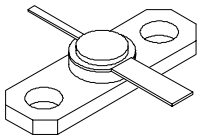
SGS-THOMSON MICROELECTRONICS

SD1891-03

RF & MICROWAVE TRANSISTORS 1.6 GHz SATCOM APPLICATIONS

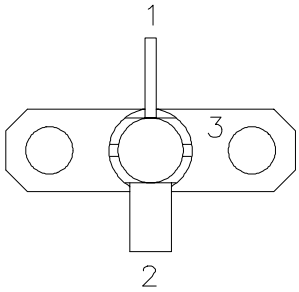
- 1.65 GHz
- 28 VOLTS
- GOLD METALLIZED SYSTEM
- POLYSILICON SITE BALLASTING
- OVERLAY DIE GEOMETRY
- HIGH RELIABILITY AND RUGGEDNESS
- P_{OUT} = 5.0 W MIN. WITH 14.0 dB GAIN



.230 2LFL (M151)
hermetically sealed

ORDER CODE	BRANDING
SD1891-03	1891-03

PIN CONNECTION



1. Collector
2. Emitter
3. Base

DESCRIPTION

The SD1891-03 is a 28 V silicon NPN transistor designed for INMARSAT and other 1.6 GHz SATCOM applications. This device utilizes polysilicon site ballasting with a gold metallized die to achieve high reliability and ruggedness.

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

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	45	V
V_{CEO}	Collector-Emitter Voltage	15	V
V_{EBO}	Emitter-Base Voltage	3.5	V
I_C	Device Current	1.1	A
P_{DISS}	Power Dissipation	8.8	W
T_J	Junction Temperature	+200	°C
T_{STG}	Storage Temperature	– 65 to +200	°C

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	20.0	°C/W

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

STATIC

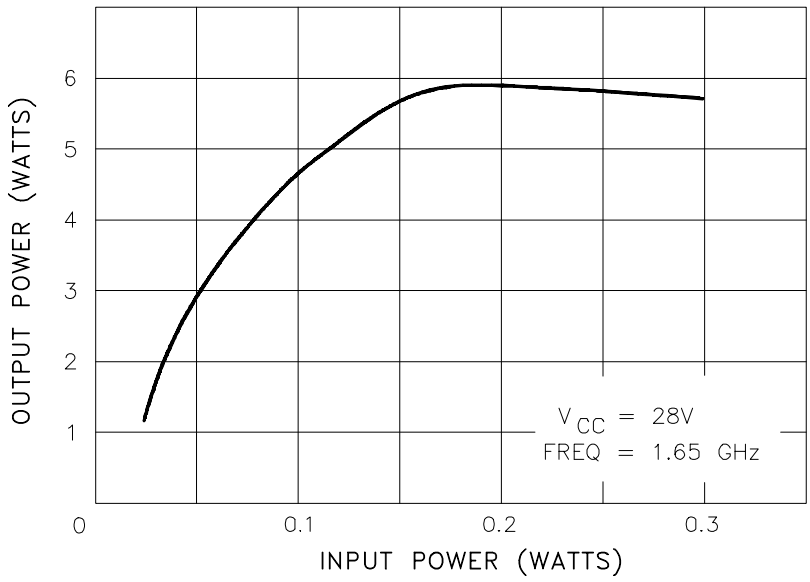
Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 1mA	I_E = 0mA	45	—	—	V
BV_{EBO}	I_E = 1mA	I_C = 0mA	3.5	—	—	V
I_{CBO}	V_{CB} = 24V	I_E = 0mA	—	—	0.5	mA
h_{FE}	V_{CE} = 5V	I_C = 100mA	15	—	150	—

DYNAMIC

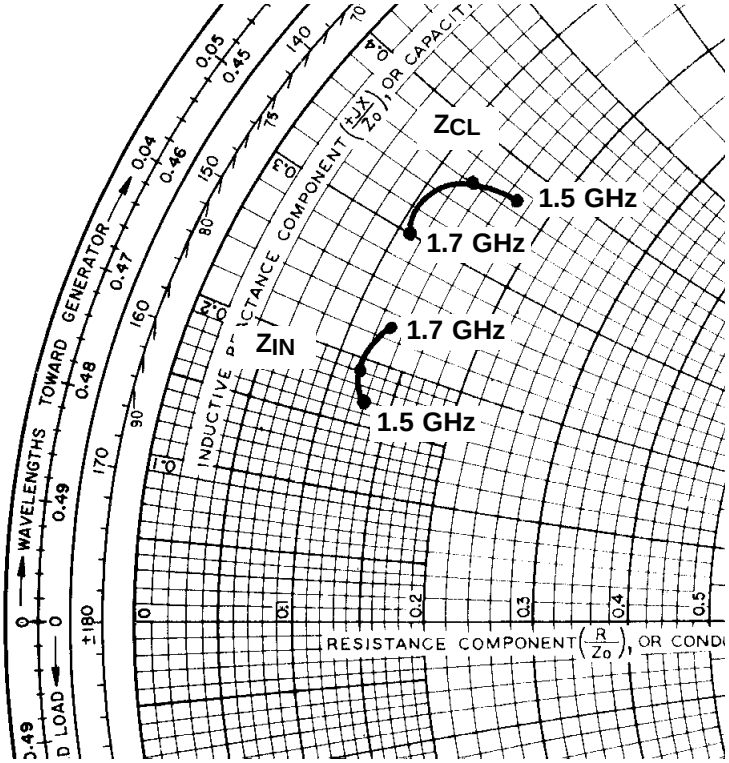
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 1.65 GHz	P_{IN} = 200 mW	V_{CE} = 28 V	5.0	—	—	W
G_P	f = 1.65 GHz	P_{IN} = 200 mW	V_{CE} = 28 V	14	—	—	dB
η_C	f = 1.65 GHz	P_{IN} = 200 mW	V_{CE} = 28 V	45	—	—	%
C_{OB}	f = 1 MHz	V_{CB} = 28 V		—	2.5	—	pF

TYPICAL PERFORMANCE

POWER OUTPUT vs POWER INPUT

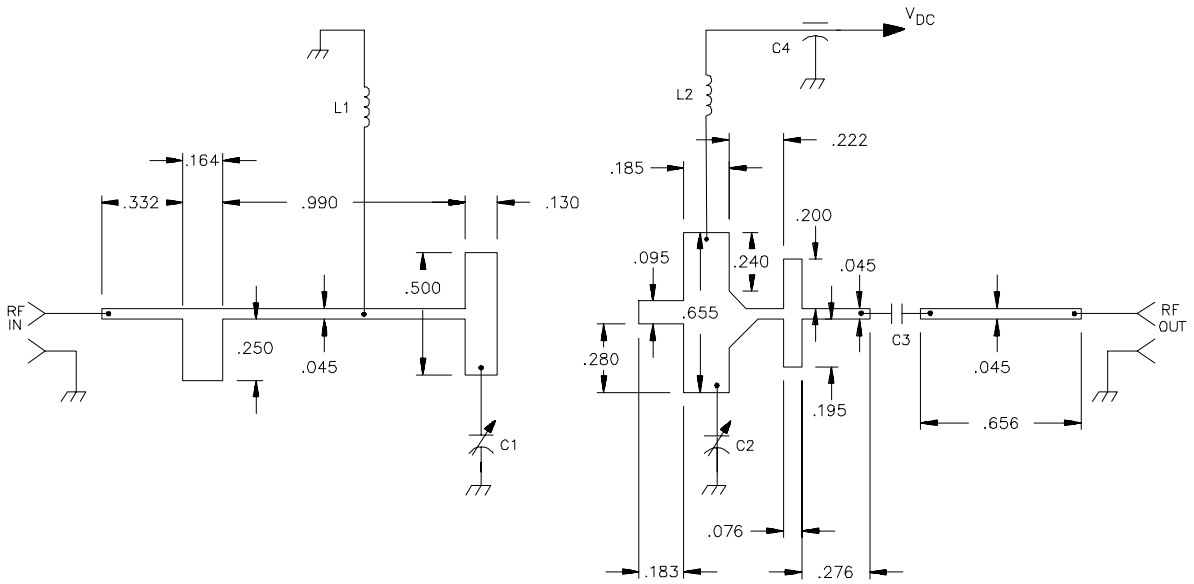


IMPEDANCE DATA



FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
1.5 GHz	6.5 + j 8.5	8.5 + j 18.5
1.6 GHz	6.0 + j 9.5	6.5 + j 18.0
1.7 GHz	6.5 + j 11.5	5.5 + j 15.0

TEST CIRCUIT



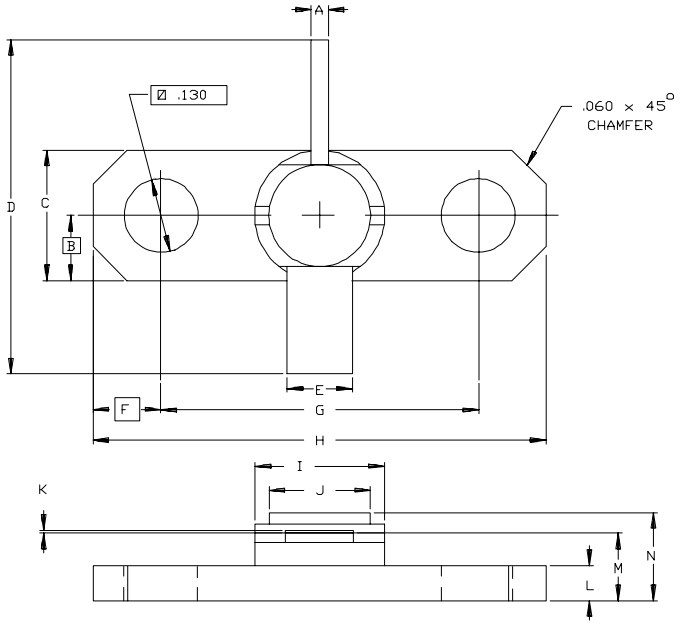
C1, C2 : .4 - 2.5pF Johandson Capacitor #27283
C3 : 100pF ATC Chip Capacitor ATC100 A101KCA 150
C4 : 15,000pF EMI Filter Murata/Erie 9900-381-6004

L1, L2 : 4 Turns, Choke #28 AWG .080" I.D.

S1 : Epsilam 10 Er = 10.2, Height .050" 1 Oz. Cu. SMA Launcher CD1
(2 pieces) .230" Fixture Housing Heatsink

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0151



SGS-THOMSON MICROELECTRONICS		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.025/0,64	.035/0,89
B	.115/2,92 NOM.	
C	.225/5,72	.235/5,97
D	.710/18,03	.750/19,05
E	.110/2,79	.120/3,05
F	.120/3,05 NOM.	
G	.555/14,10	.565/14,35
H	.795/20,19	.805/20,45
I	.222/5,64	.236/5,99
J	.165/4,19	.185/4,70

CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
K	.003/0,08	.007/0,18
L	.055/1,40	.067/1,70
M	.120/3,18	.140/3,56
N		.170/4,32