


RF & MICROWAVE POWER TRANSISTORS
 MICROWAVE POWER TRANSISTORS FOR CLASS C APPLICATIONS

FEATURES HIGH POWER GAIN PACKAGE


2N4431	5W @ 1GHz	MT66
2N4430	2.5W @ 1GHz	MT66
2N4429	1W @ 1GHz	TO-117A

DESCRIPTION

This family of single chip silicon transistors was designed for reliable operation in the 1GHz region. Precise epitaxial growth, diffusion, photoengraving and injection molding techniques are employed to fabricate each device. The family is intended for Class A, B, or C amplifier, oscillator, and multiplier operations in the UHF region.



TO-117A (M148)



MT66 (M127)

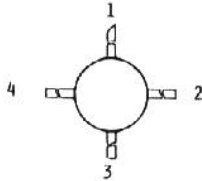
BRANDING

2N4431
2N4430
2N4429

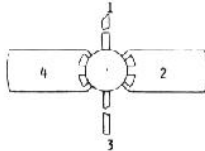
ORDER CODES

SD1171
SD1170
SD1176

PIN CONNECTION



S882N4429-01



S882N4429-02

PIN	1	2	3	4
2N4431	C	B	E	B
2N4430	C	B	E	B
2N4429	C	B	E	B

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Symbol	Parameter	2N4431	2N4430	2N4429	Unit
V _{CBO}	Collector to Base Voltage	55.0	55.0	55.0	V
V _{CEC}	Collector to Emitter Voltage	40.0	40.0	35.0	V
V _{EBO}	Emitter to Base Voltage	3.5	3.5	3.5	V
I _{C(max)}	Continuous Collector Current	2.0	1.0	425	mA
P _D	Total Dissipation at 25°C Stud	18.0	10.0	5.0	W
θ _{JC}	Thermal Resistance (junction to stud)	9.7	17.5	35.0	°C/W
T _J	Junction Temperature	200	200	200	°C
T _{stg}	Storage Temperature	- 65 to 150	- 65 to 150	- 65 to 150	°C

ELECTRICAL CHARACTERISTICS

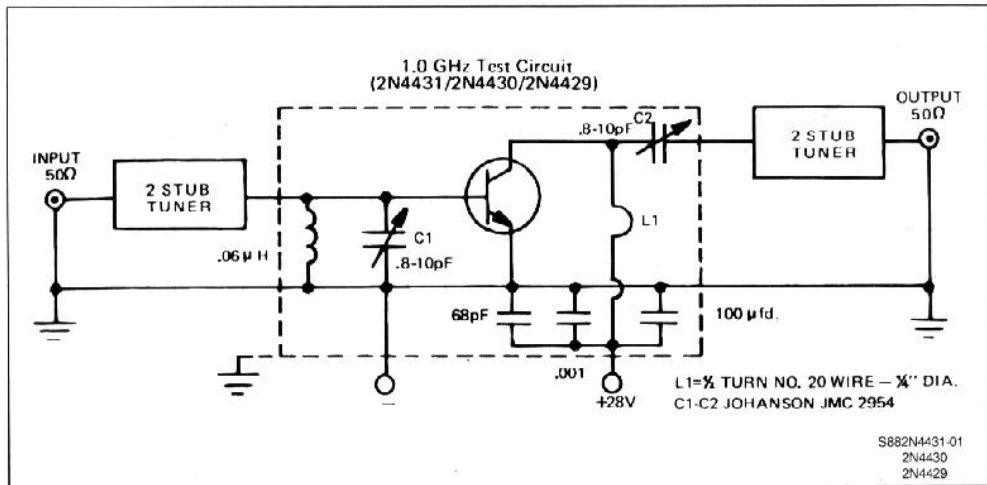
STATIC

Symbol	Parameter	Test Conditions	2N4431		2N4430		2N4429		Unit
			Min.	Max.	Min.	Max.	Min.	Max.	
I_{CEX}	Collector Cutoff Current	$V_{CE} = 55V$ $V_{BE} = 1.5V$		4.0		2.0		1.0	mA
BV_{CEO}	Collector to Emitter Breakdown Voltage	$I_C = 50mA, I_B = 0$	40.0		40.0				V
		$I_C = 20mA, I_B = 0$					35.0		V
BV_{CEB}	Collector to Emitter Breakdown Voltage	$R = 10\Omega, I_C = 50mA$	55.0		55.0				V
		$R = 10\Omega, I_C = 20mA$					55.0		V
BV_{EBO}	Emitter to Base Breakdown Voltage	$I_E = 0.50mA$	3.5						V
		$I_E = 0.20mA$			3.5				V
		$I_E = 0.10mA$					3.5		V
h_{FE}	DC Current Gain	$V_{CE} = 5V, I_C = 100mA$	20	200	20	200			
		$V_{CE} = 5V, I_C = 50mA$					20	200	

DYNAMIC

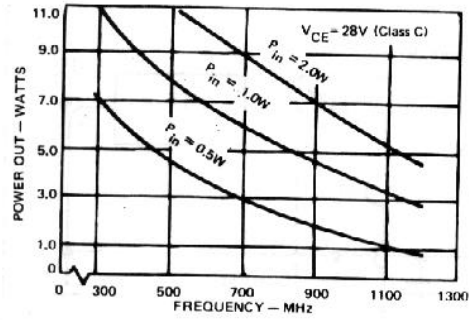
Symbol	Parameter	Test Conditions	2N4431		2N4430		2N4429		Unit
			Min.	Max.	Min.	Max.	Min.	Max.	
f_T	Gain Bandwidth @ 200mHz	$V_{CE} = 20V, I_C = 100mA$	600		600				MHz
		$V_{CE} = 20V, I_C = 50mA$					700		MHz
C_{ob}	Output Capacitance	$V_{CE} = 28V, f_o = 1.0MHz$		10		5.0		3.5	pF
h_{FE}	DC Current Gain	$V_{CE} = 5.0V, I_C = 2.0A$	5						
		$V_{CE} = 5.0V, I_C = 1.0A$			5				
		$V_{CE} = 5.0V, I_C = 400mA$					5		
P_{out}	Power Output $V_{CE} = 28V$ $n = \text{Collector}$ Efficiency > 35	$f_o = 1000MHz, P_{in} = 1.57W$	5.0						W
		$f_o = 1000MHz, P_{in} = 750mW$			2.5				W
		$f_o = 1000MHz, P_{in} = 300mW$					1.0		W
		$f_o = 500MHz, P_{in} = 75mW$							mW

TEST CIRCUIT



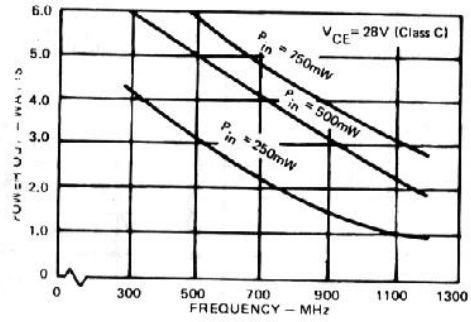
2N4429 → 4431

POWER OUT vs. FREQUENCY (2N4431)



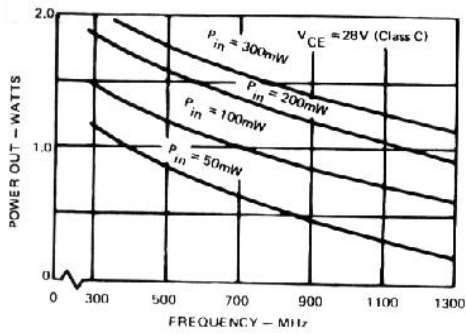
S882N4431-02

POWER OUT vs. FREQUENCY (2N4430)



S882N4430-02

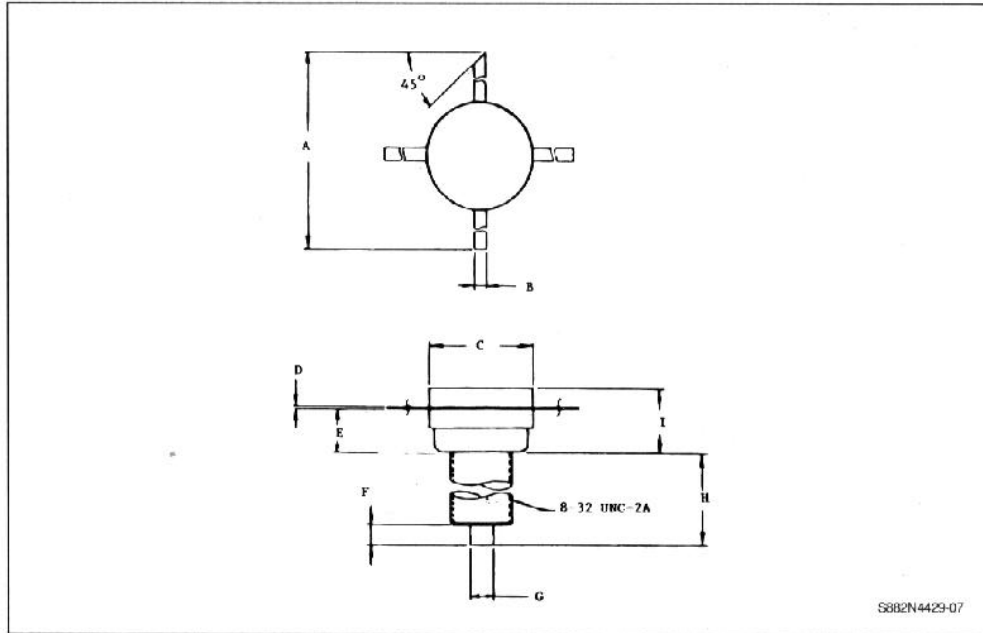
POWER OUT vs. FREQUENCY (2N4429)



S882N4429-03

PACKAGE MECHANICAL DATA

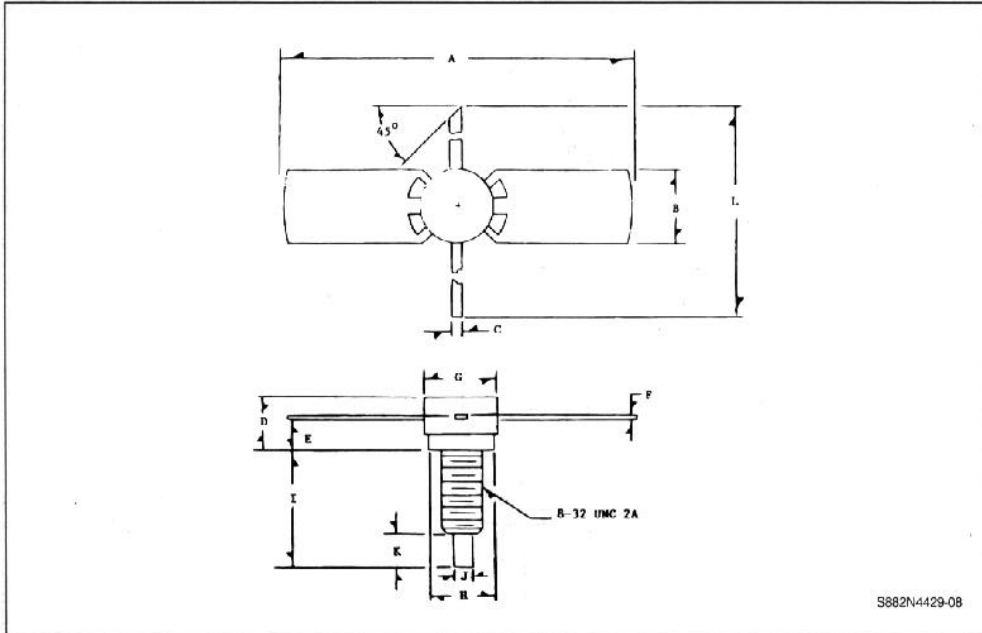
TO-117A



	Minimum Inch/mm	Maximum Inch/mm
A	.910/23.11	
B	.024/0.61	.034/0.86
C	.270/6.86	.290/7.37
D	.003/0.08	.007/0.18
E	.110/2.79	.130/3.30
F	.115/2.92	.145/3.68
G	.055/1.40	.065/1.65
H	.435/11.05	.465/11.81
I	.175/4.45	.210/5.33

PACKAGE MECHANICAL DATA

MT66



S882N4429-08

	Minimum Inches	Maximum Inches
A	.865	.900
B	.285	.295
C	.025	.035
D	.180	.200
E	.110	.130
F	.008	.012

	Minimum Inches	Maximum Inches
G	.270	.290
H	.240	.260
I	.435	.465
J	.055	.065
K	.115	.135
L	1.350	