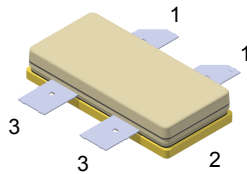


## RF power transistors HF/VHF/UHF N-channel MOSFET


**STAC780-4F**

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

### Features

Order code	Frequency	V <sub>DD</sub>	P <sub>OUT</sub>	Gain	Efficiency
STAC4932F	123 MHz	100 V	1000 W	26 dB	60 %

- Excellent thermal stability
- Common source push-pull configuration
- P<sub>OUT</sub> = 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	
<a href="#">STAC4932F</a>	

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<sub>CASE</sub> = 25 °C)**

Symbol	Parameter	Value	Unit
V <sub>(BR)DSS</sub>	Drain source voltage (V <sub>GS</sub> = 0 V, T <sub>J</sub> = 150 °C)	200	V
V <sub>DGR</sub>	Drain-gate voltage (R <sub>GS</sub> = 1 MΩ)	200	V
V <sub>GS</sub>	Gate-source voltage	±20	V
T <sub>J</sub>	Maximum operating junction temperature	200	°C
T <sub>STG</sub>	Storage temperature range	-65 to +150	°C

## 1.2 Thermal data

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

Symbol	Parameter	Value	Unit
R <sub>thJC</sub>	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

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

### 2.1 Static

**Table 4. Static**

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain - source Breakdown voltage	$V_{GS} = 0\text{ V}$ , $I_{DS} = 100\text{ mA}$ , $T_J = 150\text{ °C}$	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

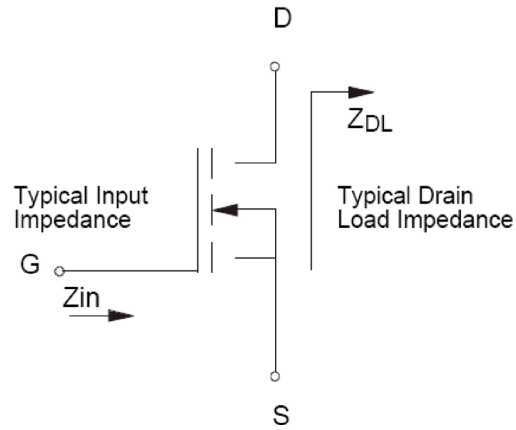
**Table 5. Dynamic <sup>(1)</sup>**

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

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

### 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

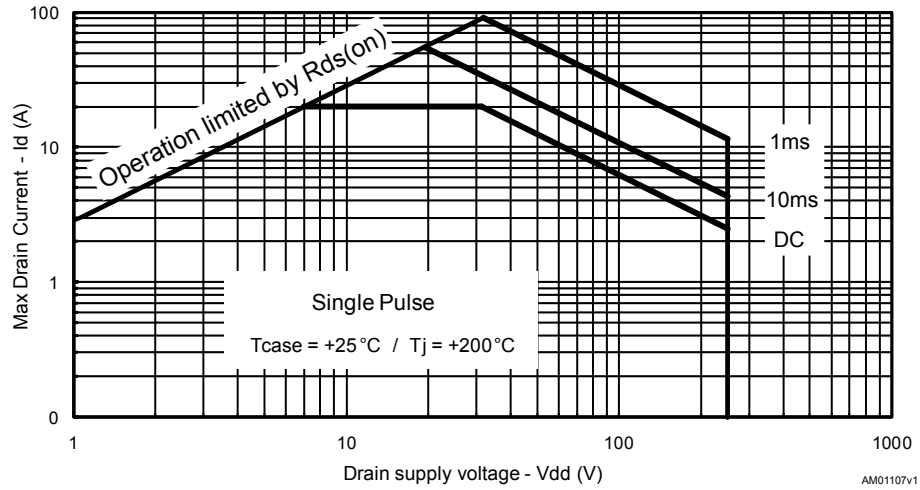


Figure 3. Transient thermal impedance

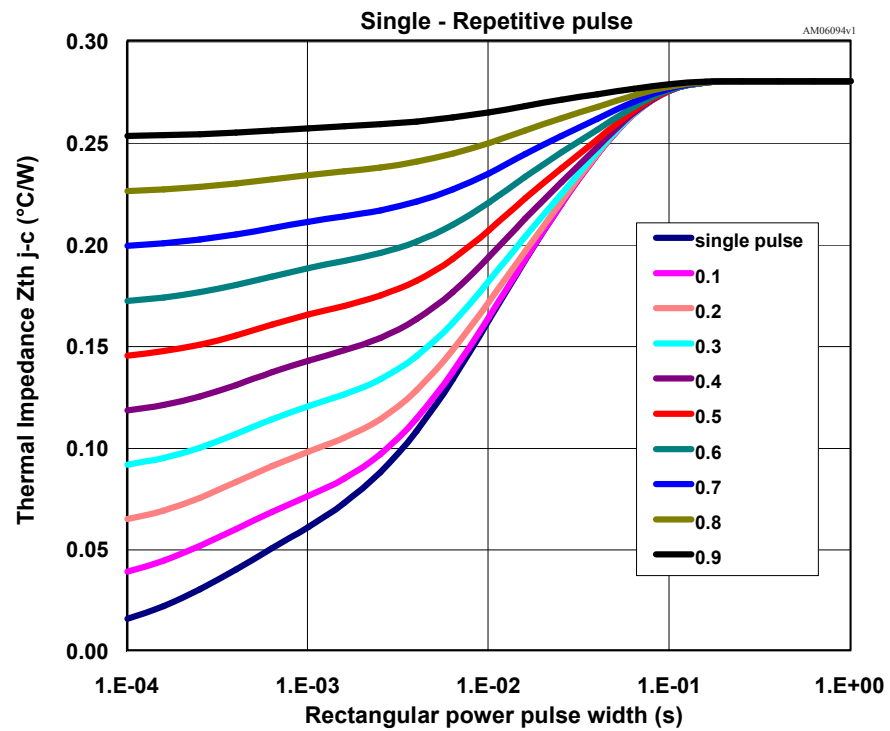
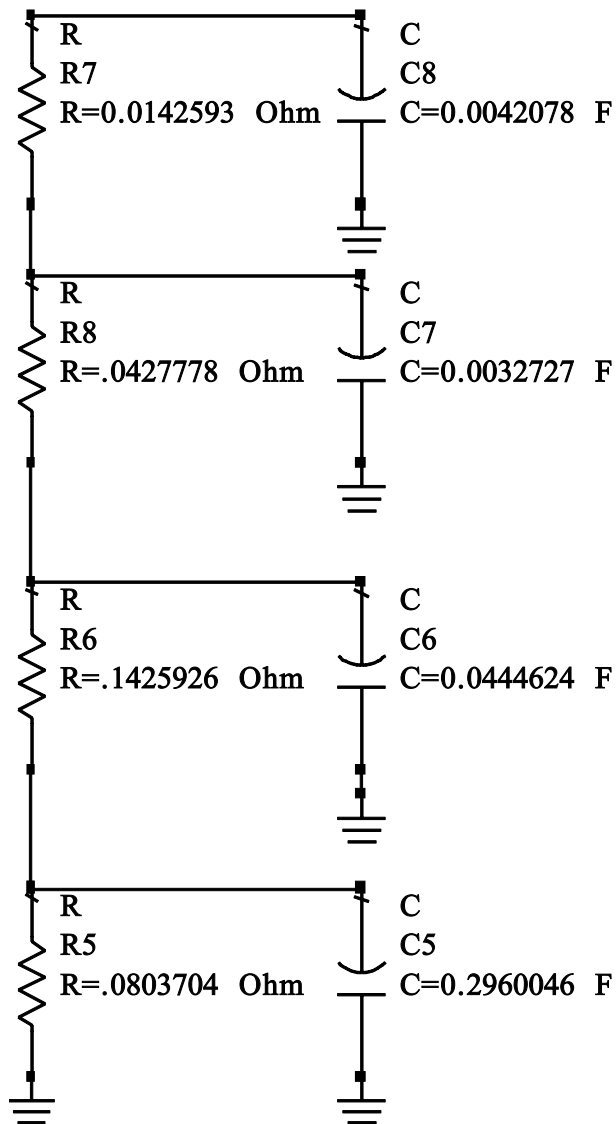


Figure 4. Transient thermal model



AM06106v1

Figure 5. Power gain versus output power

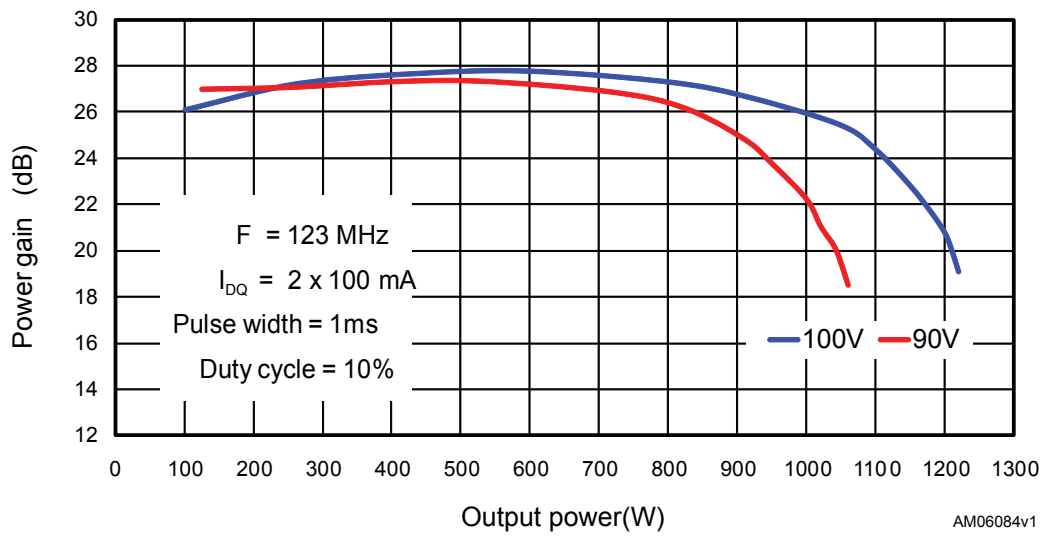
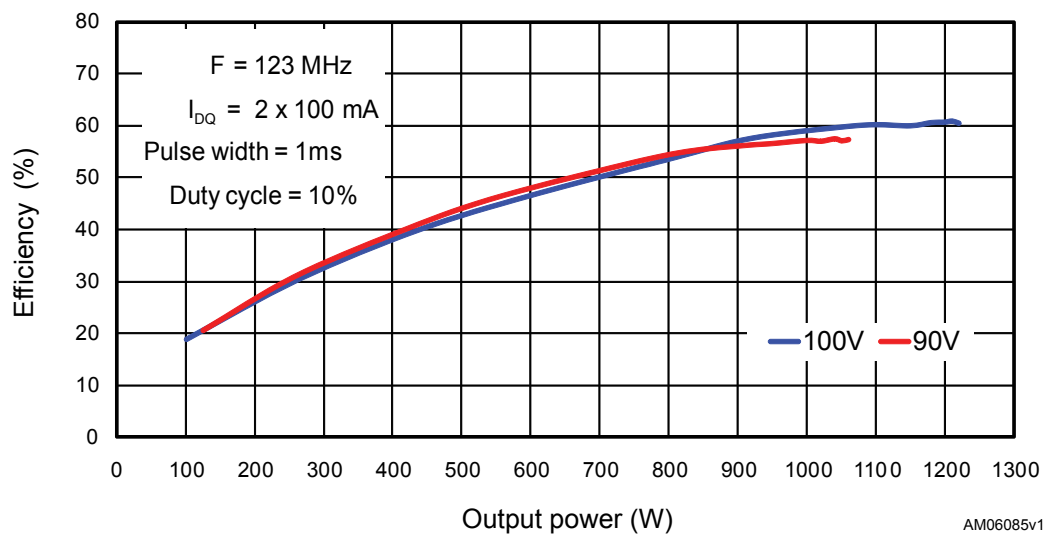


Figure 6. Efficiency versus output power

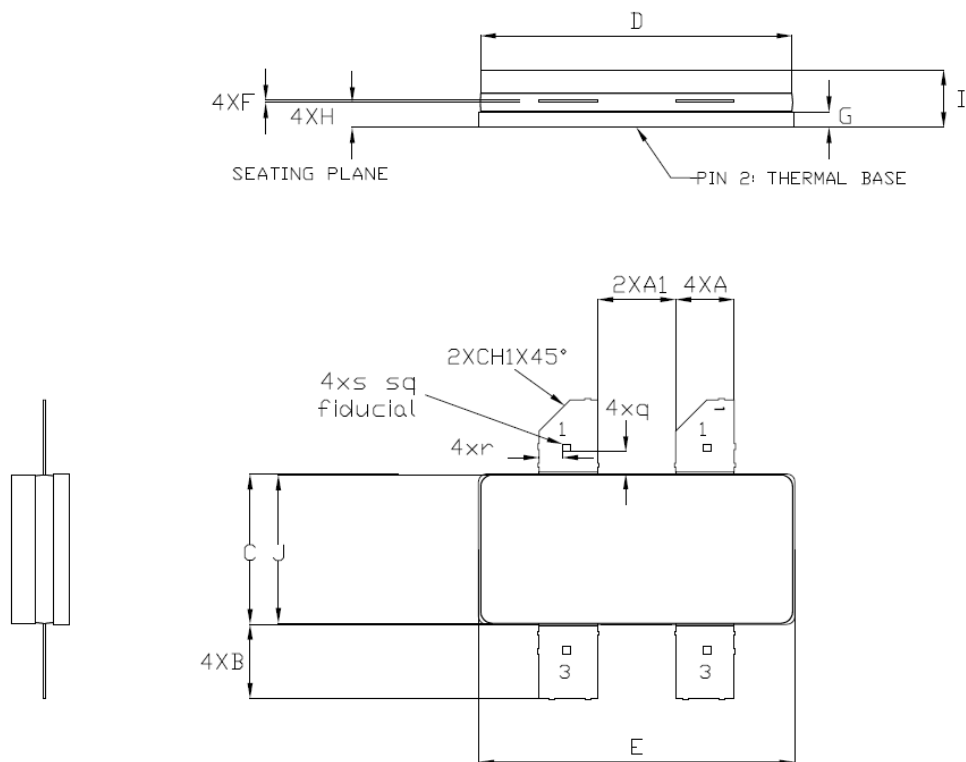


## 5 Package information

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](http://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

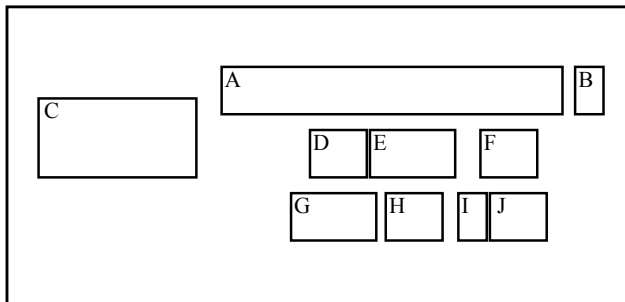


**Table 7. STAC780-4F mechanical data**

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 <a href="#">Section 1.3 ESD protection characteristics</a> .

## Contents

<b>1</b>	<b>Electrical data</b> .....	<b>2</b>
1.1	Maximum ratings .....	2
1.2	Thermal data .....	2
1.3	ESD protection characteristics .....	2
<b>2</b>	<b>Electrical characteristics</b> .....	<b>3</b>
2.1	Static .....	3
2.2	Dynamic .....	3
<b>3</b>	<b>Impedance</b> .....	<b>4</b>
<b>4</b>	<b>Typical performance</b> .....	<b>5</b>
<b>5</b>	<b>Package information</b> .....	<b>8</b>
5.1	STAC780-4F package information .....	8
5.2	Marking information .....	10
	<b>Revision history</b> .....	<b>11</b>
	<b>Contents</b> .....	<b>12</b>

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