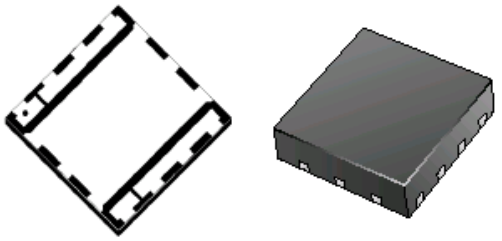
PD54003L

RF POWER TRANSISTORS
The *LdmoST* PLASTIC FAMILY

ADVANCED DATA

N-CHANNEL ENHANCEMENT-MODE LATERAL MOSFETs

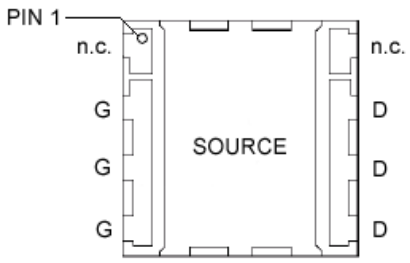
- EXCELLENT THERMAL STABILITY
- COMMON SOURCE CONFIGURATION
- P_{OUT} = 3 W WITH 20 dB gain @ 500 MHz
- NEW LEADLESS PLASTIC PACKAGE
- ESD PROTECTION
- SUPPLIED IN TAPE & REEL OF 3K UNITS



PowerFLAT™(5x5)

ORDER CODE	BRANDING
PD54003L	54003

PIN CONNECTION



TOP VIEW

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 °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 (@ Tc = 70°C)	19.5	W
Tj	Max. Operating Junction Temperature	150	°C
T_{STG}	Storage Temperature	-65 to +150	°C

THERMAL DATA

$R_{th(j-c)}$	Junction -Case Thermal Resistance	4.1	°C/W

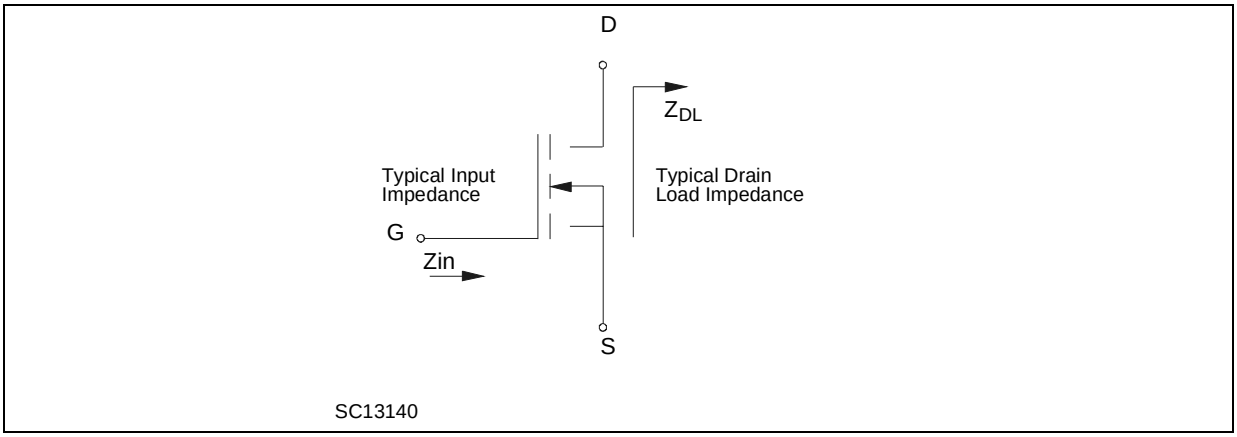
ELECTRICAL SPECIFICATION (T_{CASE} = 25 °C)

STATIC (Per Section)

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 = 50 mA		2.0		5.0	V
$V_{DS(ON)}$	V_{GS} = 10 V	I_D = 0.5 A			0.13	0.16	V
g_{FS}	V_{DS} = 10 V	I_D = 3.2 A			TBD		mho
C_{ISS}	V_{GS} = 0 V	V_{DS} = 7.5 V	f = 1 MHz		54		pF
C_{OSS}	V_{GS} = 0 V	V_{DS} = 7.5 V	f = 1 MHz		43		pF
C_{RSS}	V_{GS} = 0 V	V_{DS} = 7.5 V	f = 1 MHz		4.0		pF

DYNAMIC

Symbol	Test Conditions				Min.	Typ.	Max.	Unit
P_{OUT}	V_{DD} = 7.5 V	I_{DQ} = 50 mA		f = 500 MHz	3			W
G_{PS}	V_{DD} = 7.5 V	I_{DQ} = 50 mA	P_{OUT} = 3 W	f = 500 MHz	16	20		dB
η_D	V_{DD} = 7.5 V	I_{DQ} = 50 mA	P_{OUT} = 3 W	f = 500 MHz	50	55		%
Load mismatch	V_{DD} = 9.5 V ALL PHASE ANGLES	I_{DQ} = 50 mA	P_{OUT} = 3 W	f = 500 MHz	20:1			VSWR



ESD PROTECTION CHARACTERISTICS

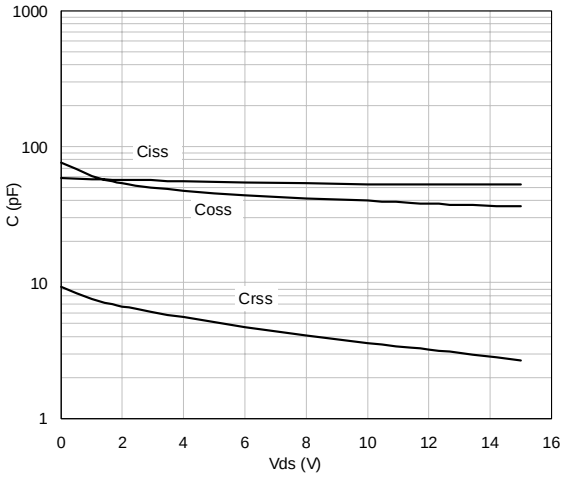
Test Conditions	Class
Human Body Model	2
Machine Model	M3

MOISTURE SENSITIVITY LEVEL

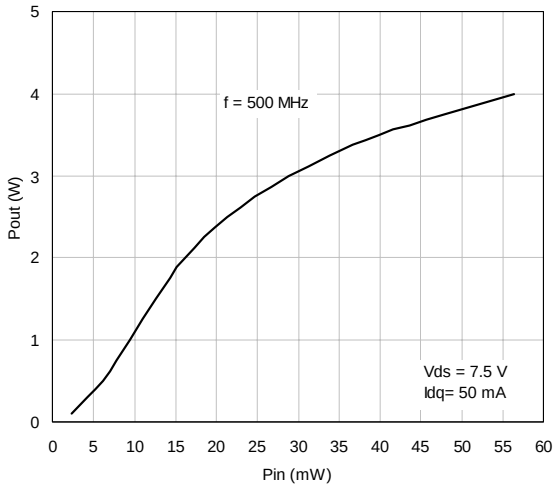
Test Methodology	Rating
J-STD-020B	MSL 3

TYPICAL PERFORMANCE

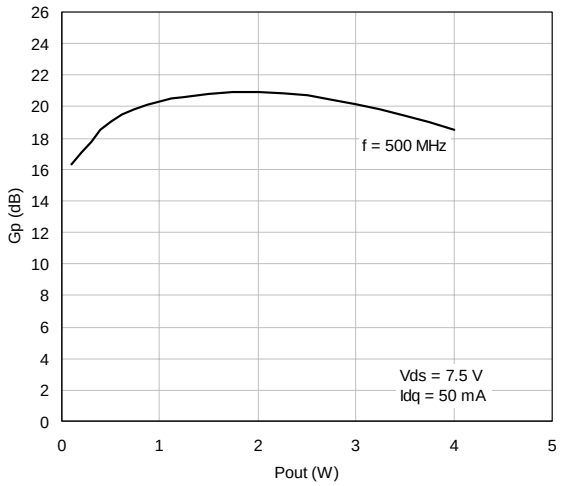
Capacitance Vs Supply Voltage



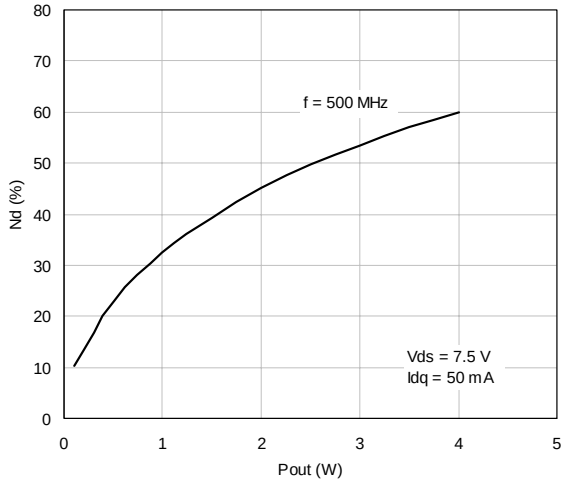
Output Power Vs Input Power



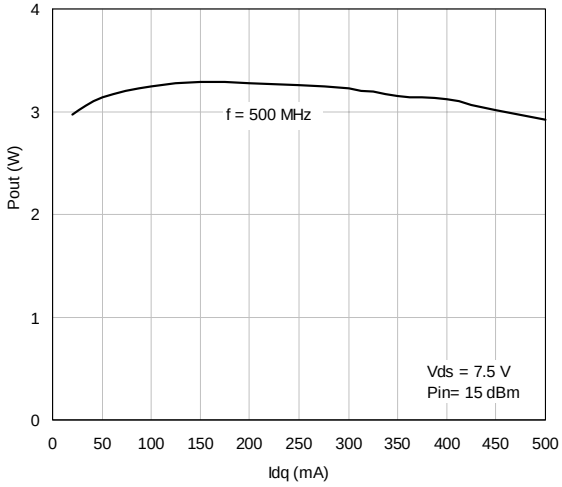
Power Gain Vs Output Power



Efficiency Vs Output Power

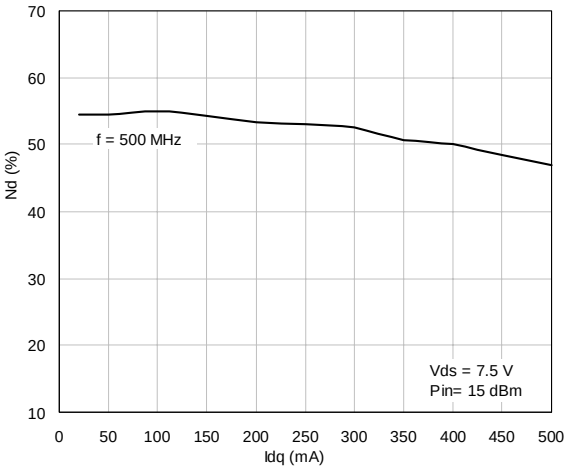


Output Power Vs Bias Current

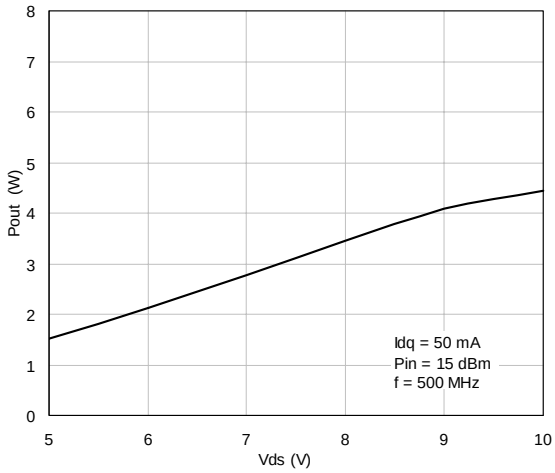


TYPICAL PERFORMANCE

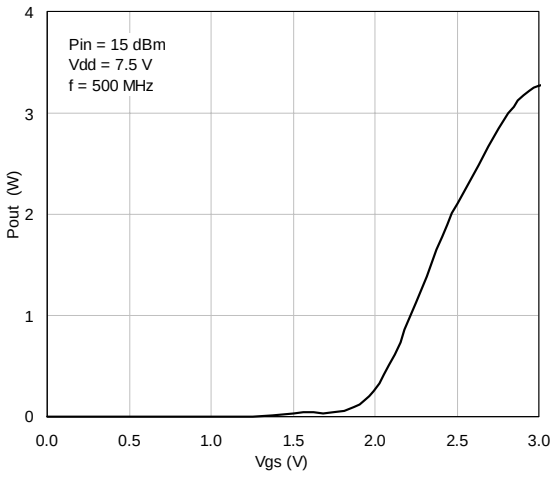
Efficiency Vs Bias Current



Output Power Vs Supply Voltage

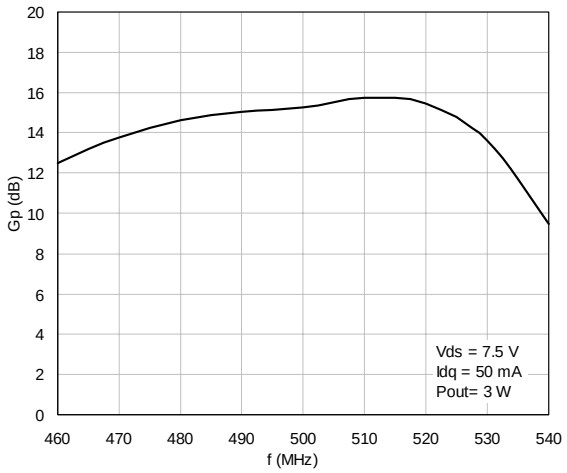


Output Power Vs Gate-Source Voltage

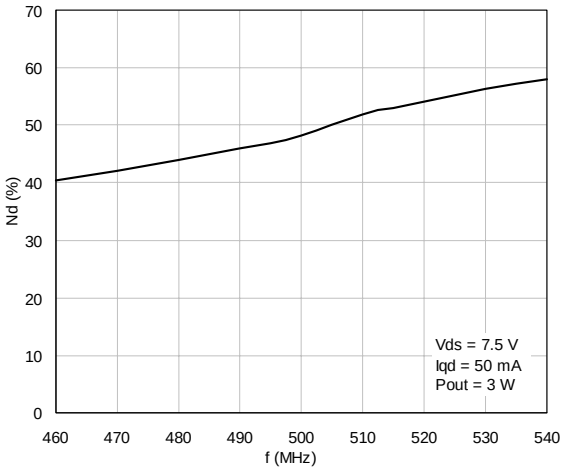


TYPICAL PERFORMANCE *(BROADBAND)*

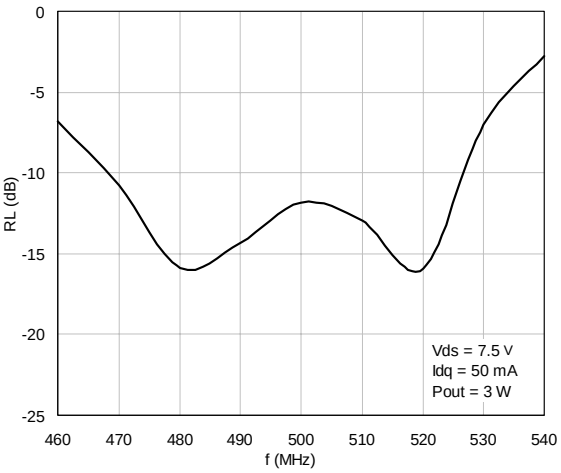
Power Gain Vs Frequency



Efficiency Vs Frequency

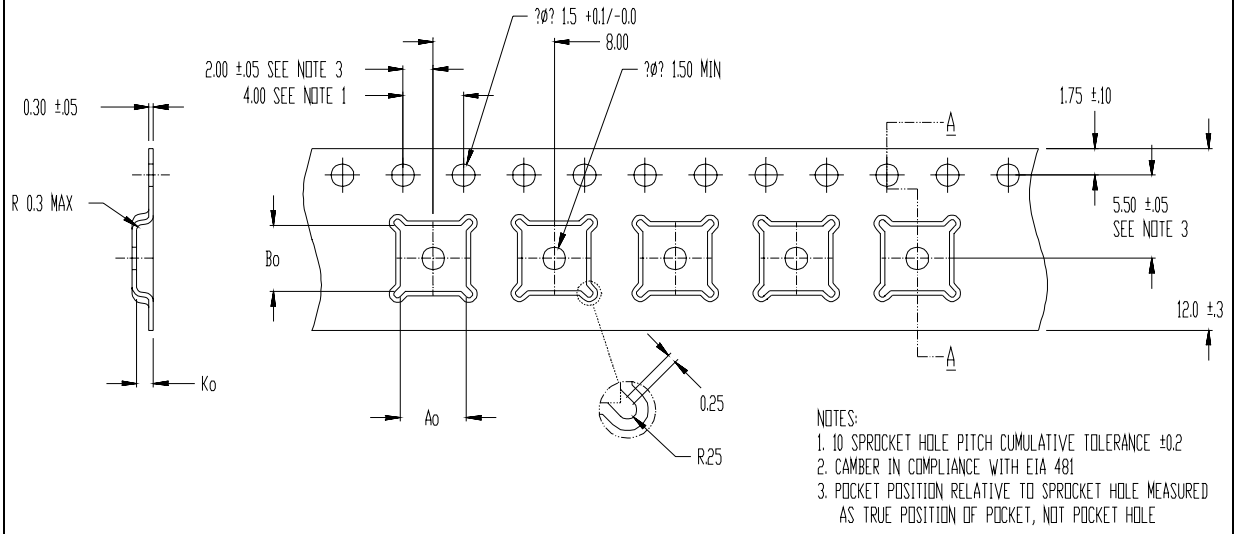


Return Loss Vs Frequency



TAPE & REEL DIMENSIONS

	mm		
	MIN.	TYP.	MAX
Ao	5.15	5.25	5.35
Bo	5.15	5.25	5.35
Ko	1.0	1.1	1.2



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