SOLID STATE MICROWAVE

THOMSON-CSF COMPONENTS CORPORATION
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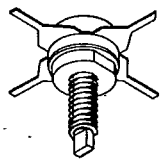
2N5635
2N5636
2N5637

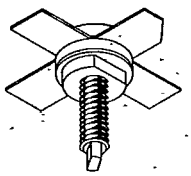
UHF COMMUNICATIONS TRANSISTOR

DESCRIPTION:

SSS device type 2N5635 is an epitaxial silicon NPN-planar transistor designed primarily for UHF communications transmitters. This device utilizes ballasted emitter resistors and improved metalization systems to achieve extreme ruggedness under severe operating conditions.



MT-71



MT-72

FEATURES:

- 2.5 watts (minimum) with greater than 6.2 dB gain at 28 volts 2N5635–MT71
- 7.5 watts (minimum) with greater than 5.7 dB gain at 28 volts 2N5636–MT71
- 20 watts (minimum) with greater than 4.6 dB gain at 28 volts 2N5637–MT72

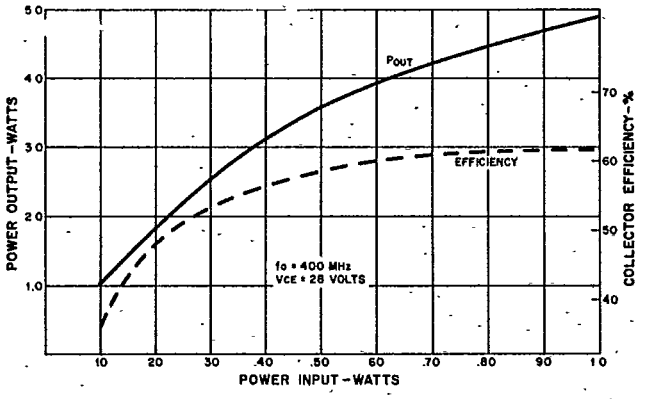
ABSOLUTE MAX. RATINGS (+25°C except where noted)

Symbol	Characteristic	2N5635	2N5636	2N5637
V_{CBO}	Collector to Base Voltage	60.0V	60.0V	60.0V
V_{CEO}	Collector to Emitter Voltage	35.0V	35.0V	35.0V
V_{EBO}	Emitter to Base Voltage	4.0V	4.0V	4.0V
I_C (max)	Continuous Collector Current	1.0A	1.5A	3.0A
P_D	Total Dissipation at 25°C Stud	7.5W	15.0W	30.0W
ϕ_{JC}	Thermal Resistance (Junction to Stud)	23.3°C/W	11.7°C/W	5.8°C/W
T_J	Junction Temperature	−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

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

Symbol	Characteristic	Test Conditions	2N5635 Min.	2N5635 Max.	2N5636 Min.	2N5636 Max.	2N5637 Min.	2N5637 Max.
BV_{CEO}	Collector to Emitter Breakdown Voltage	I_C = 100mA, I_B = 0	35.0V	–	–	–	–	–
		I_C = 200mA, I_B = 0	–	–	35.0V	–	35.0V	–
BV_{CES}	Collector to Emitter Breakdown Voltage	I_C = 100mA, V_{BE} = 0	60.0V	–	–	–	–	–
		I_C = 200mA, V_{BE} = 0	–	–	60.0V	–	60.0V	–
BV_{EBO}	Emitter to Base Breakdown Voltage	I_E = 1.0mA, I_C = 0	4.0V	–	–	–	–	–
		I_E = 5.0mA, I_C = 0	–	–	4.0V	–	–	–
		I_E = 10.0mA, I_C = 0	–	–	–	–	4.0V	–
I_{CBO}	Collector Cutoff Current	V_{CB} = 30V, I_E = 0	–	0.10mA	–	0.10mA	–	0.10mA
h_{FE}	DC Current Gain	V_{CE} = 5V, I_C = 100mA	5.0	–	–	–	–	–
		V_{CE} = 5V, I_C = 200mA	–	–	5.0	–	–	–
		V_{CE} = 5V, I_C = 500mA	–	–	–	–	5.0	–
C_{ob}	Output Capacitance	V_{CE} = 30V, I_C = 0, f_o = 1.0mHz	–	10.0 pF	–	20.0 pF	–	30.0 pF
C_{ib}	Input Capacitance	V_{EB} = 0.5V, I_C = 0, f_o = 1.0mHz	18 pF typ.		44 pF typ.		96 pF typ.	
P_{out}	Power Output	f_o = 400mHz, V_{CE} = 28V	3.5W typ.		10.0W typ.		23.0W typ.	
P_g	Power Gain	P_o = 2.5W, I_C = 179mA	8.5 dB typ.					
	Amplifier	P_o = 7.5W, I_C = 534mA			7.9 dB typ.			
		P_o = 20W, I_C = 1.19A					6.1 dB typ.	
η	Collector Efficiency	P_o = 2.5W, I_C = 179mA	50%					
		P_o = 7.5W, I_C = 534mA			50%			
		P_o = 20W, I_C = 1.19A					60%	

2N5635

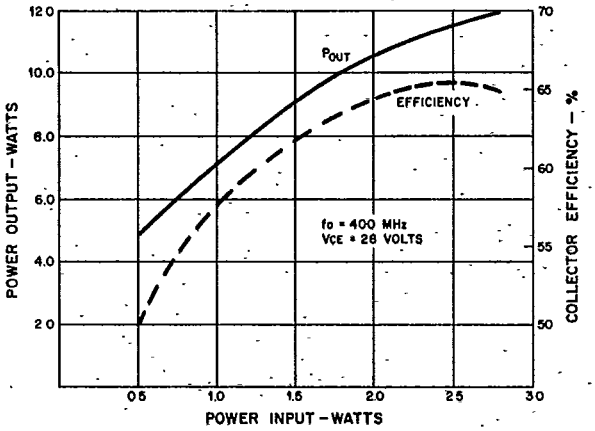


POWER OUTPUT VS POWER INPUT

f_o = 400 MHz	V_{CE} = 28.0 VOLTS		
P_{IN} WATTS	P_{OUT} WATTS	INPUT OHMS	OUTPUT OHMS
.20 W	2.0 W	3.8 + j 1.9	30.2 – j 50.0
.40 W	3.2 W	4.4 + j 2.9	34.5 – j 48.2
.60 W	4.1 W	4.6 + j 3.5	39.5 – j 43.8
.80 W	4.6 W	4.8 + j 4.0	42.3 – j 40.8

LARGE SIGNAL INPUT AND OUTPUT IMPEDANCE

2N5636

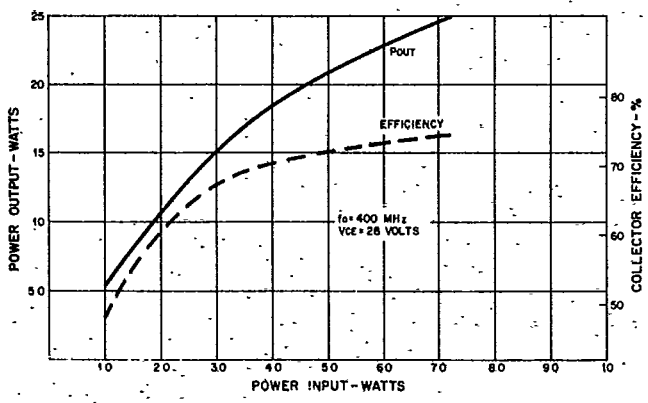


POWER OUTPUT VS POWER INPUT

f_o = 400 MHz	V_{CE} = 28.0 VOLTS		
P_{IN} WATTS	P_{OUT} WATTS	INPUT OHMS	OUTPUT OHMS
1.0	7.5	2.3 + j 3.4	16.8 – j 19.5
1.5	9.2	2.4 + j 3.5	17.6 – j 19.4
2.0	10.5	2.5 + j 3.8	18.3 – j 19.2
2.5	11.5	2.7 + j 4.0	18.4 – j 19.2

LARGE SIGNAL INPUT AND OUTPUT IMPEDANCE

2N5637



POWER OUTPUT VS POWER INPUT

f_o = 400 MHz	V_{CE} = 28.0 VOLTS		
P_{IN} WATTS	P_{OUT} WATTS	INPUT OHMS	OUTPUT OHMS
4.0	18.0	1.7 + j 3.7	12.4 – j 10.1
5.0	20.9	1.7 + j 3.8	12.6 – j 10.0
6.0	23.1	1.7 + j 3.9	12.7 – j 10.0
7.0	24.8	1.7 + j 4.0	12.8 – j 9.8

LARGE SIGNAL INPUT AND OUTPUT IMPEDANCE