

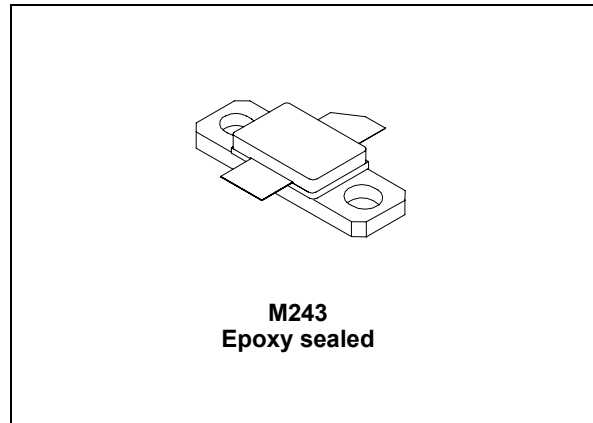
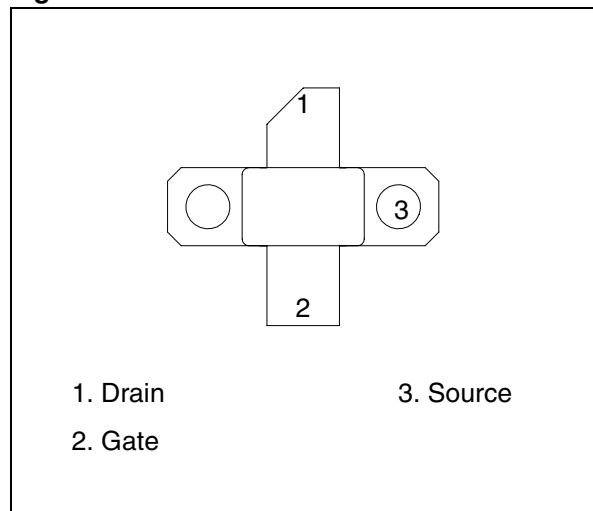
RF power transistor, LdmoST family**Features**

- Excellent thermal stability
- Common source configuration
- $P_{OUT} = 15\text{ W}$ with 11 dB gain @ 2 GHz / 13.6 V
- BeO free package
- ESD protection
- In compliance with the 2002/95/EC european directive

Description

The PD20015C is a common source N-channel, enhancement-mode lateral field-effect RF power transistor. It is designed for high gain, broadband commercial and industrial applications. It operates at 13.6 V in common source mode at frequencies of up to 2 GHz. PD20015C boasts the excellent gain, linearity and reliability of ST's latest LDMOS technology.

PD20015C's superior linearity performance makes it an ideal solution for mobile application.

**Figure 1. Pin connection**

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1 Electrical data

1.1 Maximum ratings

$T_{CASE} = 25\text{ °C}$

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$	Drain-source voltage	40	V
V_{GS}	Gate-source voltage	- 0.5 to 15	V
I_D	Drain current	7	A
P_{DISS}	Power dissipation (@ $T_C = 70\text{ °C}$)	93	W
T_J	Max. operating junction temperature	200	°C
T_{STG}	Storage temperature	-65 to +150	°C

1.2 Thermal data

Table 3. Thermal data

Symbol	Parameter	Value	Unit
R_{thJC}	Junction - case thermal resistance	1.4	°C/W

2 Electrical characteristics

$$T_{\text{CASE}} = +25\text{ }^{\circ}\text{C}$$

2.1 Static

Table 4. Static

Symbol	Test conditions			Min.	Typ.	Max.	Unit
I_{DSS}	$V_{\text{GS}} = 0\text{ V}$	$V_{\text{DS}} = 25\text{ V}$		-		1	μA
I_{GSS}	$V_{\text{GS}} = 5\text{ V}$	$V_{\text{DS}} = 0\text{ V}$		-		1	μA
$V_{\text{GS(Q)}}$	$V_{\text{DS}} = 10\text{ V}$	$I_{\text{D}} = 350\text{ mA}$		-	4.2		V
$V_{\text{DS(ON)}}$	$V_{\text{GS}} = 10\text{ V}$	$I_{\text{D}} = 1\text{ A}$		-	270	310	mV
C_{ISS}	$V_{\text{GS}} = 0\text{ V}$	$V_{\text{DS}} = 12.5\text{ V}$	$f = 1\text{ MHz}$	-	49		pF
C_{OSS}	$V_{\text{GS}} = 0\text{ V}$	$V_{\text{DS}} = 12.5\text{ V}$	$f = 1\text{ MHz}$	-	35		pF
C_{RSS}	$V_{\text{GS}} = 0\text{ V}$	$V_{\text{DS}} = 12.5\text{ V}$	$f = 1\text{ MHz}$	-	1.0		pF

2.2 Dynamic

Table 5. Dynamic

Symbol	Test conditions			Min.	Typ.	Max.	Unit
P3dB	$V_{\text{DD}} = 13.6\text{ V}$, $I_{\text{DQ}} = 350\text{ mA}$		$f = 2\text{ GHz}$		23	-	W
G_{P}	$V_{\text{DD}} = 13.6\text{ V}$, $I_{\text{DQ}} = 350\text{ mA}$, $P_{\text{OUT}} = 15\text{ W}$, $f = 2\text{ GHz}$			10	11	-	dB
h_{D}	$V_{\text{DD}} = 13.6\text{ V}$, $I_{\text{DQ}} = 350\text{ mA}$, $P_{\text{OUT}} = \text{P3dB}$, $f = 2\text{ GHz}$			45	53	-	%
Load mismatch	$V_{\text{DD}} = 15.5\text{ V}$, $I_{\text{DQ}} = 350\text{ mA}$, $P_{\text{OUT}} = 20\text{ W}$, $f = 2\text{ GHz}$ All phase angles			20:1		-	VSWR

2.3 ESD protection characteristics

Table 6. ESD protection characteristics

Test conditions	Class
Human body model	2
Machine model	M3

3 Typical performance

Figure 2. Capacitances vs drain voltage

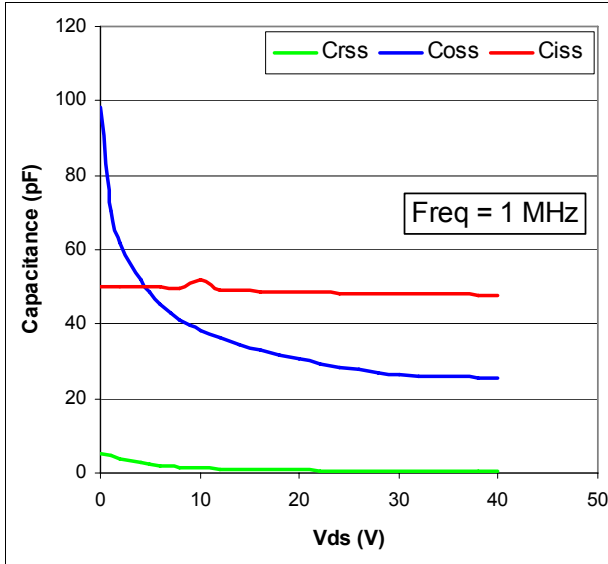


Figure 3. DC output characteristics

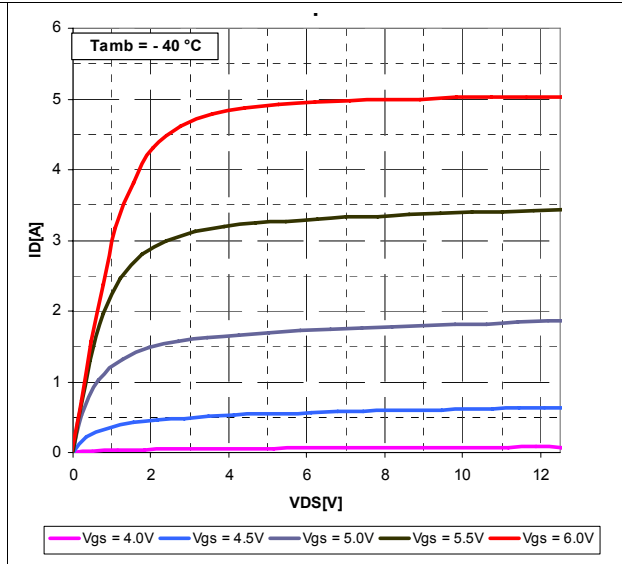


Figure 4. DC output characteristics

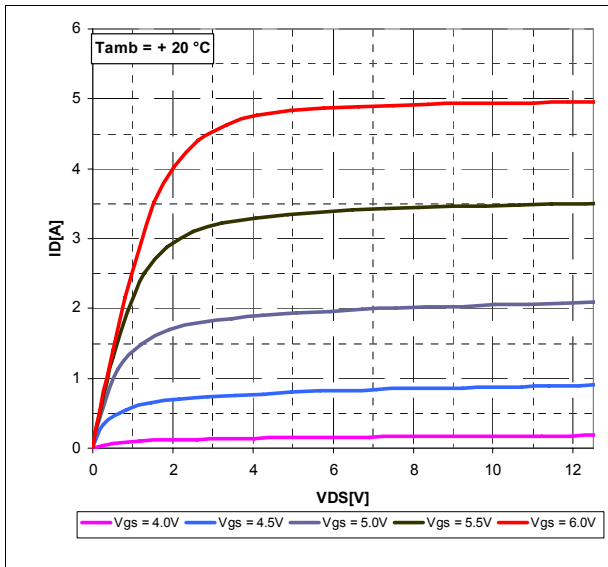


Figure 5. DC output characteristic

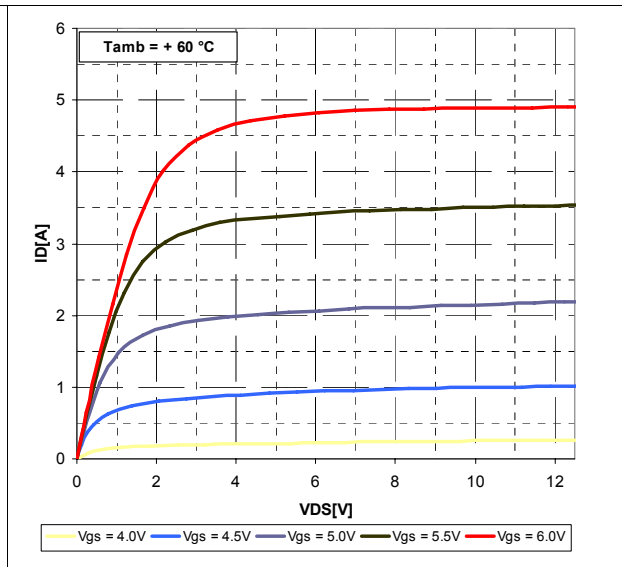


Figure 6. Gain and efficiency vs Pout

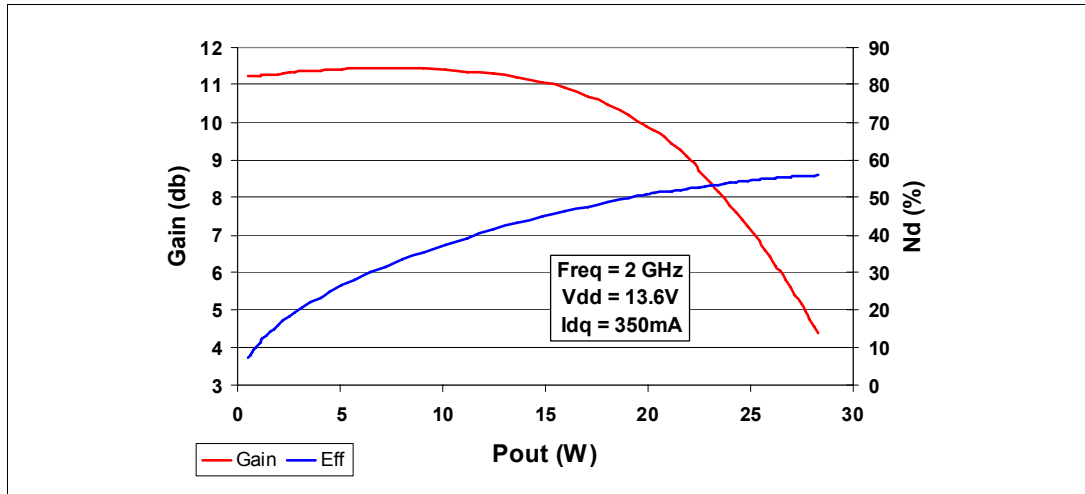
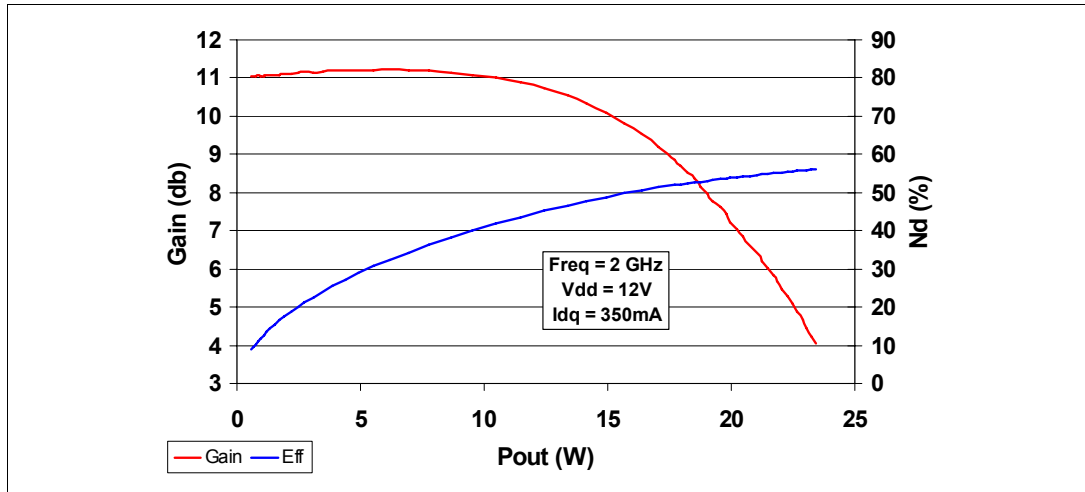


Figure 7. Gain and efficiency vs Pout



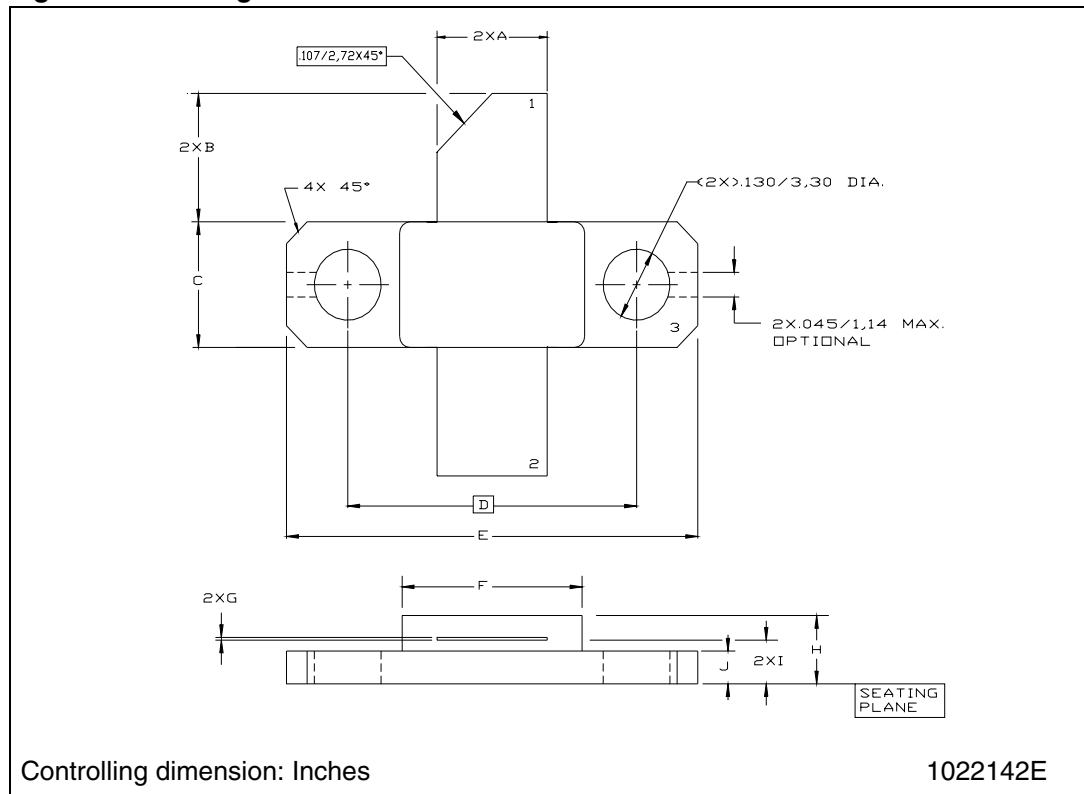
4 Package mechanical data

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.

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

Dim.	mm.			Inch		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	5.21		5.72	0.205		0.225
B	5.46		6.48	0.215		0.255
C	5.59		6.10	0.220		0.240
D		14.27			0.562	
E	20.07		20.57	0.790		0.810
F	8.89		9.40	0.350		0.370
G	0.10		0.15	0.004		0.006
H	3.18		4.45	0.125		0.175
I	1.83		2.24	0.072		0.088
J	1.27		1.78	0.050		0.070

Figure 8. Package dimensions



5 Revision history

Table 8. Document revision history

Date	Revision	Changes
16-Nov-2007	1	Initial release.
14-Apr-2009	2	Updated Table 4 on page 4

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