

TOSHIBA

MICROWAVE SEMICONDUCTOR

TECHNICAL DATA

MICROWAVE POWER GaAs FET

S8850A

FEATURES:

- HIGH POWER
 $P_{1dB} = 21.5\text{dBm}$ at $f = 15\text{ GHz}$
- HIGH GAIN
 $G_{1dB} = 9.0\text{ dB}$ at $f = 15\text{ GHz}$
- SUITABLE FOR Ku-BAND AMPLIFIER
- ION IMPLANTATION

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

TYPE NUMBER (PACKAGE CODE)					S8850A (2-3K1B)		
CHARACTERISTIC	SYMBOL	CONDITION		UNIT	MIN.	TYP.	MAX.
		f	V _{DS}				
Output Power at 1dB com- pression Point	P _{1dB}	15 GHz	10V	dBm	20.5	21.5	-
			8 V		-	20.5	-
Power Gain at 1dB Com- pression Point	G _{1dB}		10V	dB	8.0	9.0	-
			8 V		-	9.0	-
Drain Current	I _{DS}		10V	A	-	0.06	0.09
			8 V		-	0.06	0.09
Power Added Efficiency	η _{add}		10V	%	-	21	-
			8 V		-	20	-

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

TYPE NUMBER (PACKAGE CODE)				S8850A (2-3K1B)		
CHARACTERISTIC	SYMBOL	CONDITION	UNIT	MIN.	TYP.	MAX.
Trans- conductance	g_m	V _{DS} = 3V I _{DS} = 45mA	mS	-	30	-
Pinch-off Voltage	V _{GSoff}	V _{DS} = 3V I _{DS} = 1.5mA	V	-2.5	-3.5	-5
Saturated Drain Current	I _{DSS}	V _{DS} = 3V V _{GS} = 0V	A	-	0.1	0.125
Gate to Source Breakdown Voltage	V _{GS0}	I _{GS} = -1.5μA	V	-5	-	-
Thermal Resistance	R _{th(c-c)}	Channel to case	°C/W	-	90	150

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TOSHIBA CORPORATION

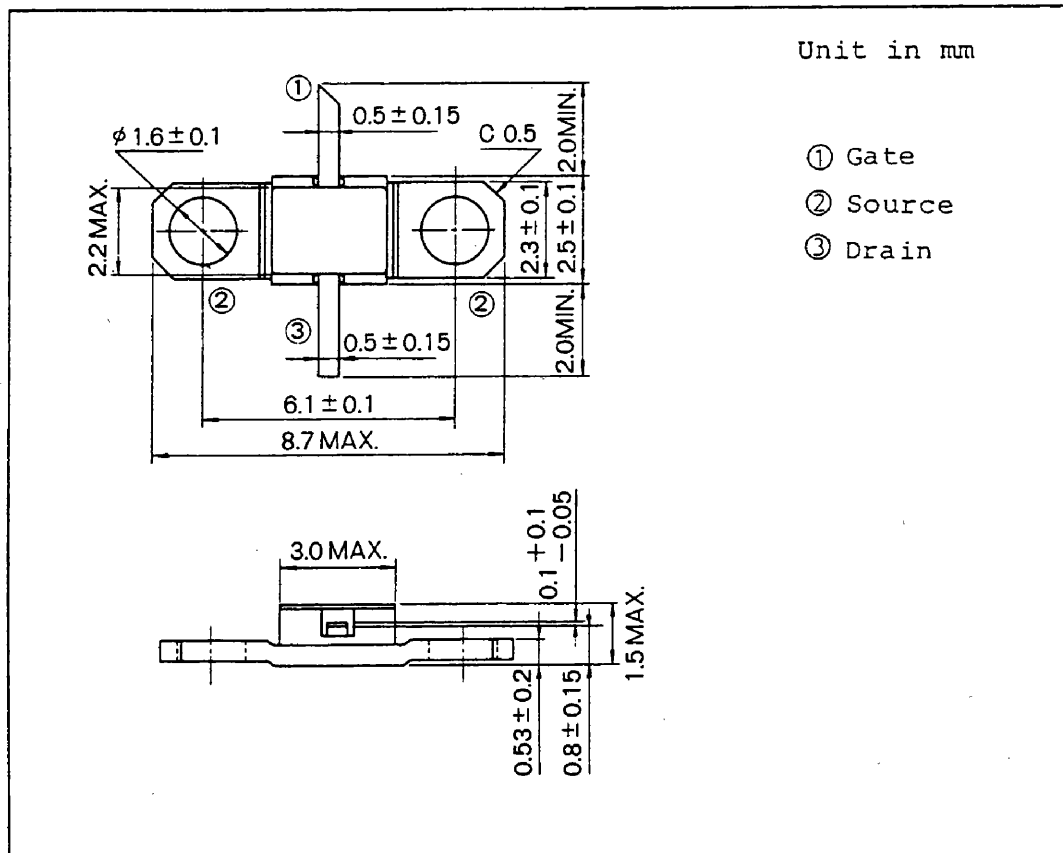
Revised May 1990

S8850A

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

TYPE NUMBER (PACKAGE CODE)			S8850A (2-3K1B)
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	1.0
Channel Temperature	T _{ch}	°C	175
Storage Temperature	T _{stg}	°C	-65 ~ 175

PACKAGE OUTLINE (2-3K1B)

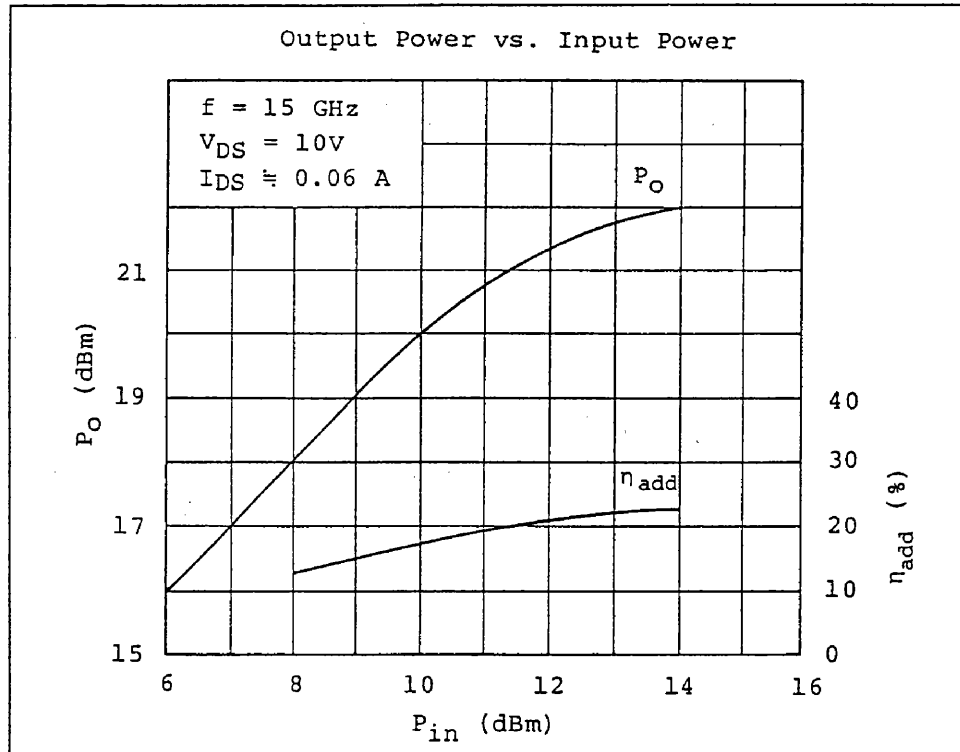


HANDLING PRECAUTIONS FOR PACKAGED TYPE

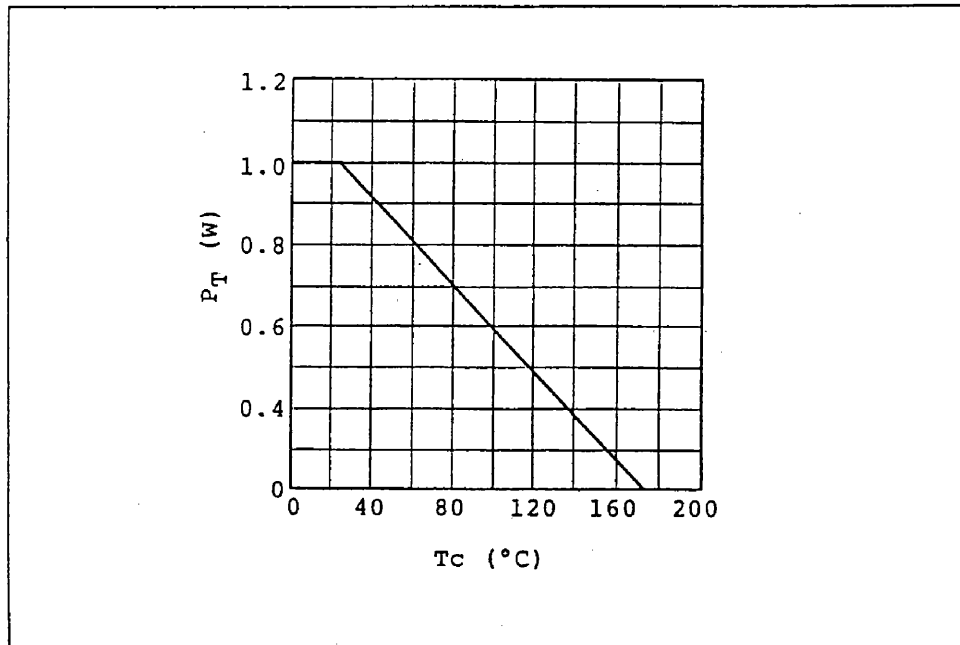
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

S8850A

RF PERFORMANCES



POWER DISSIPATION VS. CASE TEMPERATURE

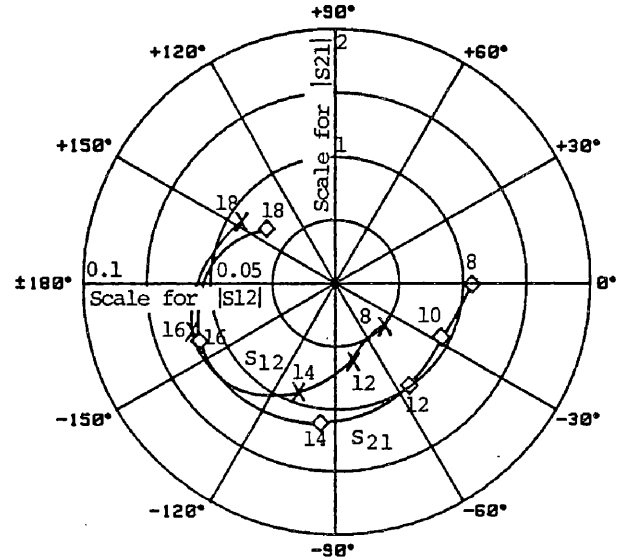
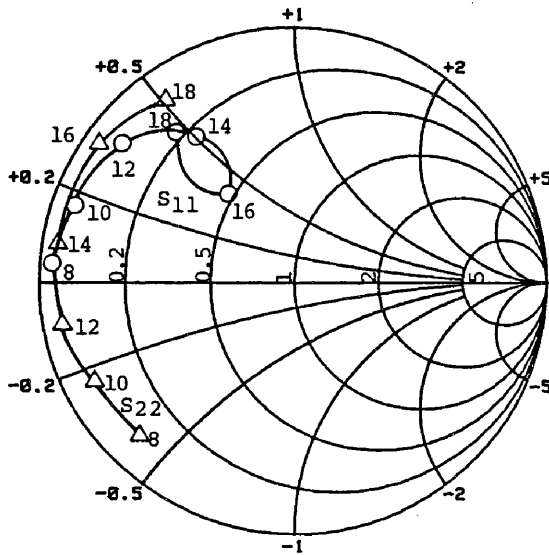


S8850A

S8850A S-PARAMETERS (MAGN. and ANGLES)

$V_{DS} = 10 \text{ V}$, $I_{DS} = 50 \text{ mA}$

$f = 8 - 18 \text{ GHz}$



FREQUENCY (GHz)	S_{11}		S_{12}		S_{21}		S_{22}	
8	0.95	176	0.026	-47	1.06	-1	0.87	-135
9	0.92	169	0.024	-51	0.94	-14	0.88	-145
10	0.91	161	0.024	-58	0.91	-27	0.89	-153
11	0.89	151	0.027	-66	0.91	-40	0.91	-160
12	0.87	141	0.032	-76	0.97	-56	0.93	-169
13	0.81	132	0.039	-88	1.01	-74	0.95	-177
14	0.68	125	0.045	-108	1.09	-95	0.94	172
15	0.53	118	0.057	-130	1.21	-122	0.94	160
16	0.43	127	0.060	-161	1.18	-156	0.94	145
17	0.55	135	0.058	173	0.99	169	0.89	132
18	0.74	129	0.044	149	0.70	141	0.88	126