

# TOSHIBA

## MICROWAVE SEMICONDUCTOR

### TECHNICAL DATA

MICROWAVE POWER GaAs FET

S8837A

#### FEATURES:

- HIGH POWER.  
 $P_{1dB} = 31 \text{ dBm}$  at  $f = 8 \text{ GHz}$
- HIGH GAIN  
 $G_{1dB} = 7 \text{ dB}$  at  $f = 8 \text{ GHz}$
- SUITABLE FOR C-BAND AMPLIFIER
- ION IMPLANTATION

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

TYPE NUMBER (PACKAGE CODE)				S8837A (2-7C1B)		
CHARACTERISTIC	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Output Power at 1dB Compression Point	$P_{1dB}$	$V_{DS} = 10\text{V}$  $f = 8\text{GHz}$	dBm	31.0	32.0	-
Power Gain at 1dB Compression Point	$G_{1dB}$		dB	6.0	7.0	-
Drain Current	$I_{DS}$		A	-	0.45	0.7
Power Added Efficiency	$\eta_{add}$		%	-	28	-

#### ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ \text{C}$ )

TYPE NUMBER (PACKAGE CODE)				S8837A (2-7C1B)		
CHARACTERISTIC	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Trans-conductance	$g_m$	$V_{DS} = 3\text{V}$ $I_{DS} = 0.55\text{A}$	mS	-	350	-
Pinch-off Voltage	$V_{GSoff}$	$V_{DS} = 3\text{V}$ $I_{DS} = 8\text{mA}$	V	-2	-3.5	-5
Saturated Drain Current	$I_{DSS}$	$V_{DS} = 3\text{V}$ $V_{GS} = 0\text{V}$	A	-	1.1	1.4
Gate to Source Breakdown Voltage	$V_{GSO}$	$I_{GS} = -20\mu\text{A}$	V	-5	-	-
Thermal Resistance	$R_{th(c-c)}$	Channel to case	$^\circ\text{C/W}$	-	13	20

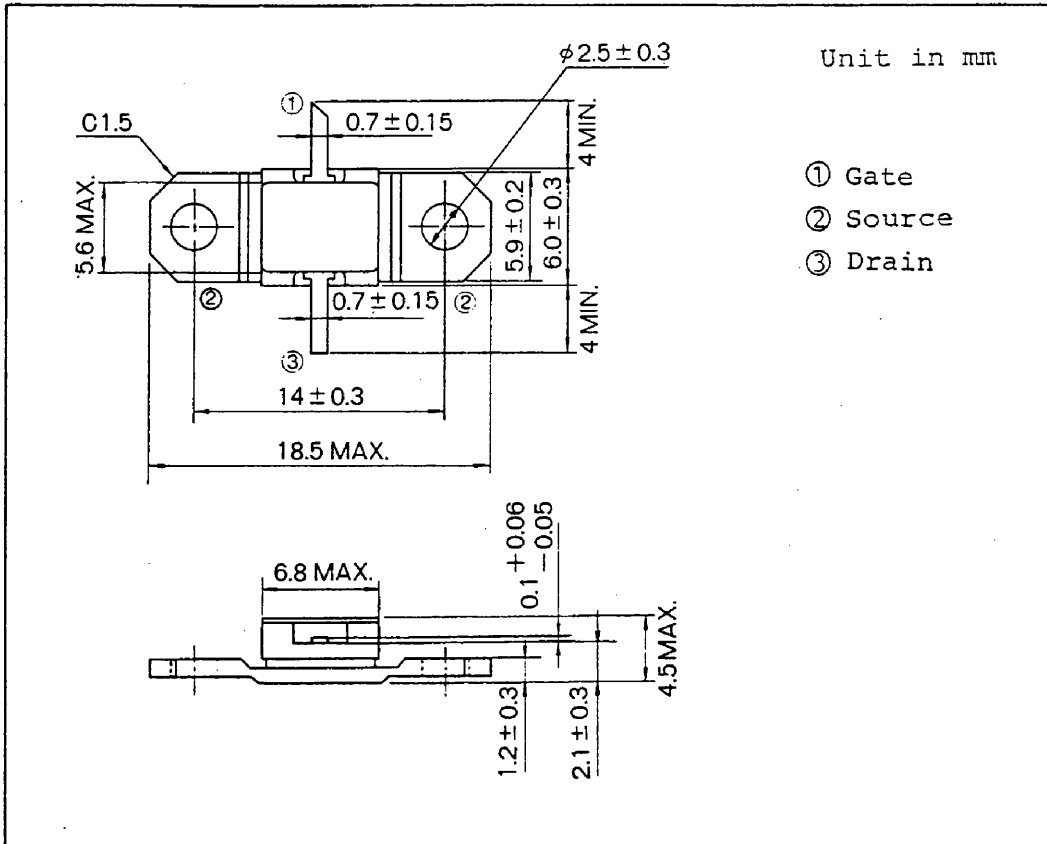
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# S8837A

## ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

TYPE NUMBER (PACKAGE CODE)			S8837A (2-7C1B)
CHARACTERISTIC	SYMBOL	UNIT	RATING
Drain-Source Voltage	V <sub>DS</sub>	V	15
Gate-Source Voltage	V <sub>GS</sub>	V	-5
Drain Current	I <sub>D</sub>	A	1.4
Total Power Dissipation (Tc=25°C)	P <sub>T</sub>	W	7.5
Channel Temperature	T <sub>ch</sub>	°C	175
Storage Temperature	T <sub>stg</sub>	°C	-65~175

## PACKAGE OUTLINE (2-7C1B)

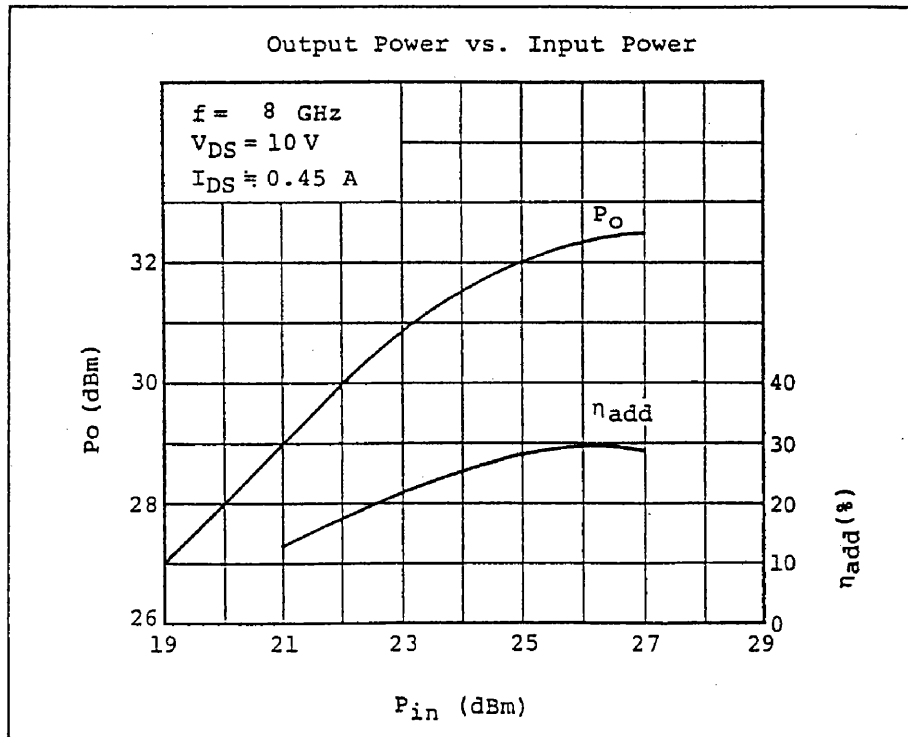


### HANDLING PRECAUTIONS FOR PACKAGED TYPE

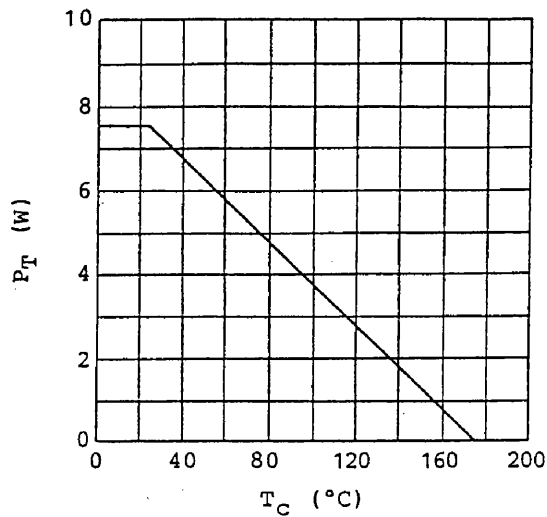
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

# S8837A

## OUTPUT POWER CHARACTERISTIC



## POWER DISSIPATION VS. CASE TEMPERATURE

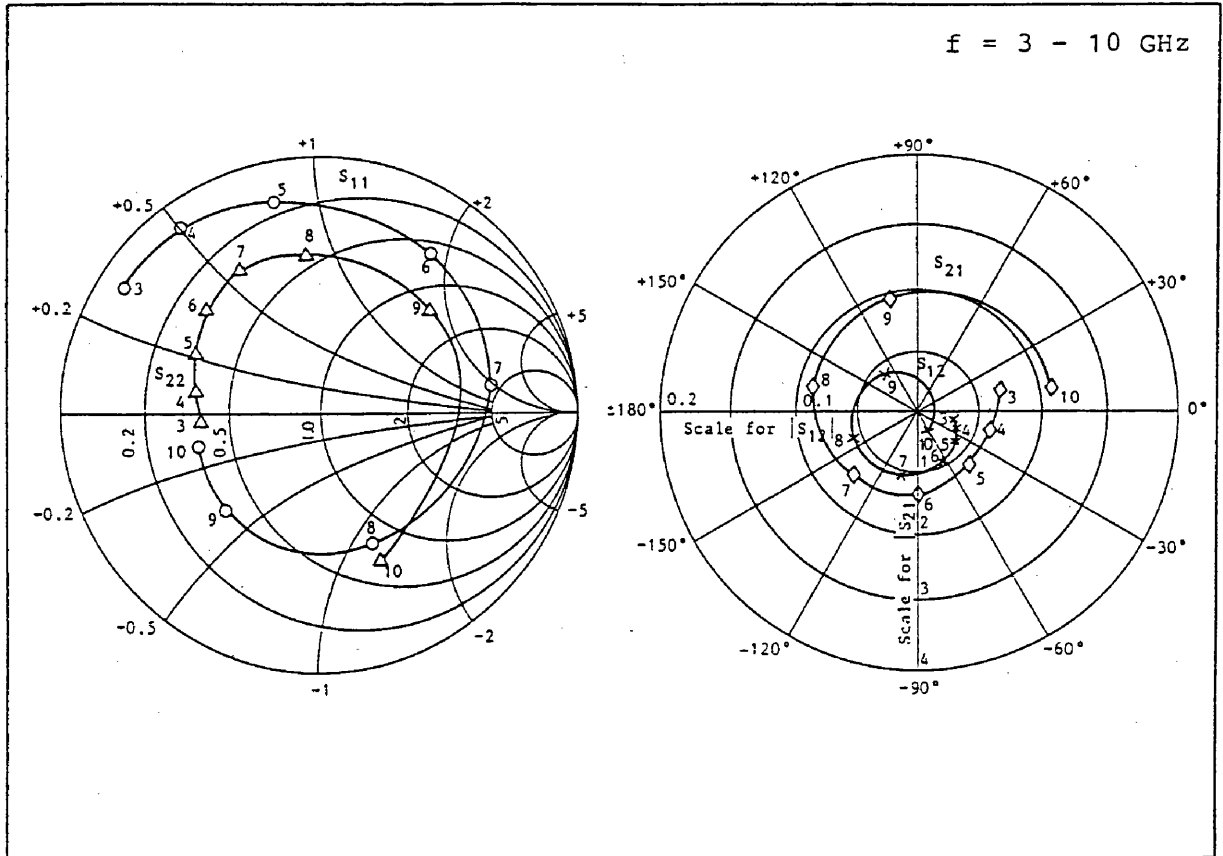


# S8837A

## S8837A S-PARAMETERS (MAGN. and ANGLES)

$V_{DS} = 10 \text{ V}$ ,  $I_{DS} = 310 \text{ mA}$

$f = 3 - 10 \text{ GHz}$



FREQUENCY (GHz)	$S_{11}$		$S_{12}$		$S_{21}$		$S_{22}$	
3	0.91	147	0.028	-7	1.38	14	0.46	-177
4	0.90	126	0.031	-16	1.19	-16	0.47	170
5	0.84	102	0.037	-34	1.21	-47	0.53	153
6	0.75	55	0.047	-64	1.38	-89	0.59	137
7	0.68	10	0.054	-103	1.51	-135	0.63	118
8	0.54	-68	0.057	-157	1.79	168	0.61	94
9	0.53	-134	0.041	130	1.88	104	0.59	43
10	0.48	-164	0.018	-64	2.18	10	0.62	-68