- F - Diffusion Traceability Plant
(WX)
- G - COUNTRY OF ORIGIN
(MAX CHAR ALLOWED = 3)
- H - Test and Finishing Plant
(TF)
- I - Assy Year
(Y)
- J - Assy Week
(WW)

Revision history

Table 8. Document revision history

Date	Version	Changes
22-Feb-2010	1	First release.
03-Aug-2010	2	Updated description on cover page and Table 3.
02-Sep-2010	3	Updated Figure 8. Added Figure 3, 4 and 5.
10-Apr-2020	4	Updated package information. Added Section 1.3 ESD protection characteristics .

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