

# TOSHIBA

MICROWAVE SEMICONDUCTOR

## TECHNICAL DATA

MICROWAVE POWER GaAs FET

S8834

### FEATURES:

- MEDIUM POWER  
 $P_{1dB} = 21 \text{ dBm}$  at  $f = 8 \text{ GHz}$
- HIGH GAIN  
 $G_{1dB} = 9 \text{ dB}$  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)				S8834 (2-3H1B)		
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	20.0	21.0	-
Power Gain at 1dB Compression Point	$G_{1dB}$		dB	8.0	9.0	-
Drain Current	$I_{DS}$		A	-	0.04	0.07
Power Added Efficiency	$\eta_{add}$		%	-	27	-

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

TYPE NUMBER (PACKAGE CODE)				S8834 (2-3H1B)		
CHARACTERISTIC	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Trans-conductance	$g_m$	$V_{DS} = 3\text{V}$ $I_{DS} = 45\text{mA}$	mS	-	30	-
Pinch-off Voltage	$V_{GSoff}$	$V_{DS} = 3\text{V}$ $I_{DS} = 1.5\text{mA}$	V	-2	-3	-5
Saturated Drain Current	$I_{DSS}$	$V_{DS} = 3\text{V}$ $V_{GS} = 0\text{V}$	A	-	0.09	0.125
Gate to Source Breakdown Voltage	$V_{GSO}$	$I_{GS} = -1.5\mu\text{A}$	V	-5	-	-
Thermal Resistance	$R_{th(c-c)}$	Channel to case	$^\circ\text{C/W}$	-	50	100

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\* The information contained herein may be changed without prior notice. It is therefore advisable to contact TOSHIBA before proceeding with the design of equipment incorporating this product.



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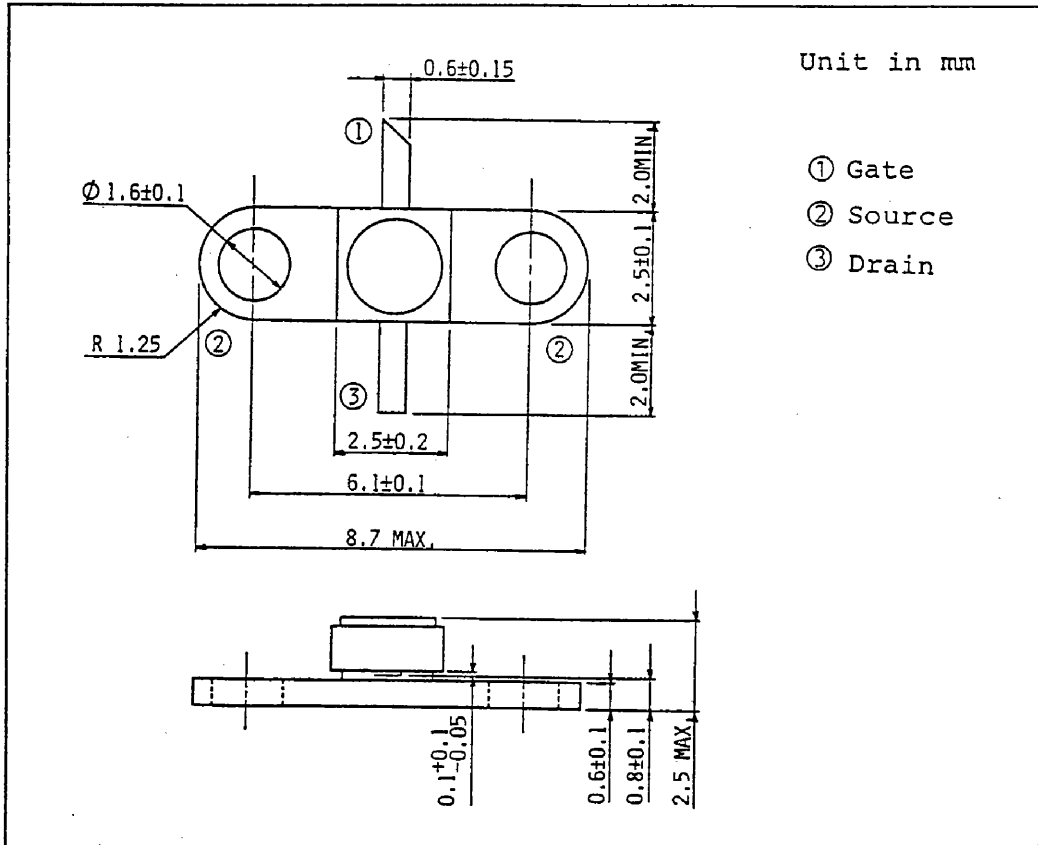
Revised May 1989

# S8834

## ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

TYPE NUMBER (PACKAGE CODE)			S8834 (2-3H1B)
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	0.125
Total Power Dissipation (Tc=25°C)	P <sub>T</sub>	W	1.5
Channel Temperature	T <sub>ch</sub>	°C	175
Storage Temperature	T <sub>stg</sub>	°C	-65~175

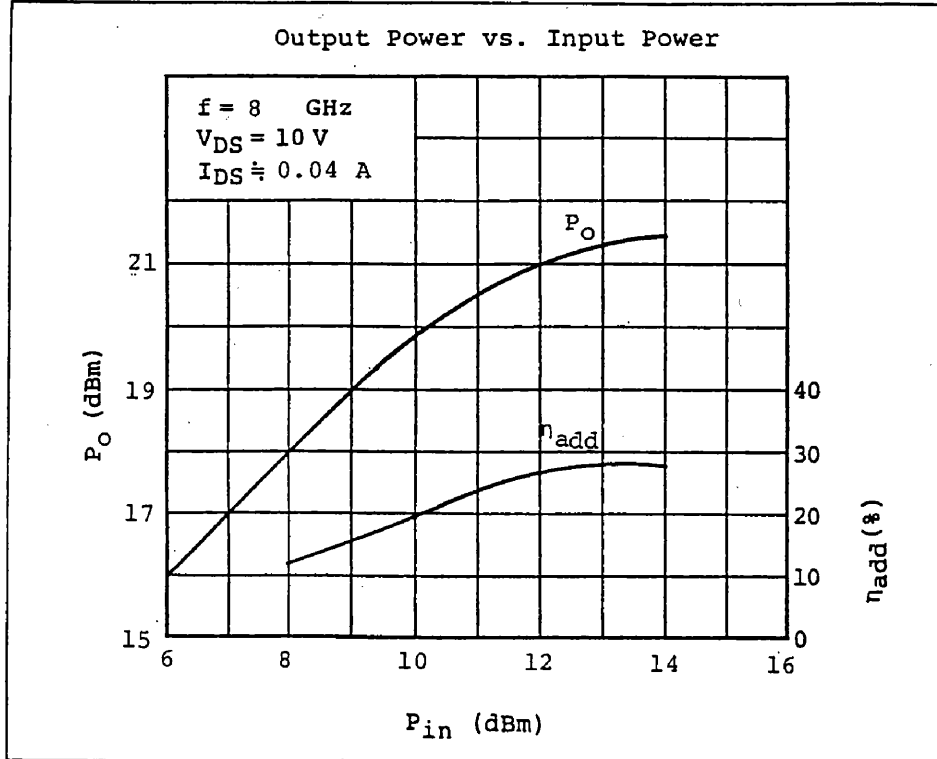
## PACKAGE OUTLINE (2-3H1B)



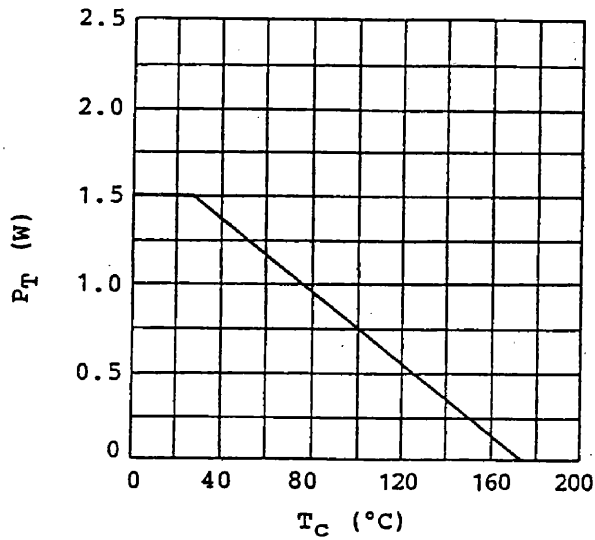
### HANDLING PRECAUTIONS FOR PACKAGED TYPE

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

OUTPUT POWER CHARACTERISTIC



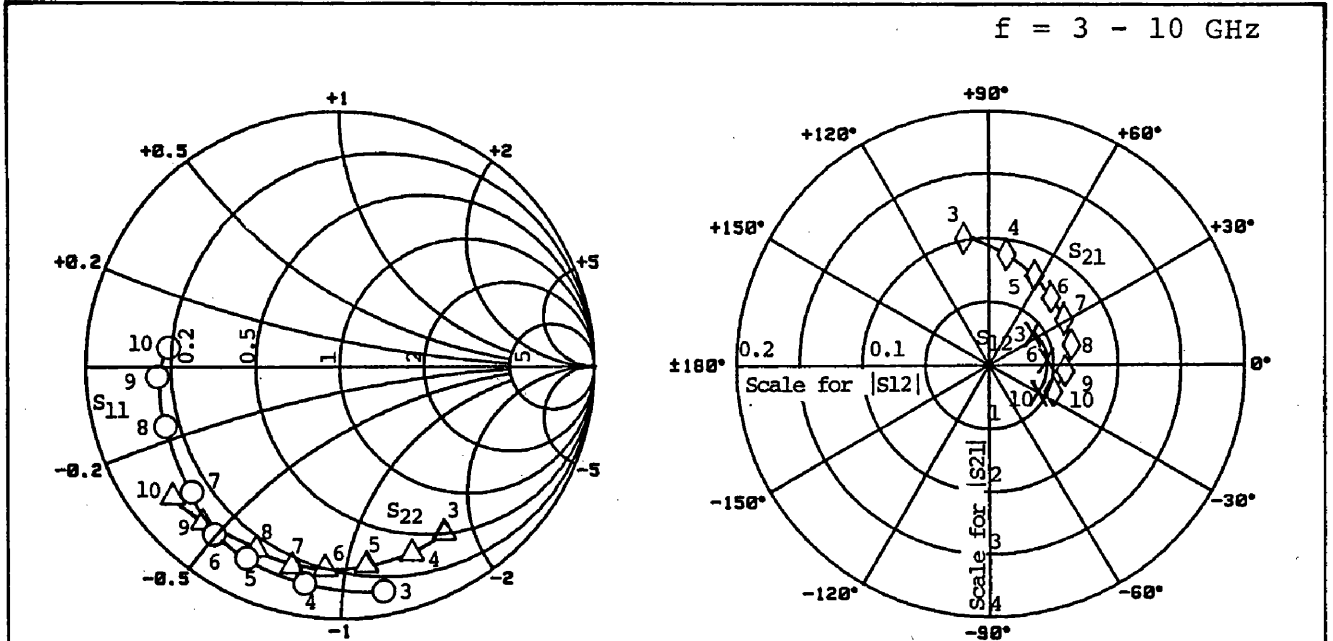
POWER DISSIPATION VS. CASE TEMPERATURE



# S8834

## S8834 S-PARAMETERS (MAGN. and ANGLES)

$V_{DS} = 10 \text{ V}$ ,  $I_{DS} = 40 \text{ mA}$



FREQUENCY (GHz)	S <sub>11</sub>		S <sub>12</sub>		S <sub>21</sub>		S <sub>22</sub>	
3	0.91	-79	0.042	32	2.04	101	0.78	-58
4	0.87	-99	0.046	20	1.78	81	0.79	-69
5	0.84	-116	0.048	10	1.58	63	0.79	-82
6	0.83	-127	0.046	2	1.43	47	0.80	-94
7	0.77	-140	0.048	-4	1.35	31	0.81	-103
8	0.73	-161	0.050	-13	1.31	13	0.80	-115
9	0.72	-177	0.049	-24	1.20	-6	0.82	-131
10	0.68	174	0.047	-31	1.07	-22	0.84	-142