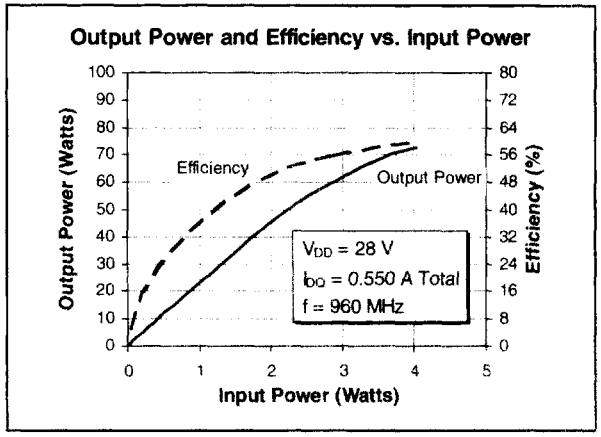
ERICSSON

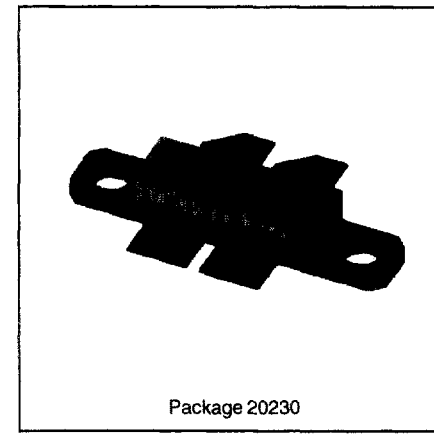
PTF 10022
65 Watts, 1.0 GHz
LDMOS Field Effect Transistor

Description

The 10022 is a common source n-channel enhancement-mode lateral MOSFET intended for large signal amplifier applications to 1.0 GHz. Its push-pull configuration allows for simpler broadband matching. It is rated at 65 watts minimum output power. Nitride surface passivation and gold metallization ensure excellent device lifetime and reliability. 100% lot traceability is standard.

- Performance at 960 MHz, 28 Volts
  - Output Power = 65 Watts Min
  - Power Gain = 13.5 dB Typ
  - Efficiency = 55% Typ
- Gold Metallization
- Silicon Nitride Passivated
- Back Side Common Source





Package 20230

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	156 1.4	Watts W/°C
Storage Temperature Range	T_{STG}	–40 to +150	°C
Thermal Resistance (T_{flange} = 70°C)	$R_{\theta JC}$	0.7	°C/W

3

GOLD LDMOS

Electrical Characteristics (100% Tested)

Characteristic (per side)	Conditions	Symbol	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_D = 50 mA	$V_{(BR)DSS}$	65	70	—	Volts
Drain-Source Leakage 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	$V_{GS(th)}$	—	2.0	—	Volts
Forward Transconductance	V_{DS} = 10 V, I_D = 3 A	g_{fs}	—	2.2	—	Siemens

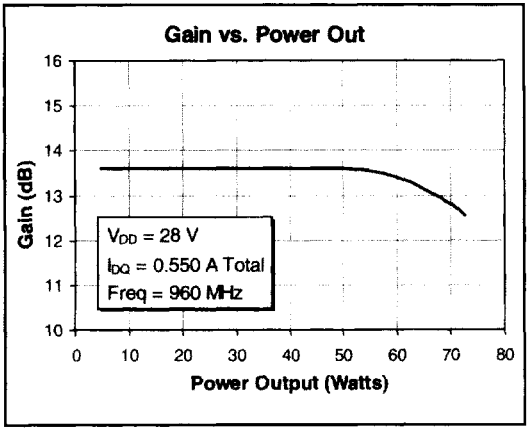
Dynamic Characteristics

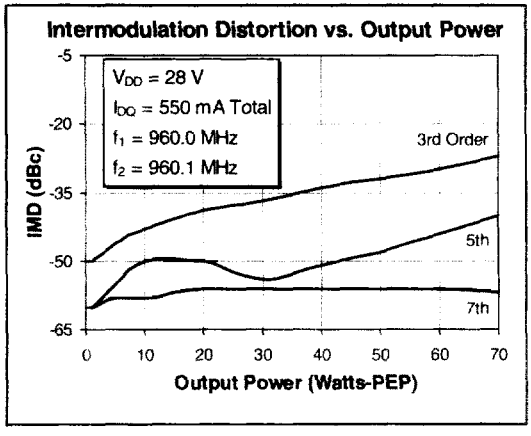
Characteristic (per side)	Symbol	Min	Typ	Max	Units
Input Capacitance (V_{DS} = 28 V, V_{GS} = 0 V, f = 1 MHz)	C_{iss}	—	72.1	—	pF
Output Capacitance (V_{DS} = 28 V, V_{GS} = 0 V, f = 1 MHz)	C_{oss}	—	25.5	—	pF
Reverse Transfer Capacitance (V_{DS} = 28 V, V_{GS} = 0 V, f = 1 MHz)	C_{rss}	—	1.2	—	pF

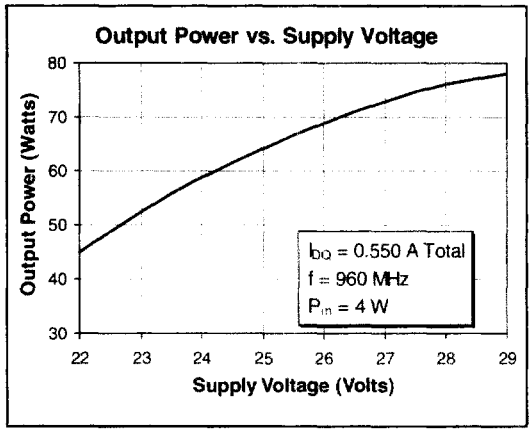
RF Specifications (100% Tested)

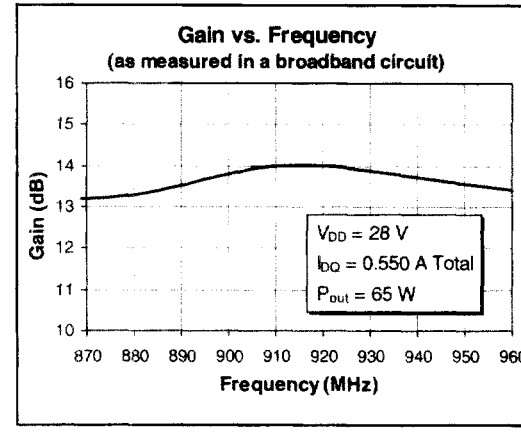
Characteristic	Symbol	Min	Typ	Max	Units
Gain (V_{DD} = 28 V, P_{out} = 65 W, I_{DQ} = 550 mA Total, f = 960 MHz)	G_{ps}	11.0	13.5	—	dB
Drain Efficiency (V_{DD} = 28 V, P_{out} = 65 W, I_{DQ} = 550 mA Total, f = 960 MHz)	η	50	55	—	%
Load Mismatch Tolerance (V_{DD} = 28 V, P_{out} = 65 W, I_{DQ} = 550 mA Total, f = 960 MHz —all phase angles at frequency of test)	Ψ	—	—	10:1	—

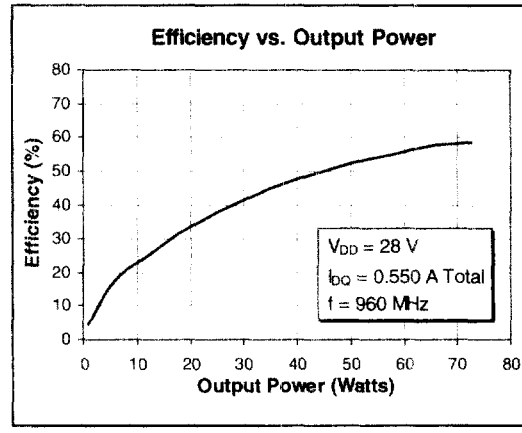
Typical Performance





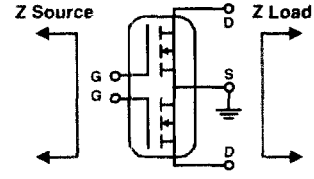


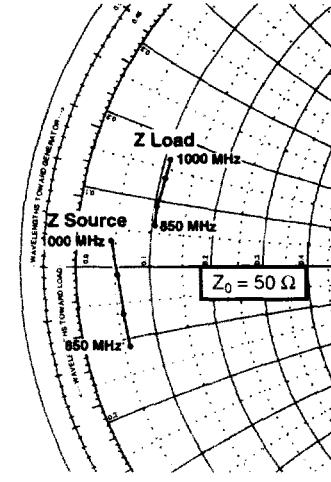




Impedance Data (shown for fixed-tuned broadband circuit)

V_{DD} = 28 V, P_{out} = 65 W, I_{DQ} = 550 mA Total





Frequency	Z Source		Z Load	
MHz	R	jX	R	jX
850	2.96	-5.60	5.20	3.1
900	2.90	-3.30	5.20	4.6
950	2.70	-0.60	5.36	6.8
1000	2.20	1.76	5.40	8.3

Typical Scattering Parameters (one side only)

(V_{DS} = 28 V, I_D = 2 A)

f	S11		S21		S12		S22	
(MHz)	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang
400	0.948	-167	3.67	33	0.006	-37	0.858	-149
420	0.951	-168	3.40	32	0.005	-37	0.866	-150
440	0.955	-168	3.16	30	0.005	-37	0.877	-151
460	0.956	-168	2.94	29	0.005	-36	0.886	-152
480	0.957	-168	2.75	28	0.004	-38	0.892	-152
500	0.959	-168	2.58	27	0.004	-35	0.898	-153
520	0.960	-169	2.42	26	0.004	-34	0.903	-153
540	0.962	-169	2.28	25	0.004	-30	0.907	-154
560	0.963	-169	2.15	24	0.003	-29	0.911	-155
580	0.964	-169	2.02	22	0.003	-28	0.913	-155
600	0.964	-169	1.91	22	0.003	-23	0.919	-156
620	0.965	-169	1.81	21	0.002	-20	0.925	-156
640	0.967	-169	1.72	21	0.002	-13	0.929	-156
660	0.966	-170	1.64	20	0.002	-6	0.929	-157
680	0.967	-170	1.56	19	0.002	3	0.929	-157
700	0.967	-170	1.48	18	0.002	8	0.928	-157
720	0.968	-170	1.41	18	0.002	21	0.930	-158
740	0.968	-170	1.35	17	0.002	25	0.932	-158
760	0.967	-170	1.28	17	0.002	33	0.935	-159
780	0.966	-170	1.23	17	0.002	44	0.937	-159
800	0.967	-170	1.18	16	0.002	51	0.938	-159
820	0.968	-170	1.13	16	0.002	55	0.939	-159
840	0.967	-170	1.09	15	0.002	59	0.938	-160
860	0.967	-170	1.04	15	0.003	67	0.938	-160
880	0.967	-170	0.993	14	0.003	68	0.938	-160
900	0.966	-170	0.957	14	0.003	73	0.941	-161
920	0.966	-171	0.922	14	0.003	75	0.943	-161
940	0.966	-171	0.890	14	0.003	79	0.941	-161
960	0.966	-171	0.859	13	0.004	81	0.942	-161
980	0.966	-171	0.827	13	0.004	83	0.943	-161
1000	0.965	-171	0.794	12	0.004	86	0.942	-162

ERICSSON

Ericsson Inc.
RF Power Products
675 Jarvis Drive
Morgan Hill, CA 95037
Telephone: 408-778-9434

R1B May 1998