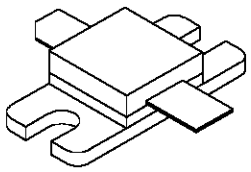
SGS-THOMSON MICROELECTRONICS

SD1898

RF & MICROWAVE TRANSISTORS 1.6 GHz SATCOM APPLICATIONS

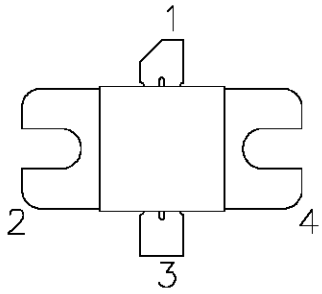
- 1.65 GHz
- 28 VOLTS
- EFFICIENCY 40% MIN.
- CLASS C OPERATION
- COMMON BASE
- P_{OUT} = 32 W MIN. WITH 9 dB GAIN



.400 SQ. 2LFL (M186)
epoxy sealed

ORDER CODE	BRANDING
SD1898	1898

PIN CONNECTION



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

DESCRIPTION

The SD1898 is a 28 V Class C silicon NPN transistor designed for INMARSAT and other 1.65 GHz SATCOM applications. A gold metallized emitter-ballasted die geometry is employed providing high gain and efficiency while ensuring long term reliability and ruggedness under severe operating conditions. SD1898 is packaged in a cost-effective epoxy sealed housing.

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	7.8	A
P_{DISS}	Power Dissipation	87.5	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	2.0	°C/W

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

STATIC

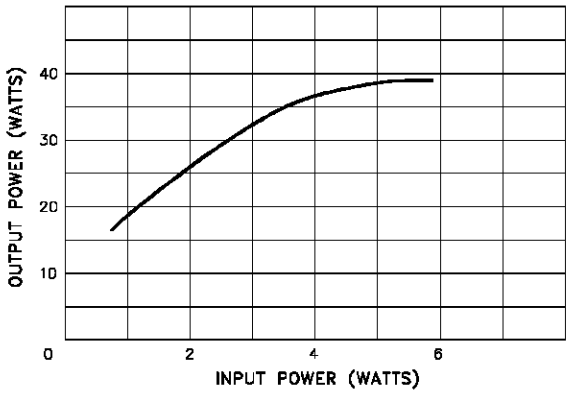
Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 10mA	I_E = 0mA	45	—	—	V
BV_{CEO}	I_C = 10mA	I_B = 0mA	12	—	—	V
BV_{EBO}	I_E = 10mA	I_C = 0mA	3.5	—	—	V
h_{FE}	V_{CE} = 5V	I_C = 2A	15	—	150	—

DYNAMIC

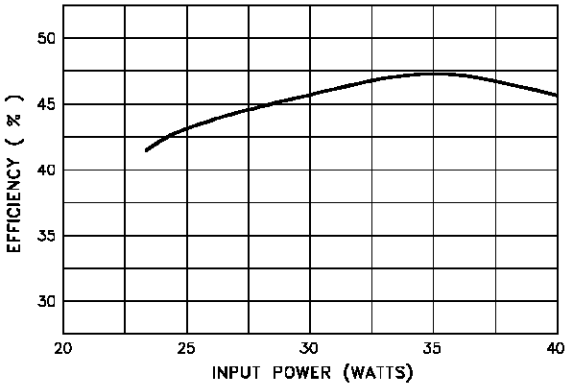
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 1.65 GHz	P_{IN} = 4.0 W	V_{CE} = 28 V	32	—	—	W
G_P	f = 1.65 GHz	P_{IN} = 4.0 W	V_{CE} = 28 V	9.0	—	—	dB
η_c	f = 1.65 GHz	P_{IN} = 4.0 W	V_{CE} = 28 V	40	—	—	%

TYPICAL PERFORMANCE

POWER OUTPUT vs POWER INPUT



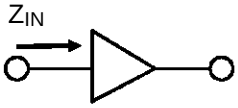
EFFICIENCY vs POWER INPUT



IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

Z_{IN}

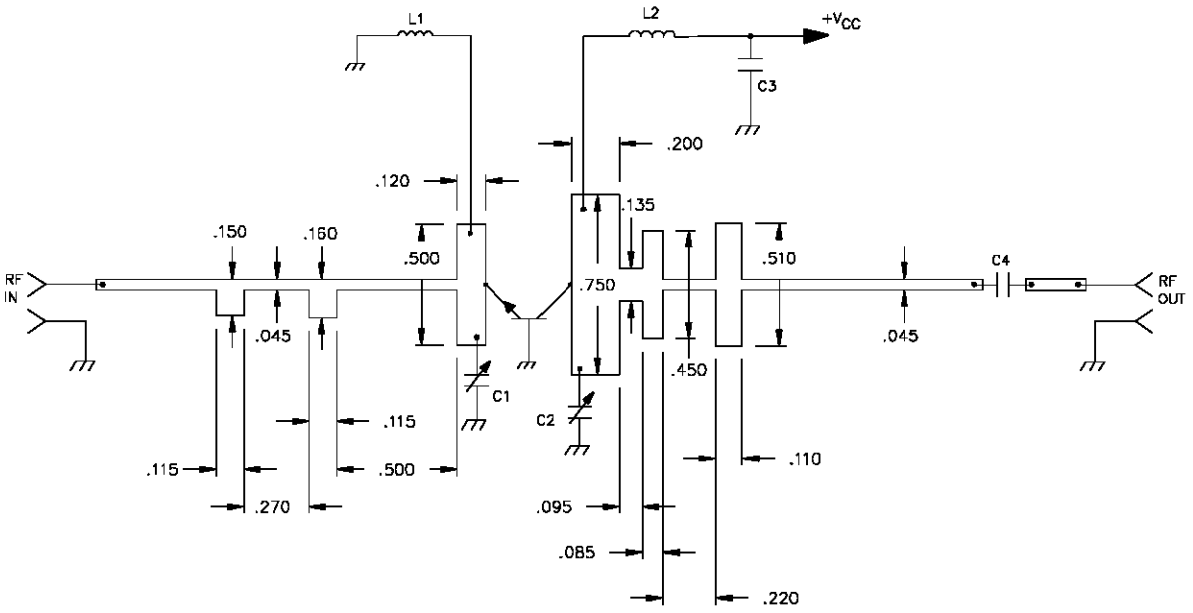


TYPICAL COLLECTOR LOAD IMPEDANCE

Z_{CL}

FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
1550 MHz	6.6 + j 15.0	5.6 – j 2.5
1600 MHz	8.3 + j 14.5	4.7 – j 1.9
1650 MHz	12.0 + j 12.0	4.1 – j 1.4

TEST CIRCUIT



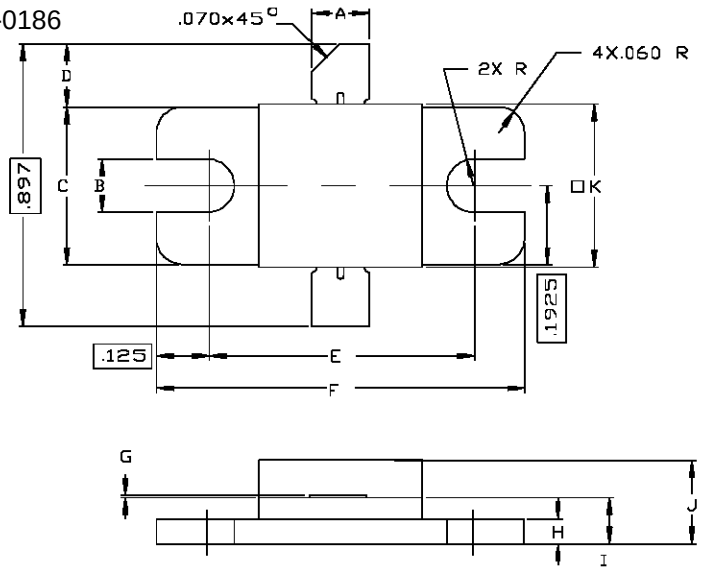
C1, C2 : .4 - 2.5pF Johanson Capacitor
C3 : 15,000pF EMI Filter
C4 : 1000pF Chip Capacitor

L1, L2 : 5 Turns Choke Diameter Wire .025" I.D. .125"

Substrate: Er = 10.2, Height .050", 1 Oz. Copper
All Dimensions in Inches.

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0186



SGS-THOMSON MICROELECTRONICS			CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm		MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.135/3,43	.145/3,69	K	.390/9,91	.410/10,41
B	.130/3,30 NOM.				
C	.380/ 9,65	.390/ 9,91			
D	.240/6,10	.260/6,61			
E	.645/16,38	.655/16,64			
F	.890/22,61	.910/23,11			
G	.002/0,05	.006/0,15			
H	.055/1,40	.065/1,65			
I	.090/2,29	.110/2,79			
J	.180/4,57	.200/5,08			