

Microsemi
RF Products
Progress Powered by Technology

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SD1021

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

- FM CLASS C TRANSISTOR
- FREQUENCY 230MHz
- VOLTAGE 12.5V
- POWER OUT 5.5W
- POWER GAIN 6.2dB
- EFFICIENCY 60%
- COMMON EMITTER

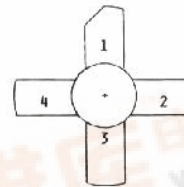


.380 4LSTUD (M135)
epoxy sealed

ORDER CODE
SD1021

BRANDING
SD1021

PIN CONNECTION



588SD1021-01

1 collector
2 emitter

3 base
4 emitter

DESCRIPTION

The SD1021 is a 12.5V NPN epitaxial, common emitter planar transistor designed for VHF communications applications. The device is rugged and exhibits high gain at optimum efficiency.

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

Symbol	Parameter	Value	Unit
V_{CEO}	Collector - Emitter Voltage	18.0	V
V_{CES}	Collector - Emitter Voltage	36.0	V
V_{EBO}	Emitter - Base Voltage	4.0	V
I_C	Collector Current	1.0	A
P_{Tot}	Total Power Dissipation	9.7	W
T_{stg}	Storage Temperature	- 65 to + 150	$^{\circ}C$
T_J	Junction Temperature	+ 200	$^{\circ}C$

THERMAL DATA

$R_{th(j-c)}$	Junction-case Thermal Resistance	18.0	$^{\circ}C/W$
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March 1989

1/4

153

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

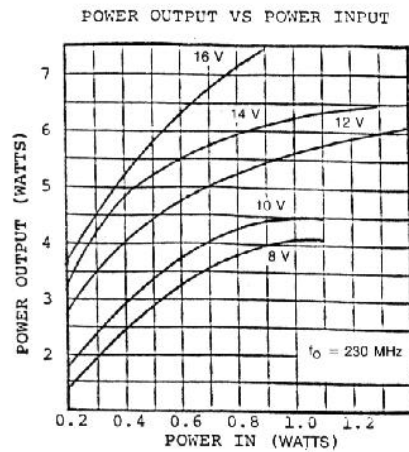
STATIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BV_{CES}	$I_C = 50\text{mA}$ $V_{BE} = 0$	36.0			V
BV_{CEO}	$I_C = 50\text{mA}$ $I_B = 0$	18.0			V
BV_{EBO}	$I_E = 10\text{mA}$ $I_C = 0$	4.0			V
I_{CBO}	$V_{CB} = 15\text{V}$ $I_E = 0$			1.0	mA
h_{FE}	$V_{CE} = 5\text{V}$ $I_C = 250\text{A}$	5.0		200	

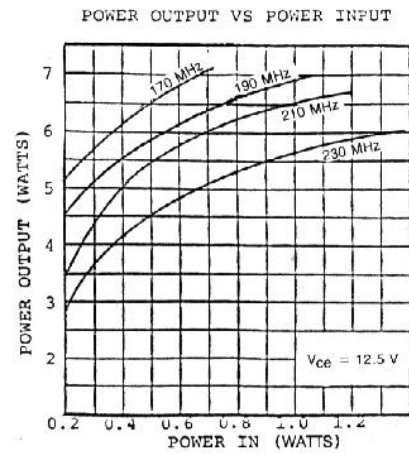
DYNAMIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
P_O	$f = 230\text{MHz}$ $V_{CE} = 12.5\text{V}$	5.5	6.0		W
G_P	$f = 230\text{MHz}$ $V_{CE} = 12.5\text{V}$	6.2	6.6		dB
η_C	$f = 230\text{MHz}$ $V_{CE} = 12.5\text{V}$	60.0	70.0		%
C_{OB}	$f = 1.0\text{MHz}$ $V_{CB} = 12.5\text{V}$		8.0	12.0	pF

APPLICATION INFORMATION (typical curves)



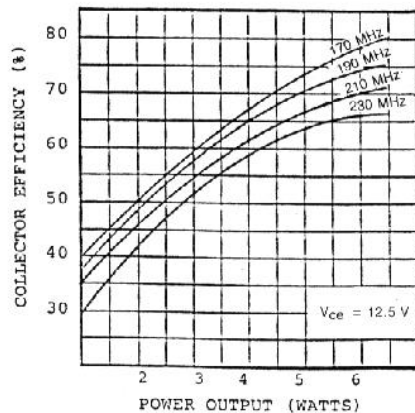
S88SD1021-02



S88S1021-03

APPLICATION INFORMATION (typical curves) (continued)

EFFICIENCY VS POWER OUTPUT



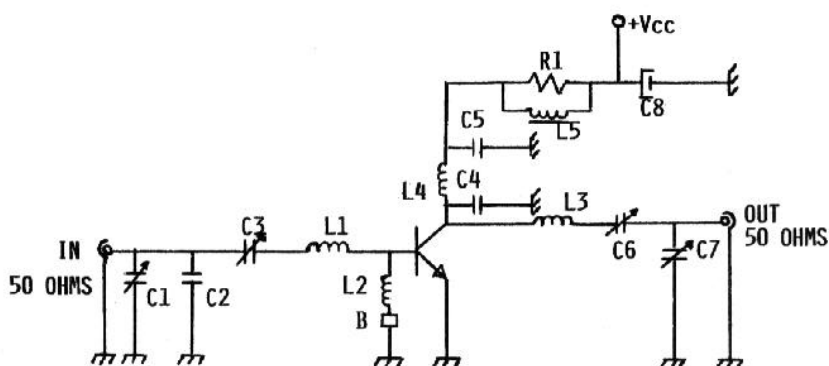
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IMPEDANCE DATA

 $V_{CE} = -12.5V$ $P_{out} = 5.5W$

	170	200	230
Z_{IN}	$3 - j 1.0$	$3 + j 0$	$3 + j 1.0$
Z_{OUT}	$10 - j 7.0$	$13 - j 8.0$	$17 - j 9.5$

TEST CIRCUIT (170-230MHz)



S88SD1021-05

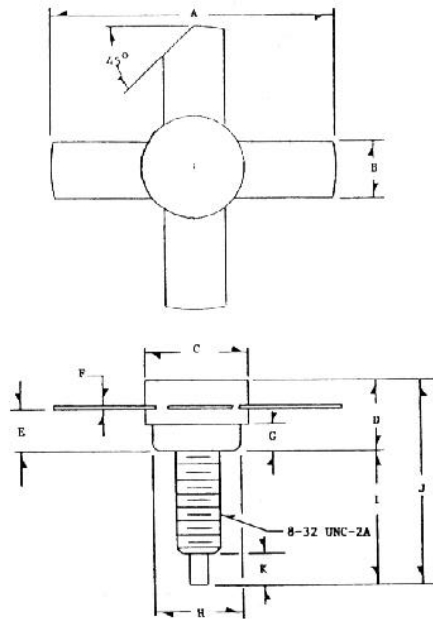
C1 = 12.65pF SPRAGUE TYPE GMC 20400 trimmer capacitor
 C2 = 18pF ATC 100B 180J mica capacitor
 C3 = 26 - 115pF SPRAGUE TYPE GMC 20600 trimmer capacitor
 C4 = 1000pF LCC mica capacitor
 C5 = 0.1μF LCC mica capacitor
 C6 = 16 - 90pF SPRAGUE TYPE GMC 20500 trimmer capacitor
 C7 = 1.30pF AIRTRONIC TYPE 5601 trimmer capacitor
 C8 = 100μF, 40V electrolytic capacitor

L1 = 2 turns 1mm enameled-wire ID = 4mm
 L2 = 4 turns 0.8mm enameled-wire ID = 4mm B. Ferroxcube bead 200/020 51292
 L3 = 3 turns 1mm enameled-wire ID = 8mm
 L4 = 4 turns 1mm enameled-wire ID = 6mm
 L5 = Vx 200 - 20 - 48 Ferroxcube
 R1 = 10Ω, 1/2W carbon composition resistor

SD1021

PACKAGE MECHANICAL DATA

.380 4LSTUD



S88SD1021 06

	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