



SOLID STATE MICROWAVE

THOMSON-CSF COMPONENTS CORPORATION

Montgomeryville, PA 18936 ■ (215) 362-8500 ■ TWX 510-661-7299

SD1136

10 W, 12.5 V UHF POWER TRANSISTOR

DESCRIPTION

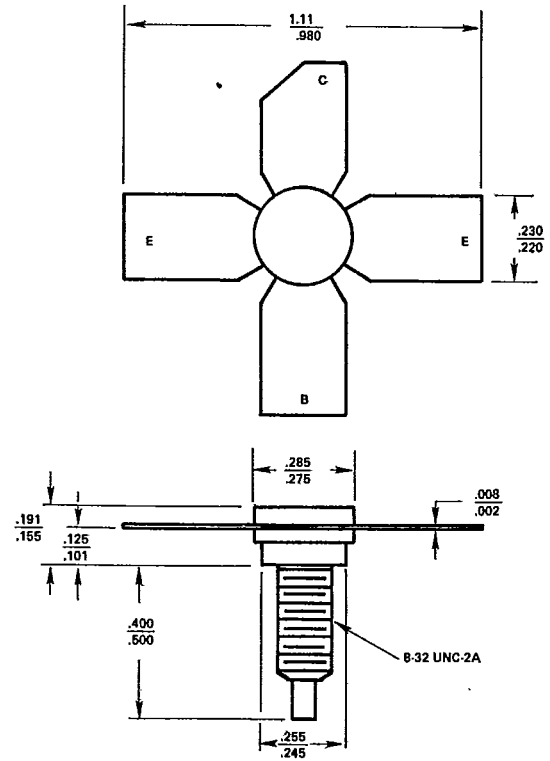
SSM device type SD1136 is a 12.5 volt epitaxial silicon NPN planar transistor designed primarily for UHF communications.

FEATURES

- Designed for UHF military and commercial equipment
- 10.0 watts (min.) with greater than 6.0 dB gain
- Withstands infinite VSWR under operating conditions
- Low inductance stripline package
- Emitter stabilized

ABSOLUTE MAX. RATING

V_{CB0}	: Collector-Base Voltage	36.0 V
V_{CEO}	: Collector-Emitter Voltage	16.0 V
V_{EBO}	: Emitter-Base Voltage	4.0 V
I_c	: Collector Current (max.)	3.4 A
PT.	: Total Device Dissipation @ 25° Case	37.5 W
ϕ_{jc}	: Thermal Resistance	4.6° C/W
T_j	: Junction Temperature	+200°C
T_s	: Storage Temperature	-65°C to +200°C



.280 4LS(B)

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector-Emitter Breakdown Voltage*	BV_{CEO}	$I_c = 50 \text{ mA}, I_b = 0$	16	—	—	V_{dc}
Collector-Emitter Breakdown Voltage*	BV_{CES}	$I_c = 20 \text{ mA}, V_{be} = 0$	36	—	—	V_{dc}
Emitter-Base Breakdown Voltage	BV_{EBO}	$I_e = 5 \text{ mA}, I_c = 0$	4	—	—	V_{dc}
Collector Cut Off Current	I_{CBO}	$V_{cb} = 15 \text{ V}, I_e = 0$	—	—	2	mA
DC Current Gain	h_{FE}	$V_{ce} = 5 \text{ V}, I_c = .5 \text{ A}$	20	—	—	—

*Pulsed through 25 MH Inductor

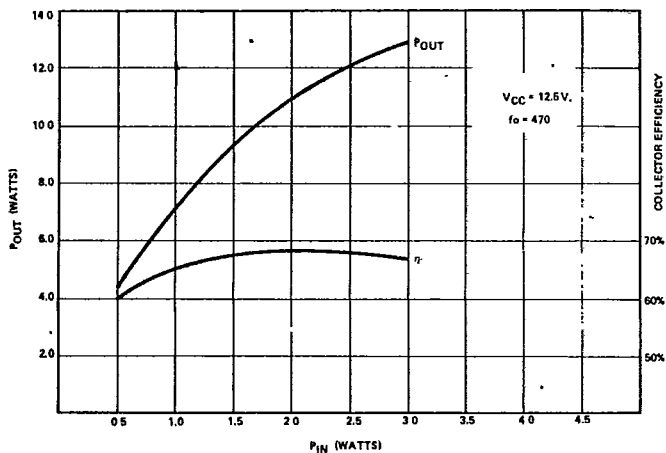
RF CHARACTERISTICS: SMALL SIGNAL

Output Capacitance — $F_o = 1.0 \text{ MHz}$	C_{ob}	$V_{cb} = 12 \text{ V}, I_c = 0$	—	23	—	pF
Input Capacitance — $F_o = 1.0 \text{ MHz}$	C_{ib}	$V_{eb} = .5 \text{ V}, I_c = 0$	—	85	—	pF

RF CHARACTERISTICS: LARGE SIGNAL

Amplifier power out	P_o	470 MHz/12.5 V	10	—	—	watts
Amplifier power gain	P_g		6.0	—	—	dB
Impedance — Input	Z_{in}	470 MHz/12.5 V	1.5 + J0.4			ohms
Impedance — Output	Z_{out}		6.6 - J3.6			ohms

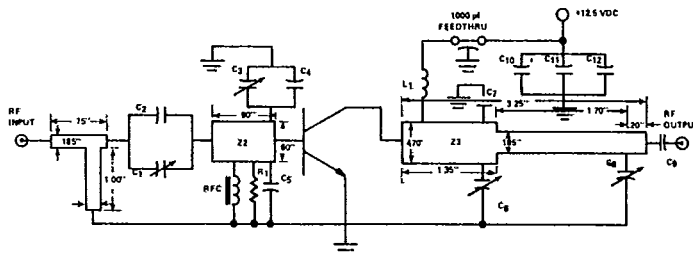
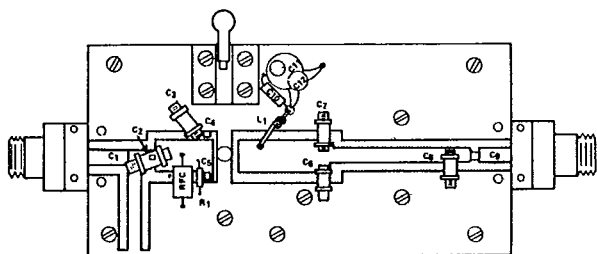




POWER OUT VS POWER IN

IMPEDANCE VS. FREQUENCY

f_o	Z_{in}	Z_{out}
450	$1.4 + j4.4$	$6.4 - j3.4$
470	$1.5 + j4.0$	$6.6 - j3.6$
512	$1.6 + j4.0$	$6.3 - j3.7$



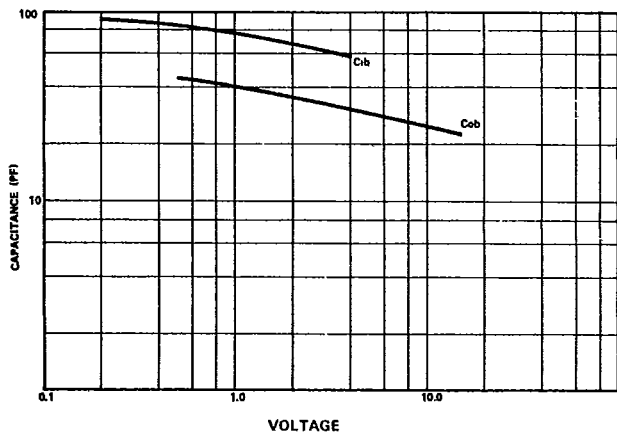
COMPONENT LIST

- C1, C3, C6, C7, C8 — Voltronics, AJ10, 0.8–10 pf
- C2 — Chip Capacitor, ATC100B, 11 pf
- C4, C5 — Chip Capacitor, ATC 100B, 16 pf
- C9 — Chip Capacitor, ATC 100B, 620 pf
- C10 — Electrolytic, 5.6 μf, 35V
- C11 — DISC-Ceramic, 0.1 μf

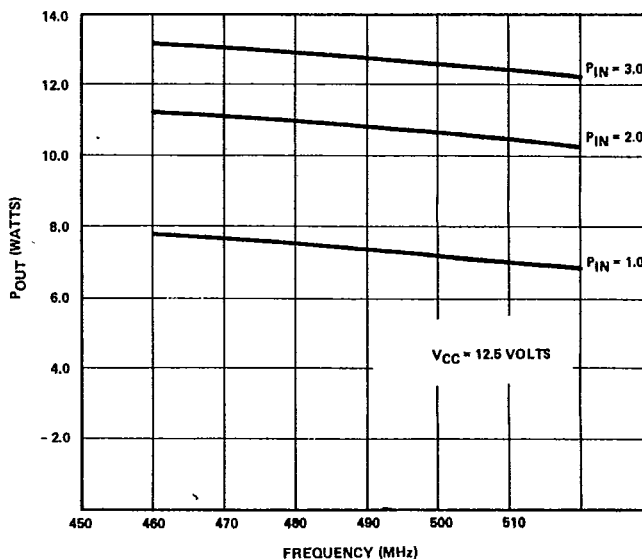
- C12 — DISC-Ceramic, 0.01 μf
- R1 — Carbon Resistor, 270 Ω, 1/4w
- L1 — 2 Turns #22 Enameled 0.1" ID
- RFC — 2 Turns in Ferrocube VK200/19-4B

BOARD MATERIAL—3M-K-6098 1/16" Thk.

BROADBAND TEST FIXTURE 450 – 510 MHz



CAPACITANCE VS VOLTAGE



POWER OUTPUT VS FREQUENCY