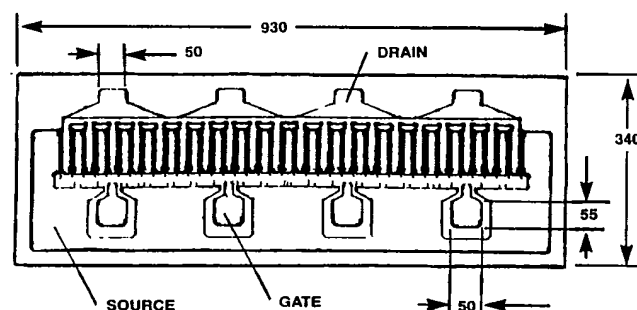


Litton**LF3830****Solid State****1 Watt Power GaAs FET****FEATURES**

- +31.5 dBm Typical Output Power @ 8 GHz
- 7 dB Typical Compressed Gain @ 8 GHz
- 0.5 Micron Ti/Pt/Au Recessed Gate
- MBE Grown Triple-Layer EPI with N⁺ Contact Layer

CHIP THICKNESS: 75 ± 13 MICRONS ALL DIMENSIONS IN MICRONS**DESCRIPTION AND APPLICATIONS**

The LF3830 is a Gallium Arsenide (GaAs) n-channel Field Effect Transistor (FET) utilizing a 0.5 micron long by 3000 micron wide Schottky barrier gate. The N⁺ contact layer and the Silicon Nitride passivation ensure device stability and reliability. The LF3830 offers exceptional Class A/AB power and maintains useable performance up through 12 GHz. The device is also available in packages upon request.

Quality assurance and screening procedures meet the intent of MIL-STD-19500 and MIL-STD-750. Reliability screening and testing to "S" level available upon request.

The LF3830 is a device suitable for industrial, military, and space applications. A typical application would be power amplification with output power levels up to 2 watts in balanced configurations for telecommunications and radar systems.

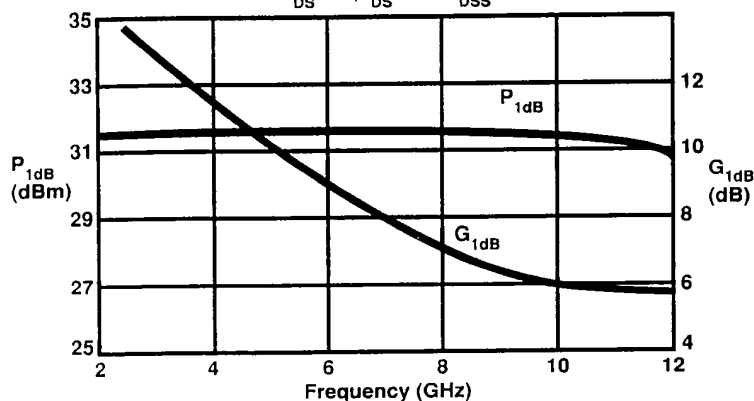
PERFORMANCE SPECIFICATIONS ($T_a = 25^\circ\text{C}$)

SYMBOLS	PARAMETERS AND CONDITIONS	MIN	TYP	MAX	UNITS
$P_{1\text{dB}}$	Output Power at 1 dB Compression $V_{\text{DS}} = 9.0\text{V}$, $I_{\text{DS}} = 50\% I_{\text{DSS}}$ $f = 4\text{ GHz}$ $f = 8\text{ GHz}$	30.0	31.5 31.5		dB
$G_{1\text{dB}}$	Gain at 1 dB Compression $V_{\text{DS}} = 9.0\text{V}$, $I_{\text{DS}} = 50\% I_{\text{DSS}}$ $f = 4\text{ GHz}$ $f = 8\text{ GHz}$	6.0	11.0 7.0		dB
η_{add}	Power Added Efficiency $f = 8\text{ GHz}$		36		%
I_{DSS}	Saturated Drain Current $V_{\text{DS}} = 3\text{V}$, $V_{\text{GS}} = 0\text{V}$	500	700	900	mA
G_m	Transconductance $V_{\text{DS}} = 3\text{V}$, $V_{\text{GS}} = -1\text{V}$	200	250		mmho
V_p	Pinch-off Voltage $V_{\text{DS}} = 3\text{V}$, $I_{\text{DS}} = 1\text{mA}$		-3.5		Volts
BV_{GS}	Source Breakdown Voltage $I_{\text{GS}} = 1\text{mA}$	-12	-15		Volts
BV_{GD}	Drain Breakdown Voltage $I_{\text{GD}} = 1\text{mA}$	-12	-15		Volts
θ_j	Thermal Resistance (Au-Sn Eutectic Die Attach)		20		$^\circ\text{C/W}$

Litton**LF3830****Solid State****1 Watt Power GaAs FET**

TYPICAL OUTPUT POWER & ASSOCIATED GAIN
@ 1dB GAIN COMPRESSION
vs. FREQUENCY

$V_{DS}=9V, I_{DS}=50\% I_{DSS}$

**ABSOLUTE MAXIMUM RATINGS at 25°C**

SYMBOL	PARAMETER	RATING ¹
V_{DS}	Drain-Source Voltage	12V
V_{GS}	Gate-Source Voltage	-8V
I_{DS}	Drain Current	I_{DSS}
I_{GSF}	Forward Gate Current	100 mA
P_N	RF Input Power	2000 mW
T_{CH}	Channel Temperature	175°C
T_{STG}	Storage Temperature	-65/175°C
P_T	Power Dissipation	9 W

NOTE: 1 Operating Conditions exceeding any of the above ratings may result in permanent damage.

HANDLING PRECAUTIONS

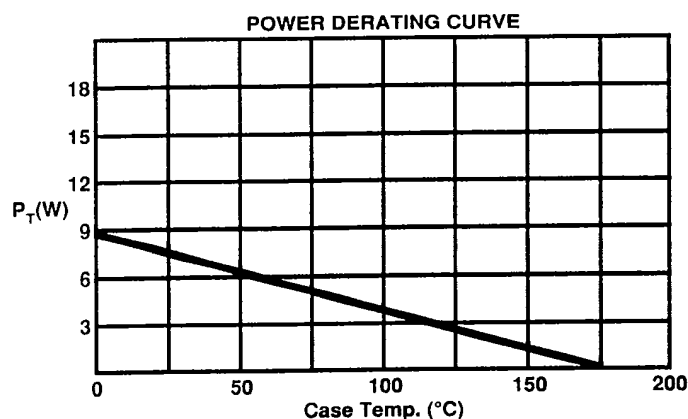
GaAs FET chips should be stored in a dry nitrogen environment until die attached. GaAs FET chips are very fragile and handling should be minimized.

ASSEMBLY INSTRUCTIONS

Die attach under a nitrogen atmosphere using Au-Sn preform and at a stage temperature of 280-300°C. Maximum time at temperature: 1 minute.

Bond using thermal compression technique with 0.7 to 1.0 mil gold wire and at a stage temperature of 250-260°C. Maximum time at temperature: 5 minutes. Capillary (ball) type bonding is not recommended.

PRECAUTION: Storage, handling, or assembly of chips other than as specified may result in permanent damage.



Litton**LF3830****Solid State****1 Watt Power GaAs FET**

TYPICAL S-PARAMETERS
 $V_{DS} = 9V, I_{DS} = 350 \text{ mA (50\% } I_{DSS})$

FREQ. (GHz.)	S11		S21		S12		S22	
	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
2.000	0.821	-135.2	3.896	97.3	0.039	43.5	0.264	-134.1
3.000	0.819	-148.8	2.748	84.4	0.044	48.4	0.300	-133.0
4.000	0.818	-156.5	2.136	74.4	0.051	53.4	0.334	-132.1
5.000	0.818	-162.2	1.767	65.6	0.058	58.6	0.362	-132.6
6.000	0.819	-167.7	1.519	57.0	0.068	62.4	0.388	-134.8
7.000	0.818	-173.6	1.338	48.3	0.080	64.4	0.413	-139.0
8.000	0.817	179.6	1.198	39.4	0.093	64.6	0.438	-145.3
9.000	0.818	172.4	1.062	30.5	0.107	62.9	0.467	-153.3
10.00	0.830	165.1	0.941	21.6	0.120	60.1	0.504	-161.8
11.00	0.849	158.3	0.831	13.4	0.130	56.3	0.557	-170.4
12.00	0.868	152.6	0.718	5.7	0.139	52.5	0.610	-177.8

Measurement Information

Test Fixture: Intercontinental Microwave
 Test Equipment: HP 8510B Network Analyzer
 Calibration Technique: TRL (Thru, Reflection, Line)
 Bondwires: 1 mil dia., 0.020 inches long
 4 each, Gate and Drain