



## PD55003-01

### RF POWER TRANSISTORS

#### The LdmoST Plastic FAMILY

##### TARGET DATA

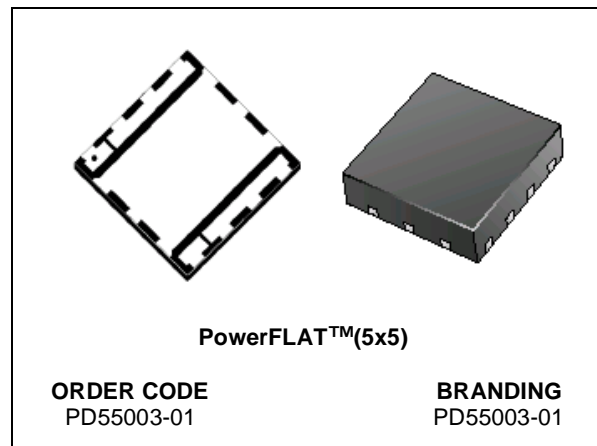
#### N-CHANNEL ENHANCEMENT-MODE LATERAL MOSFETs

- EXCELLENT THERMAL STABILITY
- COMMON SOURCE CONFIGURATION
- $P_{OUT} = 3\text{ W}$  with 17 dB gain @ 500 MHz / 12.5 V
- NEW LEADLESS PLASTIC PACKAGE

#### DESCRIPTION

The PD55003-01 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 12 V in common source mode at frequencies of up to 1 GHz. PD55003-01 boasts the excellent gain, linearity and reliability of ST's latest LDMOS technology mounted in the innovative leadless SMD plastic package, PowerFLAT™.

PD55003-01's superior linearity performance makes it an ideal solution for car mobile radio.



#### ABSOLUTE MAXIMUM RATINGS ( $T_{CASE} = 25\text{ }^{\circ}\text{C}$ )

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$	Drain-Source Voltage	40	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Drain Current	2.5	A
$P_{DISS}$	Power Dissipation (@ $T_c = 70^{\circ}\text{C}$ )	TBD	W
$T_j$	Max. Operating Junction Temperature	150	$^{\circ}\text{C}$
$T_{STG}$	Storage Temperature	-65 to +150	$^{\circ}\text{C}$

#### THERMAL DATA

$R_{th(j-c)}$	Junction -Case Thermal Resistance	TBD	$^{\circ}\text{C/W}$
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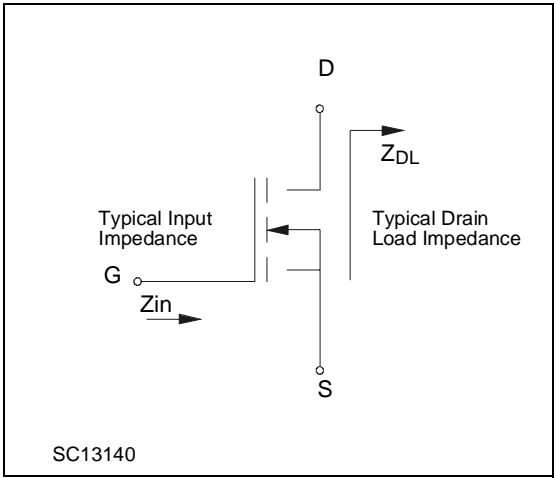
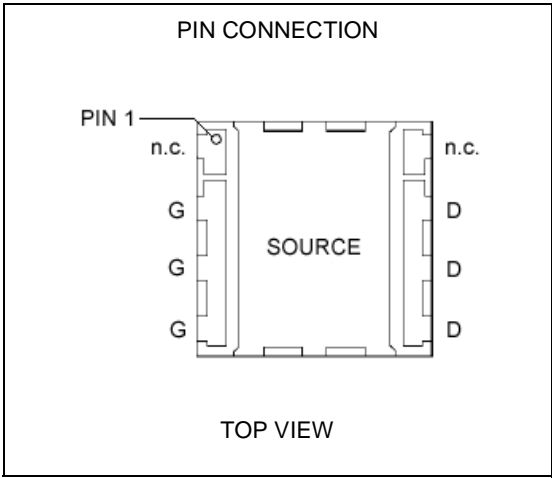
ELECTRICAL SPECIFICATION (T<sub>CASE</sub> = 25 °C)

STATIC

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I <sub>DSS</sub>	V <sub>GS</sub> = 0 V	V <sub>DS</sub> = 28 V			1	μA
I <sub>GSS</sub>	V <sub>GS</sub> = 20 V	V <sub>DS</sub> = 0 V			1	μA
V <sub>GS(Q)</sub>	V <sub>DS</sub> = 10 V	I <sub>D</sub> = 50 mA	2.0		5.0	V
V <sub>DS(ON)</sub>	V <sub>GS</sub> = 10 V	I <sub>D</sub> = 0.5 A			0.36	V
g <sub>FS</sub>	V <sub>DS</sub> = 10 V	I <sub>D</sub> = 1 A		1.0		mho
C <sub>ISS</sub>	V <sub>GS</sub> = 0 V	V <sub>DS</sub> = 12.5 V		33.9		pF
C <sub>OSS</sub>	V <sub>GS</sub> = 0 V	V <sub>DS</sub> = 12.5 V		22.7		pF
C <sub>RSS</sub>	V <sub>GS</sub> = 0 V	V <sub>DS</sub> = 12.5 V		2.46		pF

DYNAMIC

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
P <sub>1dB</sub>	V <sub>DD</sub> = 12.5 V	I <sub>DQ</sub> = 50 mA      f = 500 MHz	3			W
G <sub>P</sub>	V <sub>DD</sub> = 12.5 V	I <sub>DQ</sub> = 50 mA    P <sub>OUT</sub> = 3 W    f = 500 MHz	14	17		dB
η <sub>D</sub>	V <sub>DD</sub> = 12.5 V	I <sub>DQ</sub> = 50 mA    P <sub>OUT</sub> = 3 W    f = 500 MHz	45	52		%
Load mismatch	V <sub>DD</sub> = 15.5 V	I <sub>DQ</sub> = 50 mA    P <sub>OUT</sub> = 3 W    f = 500 MHz ALL PHASE ANGLES	20:1			VSWR

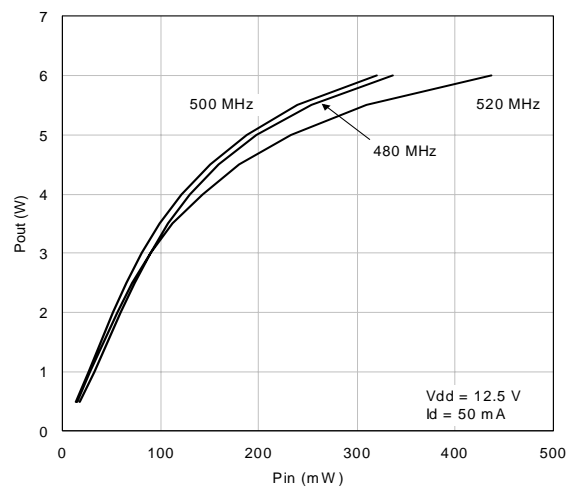


IMPEDANCE DATA

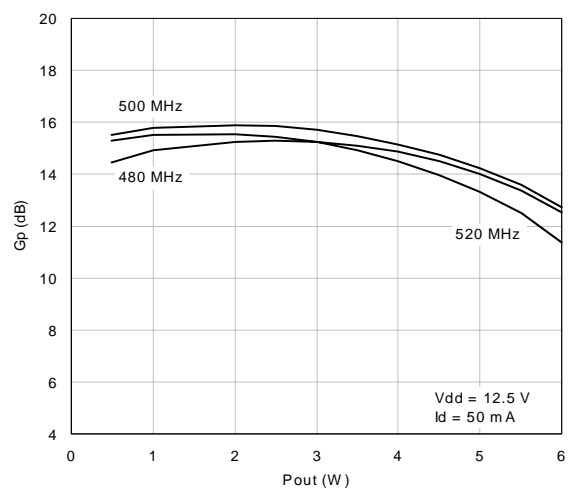
FREQ. MHz	Z <sub>IN</sub> (Ω)	Z <sub>DL</sub> (Ω)
480	TBD	TBD
500	TBD	TBD
520	TBD	TBD
860	TBD	TBD

## TYPICAL PERFORMANCE (BROADBAND DATA)

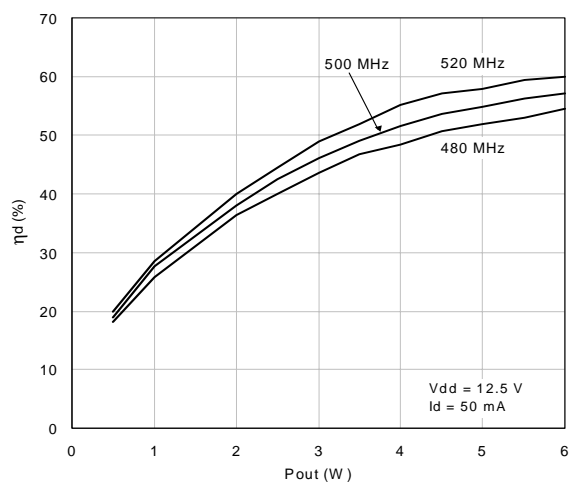
Output Power vs. Input Power



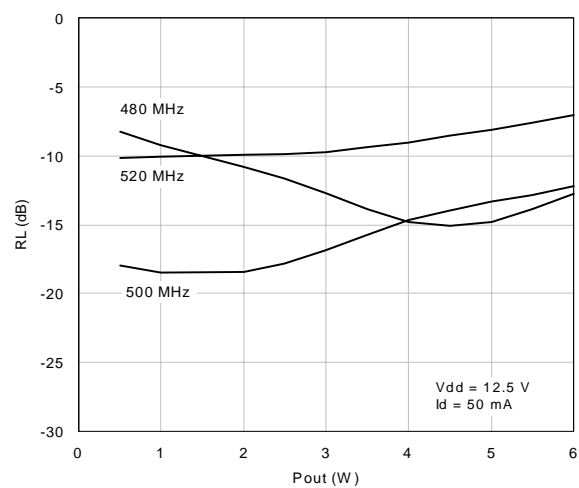
Power Gain vs. Output Power



Efficiency vs. Output Power

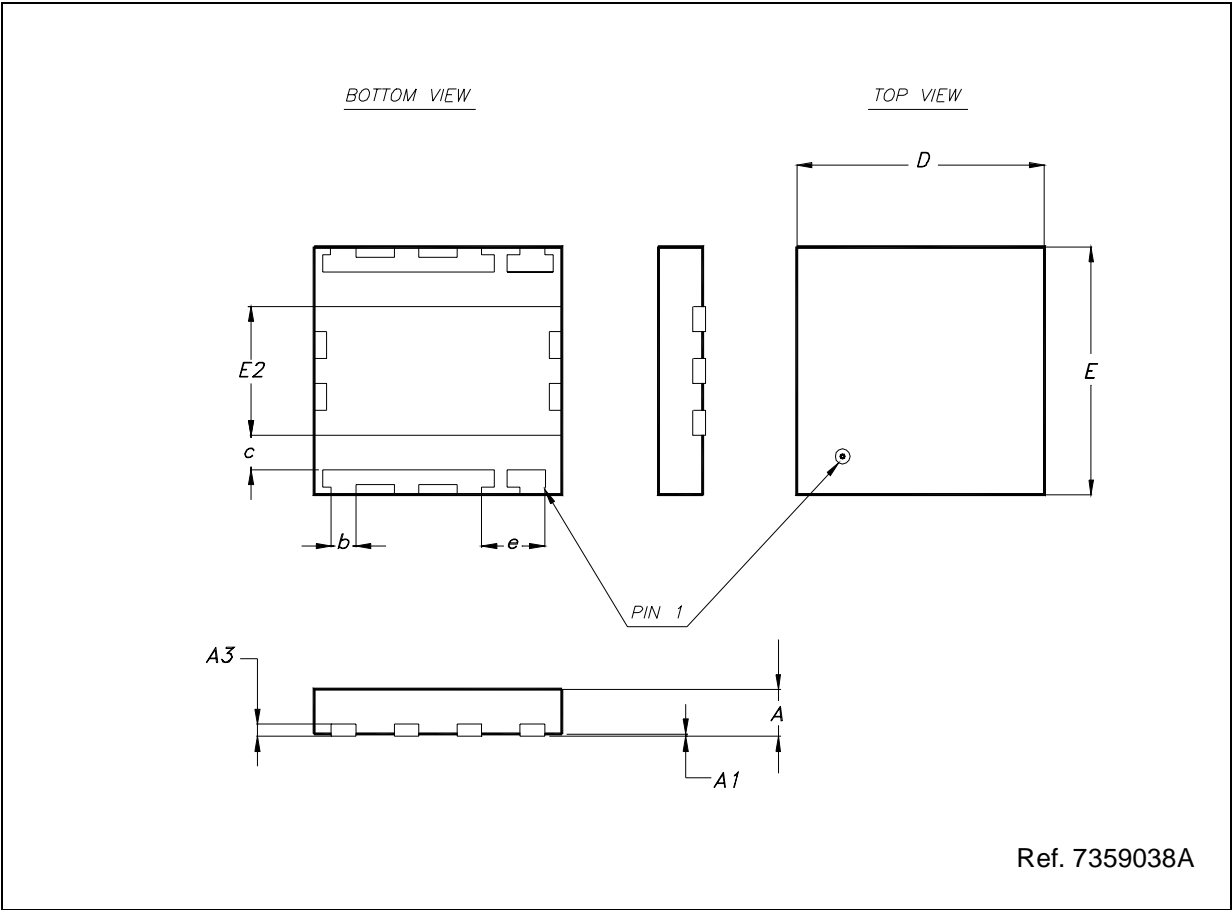


Return Loss vs. Output Power



PowerFLAT™ MECHANICAL DATA

DIM.	mm			Inch		
	MIN.	TYP.	MAX	MIN.	TYP.	MAX
A		0.90	1.00		0.035	0.039
A1		0.02	0.05		0.001	0.002
A3		0.24			0.009	
b	0.43	0.51	0.58	0.017	0.020	0.023
c	0.64	0.71	0.79	0.025	0.028	0.031
D		5.00			0.197	
E		5.00			0.197	
E2	2.49	2.57	2.64	0.098	0.101	0.104
e		1.27			0.050	



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