



# SOLID STATE MICROWAVE

THOMSON-CSF COMPONENTS CORPORATION

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

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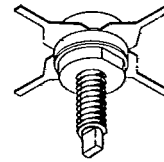
## 7 W/20 W/40 W, 28 V, VHF POWER TRANSISTOR

### DESCRIPTION:

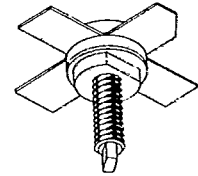
These SSM devices are epitaxial silicon NPN-planar transistors designed primarily for 12.5 volt AM class C rf amplifiers functional in the aviation band 118-136 MHz and for 28V FM class C rf amplifiers utilized in ground station transmitters. These devices utilize ballasted emitter resistors and improved metalization systems to achieve optimum load mismatch capability.

### FEATURES:

- Designed for VHF, 12.5V AM and 28V FM transmitters
- Withstands severe mismatch under operating conditions
- Low Inductance stripline package
- All leads electrically isolated from stud



MT-71



MT-72

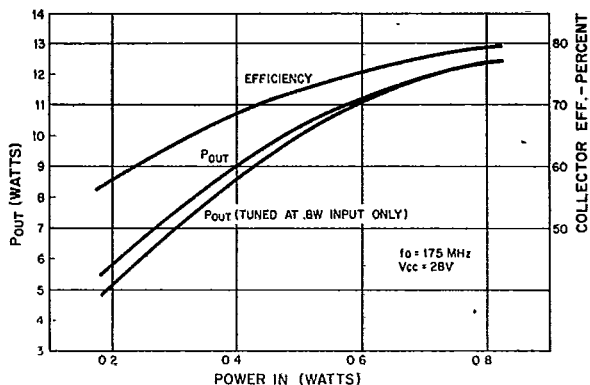
### ABSOLUTE MAX. RATINGS (+25°C except where noted)

Symbol	Characteristic	2N5641	2N5642	2N5643
V <sub>CBO</sub>	Collector to Base Voltage	65.V	65.V	65.V
V <sub>CEO</sub>	Collector to Emitter Voltage	35.V	35.V	35.V
V <sub>EBO</sub>	Emitter to Base Voltage	4.V	4.V	4.V
I <sub>C</sub> (max)	Continuous Collector Current	1.0A	3.0A	5.0A
P <sub>D</sub>	Total Dissipation at 25°C Stud	15.W	30.W	60.W
ϕ <sub>JC</sub>	Thermal Resistance (Junction to Stud)	11.7°C/W	5.8°C/W	2.9°C/W
T <sub>J</sub>	Junction Temperature	-65°C to 200°C	-65°C to 200°C	-65°C to 200°C
T <sub>stg</sub>	Storage Temperature	-65°C to 200°C	-65°C to 200°C	-65°C to 200°C
Pkg	Package	MT71	MT72	MT72

### ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)

Symbol	Characteristic	Test Conditions	2N5641		2N5642		2N5643	
			Min.	Max.	Min.	Max.	Min.	Max.
BV <sub>CEO</sub>	Collector to Emitter Breakdown Voltage	I <sub>C</sub> = 200mA, I <sub>B</sub> = 0 Pulsed through 25mH	35.0V	-	35.0V	-	35.0V	-
BV <sub>CES</sub>	Collector to Emitter Breakdown Voltage	I <sub>C</sub> = 200mA, V <sub>BE</sub> = 0 Pulsed through 25mH	65.0V	-	65.0V	-	65.0V	-
BV <sub>EBO</sub>	Emitter to Base Breakdown Voltage	I <sub>E</sub> = 5mA, I <sub>C</sub> = 0 I <sub>E</sub> = 10mA, I <sub>C</sub> = 0	4.0V	-	4.0V	-	4.0V	-
I <sub>CBO</sub>	Collector Cutoff Current	V <sub>CB</sub> = 30V, I <sub>E</sub> = 0	-	1.0mA	-	1.0mA	-	1.0mA
h <sub>FE</sub>	DC Current Gain	V <sub>CE</sub> = 5V, I <sub>C</sub> = 100mA V <sub>CE</sub> = 5V, I <sub>C</sub> = 200mA V <sub>CE</sub> = 5V, I <sub>C</sub> = 500mA	5.0	-	5.0	-	5.0	-
f <sub>T</sub>	Gain Bandwidth Product	V <sub>CE</sub> = 10V, I <sub>C</sub> = 100mA V <sub>CE</sub> = 10V, I <sub>C</sub> = 200mA V <sub>CE</sub> = 10V, I <sub>C</sub> = 500mA f <sub>o</sub> = 100mHz	300.mHz	-	250.mHz	-	200.mHz	-
C <sub>ob</sub>	Output Capacitance	V <sub>CB</sub> = 30V, I <sub>E</sub> = 0V f <sub>o</sub> = 1.0mHz	-	15. pF	-	35. pF	-	65. pF
P <sub>out</sub>	Power Output Class C	f <sub>o</sub> = 175mHz, V <sub>CE</sub> = 28V	7.W	-	20.W	-	40.W	-
P <sub>g</sub>	Power Gain Class C	f <sub>o</sub> = 175mHz, V <sub>CE</sub> = 28V	8.4 dB	-	8.2 dB	-	7.6 dB	-
η	Collector Efficiency Class C	f <sub>o</sub> = 175mHz, V <sub>CE</sub> = 28V	60.%	-	60.%	-	60.%	-

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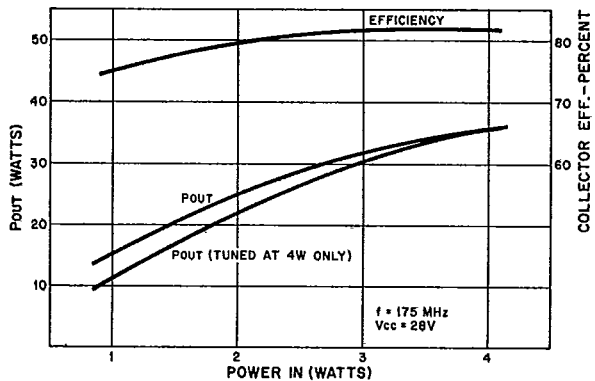


Power Output vs Power Input

f = 175 MHz, Vcc = 28V			
PIN WATTS	POUT WATTS	INPUT OHMS	OUTPUT OHMS
0.2	5.8	2.15 - j 1.95	23.23 - j 29.68
0.4	9.08	2.42 - j 1.57	22.08 - j 29.50
0.6	11.19	2.52 - j 1.15	21.80 - j 29.15
0.8	12.67	2.57 - j 5.25	18.55 - j 30.38

Network Impedance at Transistor Terminals

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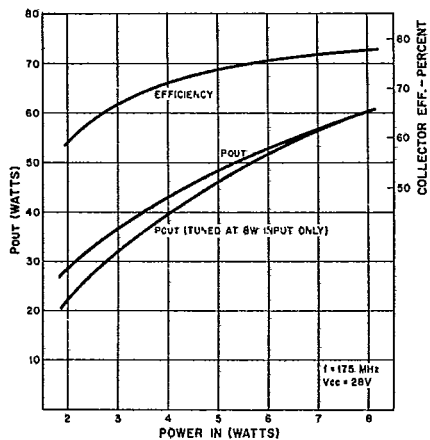


Power Output vs Power Input

f = 175 MHz, Vcc = 28V			
PIN WATTS	POUT WATTS	INPUT OHMS	OUTPUT OHMS
1.0	15.3	1.0 + j 1.15	10.22 - j 14.90
2.0	24.9	1.07 + j 1.30	9.42 - j 12.37
3.0	31.7	1.12 + j 1.15	9.00 - j 9.60
4.0	35.9	1.20 + j 1.25	9.92 - j 8.00

Network Impedance at Transistor Terminals

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Power Output vs Power Input

f = 175 MHz, Vcc = 28V			
PIN WATTS	POUT WATTS	INPUT OHMS	OUTPUT OHMS
2.0	28.5	.85 + j 1.20	3.25 - j 7.05
4.0	43.0	1.02 + j 1.32	4.45 - j 5.40
6.0	53.0	1.01 + j 1.42	5.25 - j 4.42
8.0	60.5	1.05 + j 1.35	5.45 - j 4.12

Network Impedance at Transistor Terminals