

SOLID STATE MICROWAVE

THOMSON-CSF COMPONENTS CORPORATION

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2N5641
2N5642
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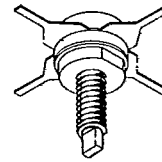
7 W/20 W/40 W, 28 V, VHF POWER TRANSISTOR

DESCRIPTION:

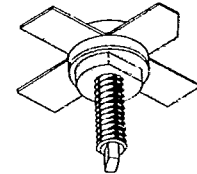
These SSM devices are epitaxial silicon NPN-planar transistors designed primarily for 12.5 volt AM class C rf amplifiers functional in the aviation band 118-136 MHz and for 28V FM class C rf amplifiers utilized in ground station transmitters. These devices utilize ballasted emitter resistors and improved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

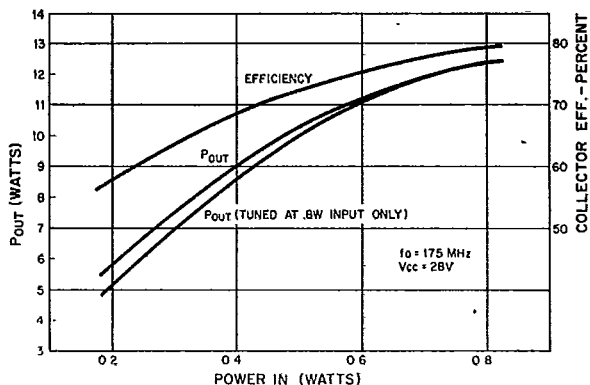
ABSOLUTE MAX. RATINGS (+25°C except where noted)

Symbol	Characteristic	2N5641	2N5642	2N5643
V _{CBO}	Collector to Base Voltage	65.V	65.V	65.V
V _{CEO}	Collector to Emitter Voltage	35.V	35.V	35.V
V _{EBO}	Emitter to Base Voltage	4.V	4.V	4.V
I _C (max)	Continuous Collector Current	1.0A	3.0A	5.0A
P _D	Total Dissipation at 25°C Stud	15.W	30.W	60.W
ϕ _{JC}	Thermal Resistance (Junction to Stud)	11.7°C/W	5.8°C/W	2.9°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
Pkg	Package	MT71	MT72	MT72

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

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

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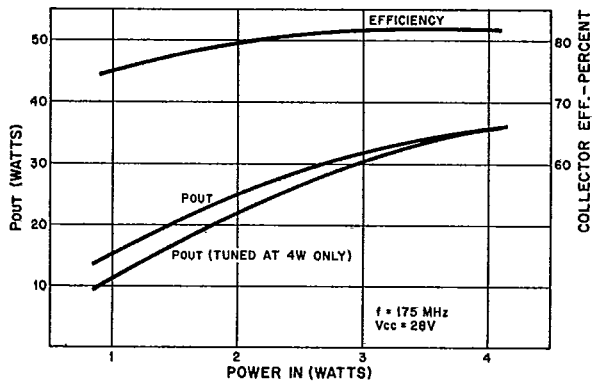


Power Output vs Power Input

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

2N5642

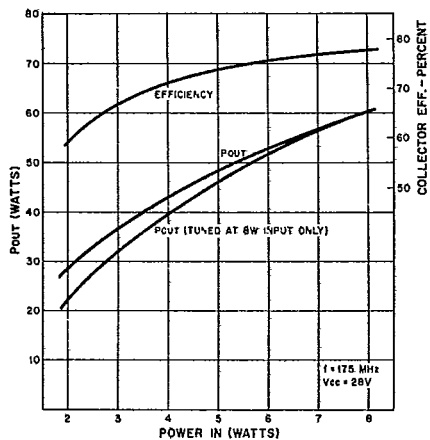


Power Output vs Power Input

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

2N5643



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