

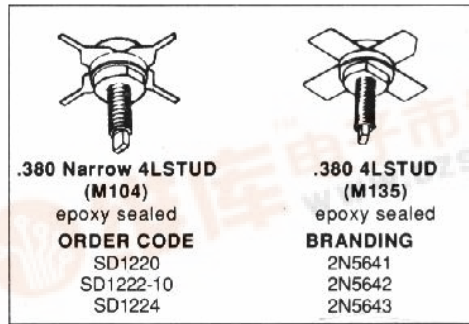


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2N5641
2N5642/2N5643

RF & MICROWAVE TRANSISTORS
130...230MHz FM MOBILE APPLICATIONS

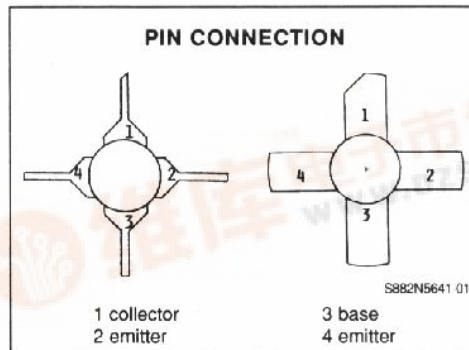
- FREQUENCY 175MHz
- VOLTAGE 28V
- HIGH POWER OUT 7 TO 40W
- HIGH POWER GAIN
- EFFICIENCY
- CLASS C TRANSISTORS
- COMMON EMITTER



DESCRIPTION

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

Device	Package
2N5641	.380 Narrow 4LSTUD
2N5642	.380 4LSTUD
2N5643	.380 4LSTUD



ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}C$)

Symbol	Parameter	2N5641	2N5642	2N5643	Unit
V_{CBO}	Collector to Base Voltage	65	65	65	V
V_{CEO}	Collector to Emitter Voltage	35	35	35	V
V_{EBO}	Emitter to Base Voltage	4.0	4.0	4.0	V
$I_C (max)$	Continuous Collector Current	1.0	3.0	5.0	A
P_D	Total Dissipation at 25°C Stud	15	30	60	W
T_j	Junction Temperature	200	200	200	°C
T_{stg}	Storage Temperature	- 65 to 150	- 65 to 150	- 65 to 150	°C

		2N5641	2N5642	2N5643	
$R_{th(j-c)}$	Junction-case Thermal Resistance	11.7	5.8	2.9	°C/W



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ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}C$)

STATIC

Symbol	Test Conditions	2N5641			2N5642			2N5643			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
BV_{CES}	$I_C = 200mA$ $V_{BE} = 0$	65			65			65			V
BV_{CEO}	$I_C = 200mA$ $I_B = 0$	35			35			35			V
BV_{EBO}	$I_E = 10mA$ $I_C = 0$	4	$(I_E = 5mA)$			4			4		V
I_{CBO}	$V_{CB} = 30V$ $I_E = 0$			1			1			1	mA
h_{FE}	$V_{CE} = 5V$ $I_C = 200mA$	5	$(I_C = 100mA)$			5			5	$(I_C = 500mA)$	

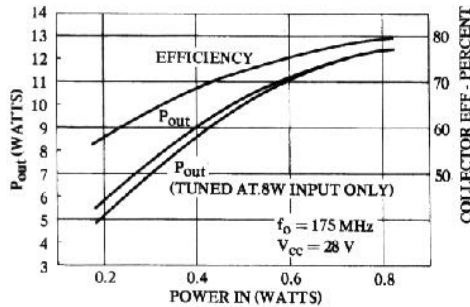
DYNAMIC

Symbol	Test Conditions	2N5641			2N5642			2N5643			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
P_O	$F = 175MHz$ $V_{CE} = 28V$ Class C	7			20			40			W
G_p	$F = 175MHz$ $V_{CE} = 28V$ Class C	8.4			8.2			7.6			dB
η_C	$F = 175MHz$ $V_{CB} = 28V$ Class C	60			60			60			%
C_{OB}	$V_{CB} = 30V$ $I_C = 0$ $F = 1MHz$			15			35			65	pF

APPLICATION INFORMATION (typical curves)

IMPEDANCE DATA (typical)

2N5641



Power Output vs Power Input

S882N5641-02

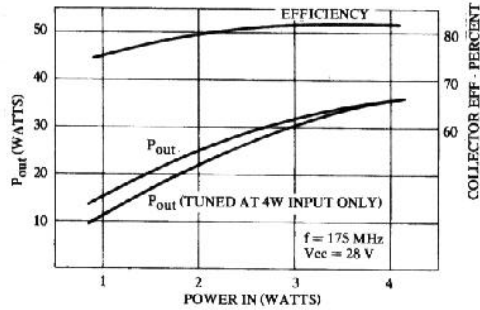
NETWORK IMPEDANCE AT TRANSISTOR TERMINALS

$f = 175MHz,$		$V_{CC} = 28V$	
P_{IN} Watts	P_{OUT} Watts	Input Ohms	Output Ohms
0.2	5.8	$2.15 - j1.95$	$23.23 - j29.68$
0.4	9.08	$2.42 - j1.57$	$22.08 - j29.50$
0.6	11.19	$2.52 - j1.15$	$21.80 - j29.15$
0.8	12.87	$2.57 - j5.25$	$18.55 - j30.38$

APPLICATION INFORMATION (typical curves) (continued)

IMPEDANCE DATA (typical) (continued)

2N5642



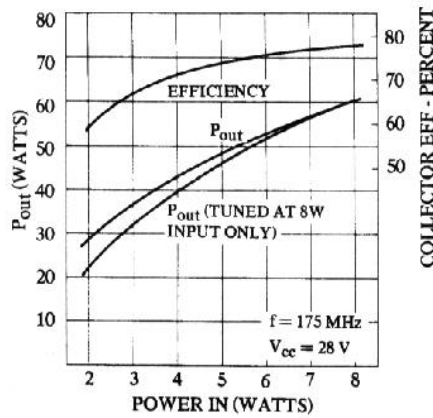
Power Output vs Power Input

S882N5642-01

NETWORK IMPEDANCE AT TRANSISTOR TERMINALS

$f = 175\text{MHz}$,		$V_{cc} = 28\text{V}$	
P_{IN} Watts	P_{OUT} Watts	Input Ohms	Output Ohms
1.0	15.3	$1.0 + j1.15$	$10.22 - j14.90$
2.0	24.9	$1.07 + j1.30$	$9.42 - j12.37$
3.0	31.7	$1.12 + j1.15$	$9.00 - j 9.60$
4.0	35.9	$1.20 + j1.25$	$9.92 - j 8.00$

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Power Output vs Power Input

S882N5643-01

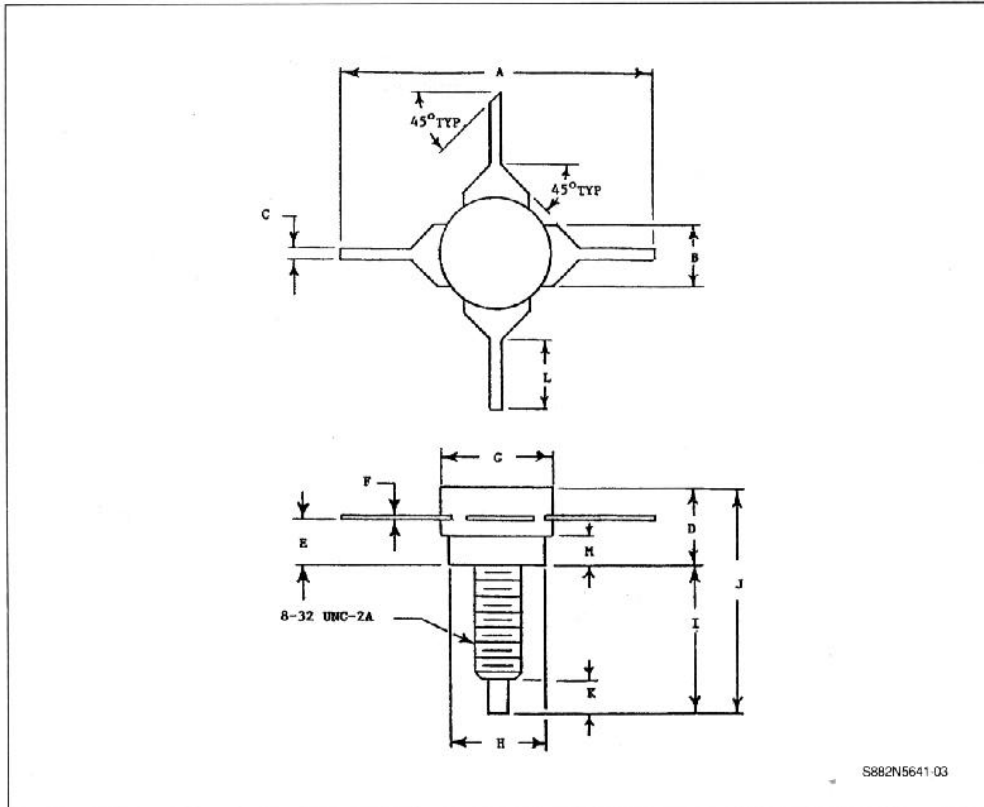
NETWORK IMPEDANCE AT TRANSISTOR TERMINALS

$f = 175\text{MHz}$,		$V_{cc} = 28\text{V}$	
P_{IN} Watts	P_{OUT} Watts	Input Ohms	Output Ohms
2.0	28.5	$.85 + j1.20$	$3.25 - j7.05$
4.0	43.0	$1.02 + j1.32$	$4.45 - j5.40$
6.0	53.0	$1.01 + j1.42$	$5.25 - j4.42$
8.0	60.5	$1.05 + j1.35$	$5.45 - j4.12$

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PACKAGE MECHANICAL DATA

.380 NARROW 4LSTUD



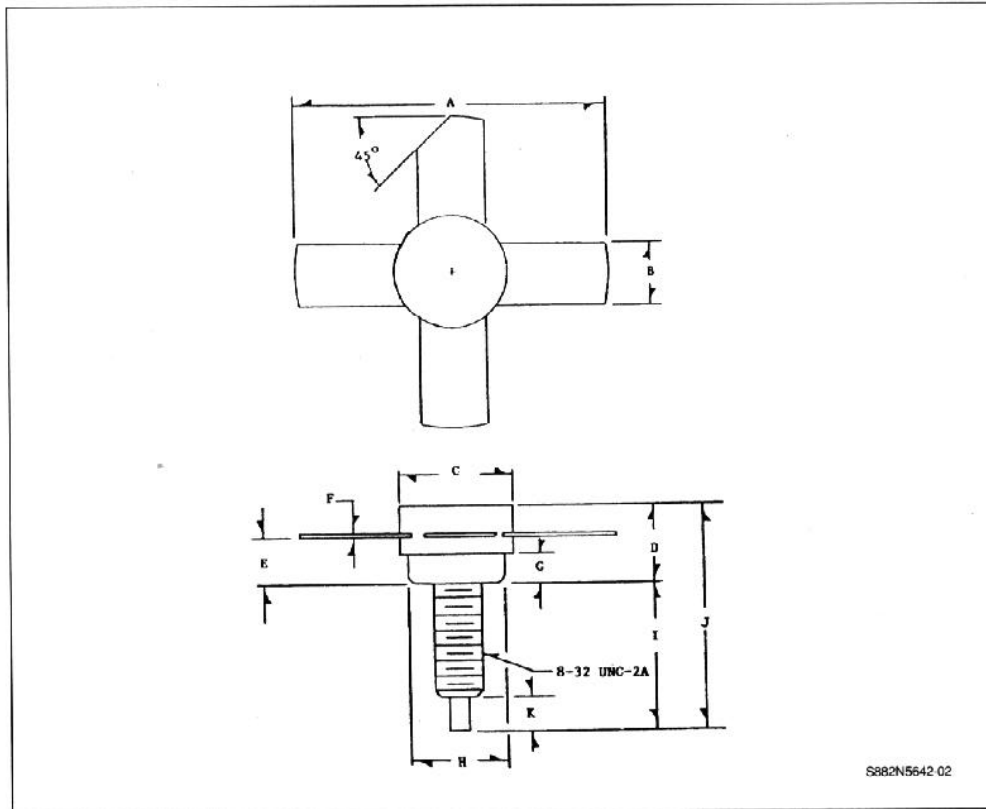
S882N5641-03

	Minimum Inches	Maximum Inches
A	1.000	
B	.220	.230
C	.025	.035
D		.275
E	.155	.175
F	.004	.007
G	.370	.380

	Minimum Inches	Maximum Inches
H	.320	.330
I	.450	.490
J		.750
K	.100	.130
L	.220	
M	.090	.100

PACKAGE MECHANICAL DATA (continued)

.380 4LSTUD



	Minimum Inches	Maximum Inches
A	.980	
B	.220	.230
C	.370	.385
D		.275
E	.155	.175
F	.004	.007

	Minimum Inches	Maximum Inches
G	.090	.100
H	.320	.330
I	.450	.490
J		.750
K	.100	.130