

PTF 10019

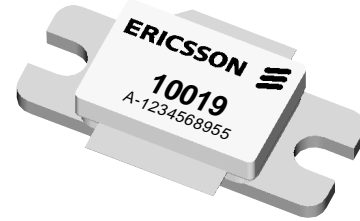
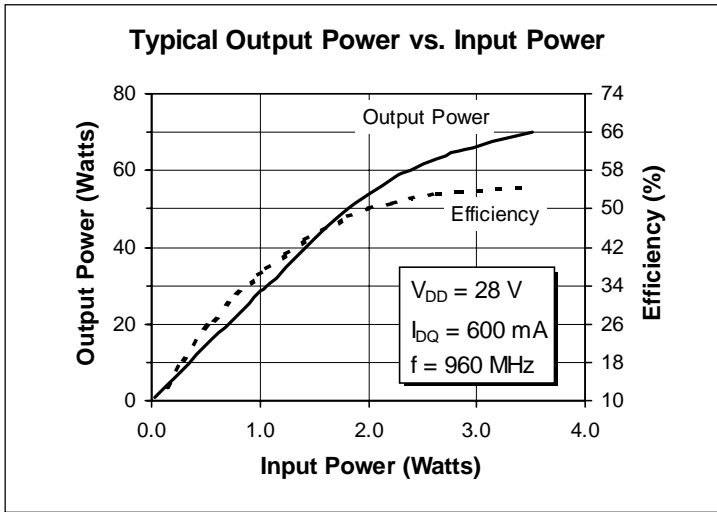
70 Watts, 860–960 MHz

GOLDMOS™ Field Effect Transistor

Description

The PTF 10019 is an internally matched, 70 Watt LDMOS FET intended for cellular, GSM, and D-AMPS applications in the 860 to 960 MHz range. Nitride surface passivation and full gold metallization ensure excellent device lifetime and reliability.

- **INTERNALLY MATCHED**
- **Performance at 960 MHz, 28 Volts**
 - Output Power = 70 Watts
 - Power Gain = 14.5 dB Typ
 - Efficiency = 50% Typ
- **Full Gold Metallization**
- **Silicon Nitride Passivated**
- **Excellent Thermal Stability**
- **100% Lot Traceability**



Package 20237

RF Specifications (100% Tested)

Characteristic	Symbol	Min	Typ	Max	Units
Gain ($V_{DD} = 28\text{ V}$, $P_{Out} = 70\text{ W}$, $I_{DQ} = 600\text{ mA}$, $f = 960\text{ MHz}$)	G_{pe}	13.0	14.5	—	dB
Power Output at 1 dB Compression ($V_{DD} = 28\text{ V}$, $I_{DQ} = 600\text{ mA}$, $f = 960\text{ MHz}$)	P-1dB	70	75	—	Watts
Drain Efficiency ($V_{DD} = 28\text{ V}$, $P_{Out} = 70\text{ W}$, $I_{DQ} = 600\text{ mA}$, $f = 960\text{ MHz}$)	η	45	50	—	%
Load Mismatch Tolerance ($V_{DD} = 28\text{ V}$, $P_{out} = 70\text{ W}$, $I_{DQ} = 600\text{ mA}$, $f = 960\text{ MHz}$ —all phase angles at frequency of test)	Y	—	—	10:1	—

All published data at $T_{CASE} = 25^\circ\text{C}$ unless otherwise indicated.

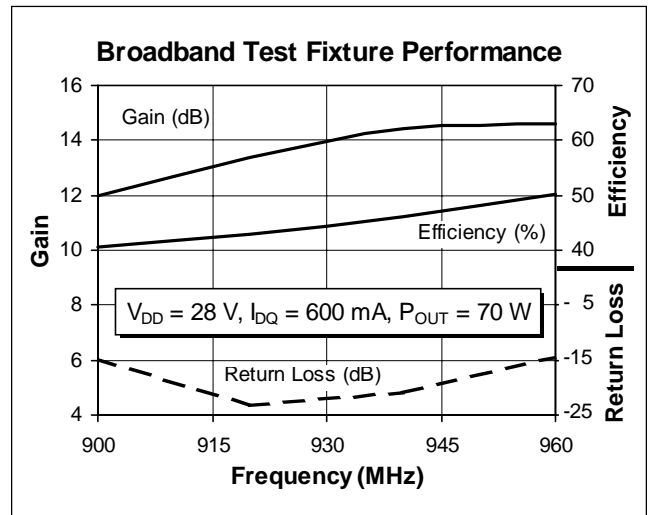
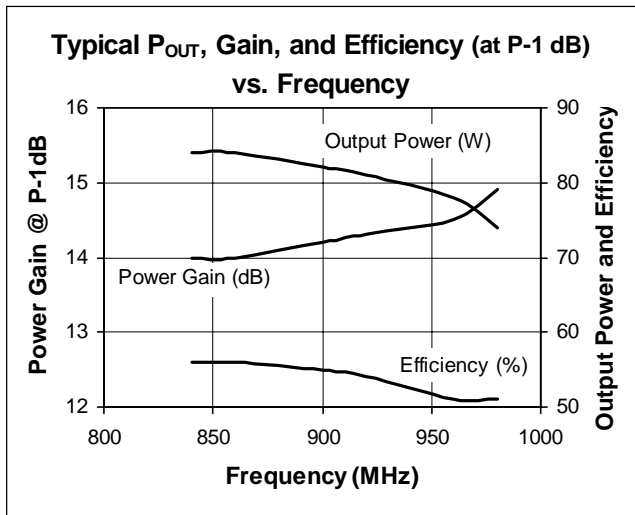
Electrical Characteristics (100% Tested)

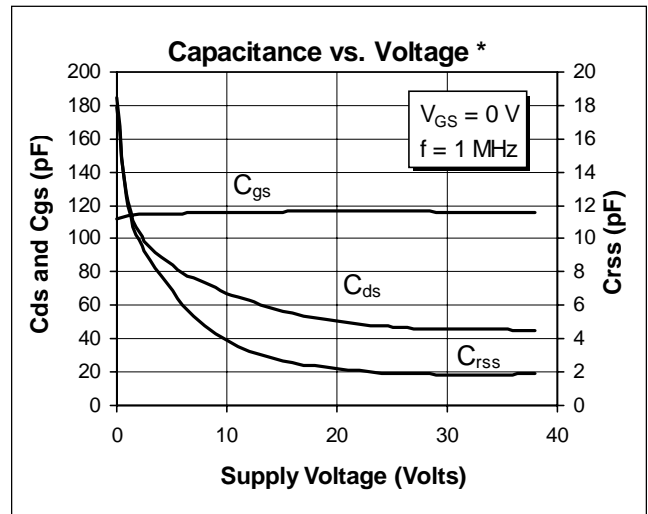
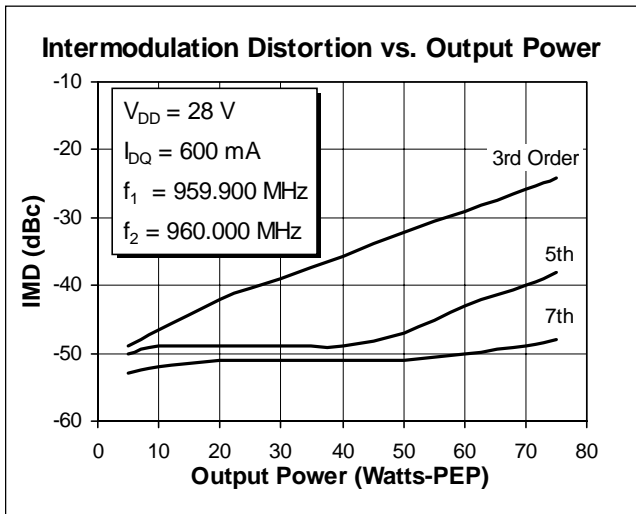
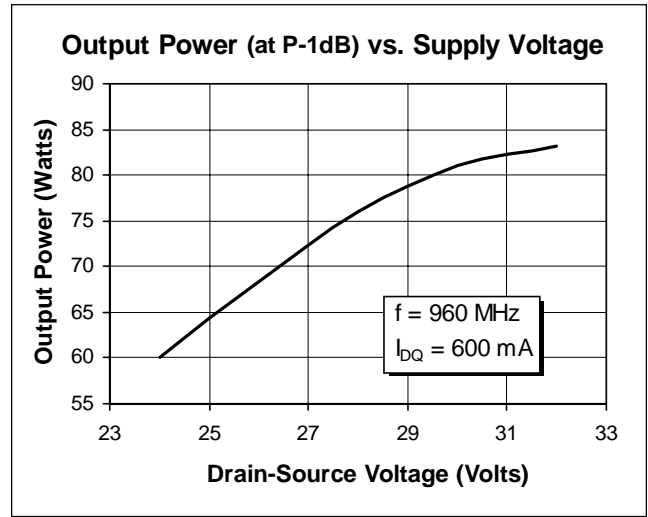
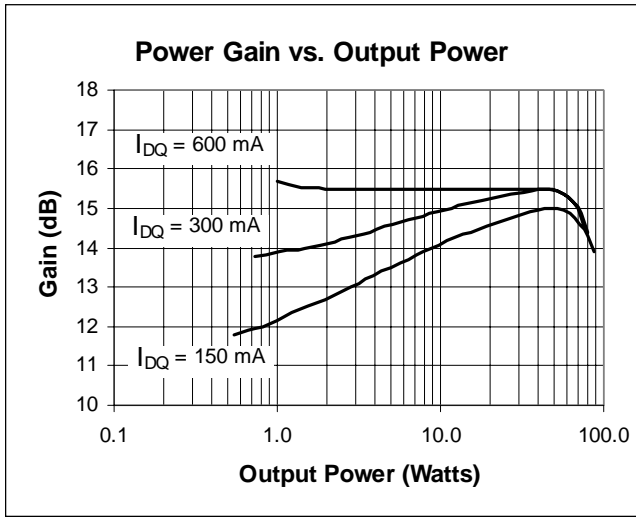
Characteristic	Conditions	Symbol	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 25\text{ mA}$	$V_{(BR)DSS}$	65	—	—	Volts
Drain-Source Leakage Current	$V_{DS} = 26\text{ V}, V_{GS} = 0\text{ V}$	I_{DSS}	—	—	1.0	mA
Gate Threshold Voltage	$V_{DS} = 10\text{ V}, I_D = 75\text{ mA}$	$V_{GS(th)}$	3.0	—	5.0	Volts
Forward Transconductance	$V_{DS} = 10\text{ V}, I_D = 3\text{ A}$	g_{fs}	—	3.0	—	Siemens

Maximum Ratings

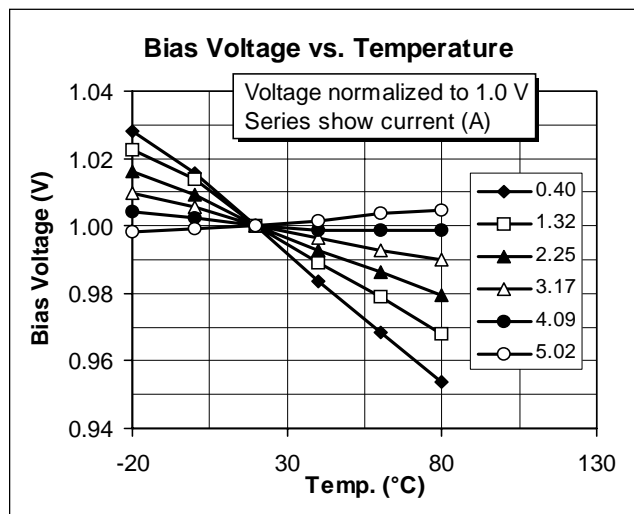
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	65	Vdc
Gate-Source Voltage	V_{GS}	± 20	Vdc
Operating Junction Temperature	T_J	200	$^{\circ}\text{C}$
Total Device Dissipation Above 25°C derate by	P_D	215 1.25	Watts $\text{W}/^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-40 to +150	$^{\circ}\text{C}$
Thermal Resistance ($T_{CASE} = 70^{\circ}\text{C}$)	$R_{\theta JC}$	0.8	$^{\circ}\text{C}/\text{W}$

Typical Performance





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

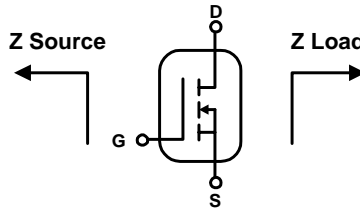


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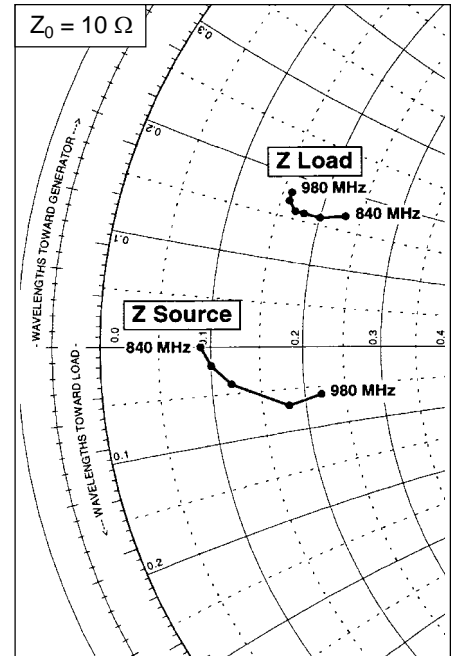


Impedance Data

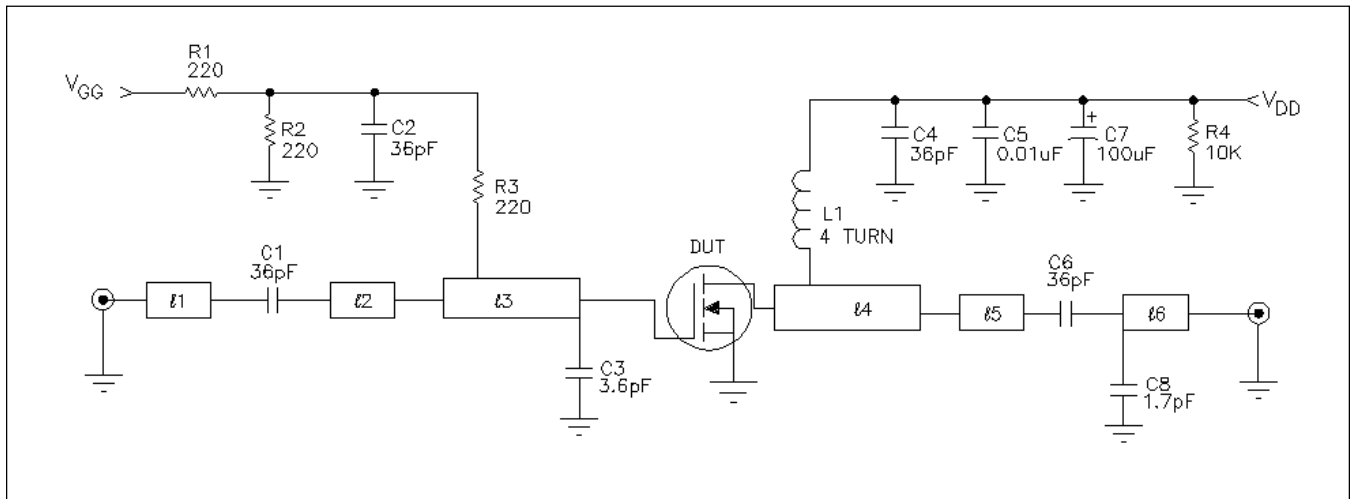
($V_{DD} = 28\text{ V}$, $P_{out} = 70\text{ W}$, $I_{DQ} = 600\text{ mA}$)



Frequency MHz	Z Source Ω		Z Load Ω	
	R	jX	R	jX
840	0.9	0	2.3	1.7
860	1.0	-0.2	2.0	1.6
900	1.2	-0.4	1.8	1.6
920	1.2	-0.4	1.7	1.6
960	1.8	-0.7	1.6	1.7
980	2.2	-0.6	1.6	1.8

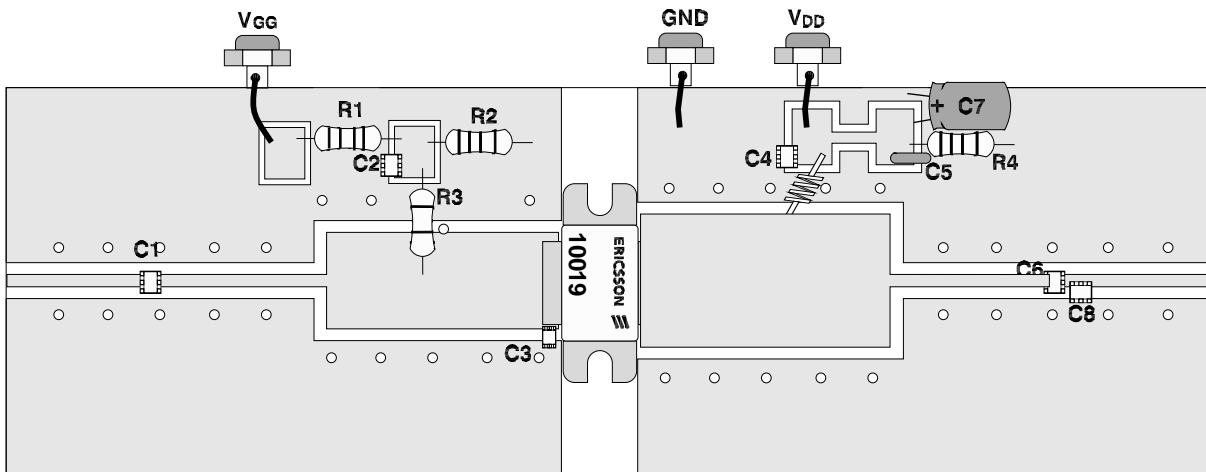


Test Circuit

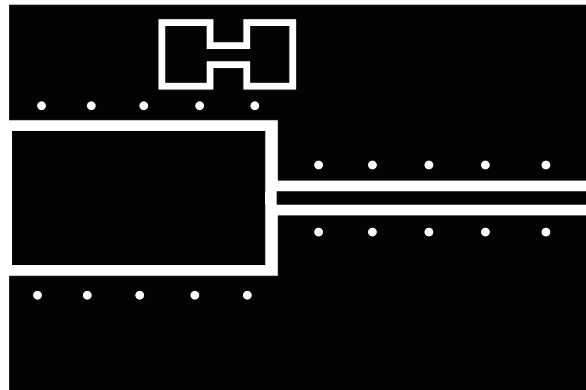
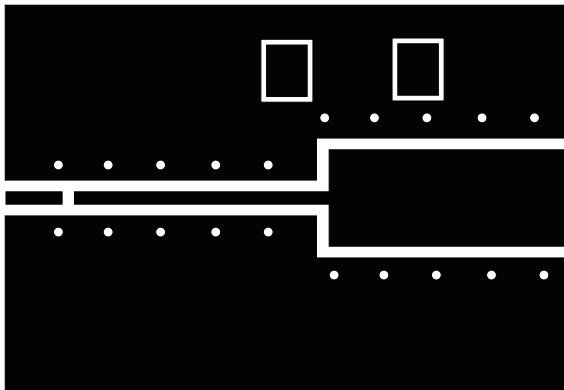


Test Circuit Schematic for $f = 960\text{ MHz}$

DUT	PTF 10019	LDMOS Field Effect Transistor		
$l1, l6$	Microstrip $50\ \Omega$		C7	50 μF , 35 V Electrolytic Capacitor, Digi-Key P5276
$l2$	$0.125\ \lambda$ 960 GHz	Microstrip $50\ \Omega$	C8	1.7 pF Chip Cap ATC 100 B
$l3$	$0.186\ \lambda$ 960 GHz	Microstrip $10\ \Omega$	L1	4 Turn, #20 AWG, .120" I.D.
$l4$	$0.200\ \lambda$ 960 GHz	Microstrip $7.5\ \Omega$	R1, R2, R3	220 Ω , 1/4 W Resistor
$l5$	$0.060\ \lambda$ 960 GHz	Microstrip $50\ \Omega$	R4	10K Ω , 1/4 W Resistor
C1, C2, C4, C6	36 pF	Chip Cap ATC 100 B	Circuit Board	.028" Dielectric Thickness, $\epsilon_r = 4.0$, AlliedSignal, G200, 2 oz. copper
C3	3.6 pF	Chip Cap ATC 100 A		
C5	0.01 μF	Capacitor Digi-Key P4917-ND		



Components Layout (not to scale)



Artwork (1 inch )

Notes: