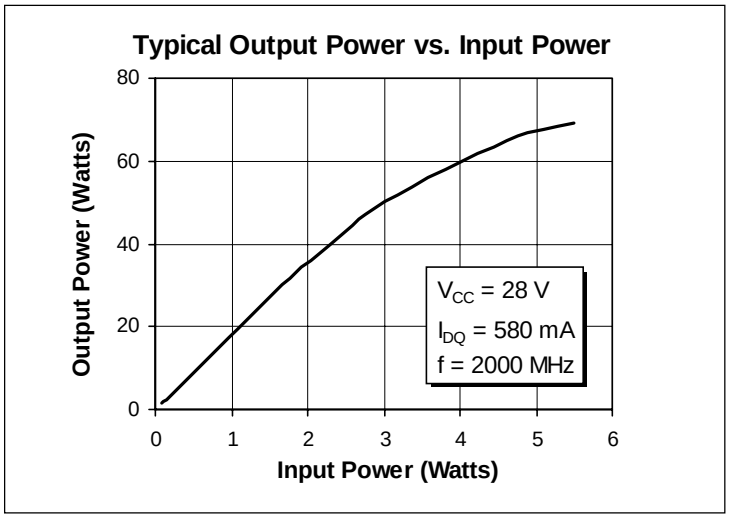
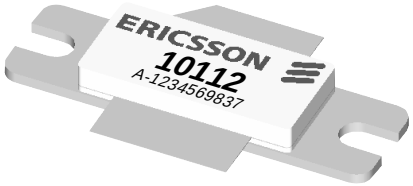
PTF 10112
60 Watts, 1.8–2.0 GHz
GOLDMOS™ Field Effect Transistor

Description

The PTF 10112 is an internally matched common source N-channel enhancement-mode lateral MOSFET intended for CDMA and TDMA applications from 1.8 to 2.0 GHz. It is rated at 60 watts power output. Nitride surface passivation and full gold metallization ensure excellent device lifetime and reliability.

- ***INTERNALLY MATCHED***
- **Guaranteed Performance at 1.93, 1.99 GHz, 28 V**
  - Output Power = 60 Watts Min
  - Power Gain = 12 dB Typ
- **Full Gold Metallization**
- **Silicon Nitride Passivated**
- **Back Side Common Source**
- **Excellent Thermal Stability**
- **100% Lot Traceability**





Package 20248

RF Specifications (100% Tested)

Characteristic	Symbol	Min	Typ	Max	Units
Gain (V_{DD} = 28 V, P_{OUT} = 15 W, I_{DQ} = 580 mA, f = 1.93, 1.99 GHz)	G_{ps}	11	12	—	dB
Power Output at 1 dB Compression (V_{DD} = 28 V, I_{DQ} = 580 mA, f = 1.99 GHz)	P-1dB	60	—	—	Watts
Drain Efficiency (V_{DD} = 28 V, P_{OUT} = 60 W, I_{DQ} = 580 mA, f = 1.99 GHz)	η_D	—	41	—	%
Load Mismatch Tolerance (V_{DD} = 28 V, P_{OUT} = 60 W, I_{DQ} = 580 mA, f = 1.99 GHz —all phase angles at frequency of test)	Ψ	—	—	10:1	—

All published data at T_{CASE} = 25°C unless otherwise indicated.

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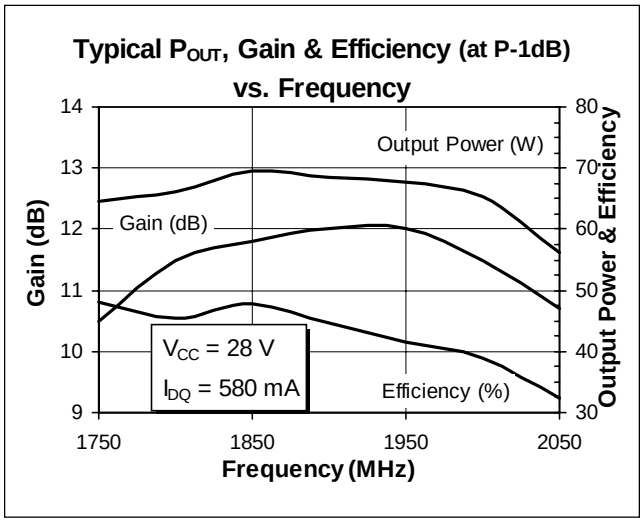
Electrical Characteristics (100% Tested)

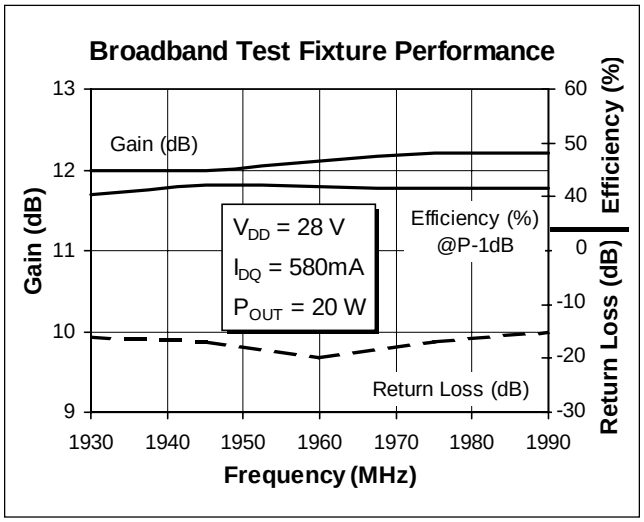
Characteristic	Conditions	Symbol	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_D = 100 mA	$V_{(BR)DSS}$	65	—	—	Volts
Zero Gate Voltage Drain Current	V_{DS} = 28 V, V_{GS} = 0 V	I_{DSS}	—	—	5.0	mA
Gate Threshold Voltage	V_{DS} = 10 V, I_D = 150 mA	$V_{GS(th)}$	3.0	—	5.0	Volts
Forward Transconductance	V_{DS} = 10 V, I_D = 2 A	g_{fs}	—	4.0	—	Siemens

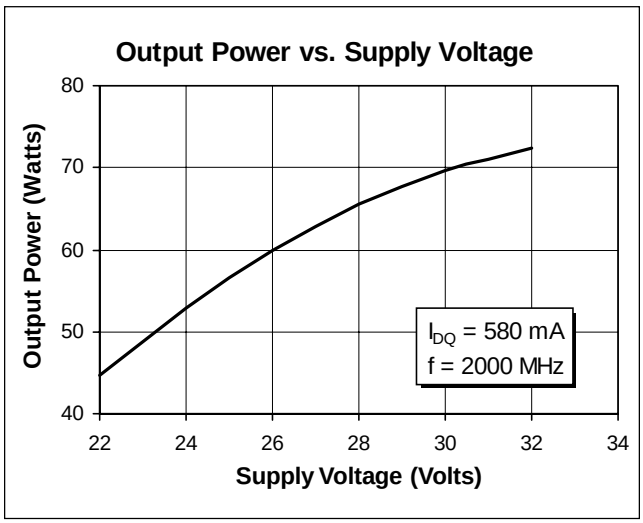
Maximum Ratings

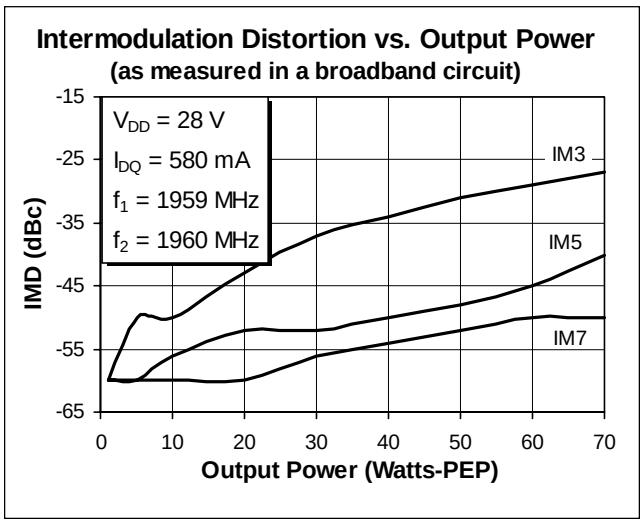
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	65	Vdc
Gate-Source Voltage	V_{GS}	±20	Vdc
Operating Junction Temperature	T_J	200	°C
Total Device Dissipation at Above 25°C derate by	P_D	237 1.35	Watts W/°C
Storage Temperature Range	T_{STG}	–40 to +150	°C
Thermal Resistance (T_{CASE} = 70°C)	$R_{\theta JC}$	0.74	°C/W

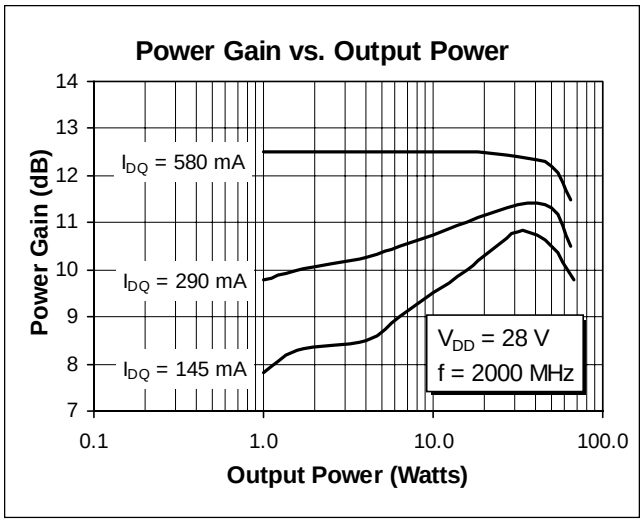
Typical Performance

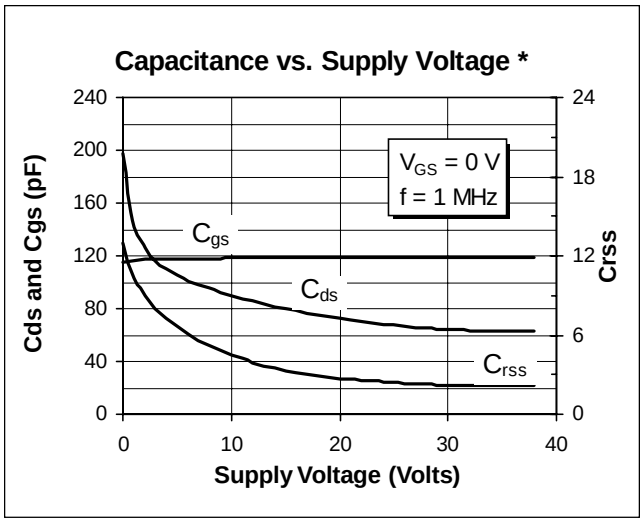




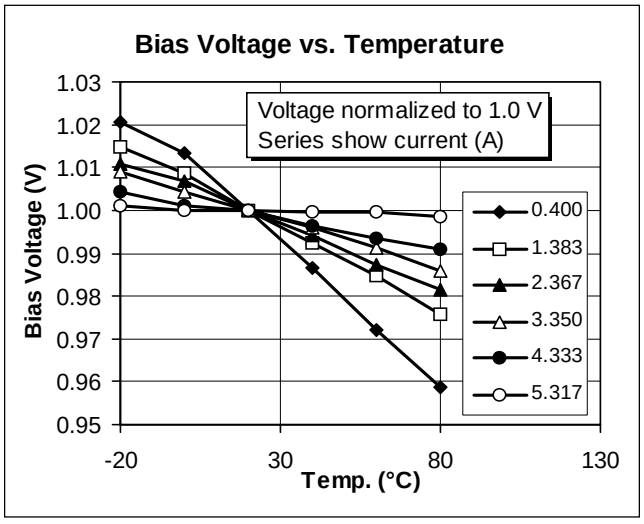








* This part is internally matched. Measurements of the finished product will not yield these results.



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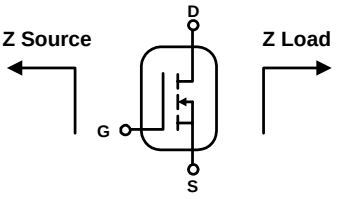
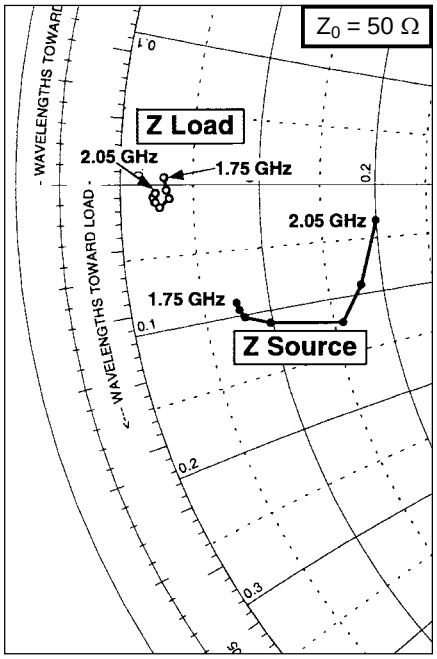
Impedance Data

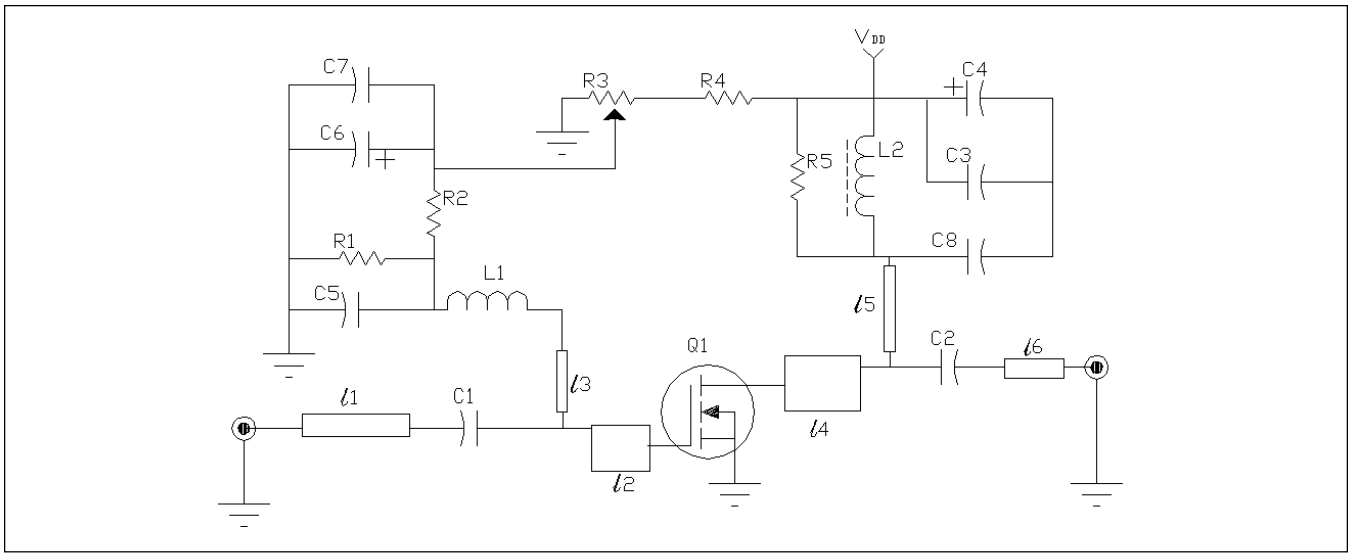
V_{DD} = 28 V, P_{OUT} = 60 W, I_{DQ} = 580 mA





Frequency	Z Source Ω		Z Load Ω	
GHz	R	jX	R	jX
1.75	3.74	-4.50	1.48	0.25
1.80	3.80	-4.80	1.56	-0.20
1.85	3.96	-5.10	1.66	-0.50
1.90	4.90	-5.50	1.32	-0.80
1.95	7.90	-6.10	1.16	-0.60
2.00	9.00	-4.60	1.10	-0.45
2.05	10.00	-1.70	1.18	-0.30

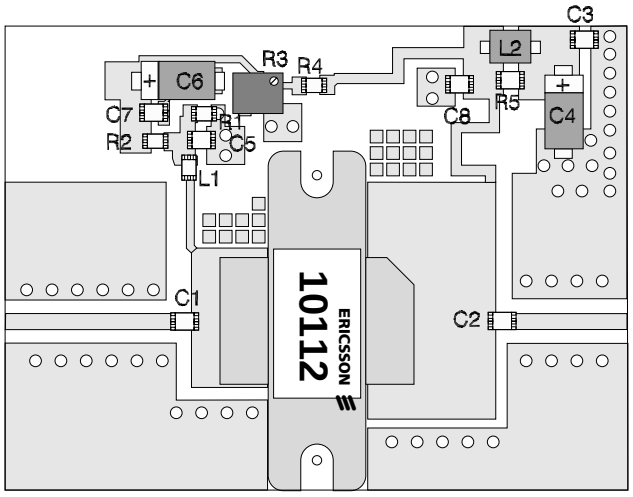
Test Circuit

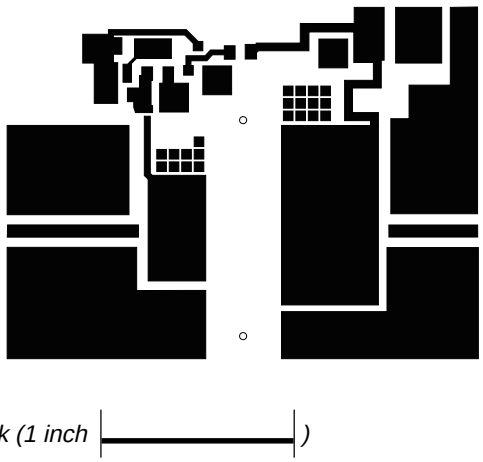


Test Circuit Block Diagram for f = 1.93–1.99 GHz

Q1	PTF 10112	LDMOS RF Transistor
ℓ1, ℓ6		Microstrip 50 Ω
ℓ2	.10 λ @ 2.0 GHz	Microstrip 9.4 Ω
ℓ3	.08 λ @ 2.0 GHz	Microstrip 70 Ω
ℓ4	.162 λ @ 2.0 GHz	Microstrip 5.8 Ω
ℓ5	.22 λ @ 2 GHz	Microstrip 65 Ω
C1, C2, C5, C8	10 pF Chip Cap	ATC 100 B
C3, C7	0.1 μF Chip Cap	
C4, C6	10 μF SMT Tantalum	

L1	2.7 nh	SMT Coil
L2	4mm	SMT Ferrite Bead
R1, R2	220 Ω	Chip Resistor K1206
R3	2K	SMT Potentiometer
R4	10 Ω	Chip Resistor K1206
R5	1 Ω	Chip Resistor K1206
Circuit Board	.028" Dielectric Thickness, ε_r = 4.0, AlliedSignal, G200, 2 oz. copper	





Parts Layout (not to scale)

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Notes: