Low Distortion Internally Matched Power GaAs FETs (C-Band)

Features

- Low intermodulation distortion
  - IM_3 = -45 dBc at Po = 34.5 dBm,
  - Single carrier level
- High power
  - P_{1dB} = 45 dBm at 4.9 GHz to 5.1 GHz
- High gain
  - G_{1dB} = 9.5 dB at 4.9 GHz to 5.1 GHz
- Broad band internally matched
- Hermetically sealed package

RF Performance Specifications (Ta = 25° C)

Characteristics	Symbol	Condition	Unit	Min.	Typ.	Max
Output Power at 1dB Compression Point	P_{1dB}	V_{DS} = 10V f = 4.9 ~ 5.1 GHz	dBm	44.0	45.0	–
Power Gain at 1dB Compression Point	G_{1dB}		dB	8.5	9.5	–
Drain Current	I_{DS1}		A	–	8.0	9.0
Gain Flatness	ΔG		dB	–	–	±0.8
Power Added Efficiency	η_{add}		%	–	35	–
3rd Order Intermodulation Distortion	IM_3	Note 1	dBc	-42	-45	–
Drain Current	I_{DS2}		A	–	8.0	9.0
Channel-Temperature Rise	ΔT_{ch}	V_{DS}xI_{DS}xR_{th}(c-c)	°C	–	–	80

Electrical Characteristics (Ta = 25° C)

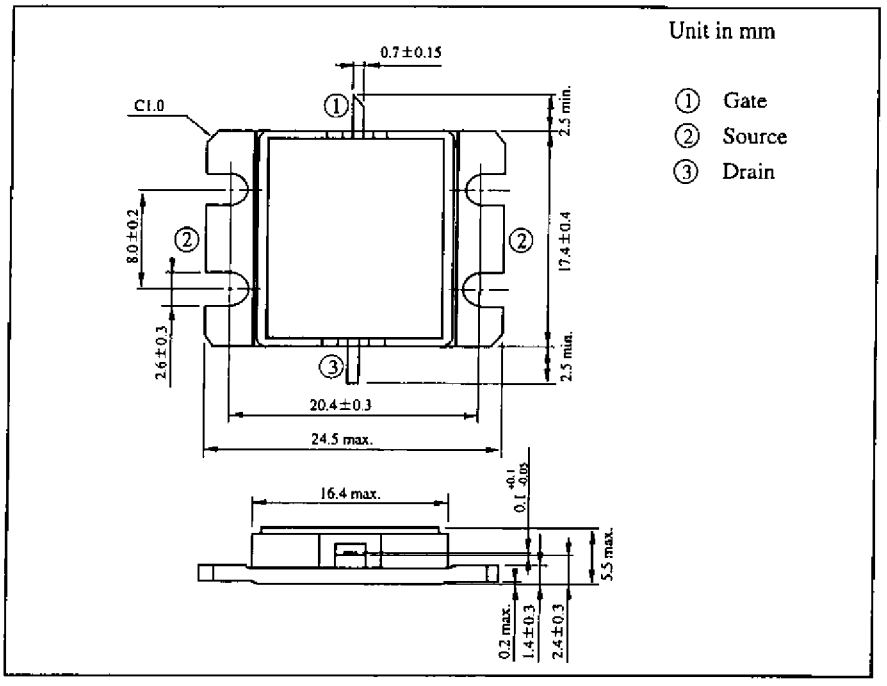
Characteristic	Symbol	Condition	Unit	Min.	Typ.	Max
Trans-conductance	gm	V_{DS} = 3V I_{DS} = 10.5A	mS	–	6300	–
Pinch-off Voltage	V_{GSoff}	V_{DS} = 3V I_{DS} = 140mA	V	-2	-3.5	-5.0
Saturated Drain Current	I_{DSS}	V_{DS} = 3V V_{GS} = 0V	A	–	20	26
Gate-Source Breakdown Voltage	V_{GSO}	I_{GS} = -420μA	V	-5	–	–
Thermal Resistance	$R_{th\ (c-c)}$	Channel to case	°C/W	–	0.8	1.0

Note 1: 2 tone Test Pout = 34.5dBm Single Carrier Level.

Absolute Maximum Ratings (Ta = 25° C)

Characteristic	Symbol	Unit	Rating
Drain-Source Voltage	V_{DS}	V	15
Gate-Source Voltage	V_{GS}	V	-5
Drain Current	I_{DS}	A	26
Total Power Dissipation (T_c = 25°C)	P_T	W	120
Channel Temperature	T_{ch}	°C	175
Storage Temperature	T_{stg}	°C	-65~175

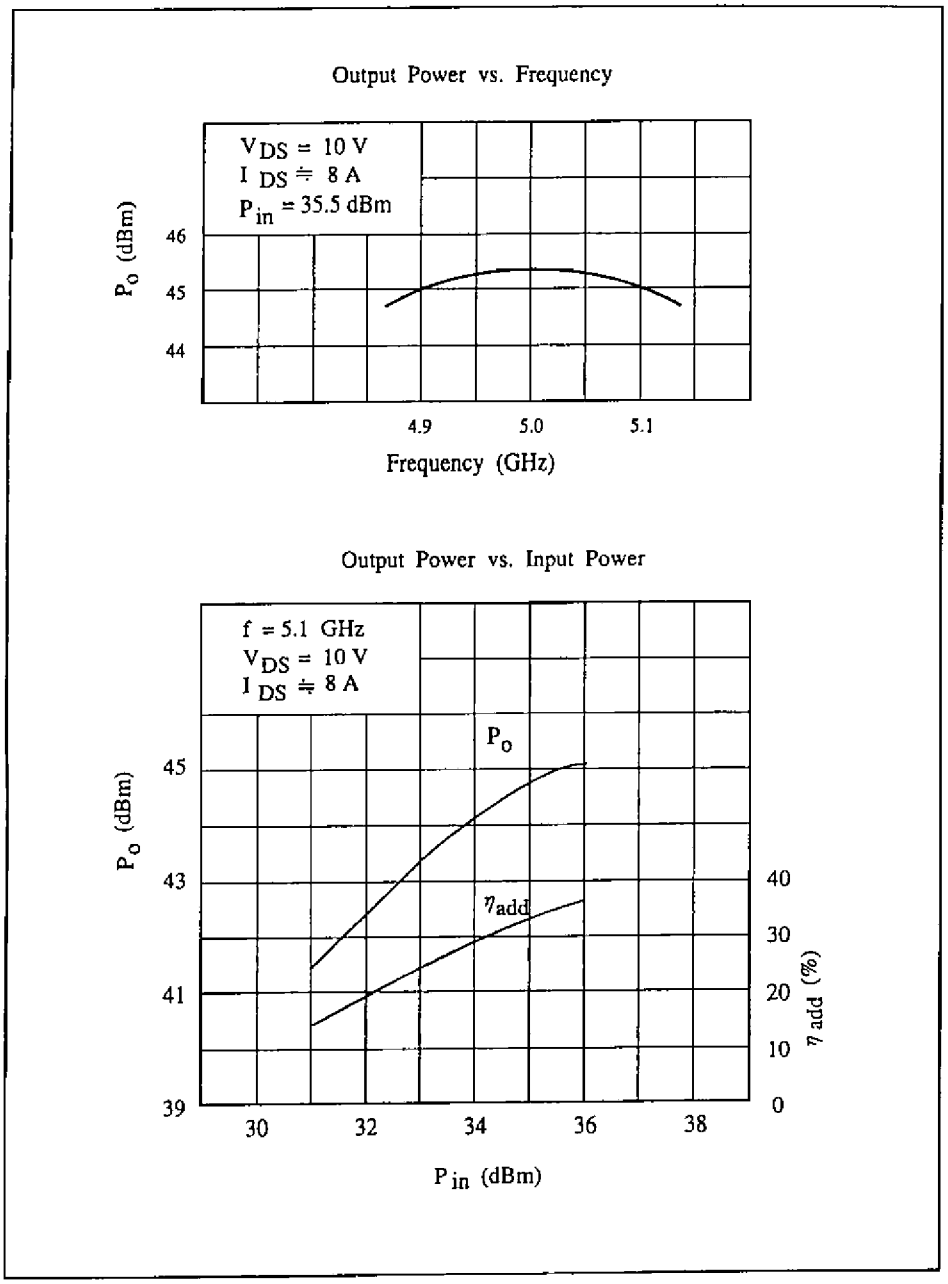
Package Outline (2-16G1B)



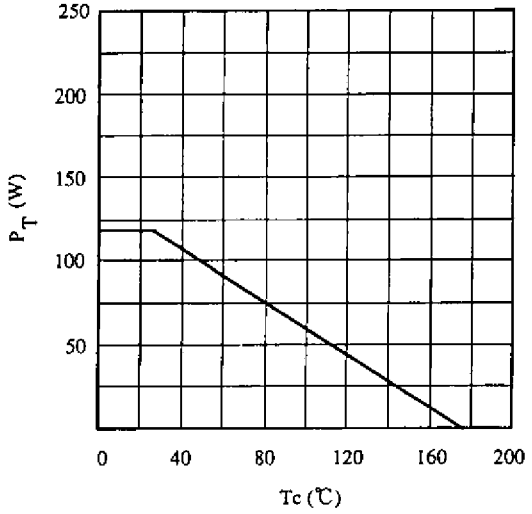
Handling Precautions for Packaged Type

Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

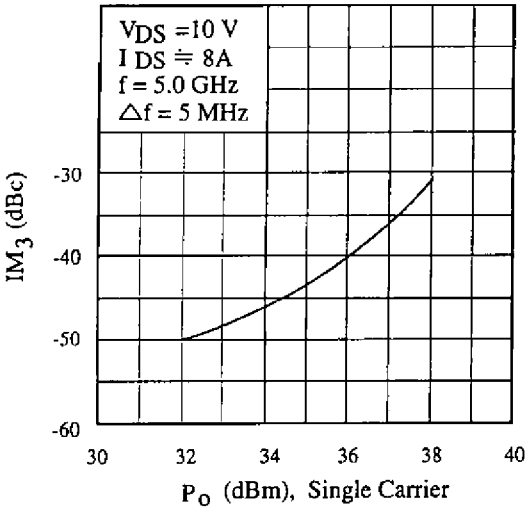
RF Performances



Power Dissipation vs. Case Temperature

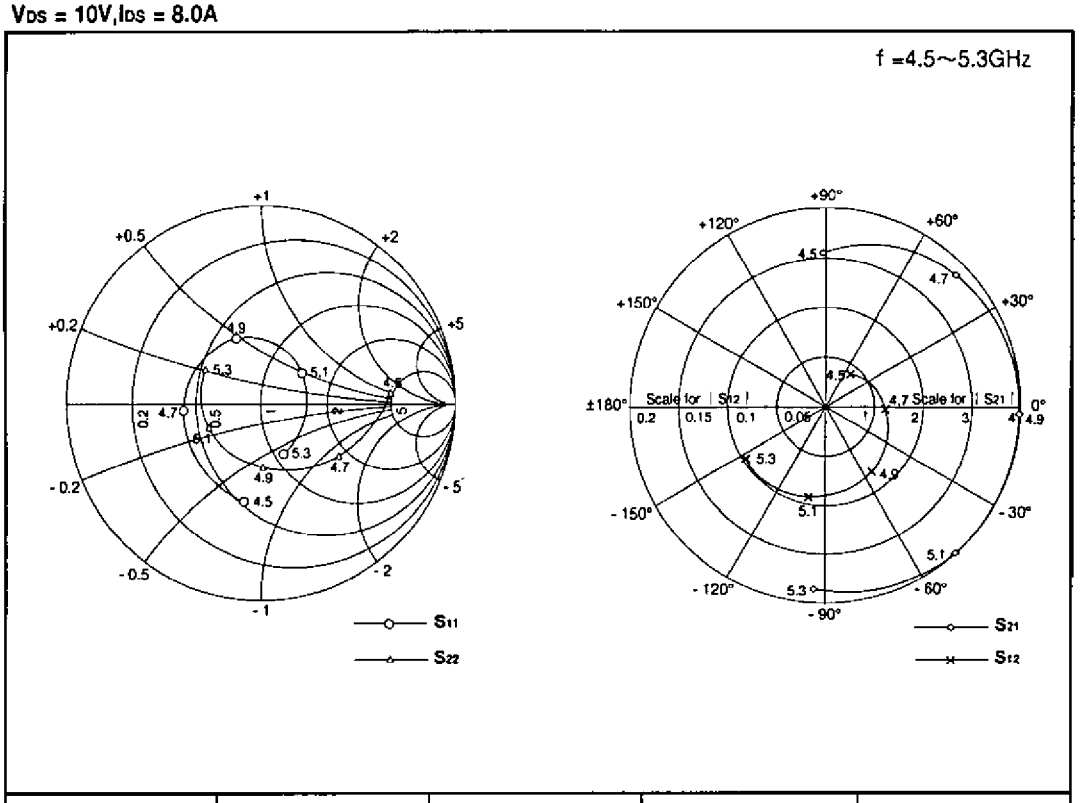


IM_3 vs. Output Power Characteristics



TIM4951-30L S-Parameters
(MAGN. and ANGLES)

V_{DS} = 10V, I_{DS} = 8.0A



FREQUENCY (MHz)	S_{11} MAG	S_{11} ANG	S_{12} MAG	S_{12} ANG	S_{21} MAG	S_{21} ANG	S_{22} MAG	S_{22} ANG
4.5	0.501	-99.7	0.041	51.2	3.093	91.2	0.672	4.3
4.7	0.396	-175.6	0.063	-2.9	3.760	44.4	0.491	-32.7
4.9	0.349	111.5	0.081	-54.4	4.014	-2.5	0.322	-87.6
5.1	0.266	36.7	0.092	-101.6	3.987	-48.0	0.293	-155.5
5.3	0.281	-64.0	0.097	-147.5	3.695	-93.6	0.330	147.8