ERICSSON

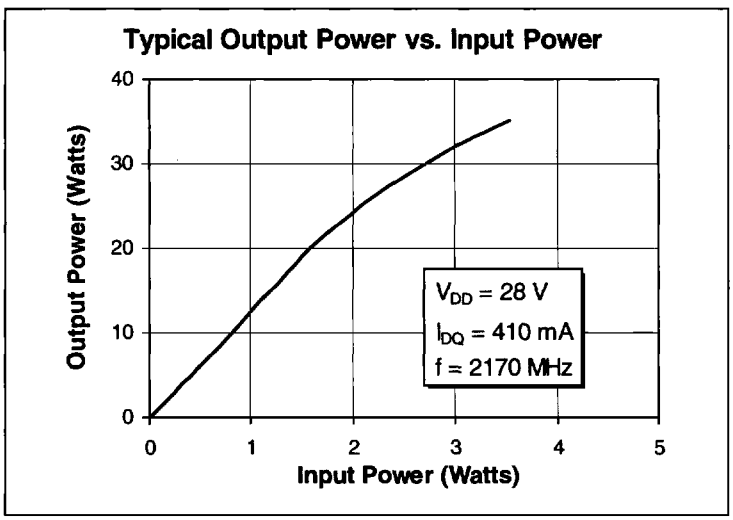
PRE-RELEASE

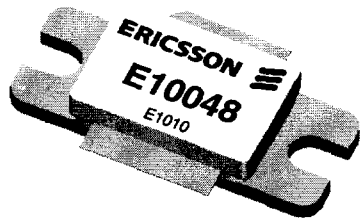
PTE 10048*
30 Watts, 2.1–2.2 GHz
LDMOS Field Effect Transistor

Description

The 10048 is an internally matched common source N-channel enhancement-mode lateral MOSFET intended for large signal amplifier applications from 2.1 to 2.2 GHz. It is rated at 30 watts power output. Nitride surface passivation and gold metallization ensure excellent device lifetime and reliability. 100% lot traceability.

- ***INTERNALLY MATCHED***
- Guaranteed Performance at 2.17 GHz, 28 V
  - Output Power = 30 Watts Min
  - Gain = 10.5 dB Typ at 30 Watts
- Full Gold Metallization
- Silicon Nitride Passivated
- Excellent Thermal Stability





Package 20237

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 T_{flange} = 25°C Above 25°C derate by	P_D	120 0.66	Watts W/°C
Storage Temperature Range	T_{STG}	–40 to +150	°C
Thermal Resistance (T_{flange} = 70°C)	$R_{\theta JC}$	1.5	°C/W

* A "PTE" number indicates that specification is preliminary and subject to change. Order this product or obtain additional information from your Ericsson Sales Representative.

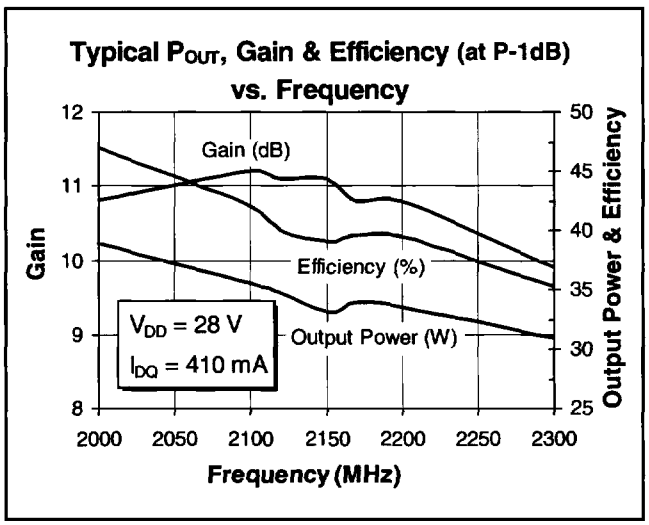
Electrical Characteristics (100% Tested)

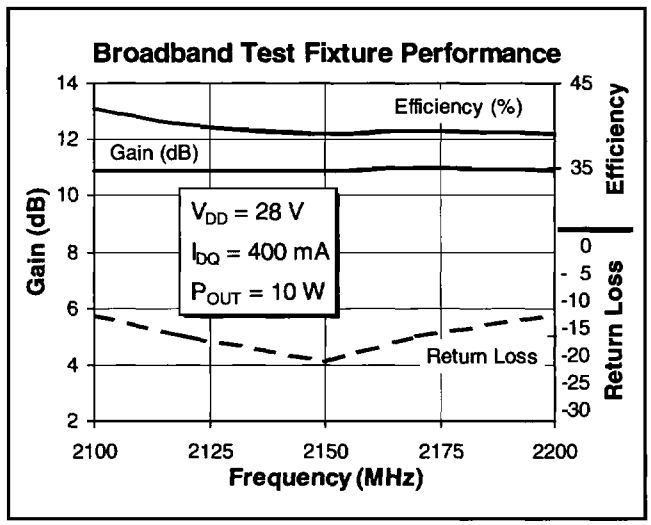
Characteristic	Conditions	Symbol	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_D = 50 mA	$V_{(BR)DSS}$	65	65	—	Volts
Zero Gate Voltage Drain Current	V_{DS} = 28 V, V_{GS} = 0 V	I_{DSS}	—	—	1.0	mA
Gate Threshold Voltage	V_{DS} = 10 V, I_D = 75 mA	$V_{GS(th)}$	—	3.8	—	Volts
Forward Transconductance	V_{DS} = 10 V, I_D = 6 A	g_{fs}	—	1.8	—	Siemens

RF Specifications (100% Tested)

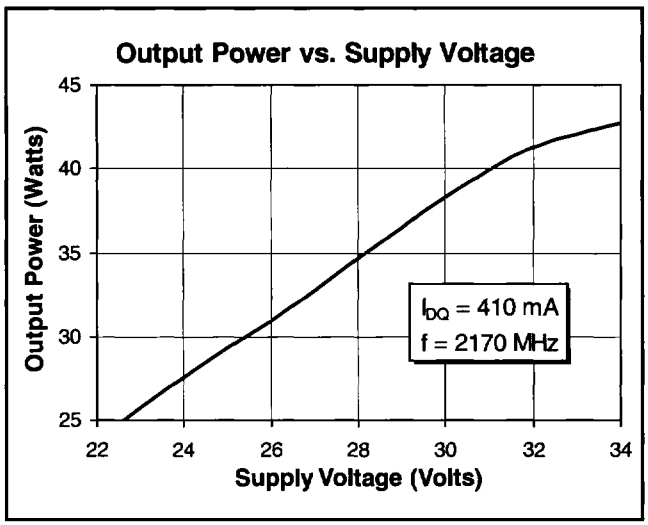
Characteristic	Symbol	Min	Typ	Max	Units
Gain (V_{DD} = 28 V, P_{out} = 10 W, I_{DQ} = 410 mA, f = 2.11 & 2.17 GHz)	G_{ps}	10	11	—	dB
Power Output at 1 dB Compression (V_{DD} = 28 V, I_{DQ} = 410 mA, f = 2.17 GHz)	P-1dB	30	36	—	Watts
Drain Efficiency (V_{DD} = 28 V, P_{out} = 30 W, I_{DQ} = 410 mA, f = 2.17 GHz)	η	30	40	—	%
Load Mismatch Tolerance (V_{DD} = 28 V, P_{out} = 30 W, I_{DQ} = 410 mA, f = 2.17 GHz —all phase angles at frequency of test)	Ψ	—	—	10:1	—

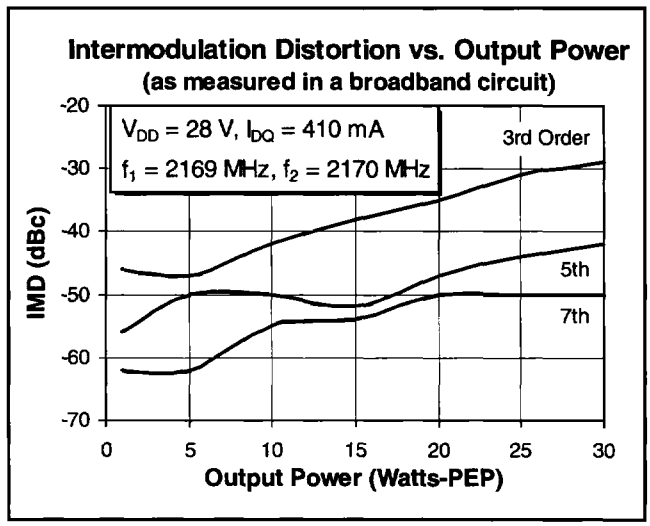
Typical Performance

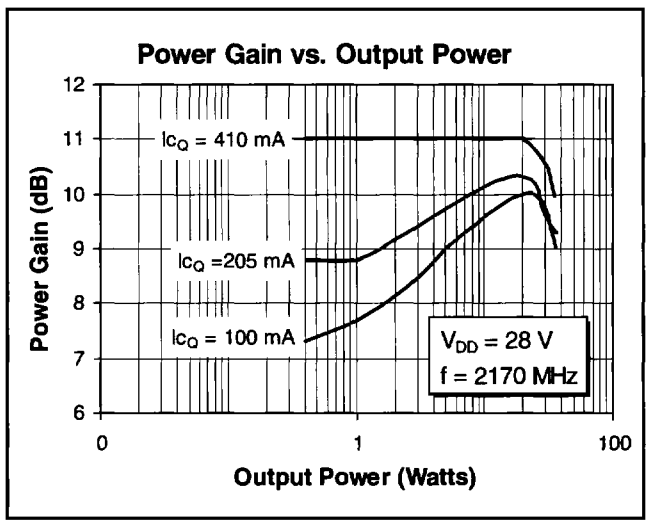


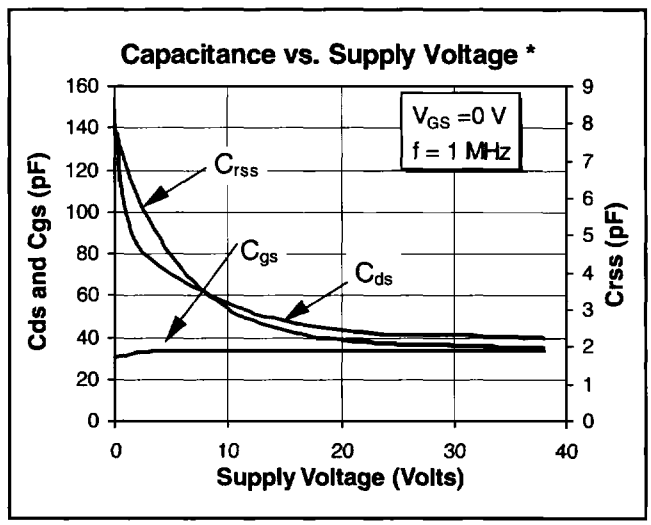


Typical Performance





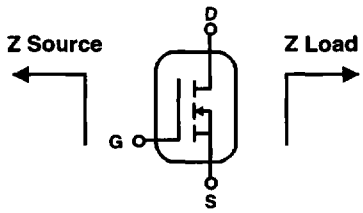




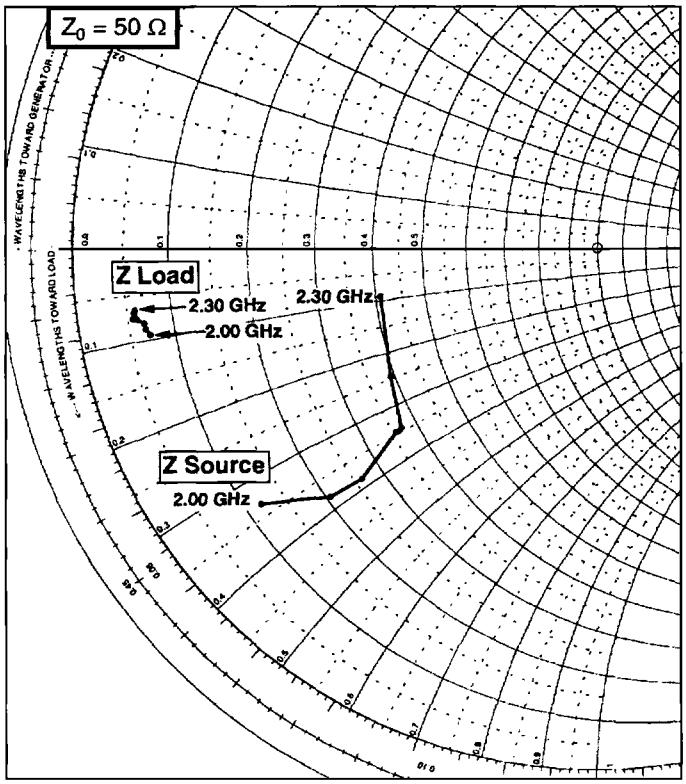
*This part is internally matched. Measurements of the finished product will not yield these figures.

Impedance Data

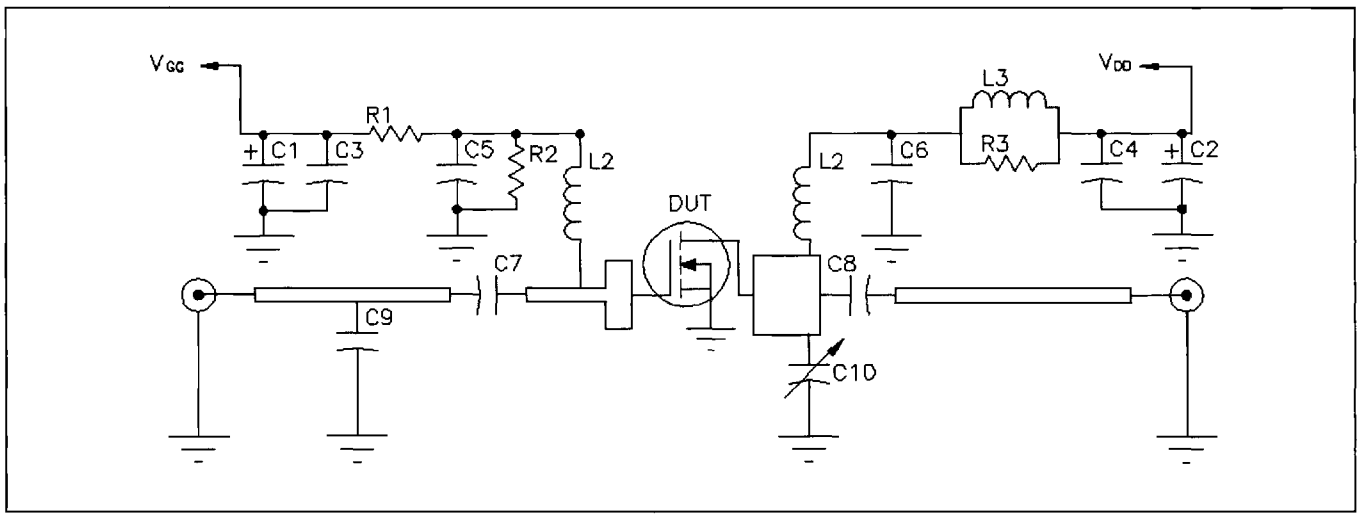
(V_{DD} = 28 V, P_{out} = 30 W, I_{DQ} = 410 mA)



Frequency	Z Source		Z Load	
GHz	R	jX	R	jX
2.00	6.0	-16.7	3.6	-4.7
2.10	10.3	-19.0	3.4	-4.4
2.12	13.2	-19.3	3.4	-4.1
2.15	17.9	-17.3	3.0	-3.8
2.17	18.5	-17.2	2.8	-3.8
2.20	19.6	-12.3	2.9	-3.5
2.30	20.5	-4.6	3.0	-3.3



Test Circuit



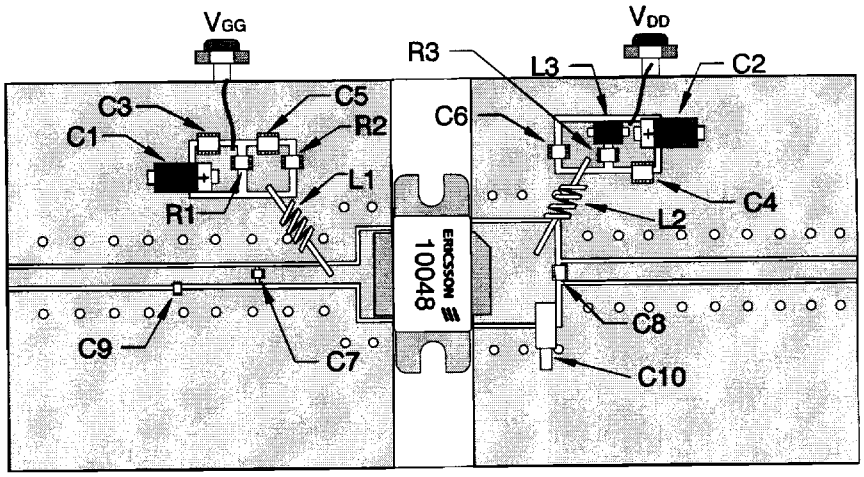
Test Circuit Schematic for f = 2.15 GHz

DUT	10048
ℓ1, ℓ2, ℓ5	Microstrip 50 Ω
ℓ3	0.048 λ 2.15 GHz Microstrip 11.52 Ω
ℓ4	0.145 λ 2.15 GHz Microstrip 10.4 Ω
C1, C2	10 pF, Tantulum Capacitor
C3, C4	0.1 µF, Chip Capacitor
C5, C6	13 pF, Chip Capacitor, ATC 100A
C7, C8	16 pF, Chip Capacitor, ATC 100A
C9	0.8 pF, Chip Capacitor, ATC 100A
C10	0.0-4.0 pF, Trimmer Capacitor, Johanson

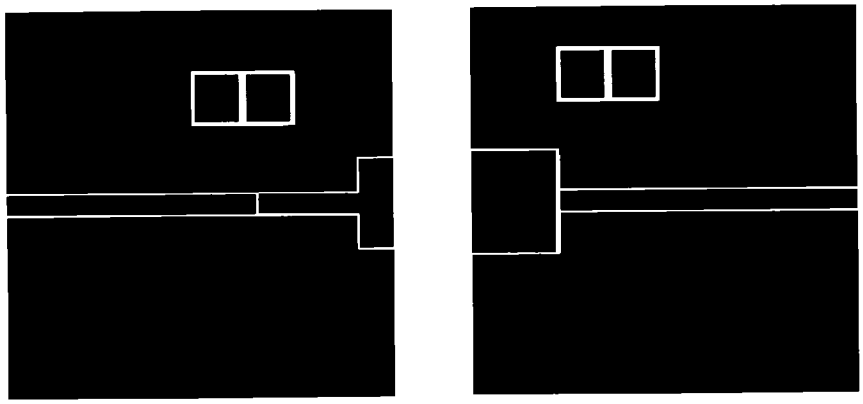
L1, L2	4 Turn, #22 AWG
L3	4 mm SMT Ferrite Bead
R1, R2	390 Ω Chip Resistor, K1206
R3	10 Ω Chip Resistor, K1206
Circuit Board	.031" Thick, ε_r = 4.0, AlliedSignal, G200

Bias Parts (not shown on layout)

R3	200 Ω Resistor
R4	2 K Resistor



Parts Layout (not to scale)



Artwork (1 inch  *)*

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