

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 compression Point	P _{1dB}	15 GHz	10V	dBm	20.5	21.5	-
			8 V		-	20.5	-
Power Gain at 1dB Compression 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 _{GSo_{off}}	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 _{GSO}	I _{GS} = -1.5 μ A	V	-5	-	-
Thermal Resistance	R _{th(c-c)}	Channel to case	$^\circ\text{C/W}$	-	90	150

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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

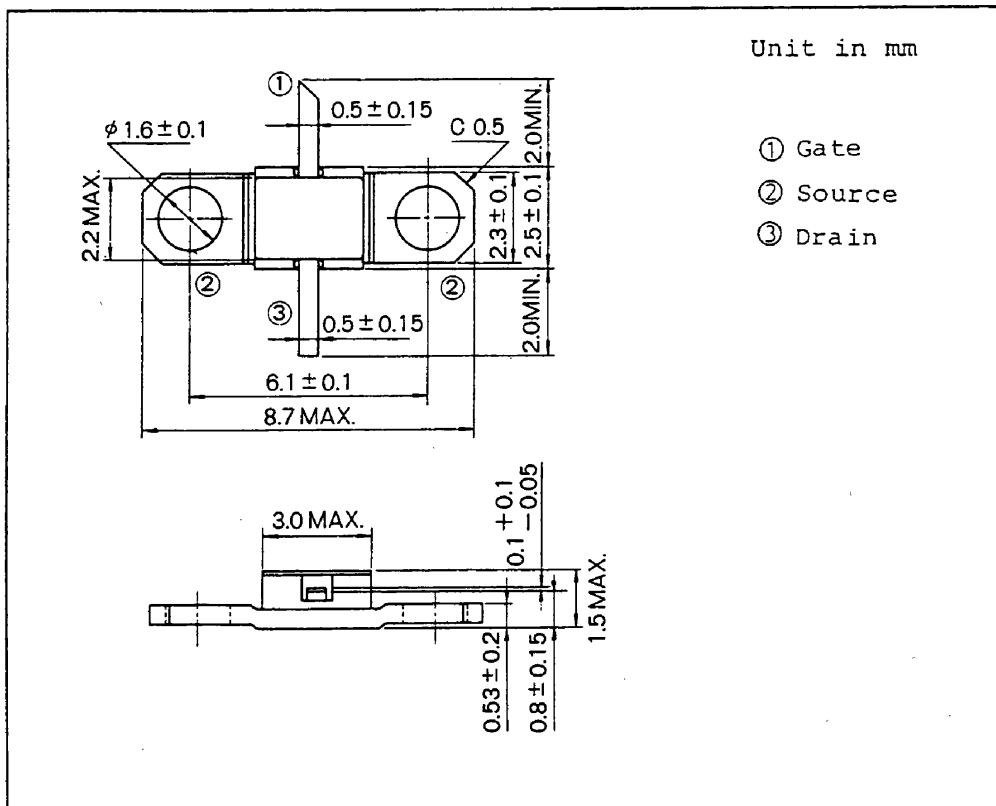
Revised May 1990

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 (T _C =25°C)	P _T	W	1.0
Channel Temperature	T _{ch}	°C	175
Storage Temperature	T _{stg}	°C	-65 ~ 175

PACKAGE OUTLINE (2-3K1B)

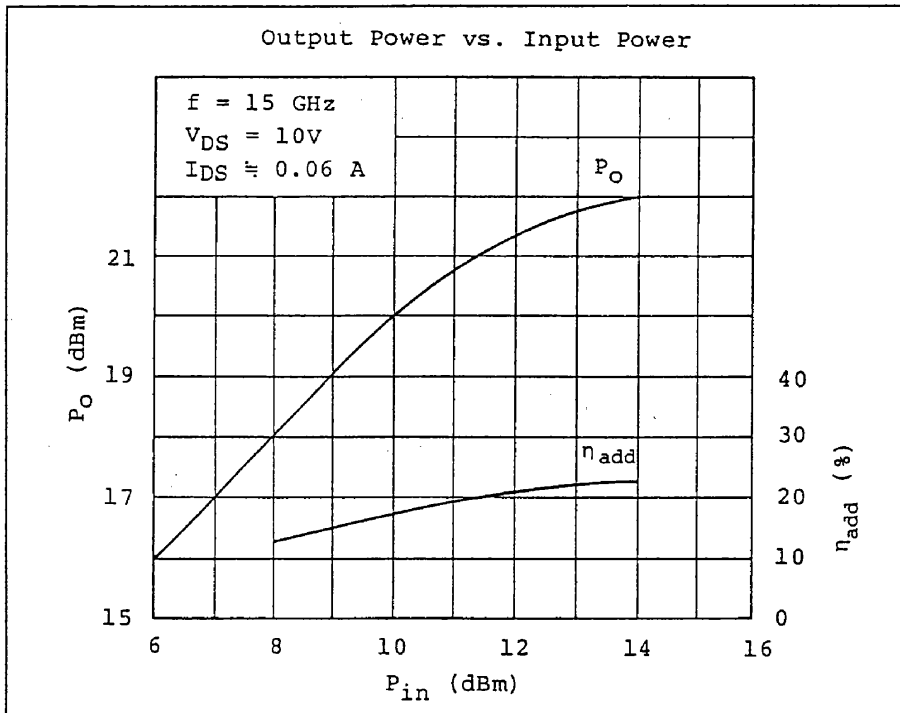


HANDLING PRECAUTIONS FOR PACKAGED TYPE

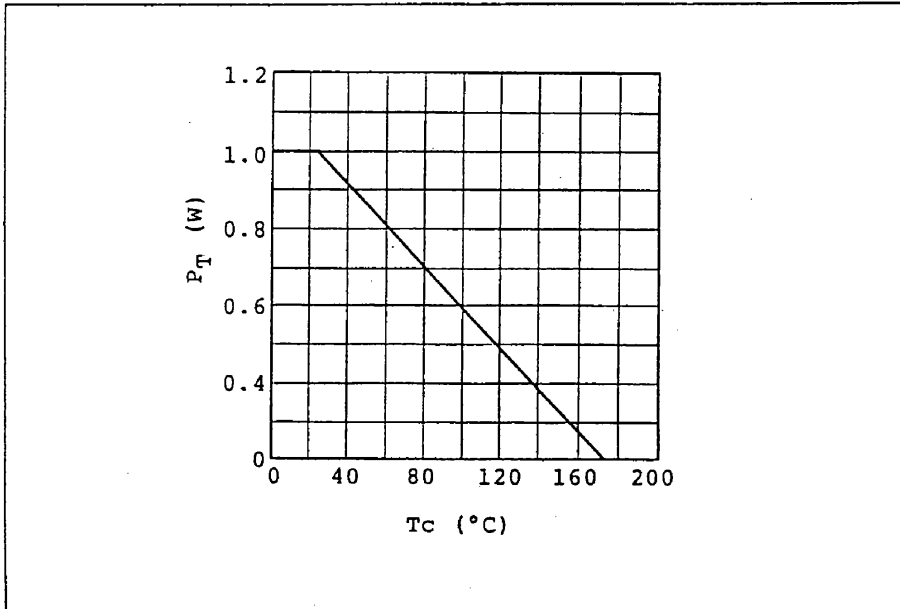
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.

S8850A

RF PERFORMANCES



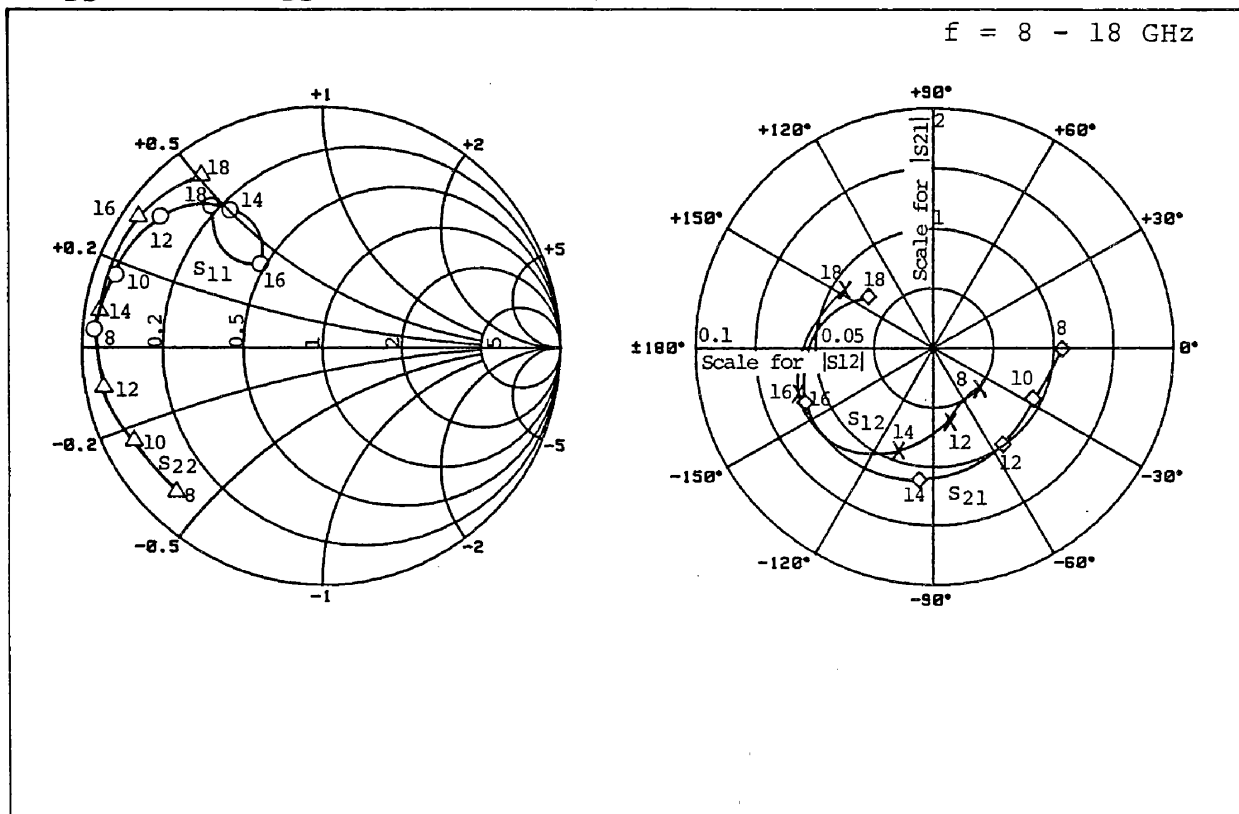
POWER DISSIPATION VS. CASE TEMPERATURE



S8850A

S8850A S-PARAMETERS (MAGN. and ANGLES)

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



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