1 Electrical data

1.1 Maximum ratings

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

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$	Drain source voltage (V_{GS} = 0 V, T_J = 150 °C)	200	V
V_{DGR}	Drain-gate voltage (R_{GS}= 1 MΩ)	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 °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 V, I_{DS} = 100 mA, T_J = 150 °C	200	250		V
I_{DSS}	Zero gate voltage drain leakage current	V_{GS} = 0 V, V_{DS} = 100 V			1	mA
I_{GSS}	Gate-source leakage current	V_{GS} = 20 V, V_{DS} = 0 V			250	nA
$V_{DS(ON)}$	Drain-source on voltage	V_{GS} = 10 V, I_D = 10 A			3.6	V
V_{TH}	Gate-source threshold voltage	I_{DS} = 250 mA	2		4	V
G_{FS}	Forward transconductance	V_{DS} = 10 V, I_D = 2.5 A		6		S
C_{ISS}	Input capacitance	V_{GS} = 0 V, V_{DS} = 100 V, f = 1 MHz		570		pF
C_{OSS}	Ouput 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 W		60	-	%
G_{ps}	Power gain	P_{OUT} = 1000 W		26	-	dB

1. *V_{DD} = 100 V, I_{DQ} = 2 x 250 mA, f = 123 MHz, PW 1ms, DC = 10%*

3 Impedance

Figure 1. Current conventions

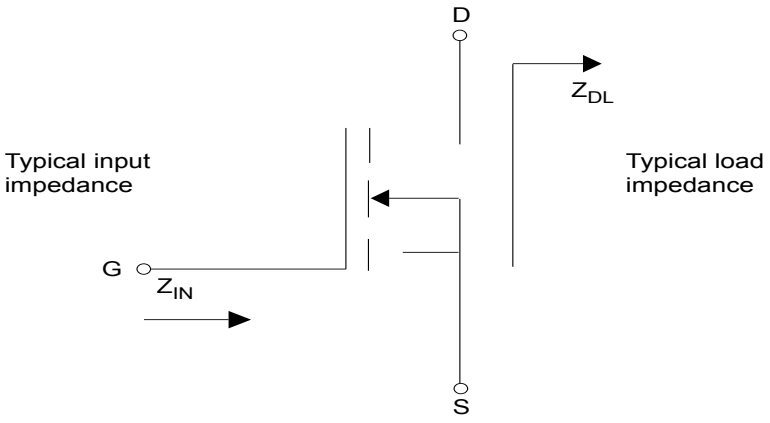


Table 6. Impedance data

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**

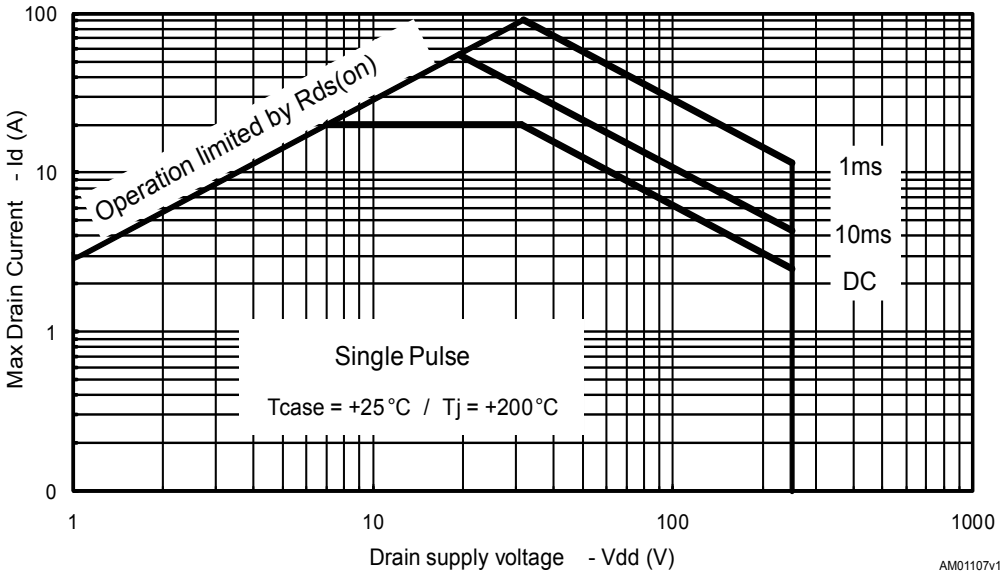


Figure 3. **Transient thermal impedance**

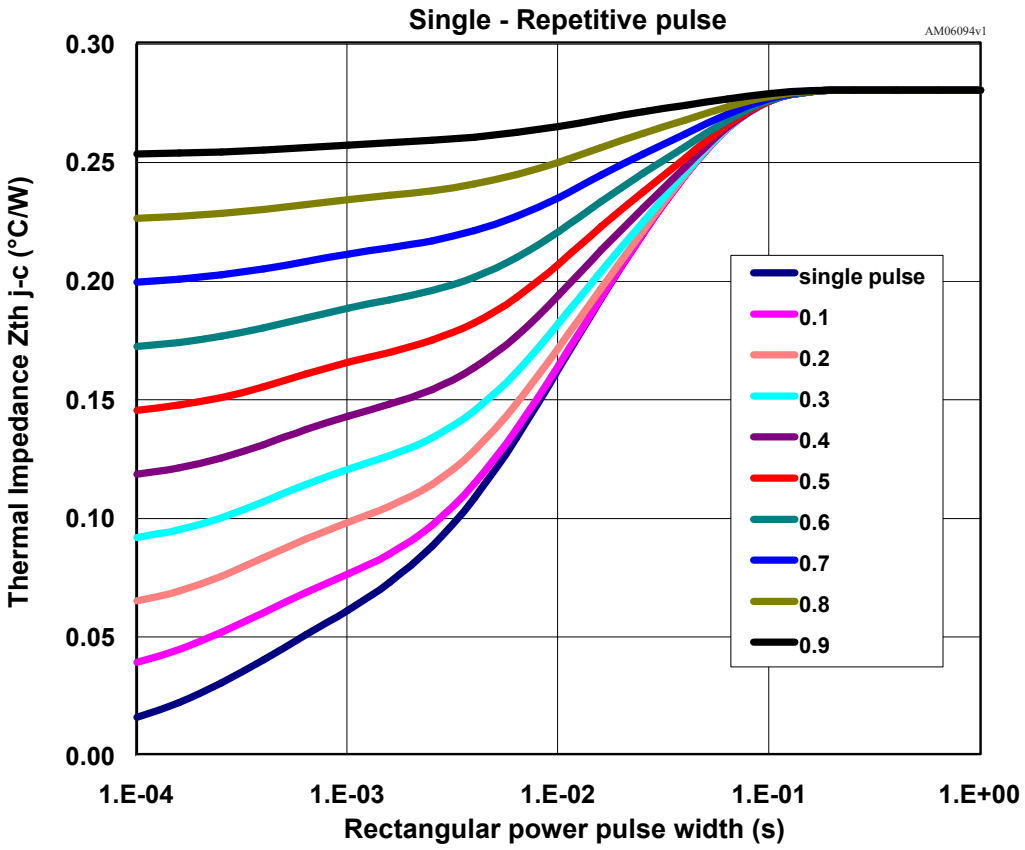
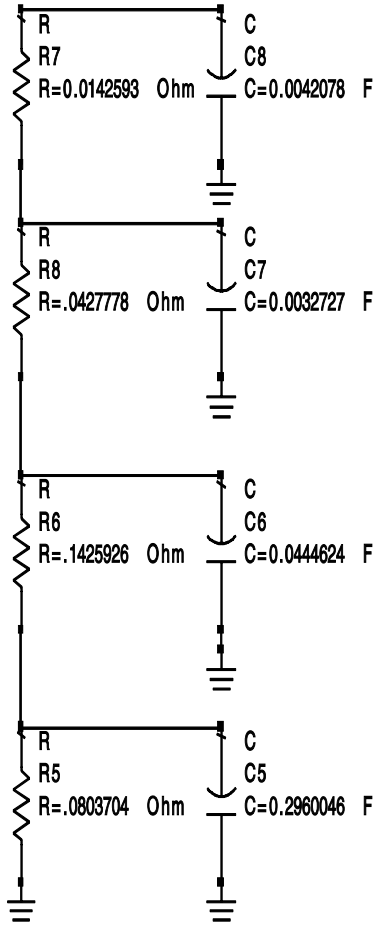


Figure 4. **Transient thermal model**



AM06106V1

Figure 5. **Power gain vs. output power**

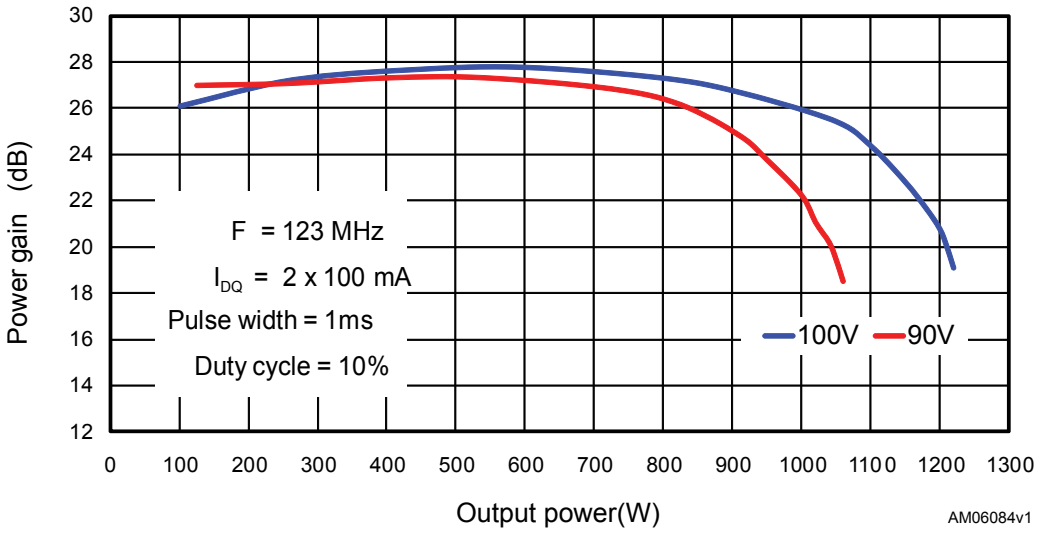


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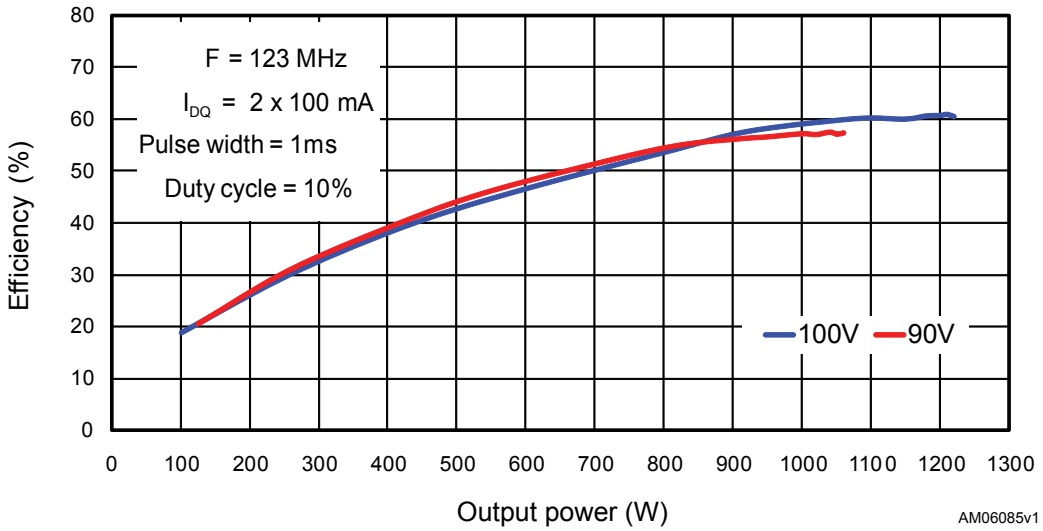
Figure 6. **Efficiency vs. output power**

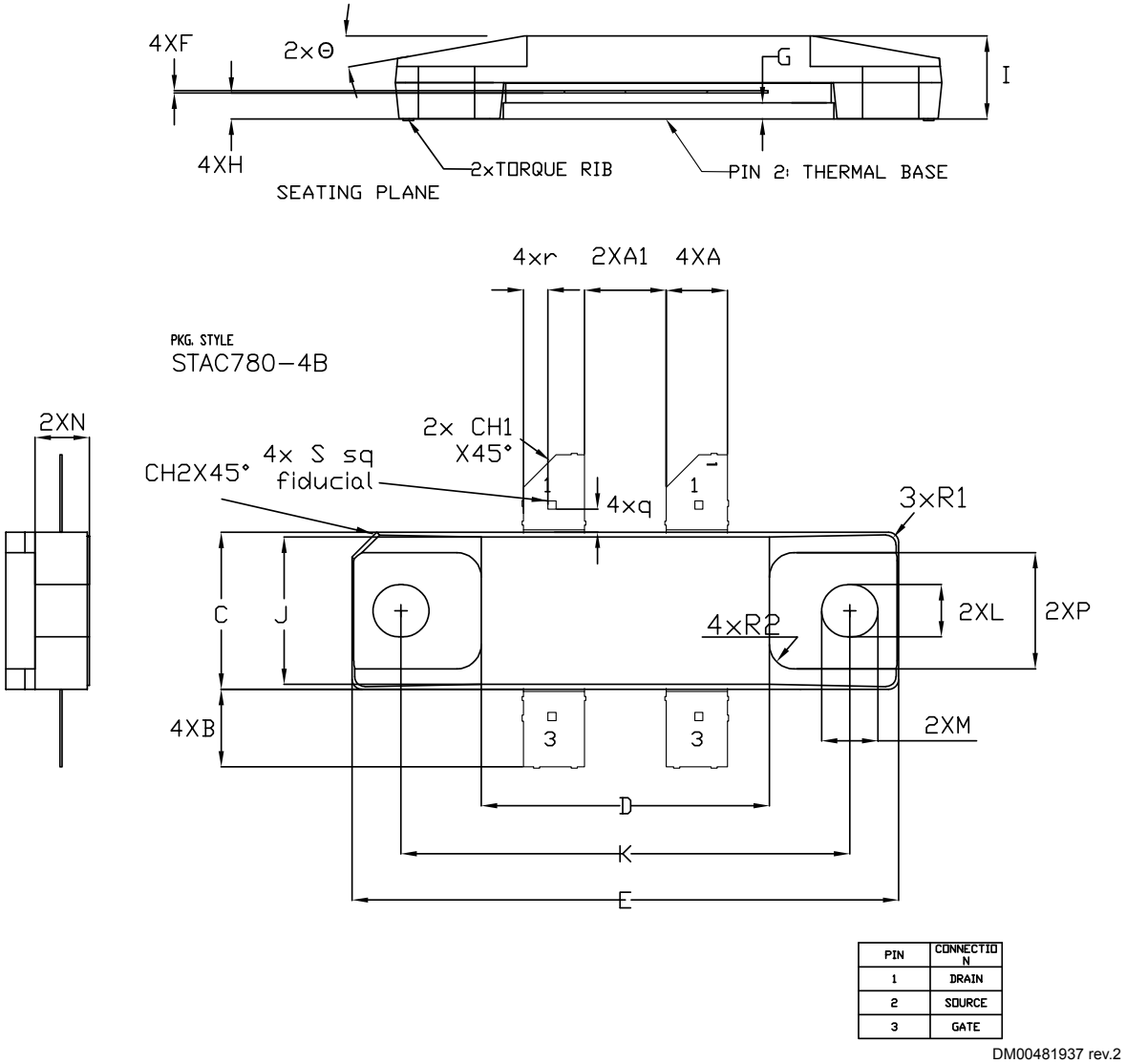


5 Package information

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



PIN	CONNECTION
1	DRAIN
2	SOURCE
3	GATE

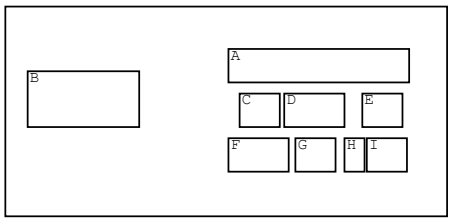
DM00481937 rev.2

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

Symbol	Milimeters		
	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.

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