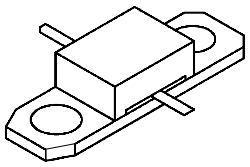
SGS-THOMSON MICROELECTRONICS

SD1897

RF & MICROWAVE TRANSISTORS 1.65 GHz SATCOM APPLICATIONS

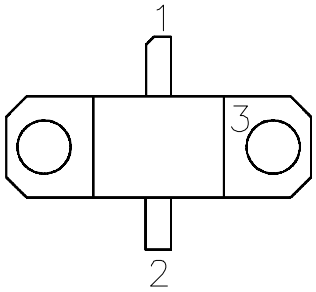
- 1.65 GHz
- 28 VOLTS
- CLASS C OPERATION
- COMMON BASE
- P_{OUT} = 10 W MIN. WITH 11.0 dB GAIN



.250 x .320 2LFL (M170)
epoxy sealed

ORDER CODE	BRANDING
SD1897	1897

PIN CONNECTION



1. Collector
2. Emitter
3. Base

DESCRIPTION

The SD1897 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. SD1897 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	2.3	A
P_{DISS}	Power Dissipation	29	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	6.0	°C/W

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

STATIC

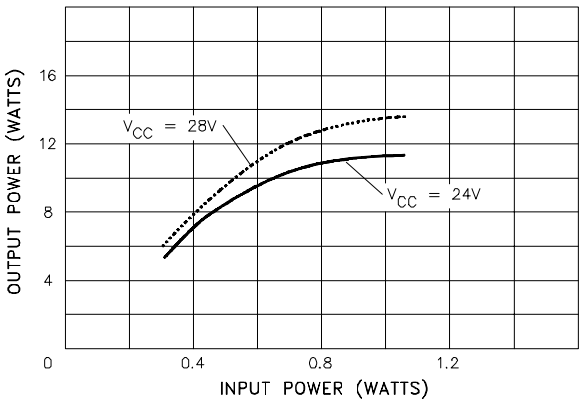
Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 3mA	I_E = 0mA	45	—	—	V
BV_{CEO}	I_C = 3mA	I_B = 0mA	12	—	—	V
BV_{EBO}	I_E = 3mA	I_C = 0mA	3.5	—	—	V
h_{FE}	V_{CE} = 5V	I_C = 600mA	15	—	150	—

DYNAMIC

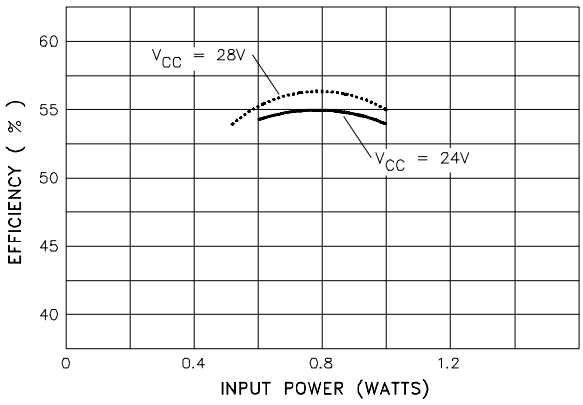
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 1.65 GHz	P_{IN} = 0.8 W	V_{CE} = 28 V	10	—	—	W
G_P	f = 1.65 GHz	P_{IN} = 0.8 W	V_{CE} = 28 V	11	—	—	dB
η_C	f = 1.65 GHz	P_{IN} = 0.8 W	V_{CE} = 28 V	48	—	—	%

TYPICAL PERFORMANCE

POWER OUTPUT vs POWER INPUT

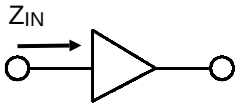


EFFICIENCY vs POWER INPUT

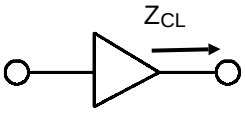


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE



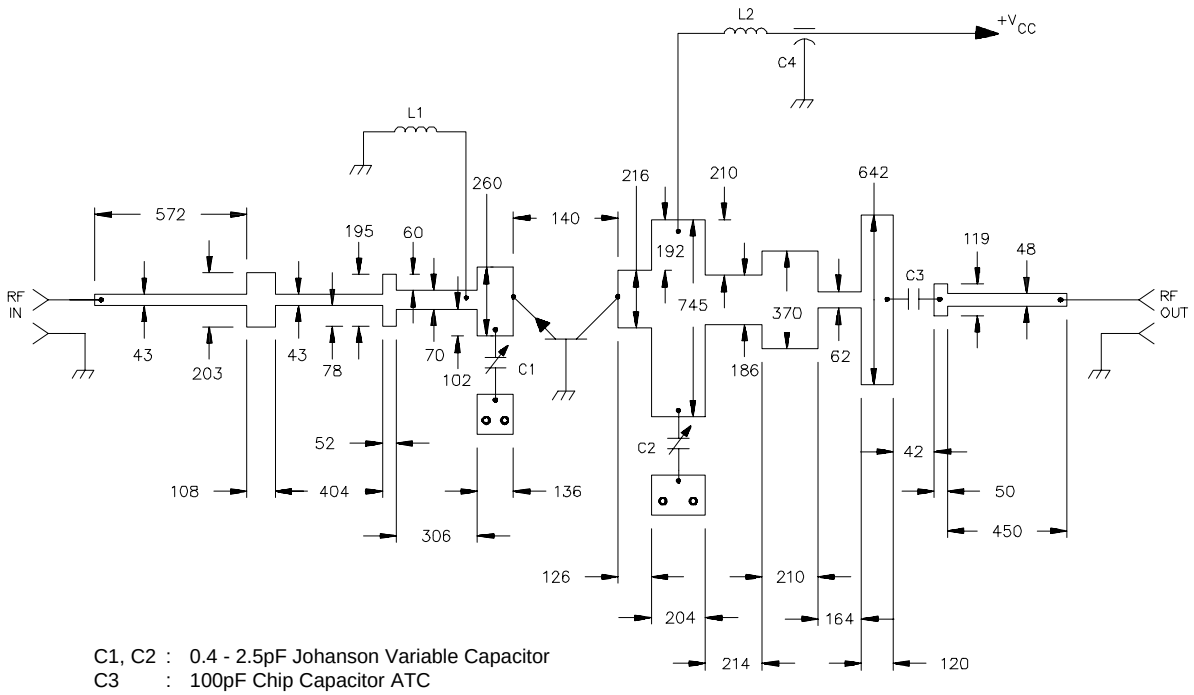
TYPICAL COLLECTOR LOAD IMPEDANCE



FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
1600 MHz	22.0 + j 23.0	3.1 + j 4.0
1650 MHz	28.0 + j 18.0	3.0 + j 2.0

P_{OUT} = 10 W
V_{CE} = 28 V
P_{IN} = 0.8 W

TEST CIRCUIT



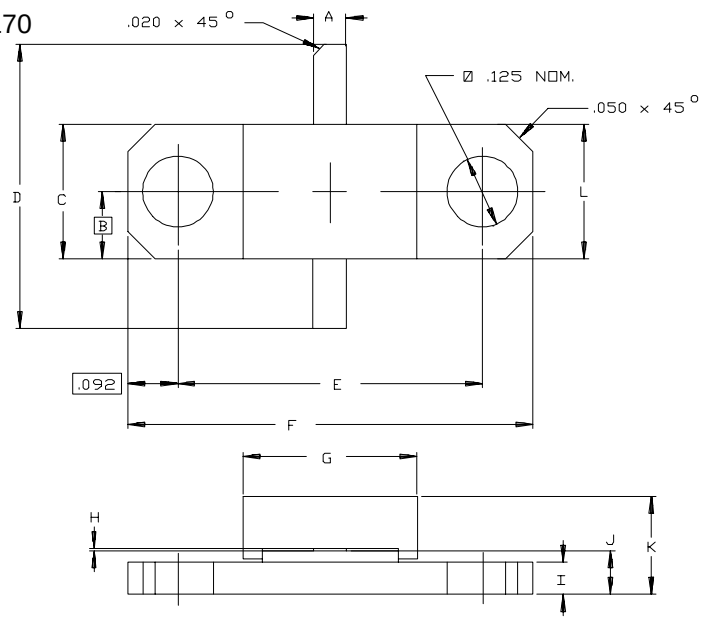
C1, C2 : 0.4 - 2.5pF Johanson Variable Capacitor
C3 : 100pF Chip Capacitor ATC
C4 : Suppression Filters CDI 9900381-6004

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

Substrate: Er = 10.2, Height .050", 1 Oz. Cu.
All Dimensions in mm unless otherwise specified

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0170



SGS-THOMSON MICROELECTRONICS			CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm		MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.055/1,40	.065/1,65	K		.190/4,83
B	.124/3,15		L	.245/6,22	.255/6,48
C	.243/6,17	.253/6,43			
D	.635/16,13	.665/16,89			
E	.555/14,10	.565/14,35			
F	.739/18,77	.749/19,02			
G	.315/8,00	.325/8,26			
H	.002/0,05	.006/0,15			
I	.055/1,40	.065/1,65			
J	.075/1,91	.095/2,41			