SOLID STATE MICROWAVE

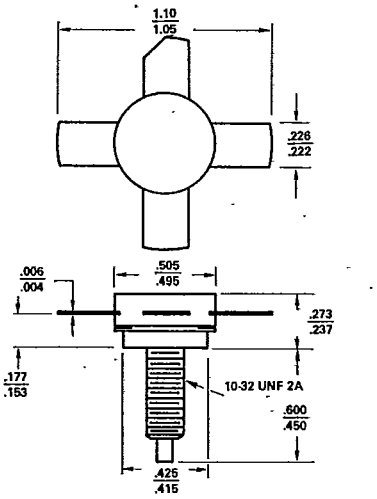
THOMSON-CSF COMPONENTS CORPORATION
Montgomeryville, PA 18936 ■ (215) 362-8500 ■ TWX 510-661-7299

2N6080 2N6081 2N6082 2N6083 2N6084

VHF COMMUNICATIONS TRANSISTOR

DESCRIPTION:

This line of epitaxial silicon NPN-planar transistor is designed primarily for VHF mobile and marine transmitters. The device utilizes emitter ballasting resistors and improved metallization systems to achieve extreme ruggedness under severe operating conditions.



.500 4LS

FEATURES:

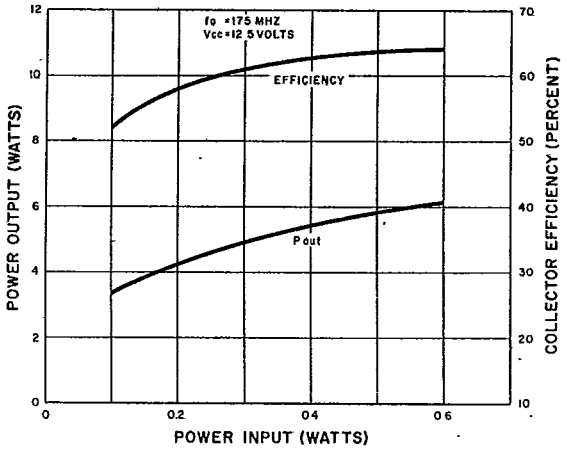
- Designed for VHF mobile and marine transmitters
- Withstands severe mismatch under operating conditions
- Low inductance stripline package
- All leads electrically isolated from stud

ABSOLUTE MAXIMUM RATINGS (TA = 25°C)

Symbol	Characteristic	2N6080	2N6081	2N6082	2N6083	2N6084
V_{CBO}	Collector to Base Voltage	36.0V	36.0V	36.0V	36.0V	36.0V
V_{CEO}	Collector to Emitter Voltage	18.0V	18.0V	18.0V	18.0V	18.0V
V_{EBO}	Emitter to Base Voltage	4.0V	4.0V	4.0V	4.0V	4.0V
I_C (max)	Continuous Collector Current	1.0A	2.5A	4.0A	4.0A	6.0A
P_D	Total Dissipation at 25°C Stud	12.0W	31.0W	65.0W	65.0W	80.0W
ϕ_{JC}	Thermal Resistance (Junction to Stud)	15.0°C/W	5.6°C/W	2.8°C/W	2.8°C/W	2.2°C/W
T_J	Junction Temperature	−65°C to 200°C	−65°C to 200°C	−65°C to 200°C	−65°C to 200°C	−65°C to 200°C
T_{stg}	Storage Temperature	−65°C to 200°C	−65°C to 200°C	−65°C to 200°C	−65°C to 200°C	−65°C to 200°C

ELECTRICAL CHARACTERISTICS (TA = 25°C)

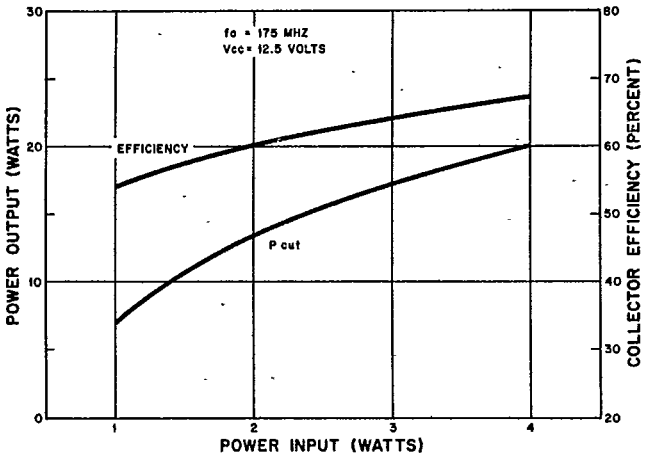
Symbol	Characteristic	Test Conditions	2N6080 Min.	2N6080 Max.	2N6081 Min.	2N6081 Max.	2N6082 Min.	2N6082 Max.	2N6083 Min.	2N6083 Max.	2N6084 Min.	2N6084 Max.
BV_{CEO}	Collector to Emitter Breakdown Voltage	I_C = 200mA, I_B = 0 Pulsed through 25mH	18.V	–	18.V	–	18.V	–	18.V	–	18.V	–
BV_{CES}	Collector to Emitter Breakdown Voltage	I_C = 200mA, V_{BE} = 0 Pulsed through 25mH	36.V	–	36.V	–	36.V	–	36.V	–	36.V	–
BV_{EBO}	Emitter to Base Breakdown Voltage	I_E = 2.5mA, I_C = 0	4.V	–	4.V	–	4.V	–	4.V	–	4.V	–
I_{CBO}	Collector Cutoff Current	V_{CB} = 15.0V, I_E = 0	–	1.0mA	–	1.0mA	–	1.0mA	–	1.0mA	–	1.0mA
h_{FE}	DC Current Gain	V_{CE} = 5V, I_C = 250mA	5.	–	5.	–	5.	–	5.	–	5.	–
f_T	Gain Bandwidth Product	V_{CE} = 13.6V, I_C = 100mA f_o = 100mHz	200.mHz	–	200.mHz	–	200.mHz	–	200mHz	–	200mHz	–
C_{ob}	Output Capacitance	V_{CE} = 12.5V, I_C = 0 f_o = 1mHz	–	20. pF	–	85. pF	–	130. pF	–	130. pF	–	200 pF
P_{out}	Output Power Class C	f_o = 175mHz, V_{CE} = 12.5V, Class C	4.W	–	15.W	–	25.W	–	30.W	–	40.W	–
G_{pe}	Power Gain Class C	f_o = 175mHz, V_{CE} = 12.5V Class C	12. dB	–	6.3 dB	–	6.2 dB	–	5.7 dB	–	4.5 dB	–
η	Collector Efficiency	f_o = 175mHz, V_{CE} = 12.5 V Class C	60.%	–	60.%	–	50.%	–	50.%	–	50.%	–



2N6080 POWER OUTPUT VS POWER INPUT

f_o = 175MHz, Vcc = 12.5V			
P_{IN} WATTS	P_{OUT} WATTS	INPUT OHMS	OUTPUT OHMS
0.1	3.3	1.5 + J1.7	5.8 + J1.4
0.3	4.9	2.2 + J1.3	7.6 + J9.8
0.5	5.8	2.9 + J0.4	8.4 + J6.9

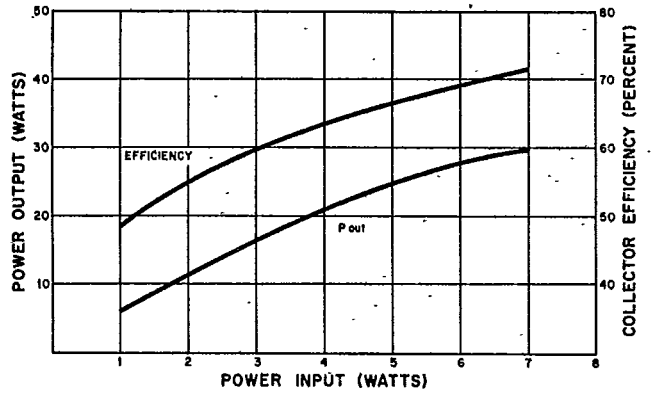
NETWORK IMPEDANCE AT TRANSISTOR TERMINALS



2N6081 POWER OUTPUT VS POWER INPUT

fo = 175 MHz, Vcc = 12.5 VOLTS			
P_{IN} WATTS	P_{OUT} WATTS	INPUT OHMS	OUTPUT OHMS
1	9.3	0.8 – j 1.0	4.0 + j 3.0
3	19.6	1.0 – j 1.4	3.3 + j 1.2
5	27.6	1.0 – j 1.0	2.9 + j 0.6

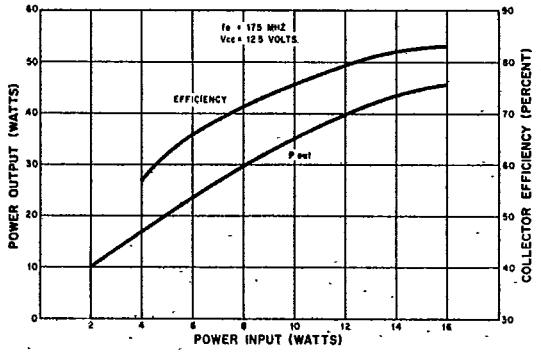
NETWORK IMPEDANCE AT TRANSISTOR TERMINALS



2N6082 – 2N6083 POWER OUTPUT VS POWER INPUT

fo = 175 MHz, Vcc = 12.5 VOLTS			
P_{IN} WATTS	P_{OUT} WATTS	INPUT OHMS	OUTPUT OHMS
2.5	17.4	0.8 – j 1.0	2.4 + j 1.5
5.0	27.5	0.9 – j 0.9	2.1 + j 0.4
7.5	35.8	0.9 – j 1.1	2.2 + j 0.1

NETWORK IMPEDANCE AT TRANSISTOR TERMINALS



2N6084 POWER OUTPUT VS POWER INPUT

fo = 175 MHz, Vcc = 12.5 VOLTS			
P_{IN} WATTS	P_{OUT} WATTS	INPUT OHMS	OUTPUT OHMS
4	21.7	0.8 – j 1.1	2.2 – j 0.3
8	37.1	0.8 – j 1.3	1.7 – j 0.5
12	46.5	0.8 – j 1.6	1.6 – j 0.3

NETWORK IMPEDANCE AT TRANSISTOR TERMINALS