PD85035C

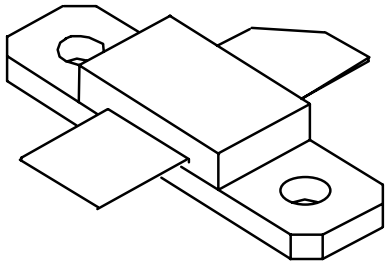
RF power transistor, LdmoST family

Features

- Excellent thermal stability
- Common source configuration
- P_{OUT} = 35 W with 14.5 dB gain @ 945 MHz / 13.6 V
- BeO-free ceramic package
- ESD protection
- In compliance with the 2002/95/EC european directive

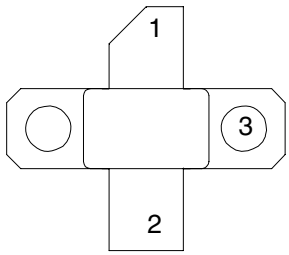
Description

The PD85035C 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 1 GHz. PD85035C boasts the excellent gain, linearity and reliability of ST's latest LDMOS technology. PD85035C's superior linearity performance makes it an ideal solution for car mobile radio.



M243
Epoxy sealed

Figure 1. Pin connection



1. Drain
2. Gate
3. Source

Table 1. Device summary

Part number	Package	Packaging
PD85035C	M243	Box

Contents

1 Electrical data

1.1 Maximum ratings

Table 2. Absolute maximum ratings (T_{CASE} = 25 °C)

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	8	A
P_{DISS}	Power dissipation (@ T_C = 70 °C)	108	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	1.2	°C/W

2 Electrical characteristics

T_{CASE} = +25 °C

2.1 Static

Table 4. Static

Symbol	Test conditions			Min	Typ	Max	Unit
I_{DSS}	V_{GS} = 0 V	V_{DS} = 25 V				1	µA
I_{GSS}	V_{GS} = 20 V	V_{DS} = 0 V				1	µA
$V_{GS(Q)}$	V_{DS} = 10 V	I_D = 350 mA			3.9		V
$V_{DS(ON)}$	V_{GS} = 10 V	I_D = 3 A			0.64	0.7	V
C_{ISS}	V_{GS} = 0 V	V_{DS} = 12.5 V	f = 1 MHz		76		pF
C_{OSS}	V_{GS} = 0 V	V_{DS} = 12.5 V	f = 1 MHz		45		pF
C_{RSS}	V_{GS} = 0 V	V_{DS} = 12.5 V	f = 1 MHz		1.4		pF

2.2 Dynamic

Table 5. Dynamic

Symbol	Test conditions		Min	Typ	Max	Unit
P3dB	V_{DD} = 13.6 V, I_{DQ} = 350 mA	f = 945 MHz	35		-	W
G_P	V_{DD} = 13.6 V, I_{DQ} = 350 mA, P_{OUT} = 15 W, f = 945 MHz		15	17.5		dB
h_D	V_{DD} = 13.6 V, I_{DQ} = 350 mA, P_{OUT} = P3dB, f = 945 MHz		60	77		%
Load mismatch	V_{DD} = 17 V, I_{DQ} = 350 mA, P_{OUT} = 50 W, f = 945 MHz 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 Impedance

Figure 2. Current conventions

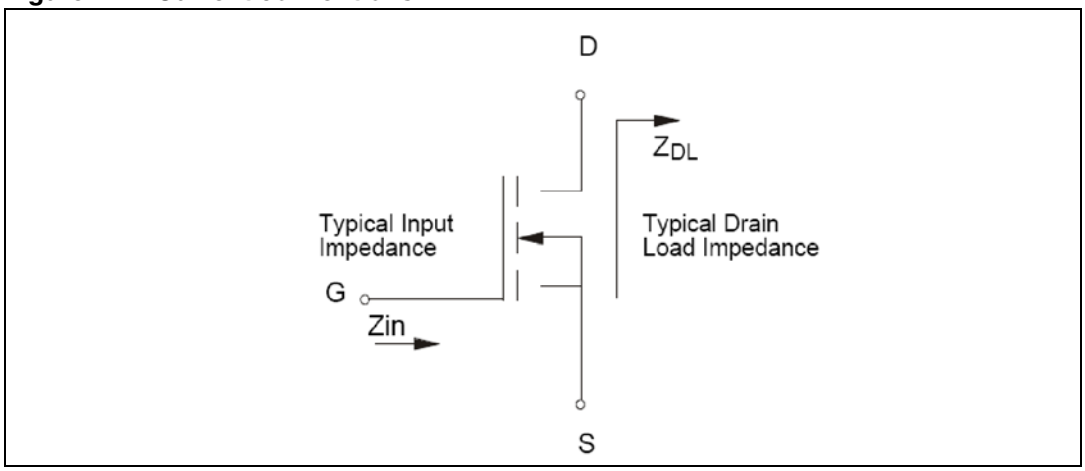


Table 7. Impedance data

Frequency (MHz)	Z_{IN} (Ω)	Z_{DL}(Ω)
945 MHz	1.08 +j 2.05	2.14 + j 2.17

4 Typical performances

Figure 3. Capacitances vs drain voltage

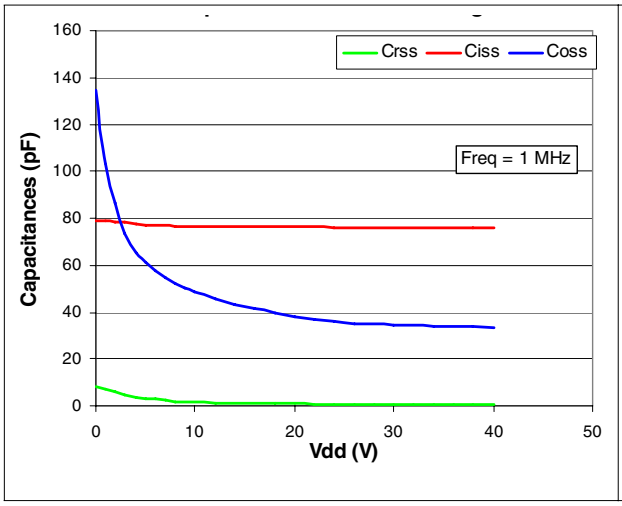


Figure 4. ID vs VGS

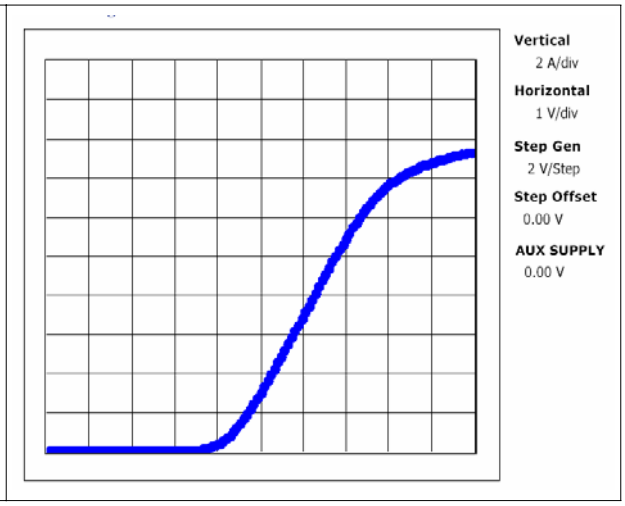


Figure 5. Threshold voltage

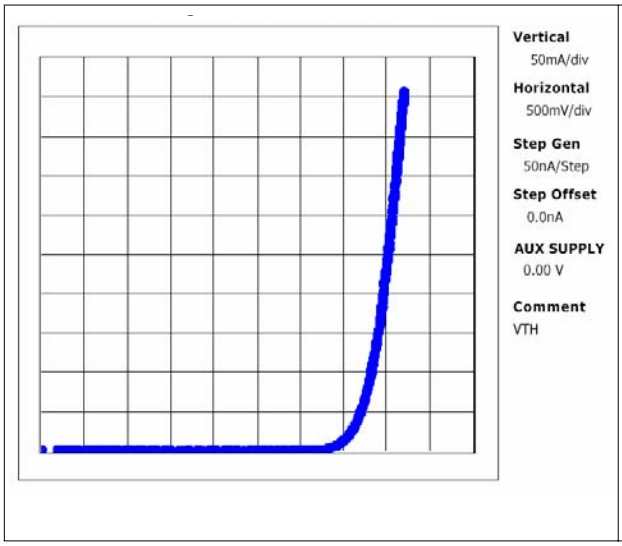


Figure 6. DC output characteristic

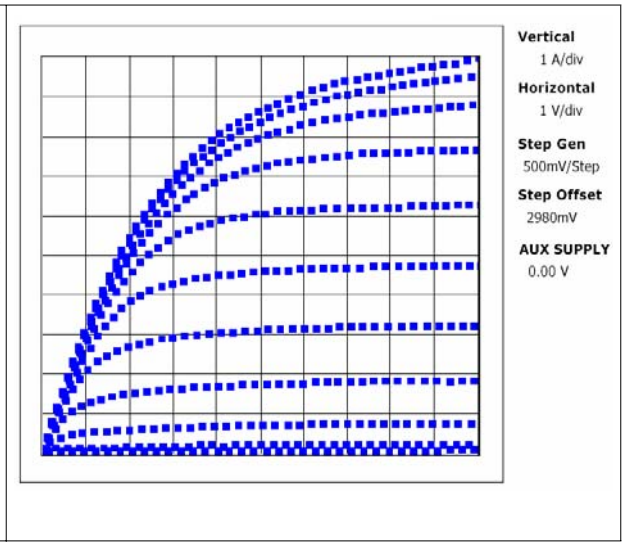


Figure 7. Gain vs output power and bias current

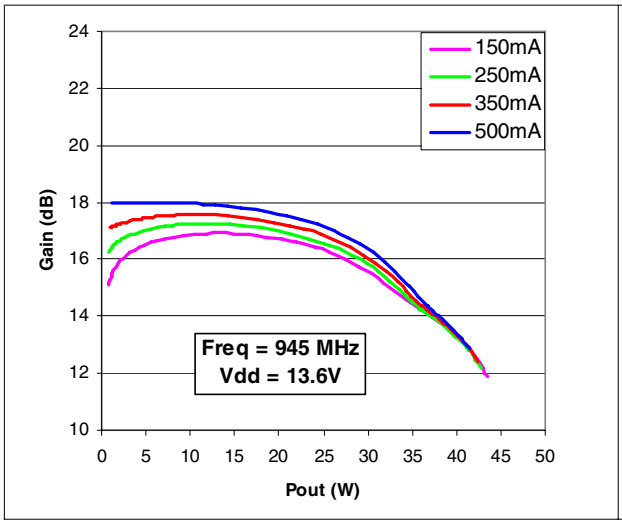


Figure 8. Pout and efficiency vs input power

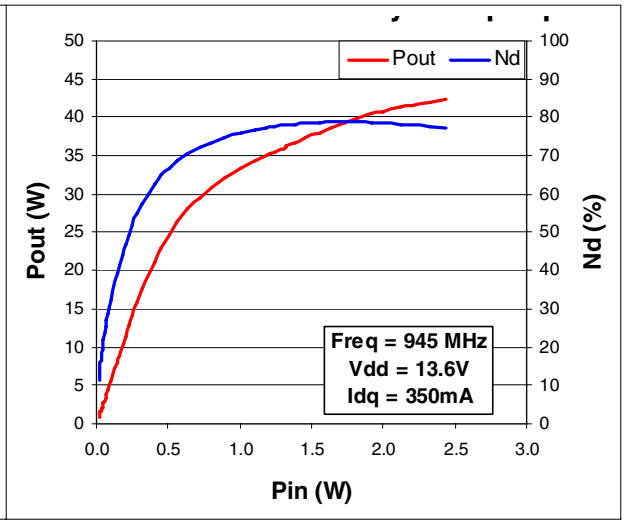


Figure 9. Pout and drain current vs supply voltage

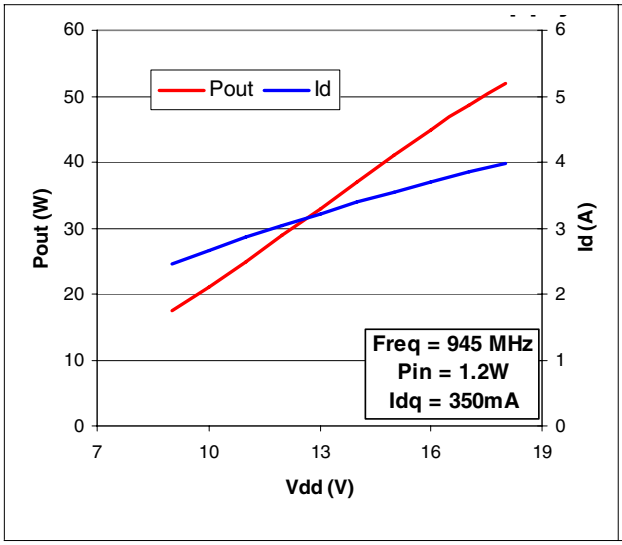
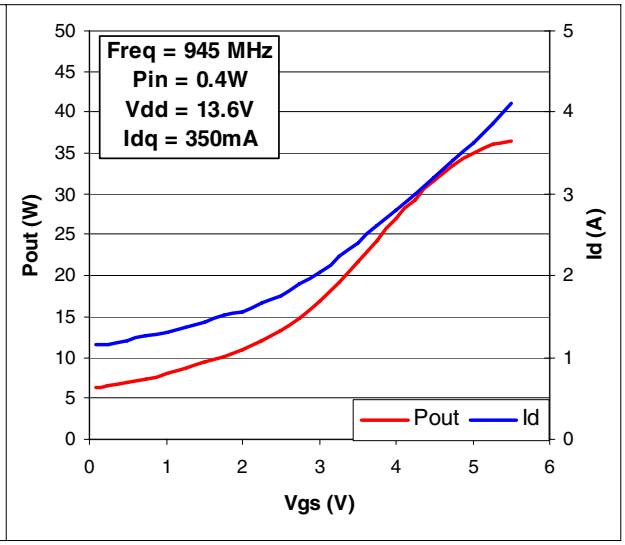


Figure 10. Pout and drain current vs gate voltage



5 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*.
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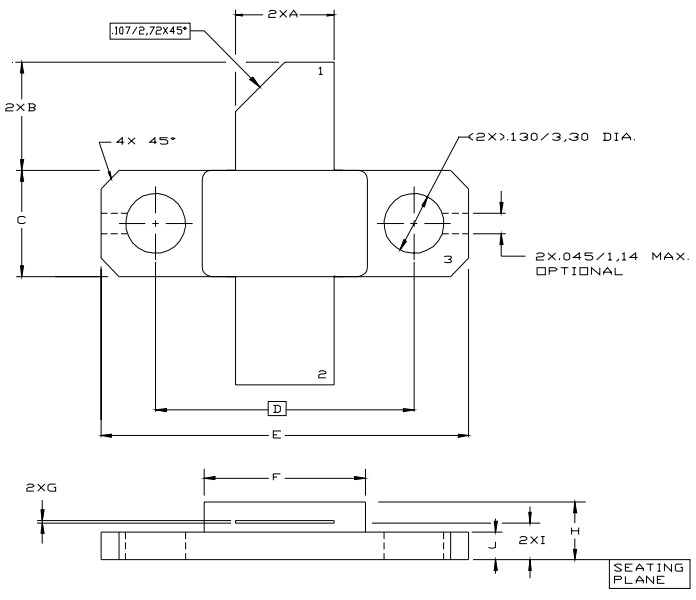
Table 8. M243 (.230 x .360 2L N/HERM W/FLG) mechanical data

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 11. Package dimensions



Controlling dimension: Inches 1022142E

6 Revision history

Table 9. Document revision history

Date	Revision	Changes
16-Nov-2007	1	Initial release
02-Jul-2009	2	Document status promoted from preliminary data to datasheet

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