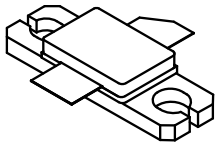
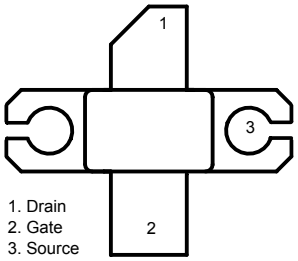
ST50V10100

Datasheet

RF Power LDMOS transistor for frequencies up to 1.5 GHz



M243
Epoxy sealed



1. Drain
2. Gate
3. Source

GADG31012018052IG

Features

Order code	F_{REQ}	V_{DD}	P_{OUT} (typ.)	Gain	N_D
ST50V10100	1000 MHz	50 V	100 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

- Industrial, scientific and medical from HF to 1.5 GHz
- Avionics

Description

The ST50V10100 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 class A/AB and C for all typical modulation formats.

STPOWER

Product status link
ST50V10100

Product summary	
Order code	ST50V10100
Marking	ST50V10100
Package	M243
Packing	TBD

1 Electrical ratings

Table 1. Absolute maximum ratings

Symbol	Parameter	Value	Unit
BV_{DSS}	Drain-source voltage	110	V
V_{GS}	Gate-source voltage	-8 / +10	V
I_D	Drain current	18	A
T_{STG}	Storage temperature range	-65 to +150	°C
T_J	Junction temperature	+200	°C

Table 2. Thermal data

Symbol	Parameter	Value	Unit
$R_{thj\text{-}case}$	Thermal resistance junction-case, T_{CASE} = +85 °C, P_{OUT}=100 W	0.75	°C/W

Table 3. ESD protection

Symbol	Parameter	Class
HBM	Human body model (per 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}= 50 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 = 1 MHz		118		pF
C_{oss}	Common source output capacitance			2		
C_{rss}	Common source feedback capacitance			44		

Table 5. Dynamic

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
P_{OUT}	Output power	V_{DD}= 28 V, I_{DQ} = 0.1 A, f = 915 MHz	-	100	-	W
Gain	Power gain		-	18	-	dB
Efficiency	Drain efficiency		-	63	-	%
IMD3	3rd order intermodulation		-	TBD	-	dBc
VSWR	Load mismatch	@ P_{OUT} = 100 W all phases	-	10:1	-	

Table 6. Impedance data

Frequency (MHz)	Input impedance Z_{IN}	Drain load impedance Z_{DL}
100	TBD	TBD
250		
500		
750		
1000		
1250		
1500		

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 M243 (0.230 x 0.360 2/L N/HERM W/FLG) package information

Figure 1. M243 (0.230 x 0.360 2/L N/HERM W/FLG) package outline

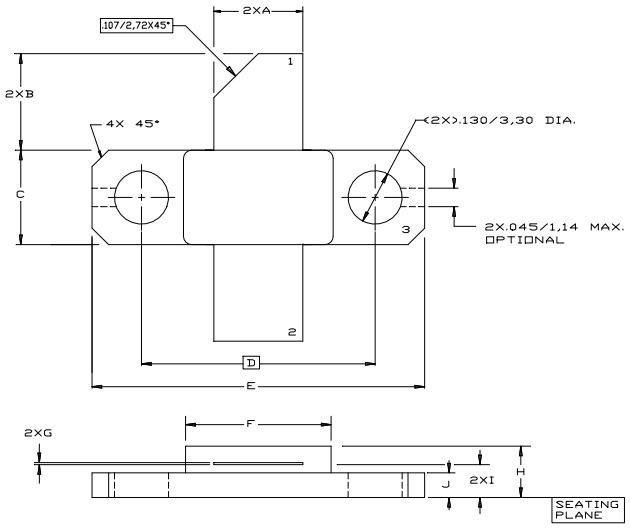


Table 7. M243 (0.230 x 0.360 2/L N/HERM W/FLG) package mechanical data

Dim.	mm		
	Min.	Typ.	Max.
A	5.21		5.72
B	5.46		6.48
C	5.59		6.1
D		14.27	
E	20.07		20.57
F	8.89		9.4
G	0.1		0.15
H	3.18		4.45
I	1.83		2.24
J	1.27		1.78

Revision history

Table 8. **Document revision history**

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

Contents