

High Power GaAs FETs (L, S-Band)

Features

- High power
 - $P_{1dB} = 44.5$ dBm at 2.3 GHz
- High gain
 - $G_{1dB} = 11.5$ dB at 2.3 GHz
- Partially matched type
- Hermetically sealed package

RF Performance Specifications ($T_a = 25^\circ\text{C}$)

Characteristics	Symbol	Condition	Unit	Min.	Typ.	Max
Output Power at 1dB Compression Point	P_{1dB}	$V_{DS} = 10V$ $f = 2.3$ GHz	dBm	43.5	44.5	–
Power Gain at 1dB Compression Point	G_{1dB}		dB	10.5	11.5	–
Drain Current	I_{DS}		A	–	7.5	9.0
Power Added Efficiency	N_{add}		%	–	35	–
Channel-Temperature Rise	ΔT_{ch}	NOTE 1	$^\circ\text{C}$	–	–	80

Electrical Characteristics ($T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Condition	Unit	Min.	Typ.	Max
Trans-conductance	gm	$V_{DS}=3V$ $I_{DS}=7.0$ A	mS	–	6300	–
Pinch-off Voltage	V_{GSoff}	$V_{DS}=3V$ $I_{DS}=140$ mA	V	-1.0	-3.0	-4.0
Saturated Drain Current	I_{DSS}	$V_{DS}=3V$ $V_{GS}=0V$	A	–	20	26
Gate to Source Breakdown Voltage	V_{GSO}	$I_{GS}=-420$ μA	V	-5	–	–
Thermal Resistance	$R_{th(c-c)}$	Channel to case	$^\circ\text{C/W}$	–	1.1	1.4

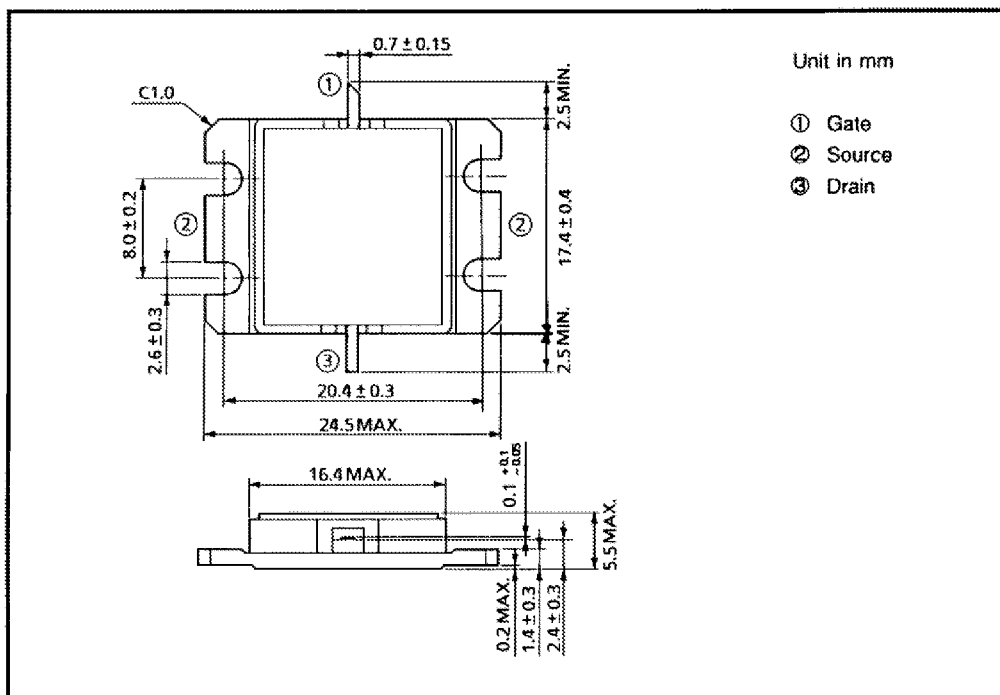
NOTE 1: $\Delta T_{ch} = (V_{DS} \times I_{DS} + P_{in} - P_{1dB}) \times R_{th(c-c)}$

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Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Unit	Rating
Drain Source Voltage	V_{DS}	V	15
Gate Source Voltage	V_{GS}	V	-5
Drain Current	I_D	A	26
Total Power Dissipation ($T_c = 25^\circ\text{C}$)	P_T	W	100
Channel Temperature	T_{ch}	$^\circ\text{C}$	175
Storage Temperature	T_{stg}	$^\circ\text{C}$	-65~175

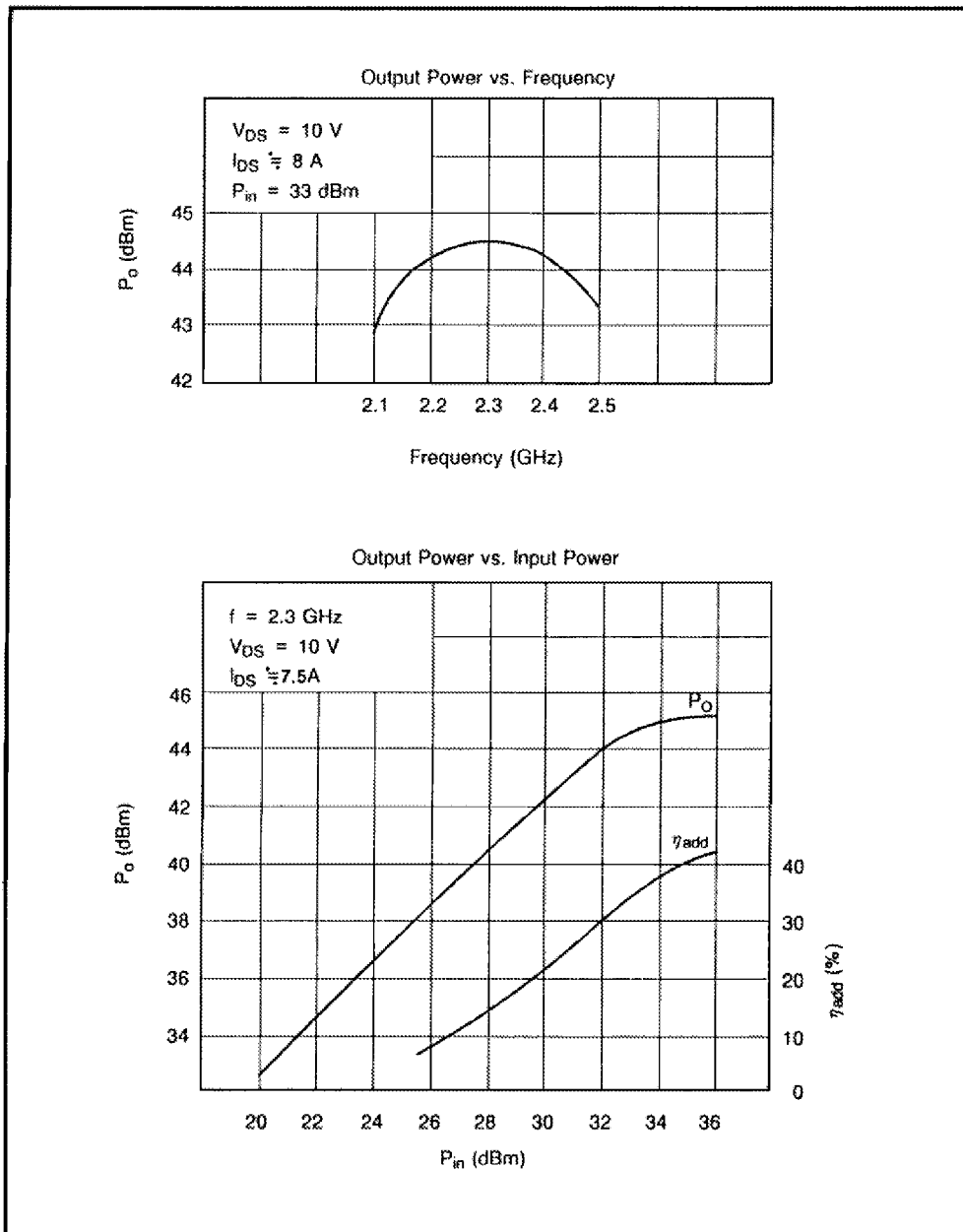
Package Outline (2-16G1B)



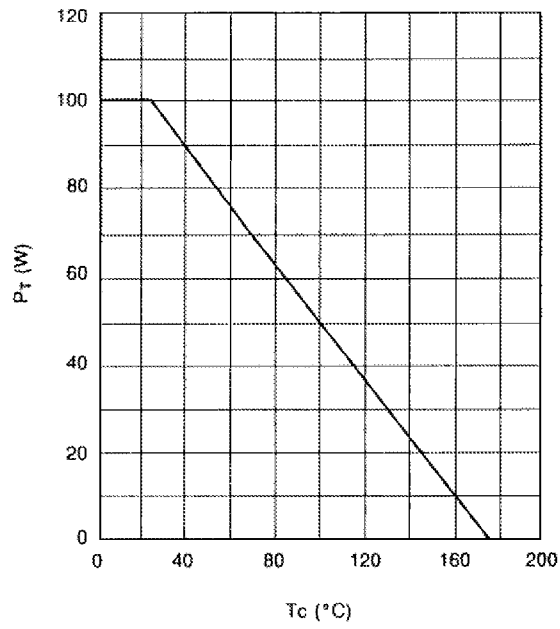
Handling Precautions for Packaged Type

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

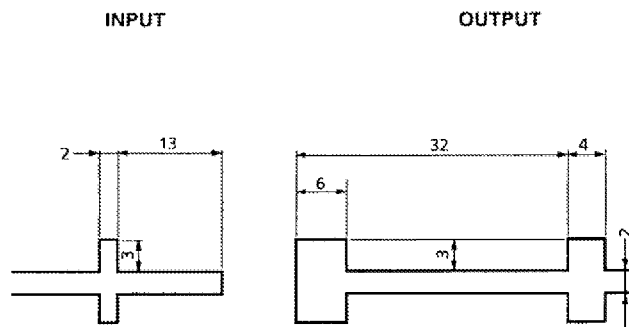
RF Performances



Power Dissipation vs. Case Temperature



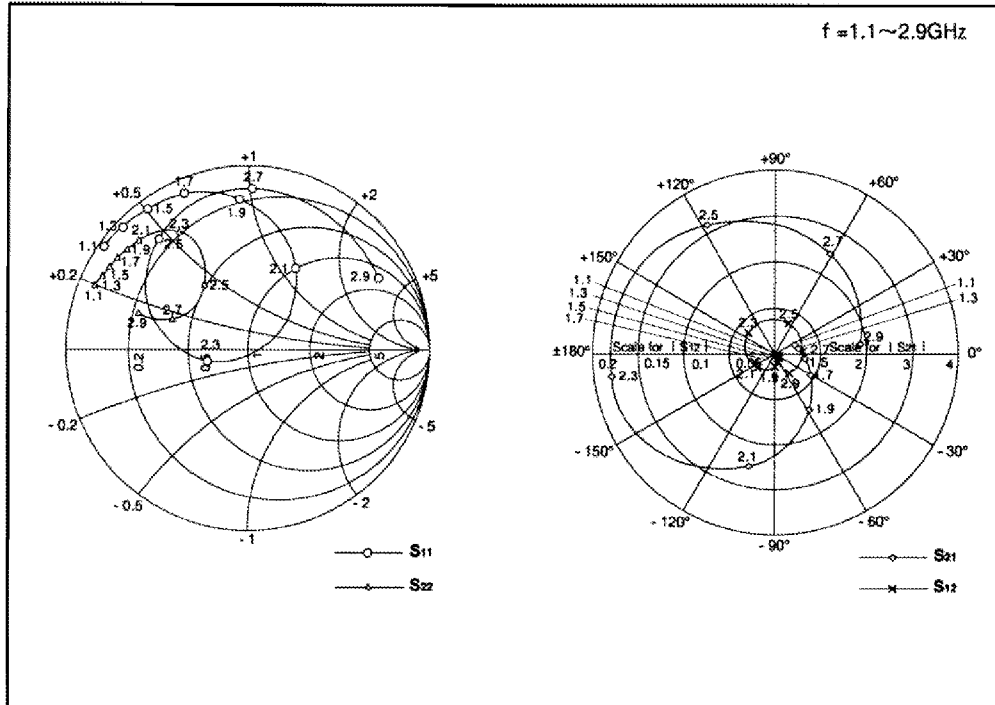
Drawing of Matching Network



Substrate Material : Teflon ($\epsilon_r = 2.6$)
Thickness : 0.76 mm

TPM2323-30 S-Parameters
(MAGN. and ANGLES)

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



FREQUENCY (MHz)	S_{11}		S_{12}		S_{21}		S_{22}	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
1.1	0.976	145.2	0.003	-8.8	0.478	22.8	0.920	157.1
1.3	0.965	136.4	0.004	-20.0	0.535	8.0	0.908	153.0
1.5	0.949	126.3	0.006	-35.9	0.660	-9.0	0.892	148.9
1.7	0.913	113.1	0.008	-57.9	0.913	-29.8	0.870	145.0
1.9	0.817	93.7	0.013	-90.8	1.441	-58.3	0.850	141.2
2.1	0.513	59.0	0.024	-141.4	2.534	-102.9	0.849	135.5
2.3	0.228	-164.4	0.037	142.0	3.634	-172.5	0.741	120.6
2.5	0.755	135.3	0.036	66.6	3.189	118.2	0.432	124.4
2.7	0.868	88.5	0.031	5.2	2.461	61.2	0.452	157.5
2.9	0.817	28.3	0.026	-52.7	1.889	6.4	0.645	161.4