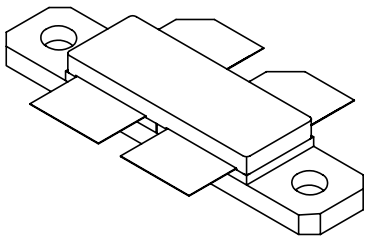
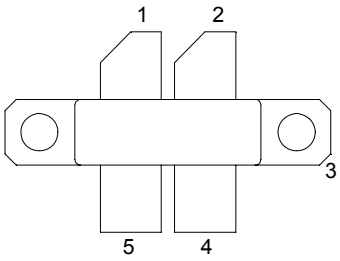
ST50V10200

Datasheet

RF power LDMOS transistor for frequencies up to 1.5 GHz



M246



1-2 Drain

3 Source

4-5 Gate

Features

Order code	F_{REQ}	V_{DD}	P_{OUT} (typ.)	Gain	N_D
ST50V10200	1000 MHz	50 V	200 W	18 dB	60%

- High efficiency and linear gain operations
- Integrated ESD protection
- Large positive and negative gate/source voltage range
- In compliance with the European Directive 2002/95/EC

Applications

- Broadband communications
- Industrial, scientific and medical (ISM)
- Avionics

Description

The ST50V10200 is a common-source N-channel enhancement-mode lateral field-effect RF power transistor designed for broadband commercial, avionics and industrial applications at frequencies up to 1.5 GHz. It can be used in A/AB and C classes for all typical modulation formats.

STPOWER

Product status link
ST50V10200

Product summary	
Order code	ST50V10200
Marking	ST50V10200 ES
Package	M246
Packing	TBD

1 Electrical ratings

Table 1. Absolute maximum ratings (+25 °C)

Symbol	Parameter	Value	Unit
B_{VDSS}	Drain-source voltage	110	V
V_{GS}	Gate-source voltage	-8/+10	V
V_{DD}	Drain supply voltage	18	V
T_{STG}	Storage temperature range	-65 to +150	°C
T_J	Junction temperature	+200	°C

Table 2. Thermal data

Symbol	Parameter	Value	Unit
$R_{thj\text{-}case}$	Junction-case thermal resistance T_{CASE} = +85 °C , T_J = +200 °C, DC test	0.40	°C/W

Table 3. ESD protection

Symbol	Parameter	Class
HBM	Human body model (according to JESD22-A114)	2

2 Electrical characteristics

(T_C = 25 °C unless otherwise specified)

Table 4. Static (per side)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain-source breakdown voltage	V_{GS} = 0 V, I_D = 100 µA	110			V
I_{DSS}	Zero-gate voltage drain current	V_{GS} = 0 V, V_{DS} = 50 V			1	µA
I_{GSS}	Gate-body leakage current	V_{DS} = 0 V, V_{GS} = 6 V			1	µA
$V_{GS(th)}$	Gate threshold voltage	V_{DS} = 28 V, I_D = 600 µA	1	TBD	3	V
$V_{DS(on)}$	Static drain-source on-resistance	V_{GS} = 10 V, I_D = 5 A			1.4	V
C_{ISS}	Common source input capacitance	V_{GS} = 0 V, V_{DD} = 50 V, F_{REQ} = 1 MHz		118		pF
C_{RSS}	Common source feedback capacitance			2		pF
C_{OSS}	Common source output capacitance			44		pF

Table 5. Dynamic

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
P_{OUT}	Output power	V_{DD} = 50 V, I_{DQ} = 0.2 A, F_{REQ} = 1000 MHz,	-	225	-	W
Gain	Power gain		-	17.5	-	dB
Efficiency	Drain efficiency		-	60	-	%
IMD3	3rd order intermodulation		-	TBD	-	dBc
VSWR	Load mismatch	P_{OUT} = 200 W, all phases	-	10:1	-	

Table 6. Impedance data

Frequency (in MHz)	Input impedance (Z_{IN})	Drain load impedance (Z_{DL})
2	TBD	TBD
5	TBD	TBD
10	TBD	TBD
30	TBD	TBD
60	TBD	TBD
100	TBD	TBD
200	TBD	TBD

3 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.

3.1 0.230 x 0.650 WIDE 4/L BAL N/HERM W/FLG M246 package information

Figure 1. 0.230 x 0.650 WIDE 4/L BAL N/HERM W/FLG M246 package outline

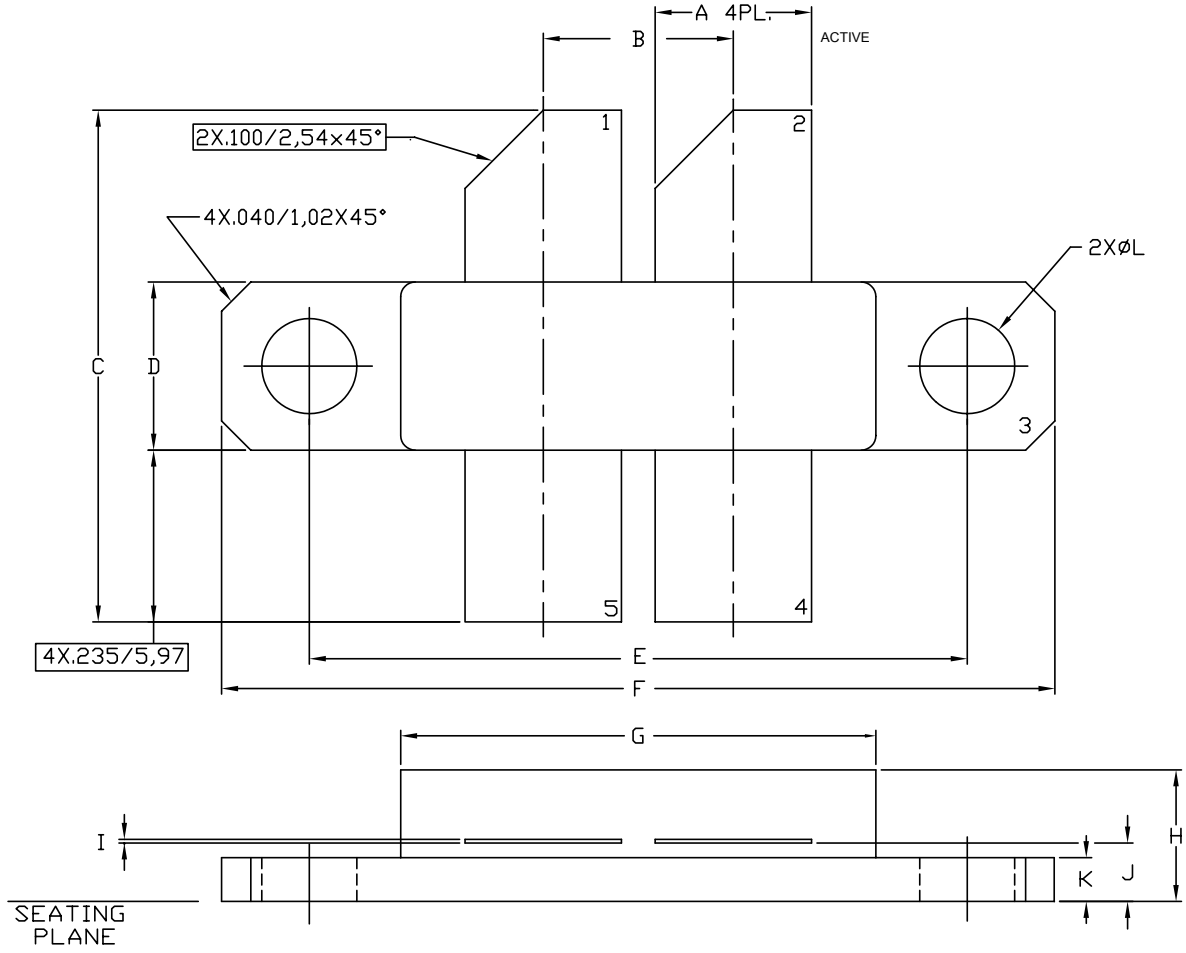


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Table 7. 0.230 x 0.650 WIDE 4/L BAL N/HERM W/FLG M246 mechanical data

Symbol	Milimeters		
	Min.	Typ.	Max.
A	5.33		5.59
B	6.48		6.73
C	17.27		18.29
D	5.72		5.97
E		22.86	
F	28.83		29.08
G	16.26		16.76
H	4.19		5.08
I	0.08		0.15
J	1.83		2.24
K	1.40		1.65
L	3.18		3.43

Revision history

Table 8. **Document revision history**

Date	Version	Changes
12-Sep-2018	1	Initial release
22-Mar-2019	2	Updated Table 1 and Table 4.

Contents

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