TOSHIBA

MICROWAVE SEMICONDUCTOR

TECHNICAL DATA

MICROWAVE POWER GaAs FET

S8836A

FEATURES:

- HIGH POWER
  P_{1dB} = 29.5 dBm at f = 8 GHz
- HIGH GAIN
  G_{1dB} = 7.5 dB at f = 8 GHz
- SUITABLE FOR C-BAND AMPLIFIER
- ION IMPLANTATION

RF PERFORMANCE SPECIFICATIONS (T_a = 25°C)

TYPE NUMBER (PACKAGE CODE)				S8836A (2-7C1B)		
CHARACTERISTIC	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Output Power at 1dB Compression Point	P_{1dB}	V_{DS}= 10V, f = 8GHz	dBm	28.5	29.5	-
Power Gain at 1dB Compression Point	G_{1dB}		dB	6.5	7.5	-
Drain Current	I_{DS}		A	-	0.25	0.4
Power Added Efficiency	η_{add}		%	-	30	-

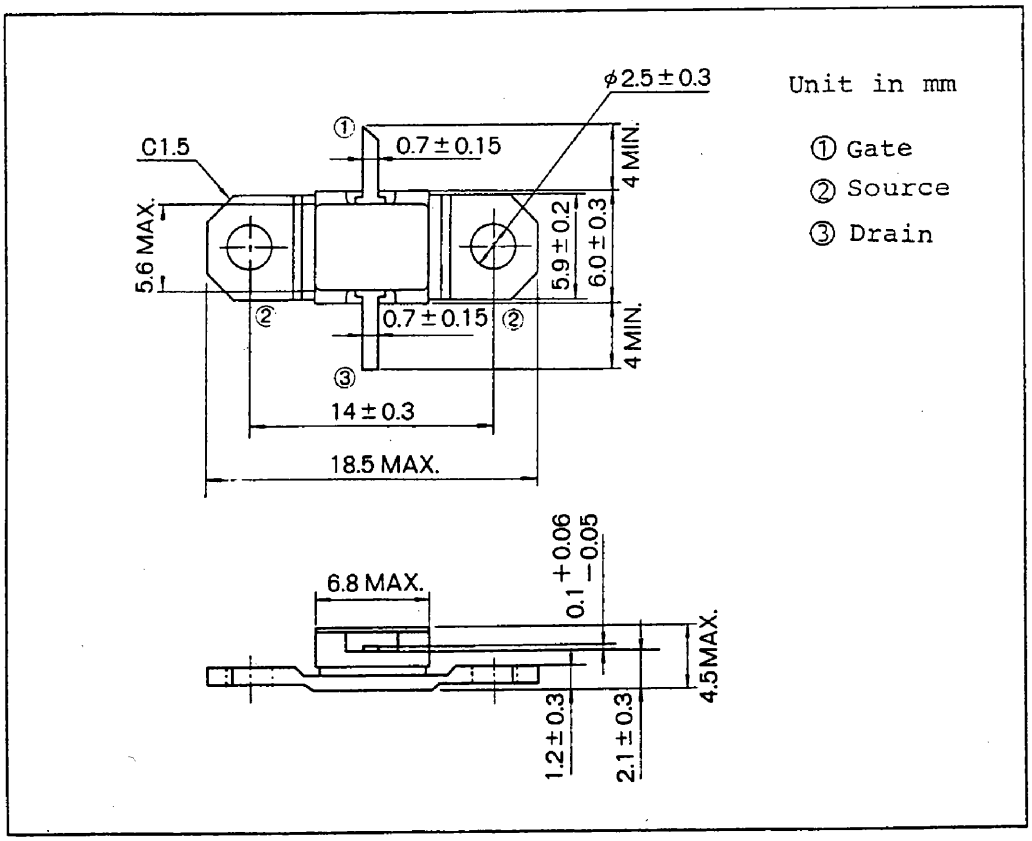
ELECTRICAL CHARACTERISTICS (T_a = 25°C)

TYPE NUMBER (PACKAGE CODE)				S8836A (2-7C1B)		
CHARACTERISTIC	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Transconductance	g_m	V_{DS}=3V, I_{DS}=0.28A	mS	-	170	-
Pinch-off Voltage	V_{GSoff}	V_{DS}=3V, I_{DS}=5mA	V	-2	-3.5	-5
Saturated Drain Current	I_{DSS}	V_{DS}=3V, V_{GS}=0V	A	-	0.55	0.7
Gate to Source Breakdown Voltage	V_{GSO}	I_{GS}=-10μA	V	-5	-	-
Thermal Resistance	$R_{th(c-c)}$	Channel to case	°C/W	-	20	30

ABSOLUTE MAXIMUM RATINGS (Ta = 25° C)

TYPE NUMBER (PACKAGE CODE)			S8836A (2-7C1B)
CHARACTERISTIC	SYMBOL	UNIT	RATING
Drain-Source Voltage	V_{DS}	V	15
Gate-Source Voltage	V_{GS}	V	-5
Drain Current	I_D	A	0.7
Total Power Dissipation (Tc=25°C)	P_T	W	5.0
Channel Temperature	T_{ch}	°C	175
Storage Temperature	T_{stg}	°C	-65∿175

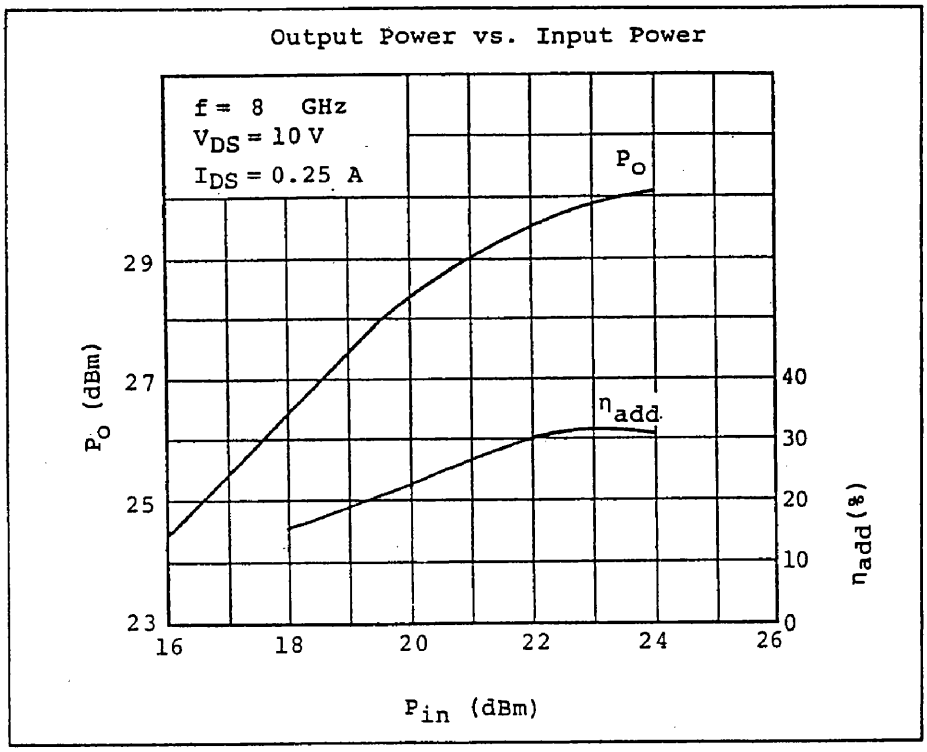
PACKAGE OUTLINE (2-7C1B)



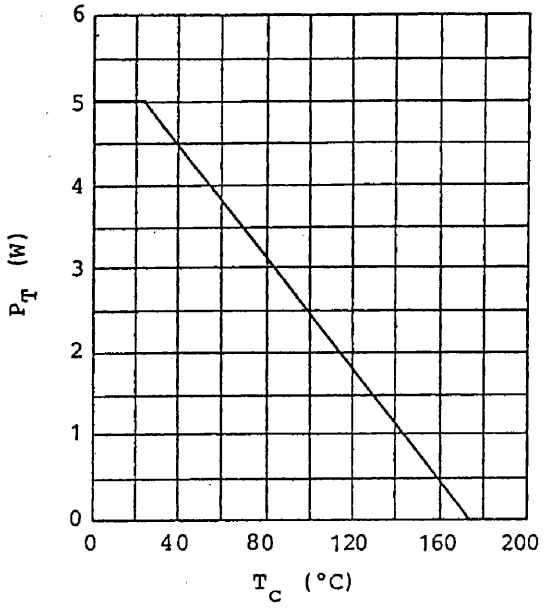
HANDLING PRECAUTIONS FOR PACKAGED TYPE

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

OUTPUT POWER CHARACTERISTIC



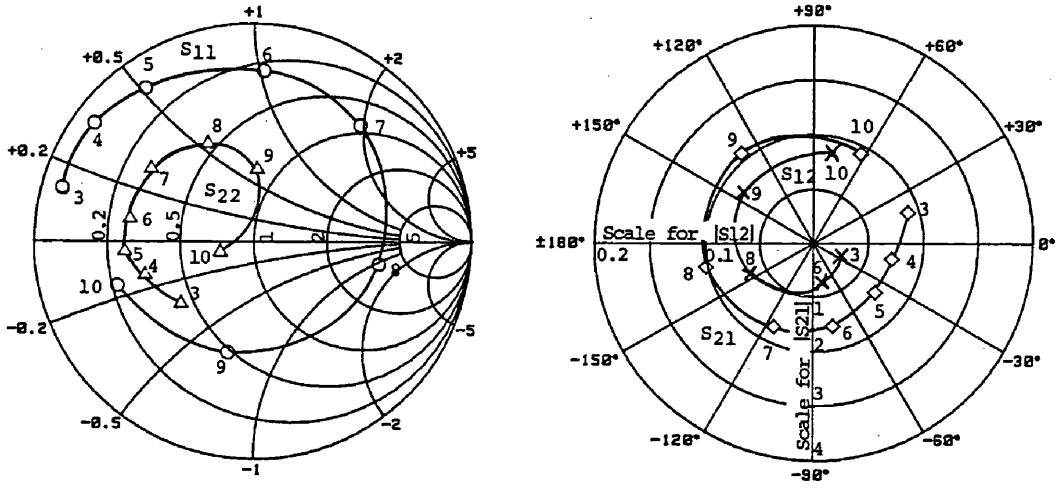
POWER DISSIPATION VS. CASE TEMPERATUR



S8836A S-PARAMETERS
(MAGN. and ANGLES)

V_{DS} = 10 V, I_{DS} = 226 mA

f = 3 - 10 GHz



FREQUENCY (GHz)	S_{11}		S_{12}		S_{21}		S_{22}	
3	0.91	164	0.027	-22	1.79	19	0.44	-139
4	0.91	143	0.026	-35	1.43	-11	0.52	-163
5	0.86	125	0.029	-51	1.43	-39	0.59	-176
6	0.79	87	0.036	-78	1.56	-77	0.57	169
7	0.72	48	0.045	-106	1.70	-116	0.58	144
8	0.58	-10	0.065	-155	2.04	-168	0.50	115
9	0.52	-103	0.081	144	2.15	129	0.34	88
10	0.65	-162	0.086	79	1.86	63	0.16	-164