

PTF 102027

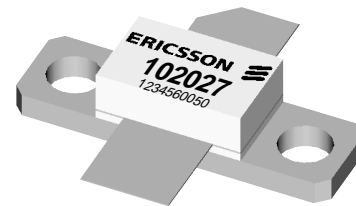
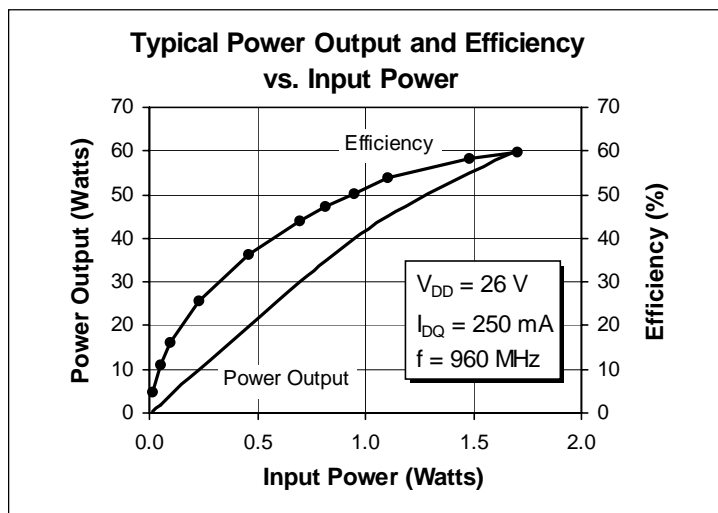
40 Watts, 925–960 MHz

GOLDMOS[®] Field Effect Transistor

Description

The PTF 102027 is a 40-watt GOLDMOS FET intended for EDGE applications from 925 to 960 MHz. This device operates at 53% efficiency with 15 dB of gain typical. Full gold metallization ensures excellent device lifetime and reliability.

- Performance at 960 MHz, 26 Volts
 - Output Power = 40 Watts
 - Power Gain = 15.0 dB Typical
 - Efficiency = 53% Typical
- Full Gold Metallization
- Excellent Thermal Stability
- 100% Lot Traceability



Package 20222

RF Specifications (100% Tested)

Characteristic	Symbol	Min	Typ	Max	Units
Gain ($V_{DD} = 26\text{ V}$, $P_{OUT} = 40\text{ W}$, $I_{DQ} = 250\text{ mA}$, $f = 960\text{ MHz}$)	G_{pe}	14.5	15	—	dB
Power Output at 1 dB Compression ($V_{DD} = 26\text{ V}$, $I_{DQ} = 250\text{ mA}$, $f = 960\text{ MHz}$)	$P-1dB$	40	45	—	Watts
Drain Efficiency ($V_{DD} = 26\text{ V}$, $P_{OUT} = 40\text{ W}$, $I_{DQ} = 250\text{ mA}$, $f = 960\text{ MHz}$)	η	40	53	—	%
Load Mismatch Tolerance ($V_{DD} = 26\text{ V}$, $P_{OUT} = 40\text{ W}$, $I_{DQ} = 250\text{ mA}$, $f = 960\text{ MHz}$ —all phase angles at frequency of test)	Ψ	10:1	—	—	—

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

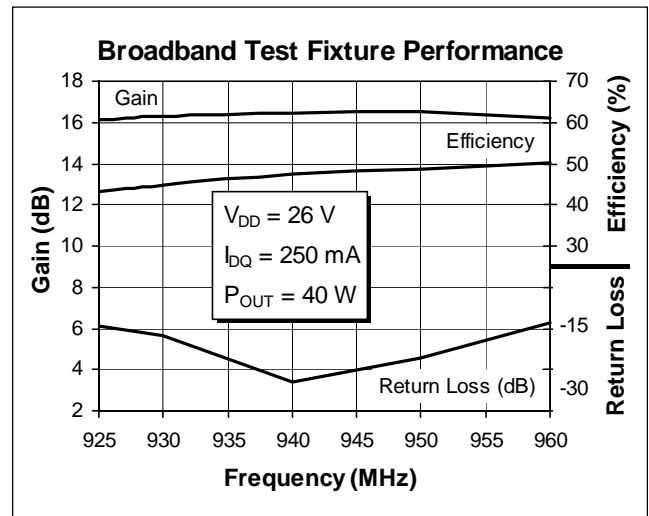
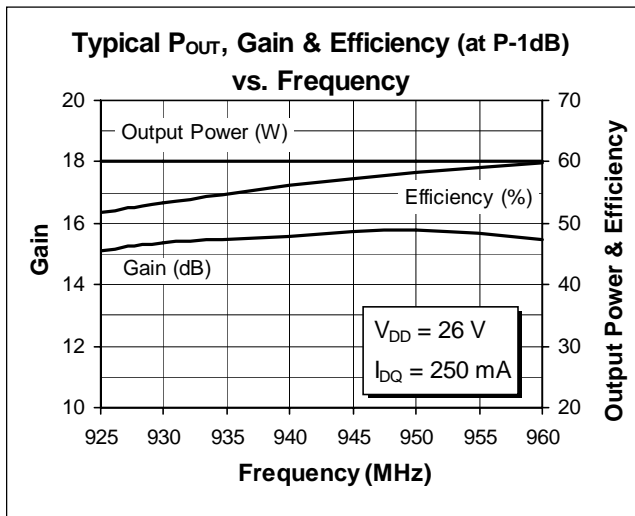
Electrical Characteristics (100% Tested)

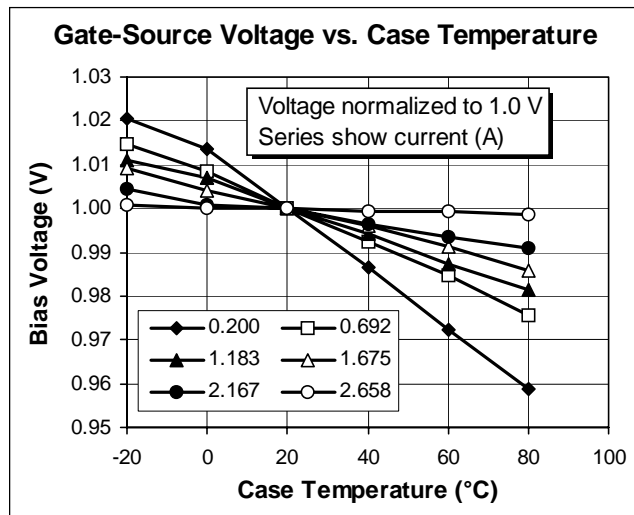
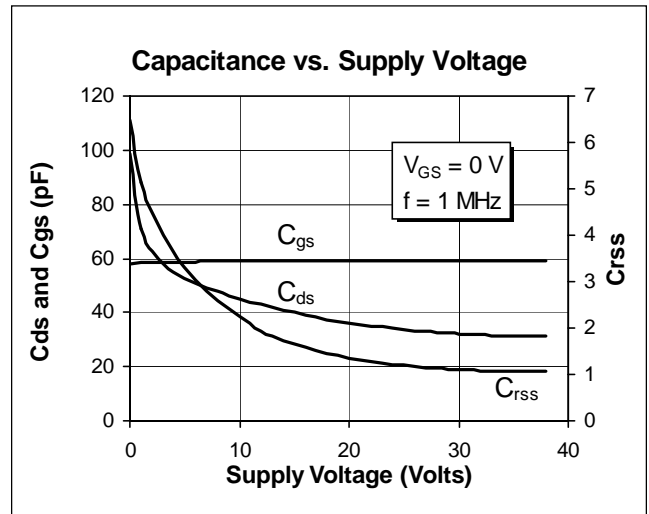
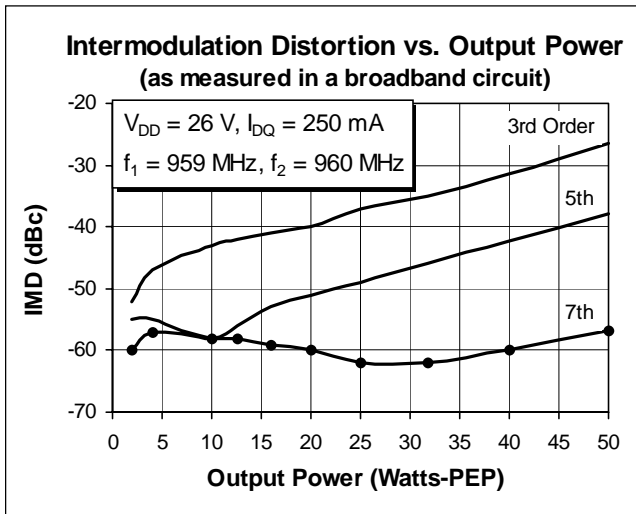
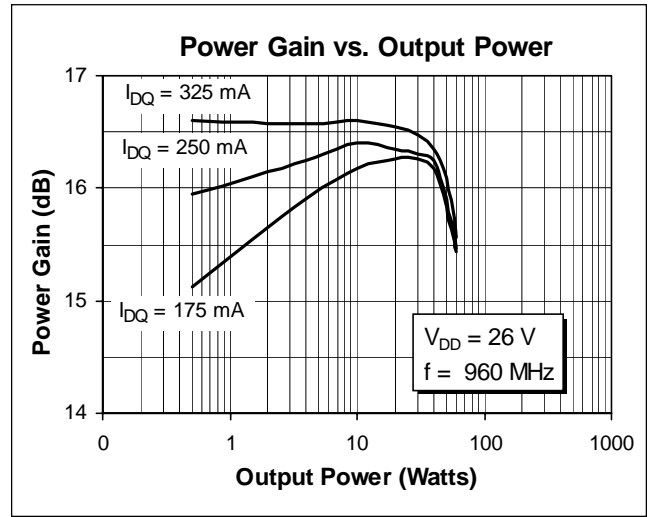
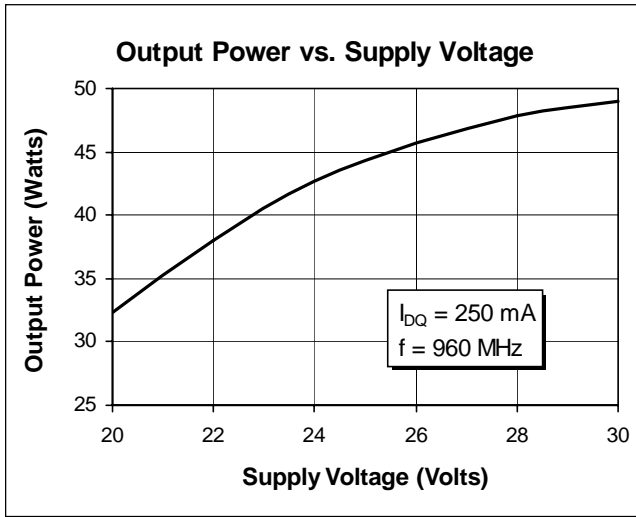
Characteristic	Conditions	Symbol	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 25\text{ mA}$	$V_{(BR)DSS}$	65	—	—	Volts
Drain-Source Leakage Current	$V_{DS} = 26\text{ V}, V_{GS} = 0\text{ V}$	I_{DSS}	—	—	1.0	mA
Gate Threshold Voltage	$V_{DS} = 10\text{ V}, I_D = 100\text{ mA}$	$V_{GS(th)}$	3.0	—	5.0	Volts
Forward Transconductance	$V_{DS} = 5\text{ V}, I_D = 3\text{ A}$	g_{fs}	—	2.0	—	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 $^{\circ}\text{C}$ derate by	P_D	125 0.714	Watts W/ $^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-40 to +150	$^{\circ}\text{C}$
Thermal Resistance ($T_{CASE} = 70^{\circ}\text{C}$)	$R_{\theta JC}$	1.4	$^{\circ}\text{C}/\text{W}$

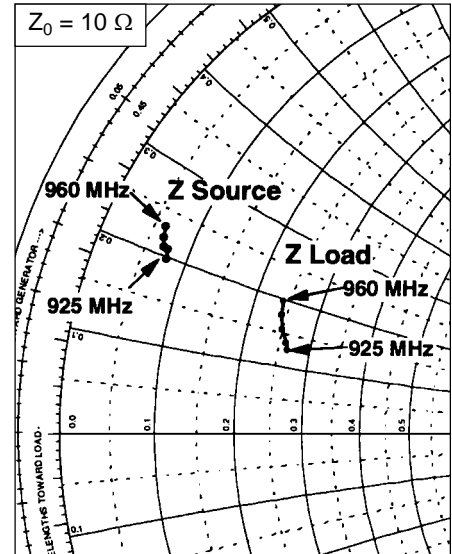
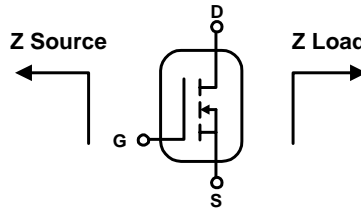
Typical Performance





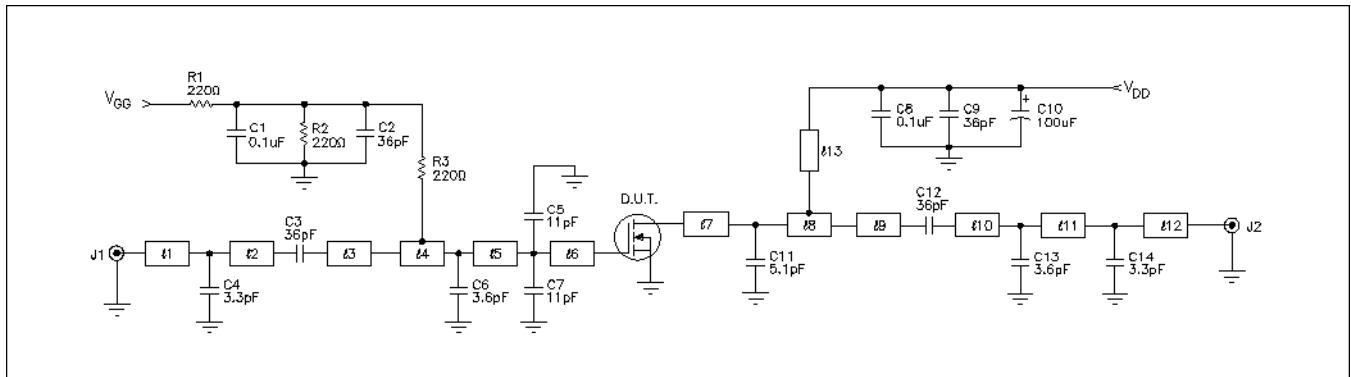
Impedance Data

$V_{DD} = 26\text{ V}$, $P_{OUT} = 40\text{ W}$, $I_{DQ} = 250\text{ mA}$



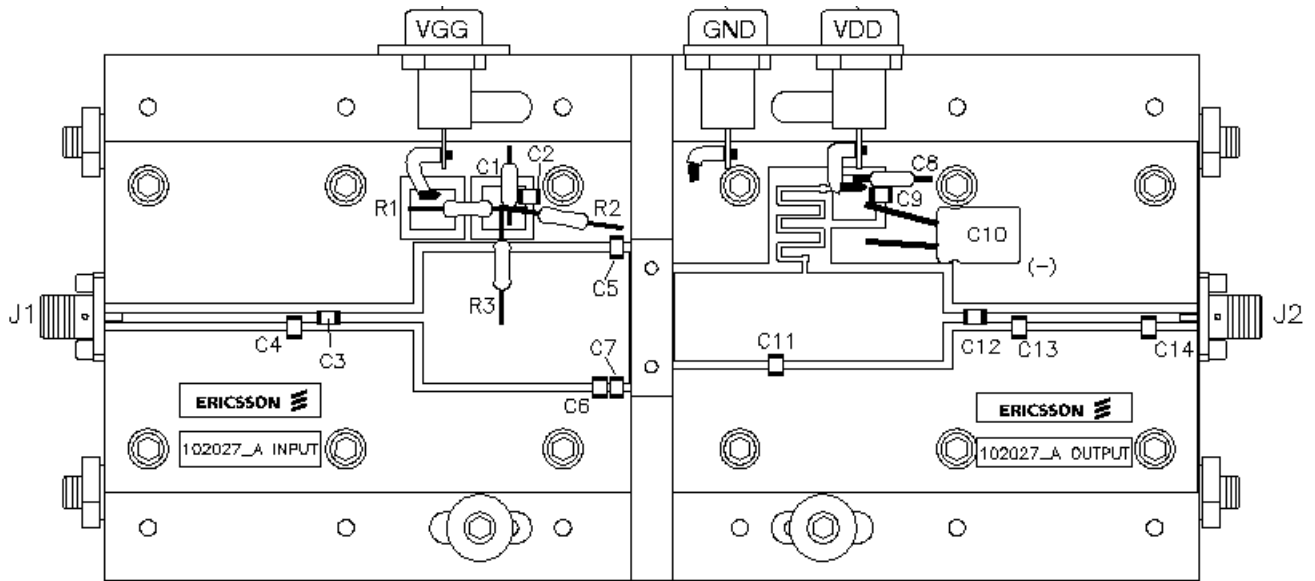
Frequency MHz	Z Source Ω		Z Load Ω	
	R	jX	R	jX
925	0.770	1.98	2.64	1.28
930	0.750	2.09	2.60	1.38
940	0.700	2.10	2.50	1.57
950	0.650	2.20	2.43	1.78
960	0.625	2.32	2.40	1.98

Test Circuit

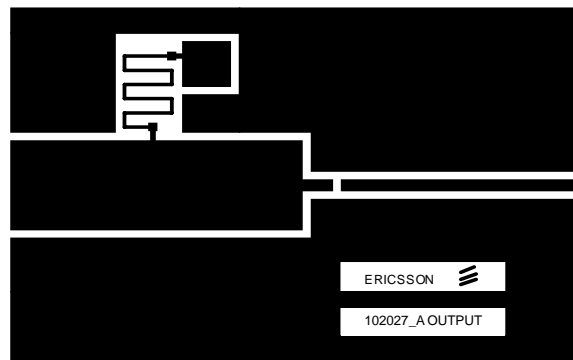
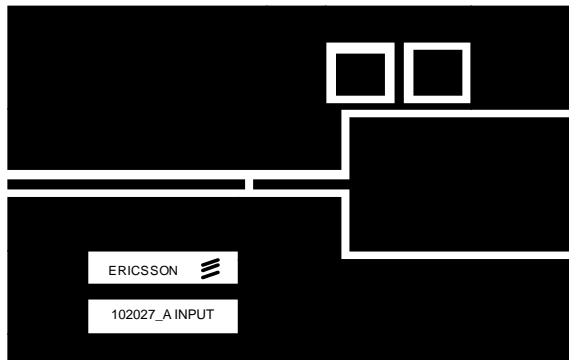


Test Circuit Schematic for $f = 960\text{ MHz}$

DUT	PTF 102027	LDMOS Transistor	C1, C8	Capacitor, 0.1 μF , 50V	Digi-Key P4525-ND
$l\ 1, l\ 9$	$0.169\ \lambda$ 960 MHz	Microstrip 50 Ω	C2, C3, C9, C12	Capacitor, 36 pF	100B 360
$l\ 2$	$0.020\ \lambda$ 960 MHz	Microstrip 50 Ω	C6, C13	Capacitor, 3.6 pF	100B 3R6
$l\ 3$	$0.079\ \lambda$ 960 MHz	Microstrip 50 Ω	C4, C14	Capacitor, 3.3 pF	100B 3R3
$l\ 4$	$0.158\ \lambda$ 960 MHz	Microstrip 7.0 Ω	C5, C7	Capacitor, 11 pF	100B 110
$l\ 5, l\ 6$	$0.016\ \lambda$ 960 MHz	Microstrip 7.0 Ω	C10	Capacitor, 100 μF , 50 V	Digi-Key P5182-ND
$l\ 7$	$0.095\ \lambda$ 960 MHz	Microstrip 10 Ω	C11	Capacitor, 5.1 pF	100B 5R1
$l\ 8$	$0.150\ \lambda$ 960 MHz	Microstrip 10 Ω	J1, J2	Connector, SMA, Female, Panel Mount	
$l\ 10$	$0.047\ \lambda$ 960 MHz	Microstrip 50 Ω	R1, R2, R3	Resistor, 220 ohm, 1/4W	Digi-Key 220QBK-ND
$l\ 11$	$0.118\ \lambda$ 960 MHz	Microstrip 50 Ω	PCB	.031" Thick, 2 Oz Copper Both Sides	AlliedSignal, G200
$l\ 12$	$0.254\ \lambda$ 960 MHz	Microstrip 50 Ω			
$l\ 13$	$0.315\ \lambda$ 960 MHz	Microstrip 85 Ω			



Assembly Diagram (not to scale)



Artwork (not to scale)

Case Outline Specifications

