



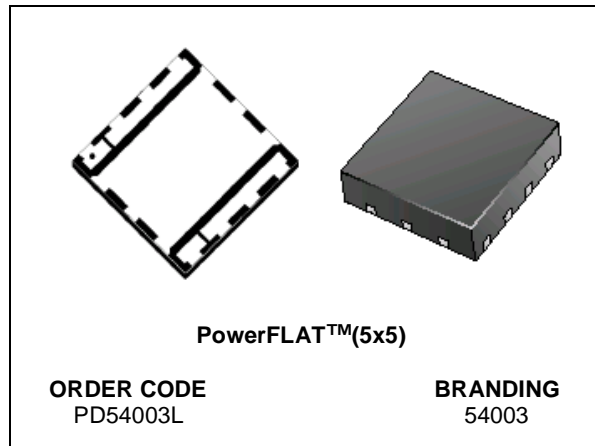
# PD54003L

## RF POWER TRANSISTORS The *LdmoST* PLASTIC FAMILY

ADVANCED DATA

### N-CHANNEL ENHANCEMENT-MODE LATERAL MOSFETs

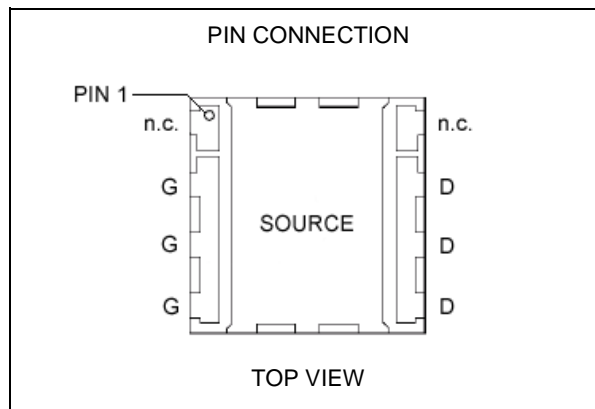
- EXCELLENT THERMAL STABILITY
- COMMON SOURCE CONFIGURATION
- $P_{OUT} = 3\text{ W}$  WITH 20 dB gain @ 500 MHz
- NEW LEADLESS PLASTIC PACKAGE
- ESD PROTECTION
- SUPPLIED IN TAPE & REEL OF 3K UNITS



### DESCRIPTION

The PD54003L is a common source N-Channel, enhancement-mode lateral Field-Effect RF power transistor. It is designed for high gain, broad band commercial and industrial applications. It operates at 7 V in common source mode at frequencies of up to 1 GHz. PD54003L boasts the excellent gain, linearity and reliability of STH1LV latest LDMOS technology mounted in the innovative leadless SMD plastic package, PowerFLAT™.

PD54003L's superior linearity performance makes it an ideal solution for portable radio.



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

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$	Drain-Source Voltage	25	V
$V_{GS}$	Gate-Source Voltage	-0.5 to +15	V
$I_D$	Drain Current	4	A
$P_{DISS}$	Power Dissipation (@ $T_c = 70^{\circ}\text{C}$ )	19.5	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	4.1	$^{\circ}\text{C}/\text{W}$
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# PD54003L

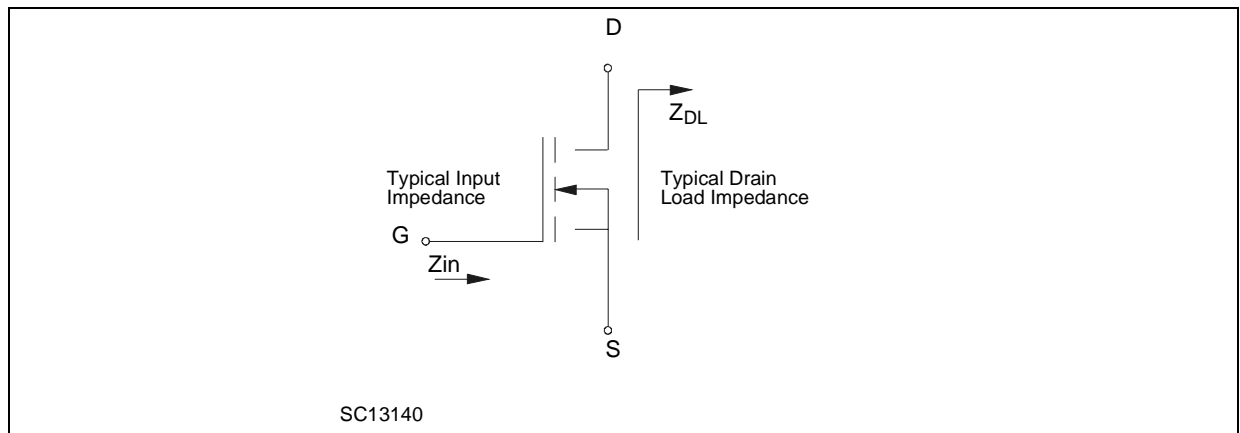
## ELECTRICAL SPECIFICATION (T<sub>CASE</sub> = 25 °C)

### STATIC (Per Section)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I <sub>DSS</sub>	V <sub>GS</sub> = 0 V	V <sub>DS</sub> = 25 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		0.13	0.16	V
g <sub>FS</sub>	V <sub>DS</sub> = 10 V	I <sub>D</sub> = 3.2 A		TBD		mho
C <sub>ISS</sub>	V <sub>GS</sub> = 0 V	V <sub>DS</sub> = 7.5 V		54		pF
C <sub>OSS</sub>	V <sub>GS</sub> = 0 V	V <sub>DS</sub> = 7.5 V		43		pF
C <sub>RSS</sub>	V <sub>GS</sub> = 0 V	V <sub>DS</sub> = 7.5 V		4.0		pF

### DYNAMIC

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
P <sub>OUT</sub>	V <sub>DD</sub> = 7.5 V	I <sub>DQ</sub> = 50 mA	f = 500 MHz	3		W
G <sub>PS</sub>	V <sub>DD</sub> = 7.5 V	I <sub>DQ</sub> = 50 mA	P <sub>OUT</sub> = 3 W	16	20	dB
η <sub>D</sub>	V <sub>DD</sub> = 7.5 V	I <sub>DQ</sub> = 50 mA	P <sub>OUT</sub> = 3 W	50	55	%
Load mismatch	V <sub>DD</sub> = 9.5 V	I <sub>DQ</sub> = 50 mA	P <sub>OUT</sub> = 3 W	20:1		VSWR
	ALL PHASE ANGLES					



### ESD PROTECTION CHARACTERISTICS

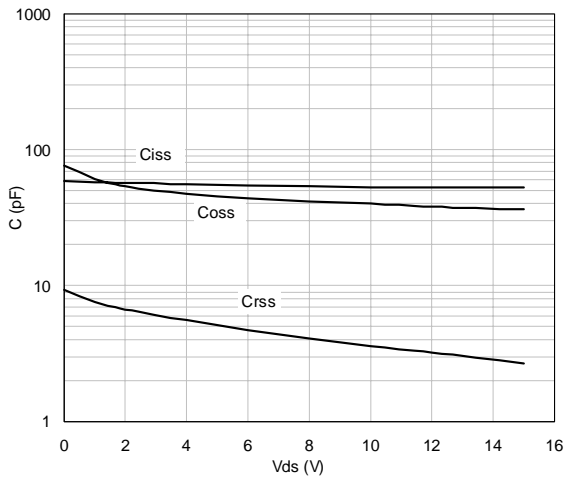
Test Conditions	Class
Human Body Model	2
Machine Model	M3

### MOISTURE SENSITIVITY LEVEL

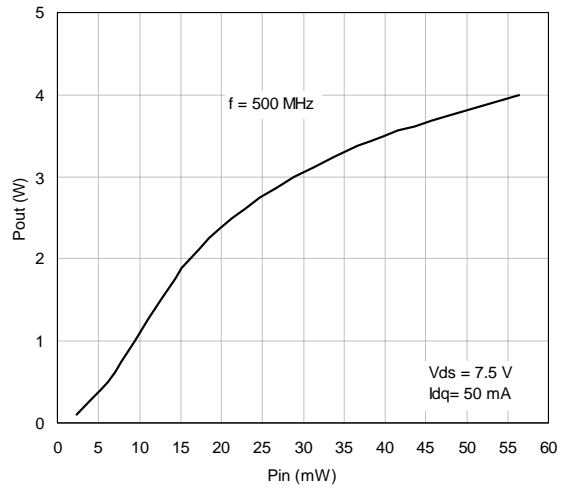
Test Methodology	Rating
J-STD-020B	MSL 3

TYPICAL PERFORMANCE

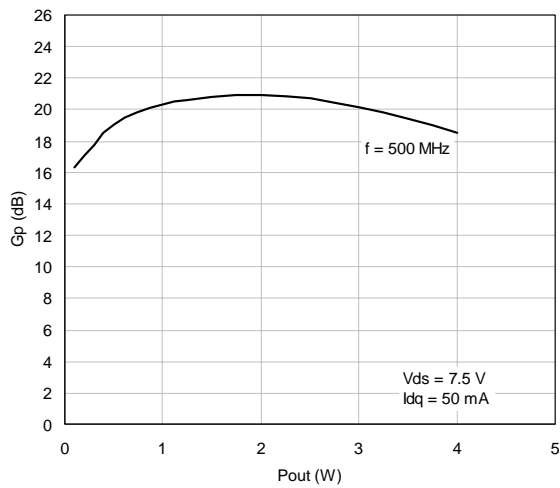
Capacitance Vs Supply Voltage



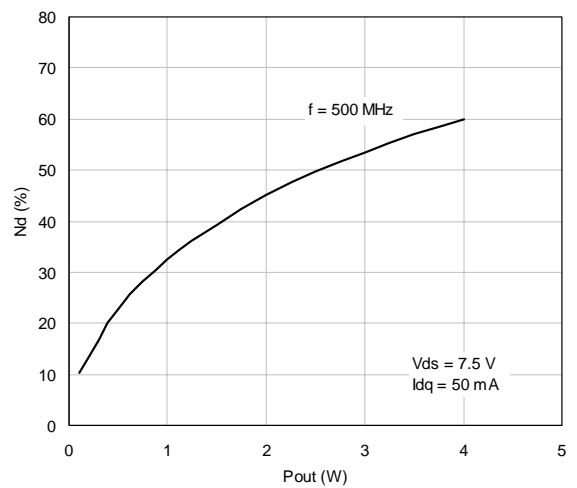
Output Power Vs Input Power



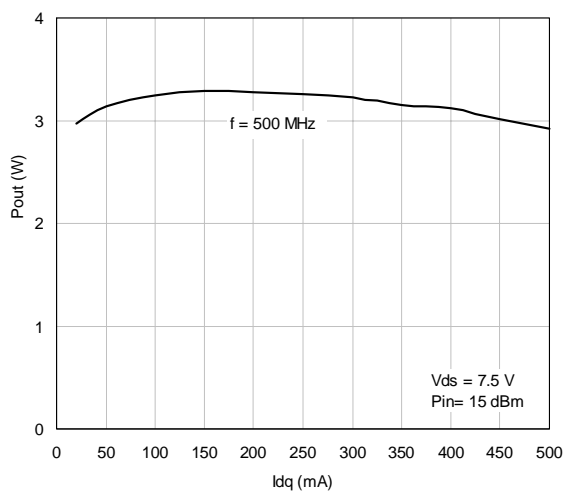
Power Gain Vs Output Power



Efficiency Vs Output Power



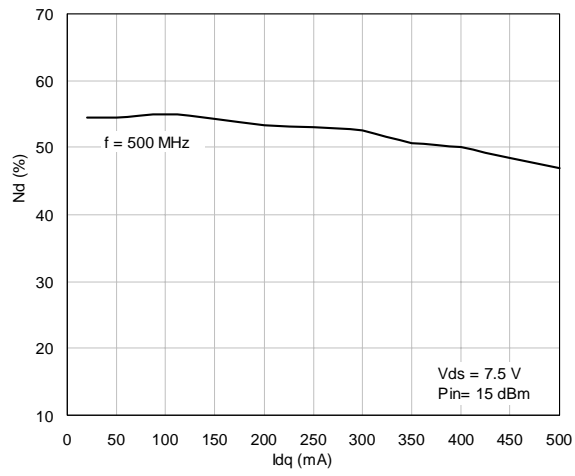
Output Power Vs Bias Current



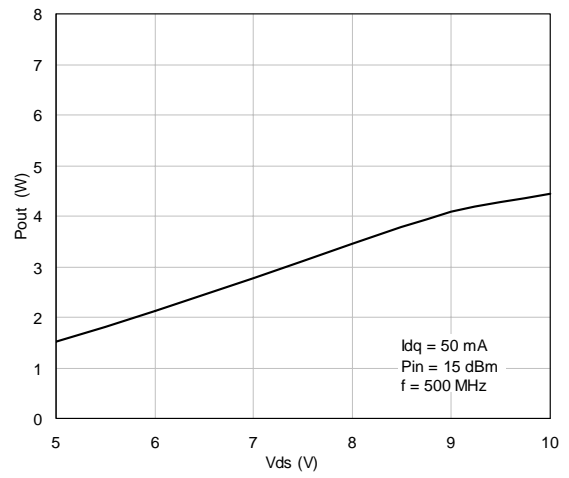
# PD54003L

## TYPICAL PERFORMANCE

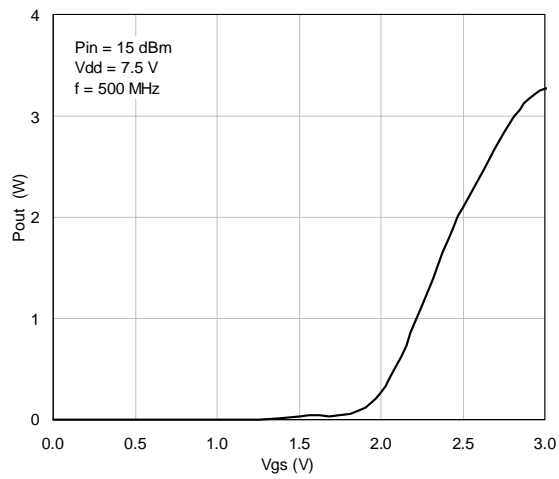
### Efficiency Vs Bias Current



### Output Power Vs Supply Voltage

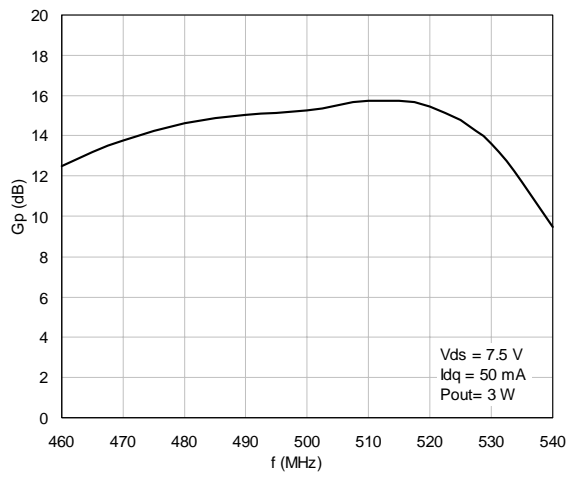


### Output Power Vs Gate-Source Voltage

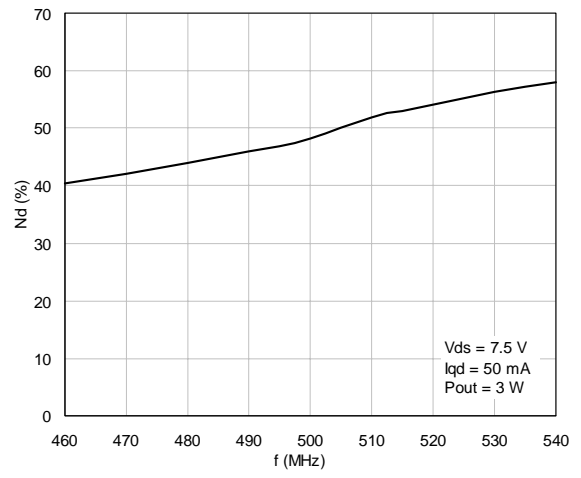


TYPICAL PERFORMANCE (BROADBAND)

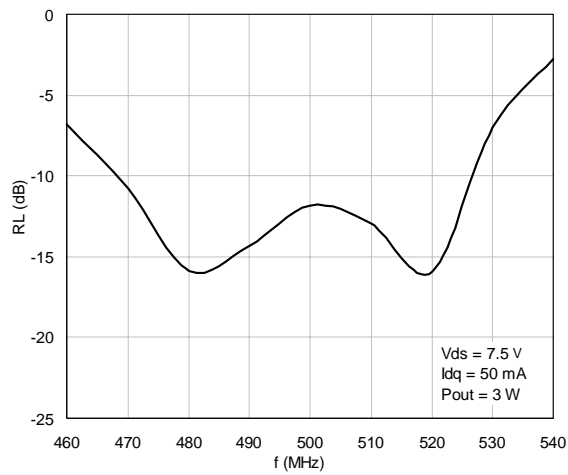
Power Gain Vs Frequency



Efficiency Vs Frequency



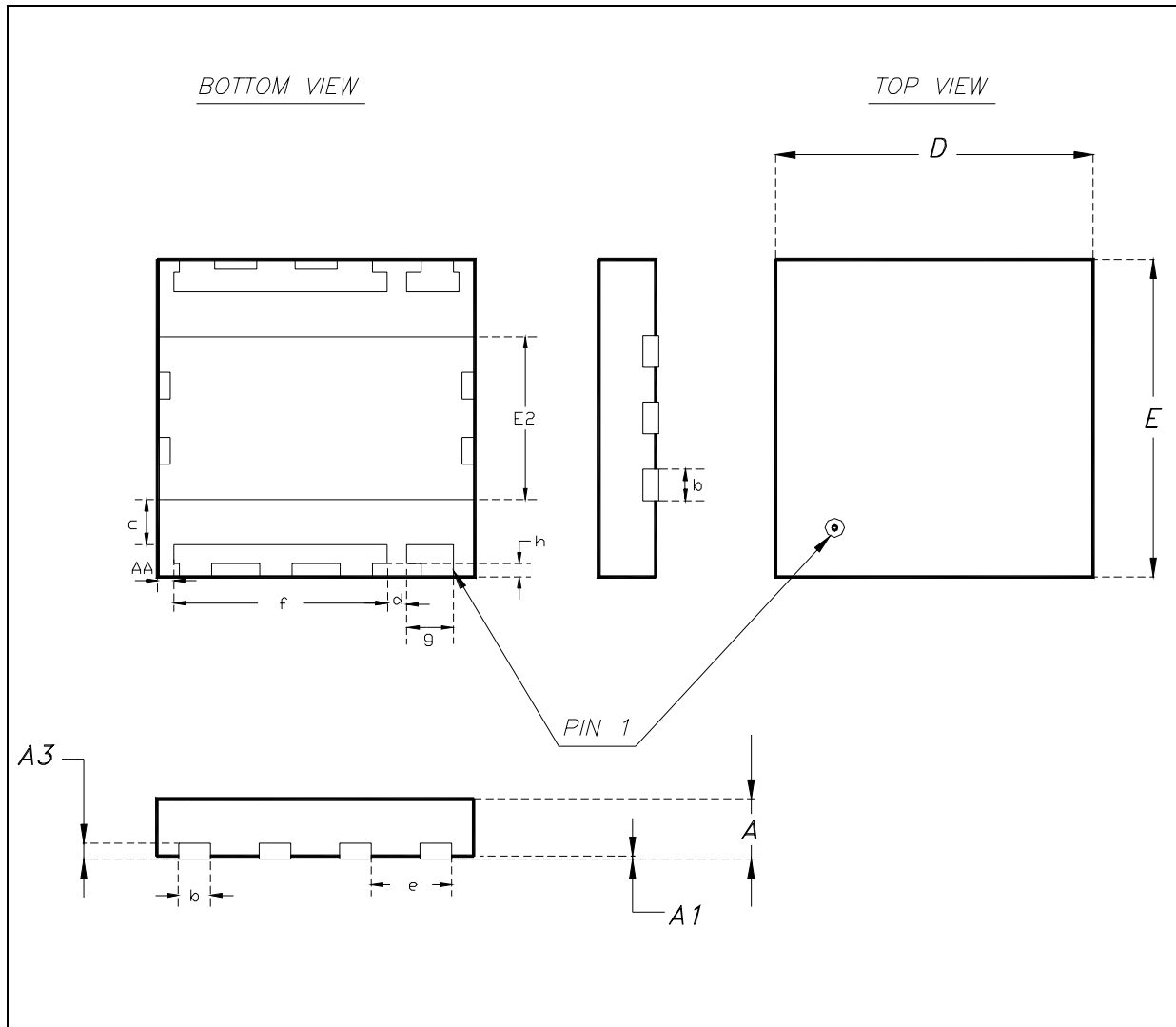
Return Loss Vs Frequency





**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	
AA	0.15	0.25	0.35	0.006	0.01	0.014
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	
d		0.30			0.011	
E		5.00			0.197	
E2	2.49	2.57	2.64	0.098	0.101	0.104
e		1.27			0.050	
f		3.37			0.132	
g		0.74			0.03	
h		0.21			0.008	



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