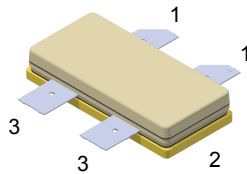


## RF power transistors HF/VHF/UHF N-channel MOSFET


**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

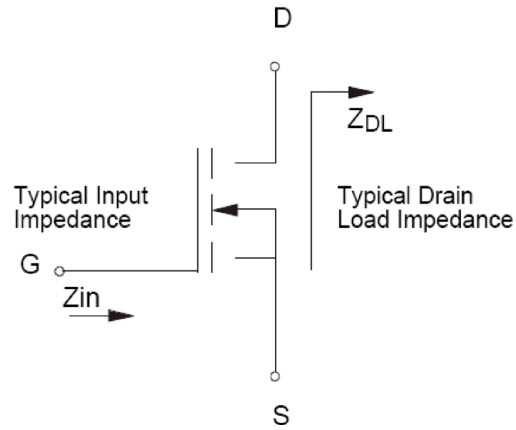
**Table 5. Dynamic <sup>(1)</sup>**

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

### 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

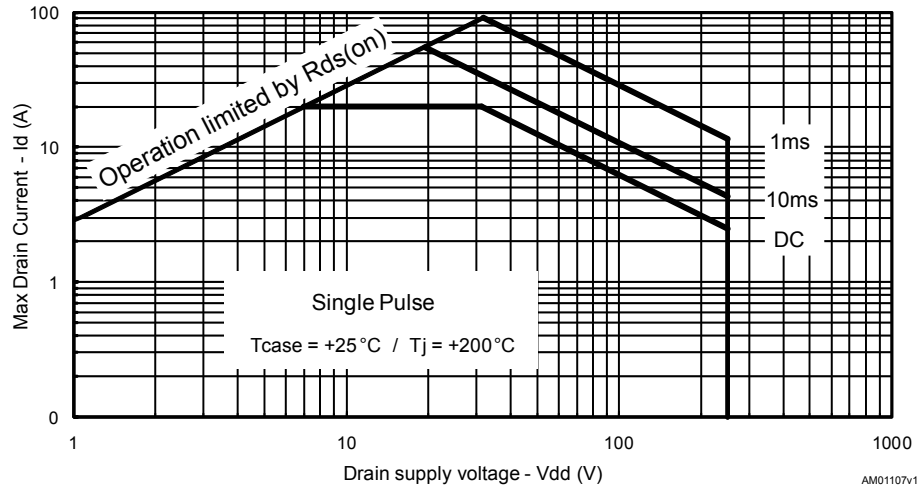


Figure 3. Transient thermal impedance

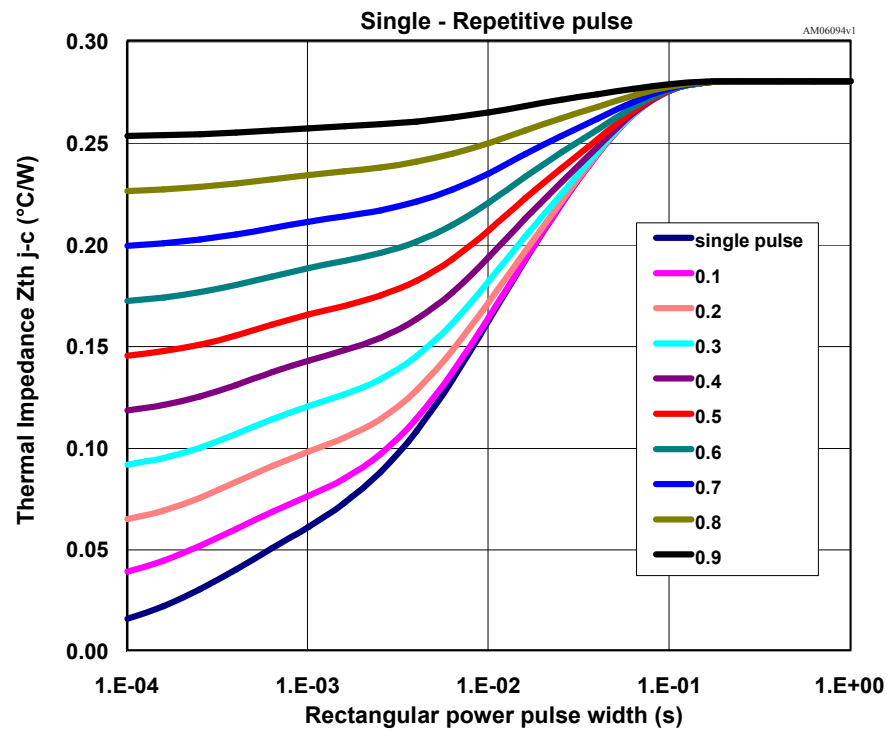
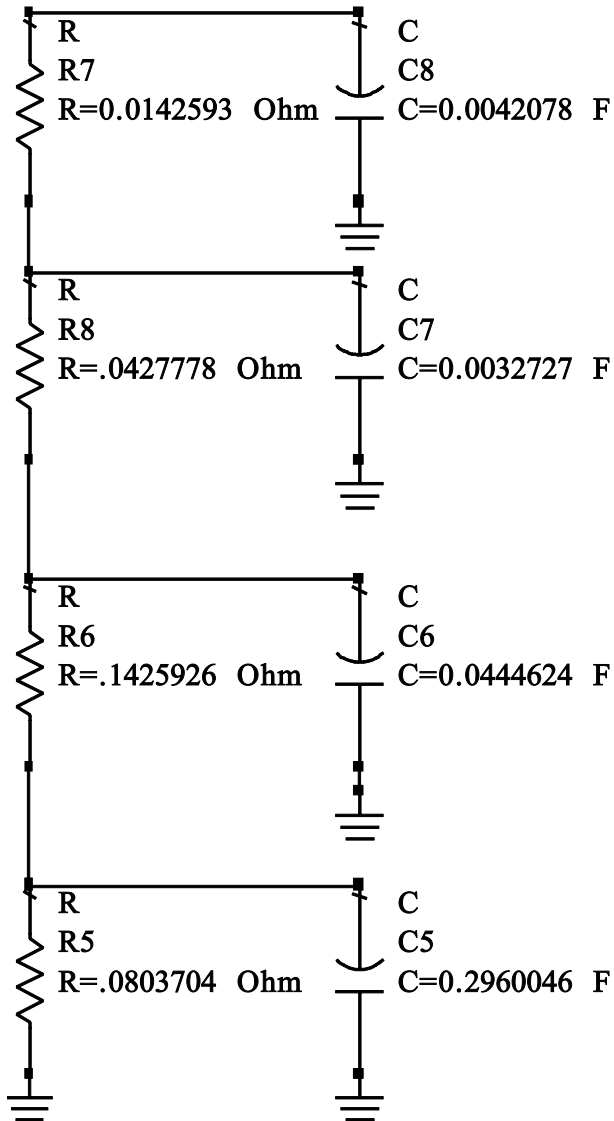


Figure 4. Transient thermal model



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Figure 5. Power gain versus output power

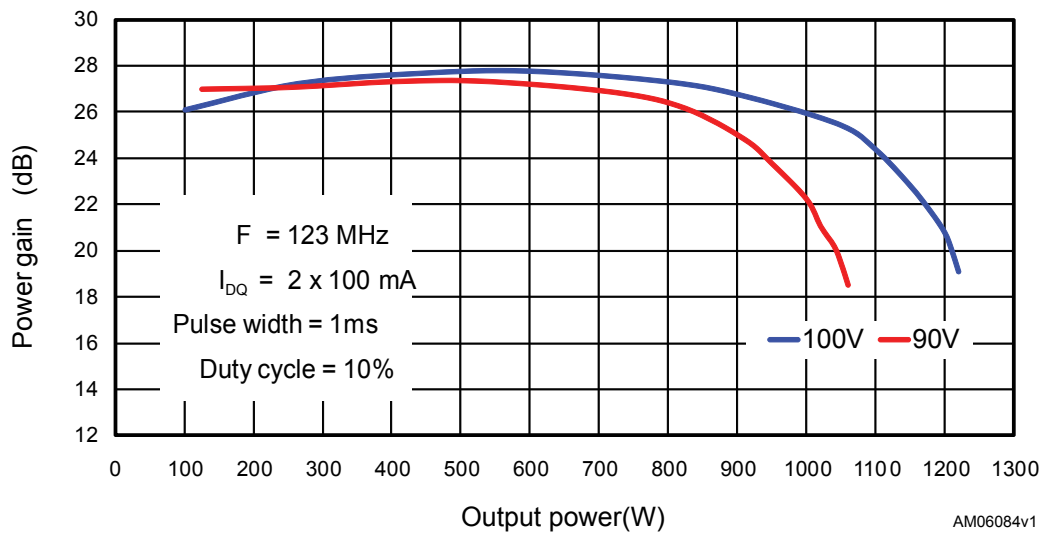
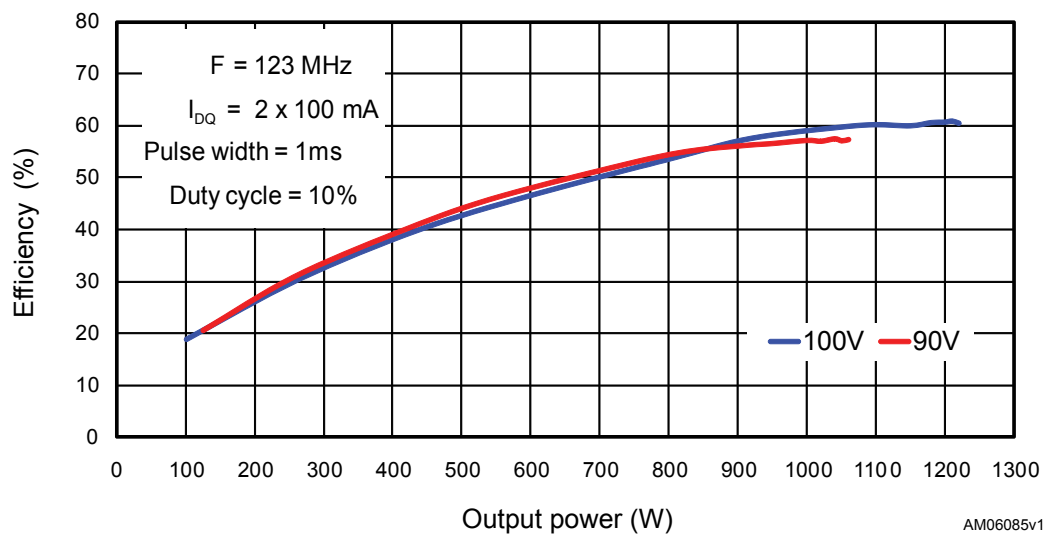


Figure 6. Efficiency versus output power

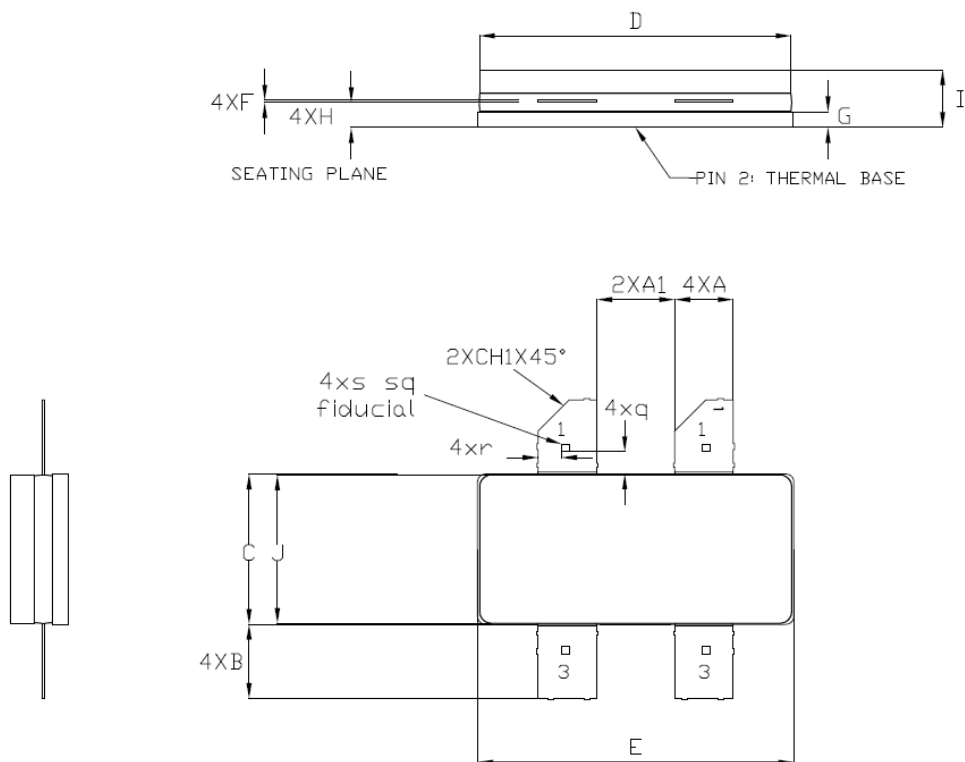


## 5 Package information

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](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

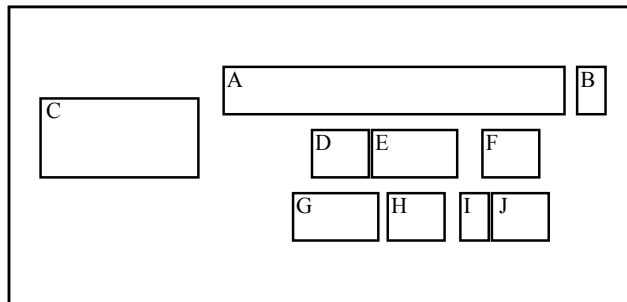


**Table 7. STAC780-4F mechanical data**

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> .

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