

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	η_{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.



TOSHIBA CORPORATION

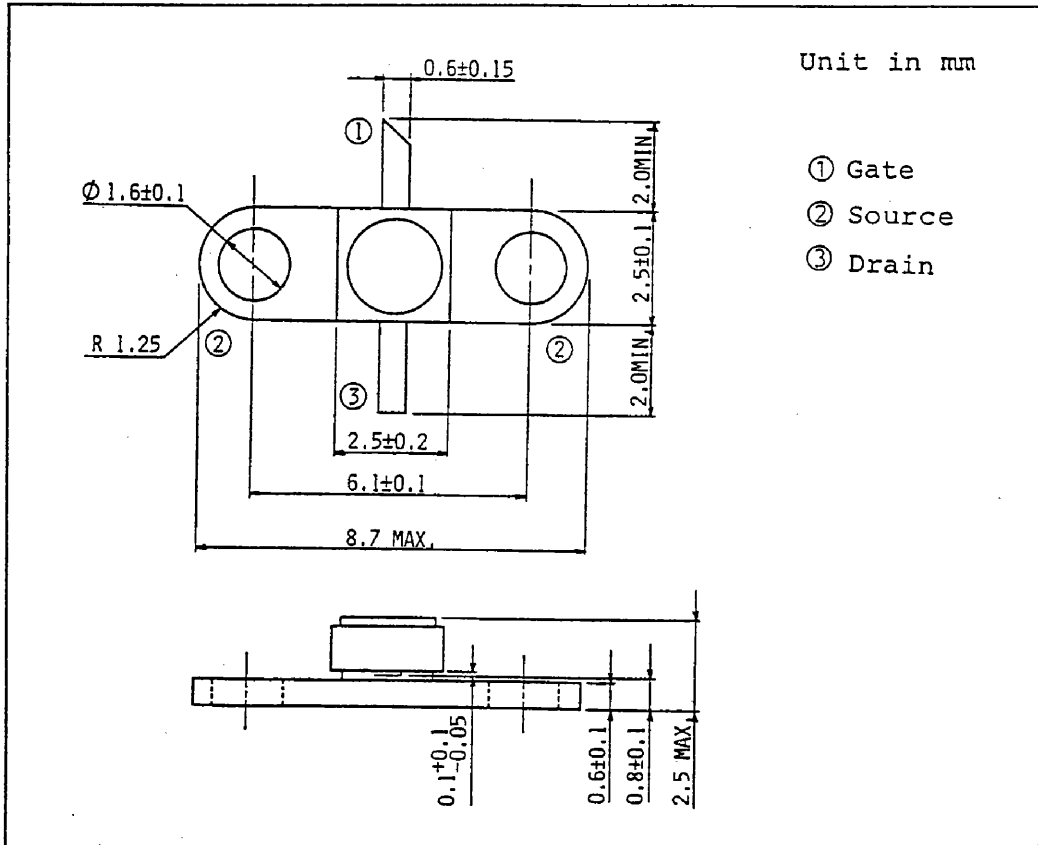
Revised May 1989

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ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

TYPE NUMBER (PACKAGE CODE)			S8834 (2-3H1B)
CHARACTERISTIC	SYMBOL	UNIT	RATING
Drain-Source Voltage	V _{DS}	V	15
Gate-Source Voltage	V _{GS}	V	-5
Drain Current	I _D	A	0.125
Total Power Dissipation (Tc=25°C)	P _T	W	1.5
Channel Temperature	T _{ch}	°C	175
Storage Temperature	T _{stg}	°C	-65~175

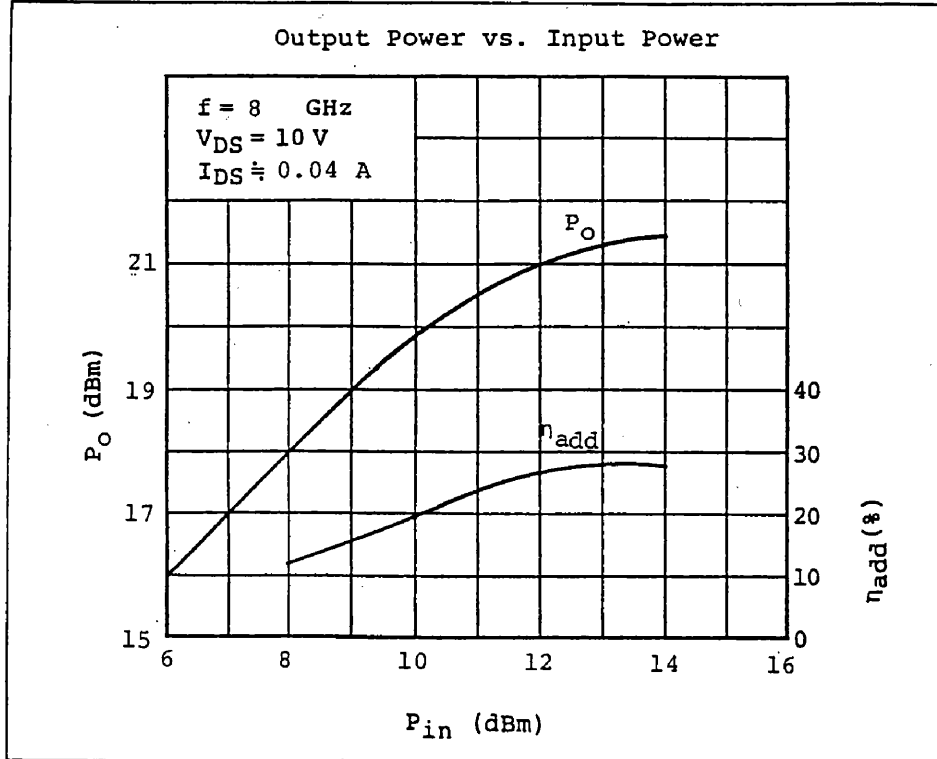
PACKAGE OUTLINE (2-3H1B)



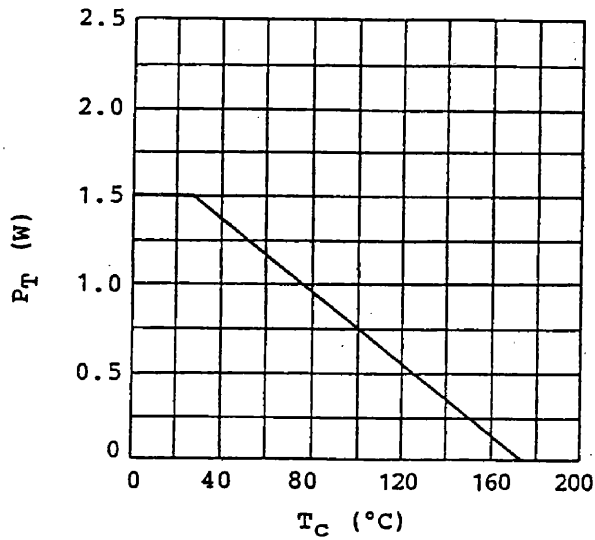
HANDLING PRECAUTIONS FOR PACKAGED TYPE

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

OUTPUT POWER CHARACTERISTIC



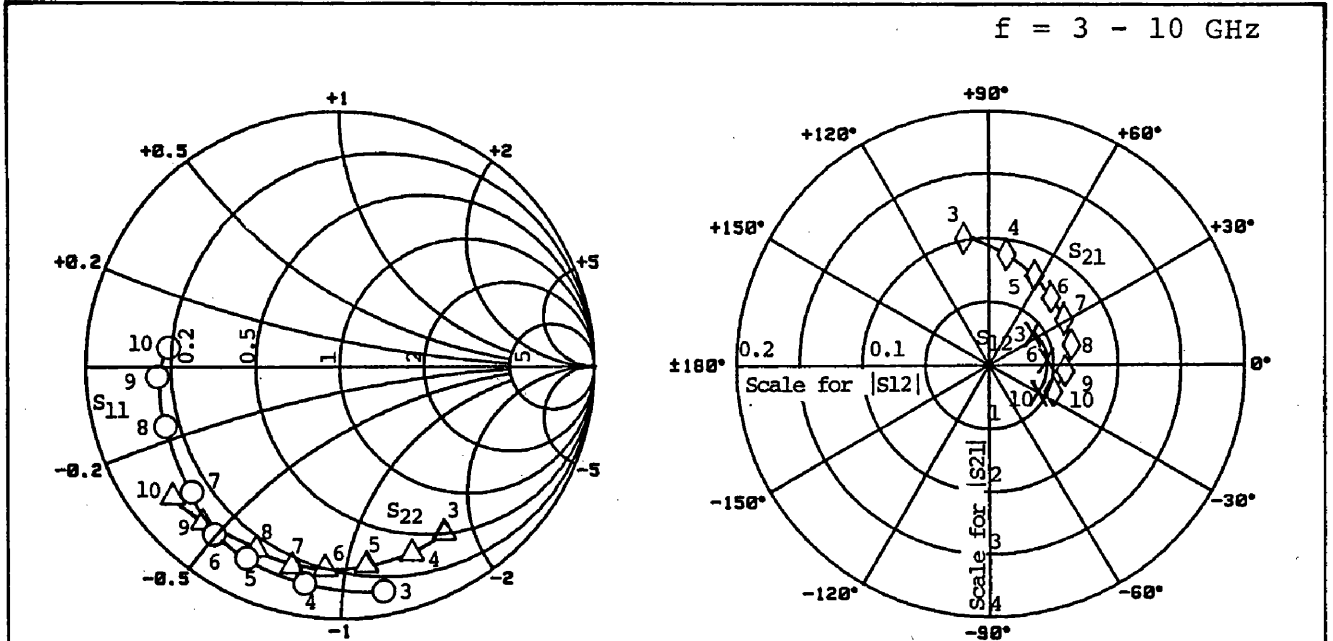
POWER DISSIPATION VS. CASE TEMPERATURE



S8834

S8834 S-PARAMETERS (MAGN. and ANGLES)

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



FREQUENCY (GHz)	S ₁₁		S ₁₂		S ₂₁		S ₂₂	
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