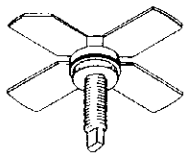
SGS-THOMSON MICROELECTRONICS

SD5000

RF & MICROWAVE TRANSISTORS GENERAL PURPOSE LINEAR APPLICATIONS

PRELIMINARY DATA

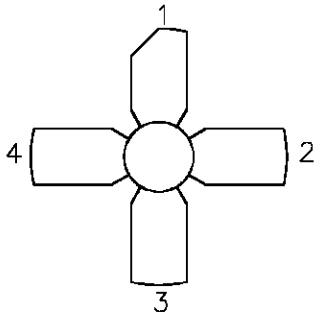
- GOLD METALLIZATION
- EMITTER SITE BALLASTING
- INTERNAL INPUT MATCHING
- OVERLAY GEOMETRY
- METAL/CERAMIC PACKAGE
- COMMON EMITTER CONFIGURATION
- P_{OUT} = 1.5 W MIN. WITH 9.5 dB GAIN



.280 4L STUD (M122)
epoxy sealed

ORDER CODE	BRANDING
SD5000	S10A015

PIN CONNECTION



1. Collector
2. Emitter
3. Base
4. Emitter

DESCRIPTION

The SD5000 is a NPN Silicon Transistor designed for high gain linear performance at 1000 MHz.

This part uses gold metallized die and polysilicon site ballasting to achieve high reliability and ruggedness.

The SD5000 can be used for applications such as Telecommunications, Radar, ECM, Space and other commercial and military systems.

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	50	V
V_{CES}	Collector-Emitter Voltage	50	V
V_{EBO}	Emitter-Base Voltage	3.5	V
I_C	Device Current	1.0	A
P_{DISS}	Power Dissipation	7.0	W
T_J	Junction Temperature	+200	°C
T_{STG}	Storage Temperature	– 65 to +150	°C

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	25	°C/W

ELECTRICAL SPECIFICATIONS (T_{case} = 25°C)

STATIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BV_{CBO}	I_C = 10mA	50	—	—	V
BV_{EBO}	I_E = 5mA	3.5	—	—	V
BV_{CES}	I_C = 10mA	50	—	—	V
BV_{CEO}	I_C = 5mA	23	—	—	V
I_{CBO}	V_{CB} = 28V	—	0.2	—	mA
h_{FE}	V_{CE} = 5V I_C = 100mA	18	—	200	—

DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT} 1dB	f = 1 GHz	V_{CC} = 20 V	I_C = 220 mA	1.5	—	—	W
G_P	f = 1 GHz	V_{CC} = 20 V	I_C = 220 mA	9.5	—	—	dB
VSWR	f = 1 GHz	V_{CC} = 20 V	I_C = 220 mA	—	—	25:1	—
C_{OB}	f = 1 MHz	V_{CB} = 20 V		—	—	4.0	pF

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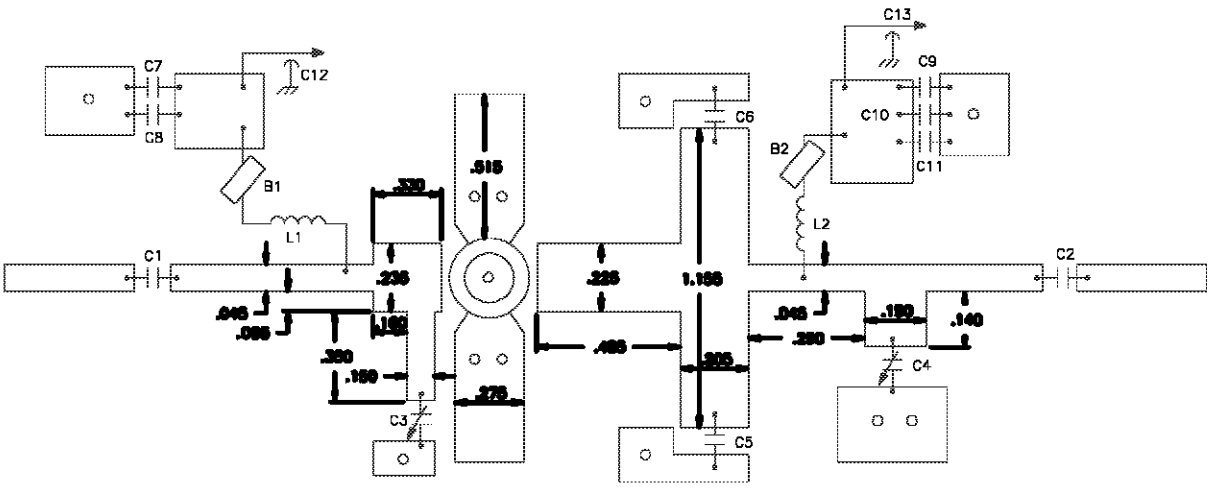
IMPEDANCE DATA

FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
1000 MHz	4.0 + j 3.3	20.8 + j 33.3

TEST CIRCUIT



B1, B2 : Ferrite Beads

C1,C2 : 120 pF Chip Capacitor
C3 : .4 - 2.5 pF Johanson Capacitor
C4 : .8 - 8 pF Johanson Capacitor
C5,C6
C7,C8 : 220 pF Chip Capacitor

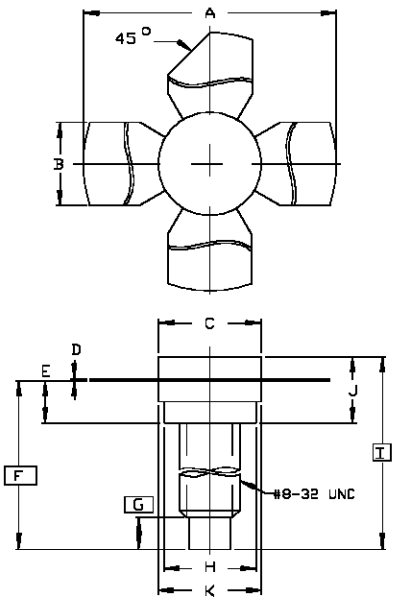
C9,C10 : 1000 pF Chip Capacitor
C11 : .1µF Capacitor
C12,C13 : 15,000 pF EMI Filter

L1,L2 : 5 Turn Choke; Wire Diameter .025", I.D. 0.125"

Substrate material: Er = 10.2, H = .050", 1oz. Copper

PACKAGE MECHANICAL DATA

Ref.: Dwg. No. 12-0122



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	MINIMUM Inches/mm	MAXIMUM Inches/mm
A	1.010/25,65	1.055/26,80
B	.220/5,59	.230/5,84
C	.270/6,86	.285/7,24
D	.003/0,08	.007/0,18
E	.117/2,97	.137/3,48
F	.572/14,53	
G	.130/3,30	
H	.245/6,22	.255/6,48
I	.640/16,26	
J	.175/4,45	.217/5,51
K	.275/6,99	.285/7,24