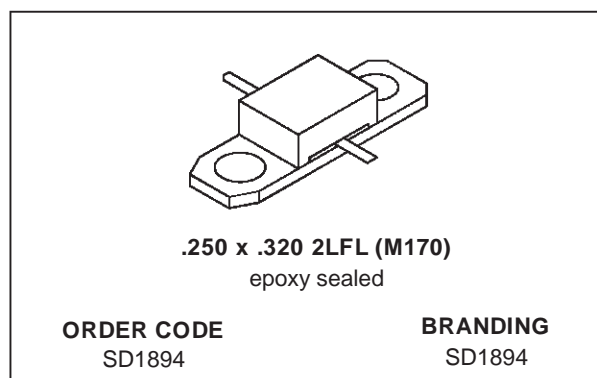


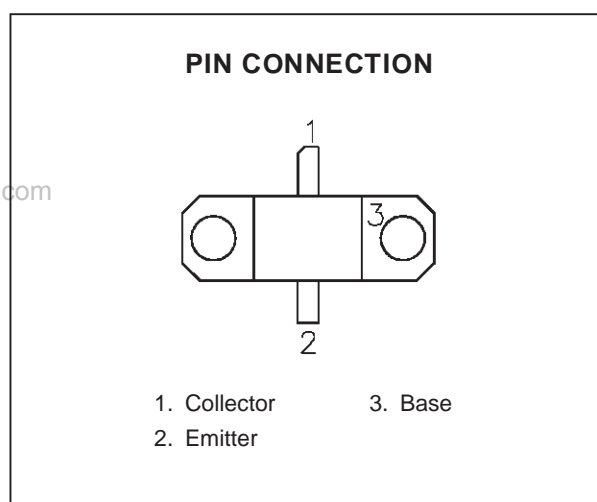
RF & MICROWAVE TRANSISTORS SATELLITE COMMUNICATIONS APPLICATIONS

- CLASS C
- 1.6 GHz
- COMMON BASE
- REFRACTORY/GOLD METALLIZATION
- EFFICIENCY = 50% MIN.
- $P_{OUT} = 4.5 \text{ W MIN. WITH } 10 \text{ dB GAIN}$

**DESCRIPTION**

The SD1894 is a common base silicon NPN bipolar device optimized for 1.6 GHz SATCOM applications.

The SD1894 offers superior gain and collector efficiency, making it an ideal choice for Class C power amplifiers used in portable as well as fixed SATCOM terminals.

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

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	45	V
V_{CES}	Collector-Emitter Voltage	45	V
V_{EBO}	Emitter-Base Voltage	3.0	V
I_C	Device Current	375	mA
P_{DISS}	Power Dissipation	12.5	W
T_J	Junction Temperature	+200	$^{\circ}\text{C}$
T_{STG}	Storage Temperature	- 65 to +150	$^{\circ}\text{C}$

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	14.0	$^{\circ}\text{C/W}$
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SD1894**ELECTRICAL SPECIFICATIONS** ($T_{case} = 25^{\circ}C$)

STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	$I_C = 1 \text{ mA}$	$I_E = 0 \text{ mA}$	45	—	—	V
BV_{CES}	$I_C = 1 \text{ mA}$	$V_{BE} = 0 \text{ V}$	45	—	—	V
BV_{EBO}	$I_E = 1 \text{ mA}$	$I_C = 0 \text{ mA}$	3.0	—	—	V
I_{CBO}	$V_{CB} = 28 \text{ V}$	$I_E = 0 \text{ mA}$	—	—	.25	mA
h_{FE}	$V_{CE} = 5 \text{ V}$	$I_C = .2 \text{ A}$	15	—	150	—

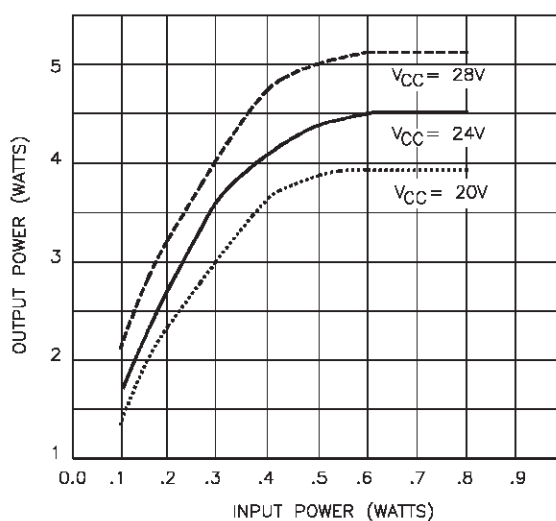
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{IN}	$f = 1650 \text{ MHz}$	$V_{CC} = 28 \text{ V}$	$P_{OUT} = 4.5 \text{ W}$	—	.35	.45	W
η_C	$f = 1650 \text{ MHz}$	$V_{CC} = 28 \text{ V}$	$P_{OUT} = 4.5 \text{ W}$	50	55	—	%
P_G	$f = 1650 \text{ MHz}$	$V_{CC} = 28 \text{ V}$	$P_{OUT} = 4.5 \text{ W}$	10.0	11.1	—	dB
Load Mismatch	$V_{CC} = 28 \text{ V}$	$P_{OUT} = 4.5 \text{ W}$	$V_{SWR} = 20:1$	No Degradation in Output Power			

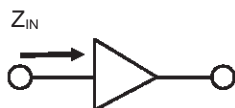
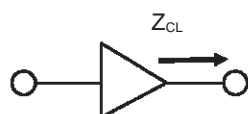
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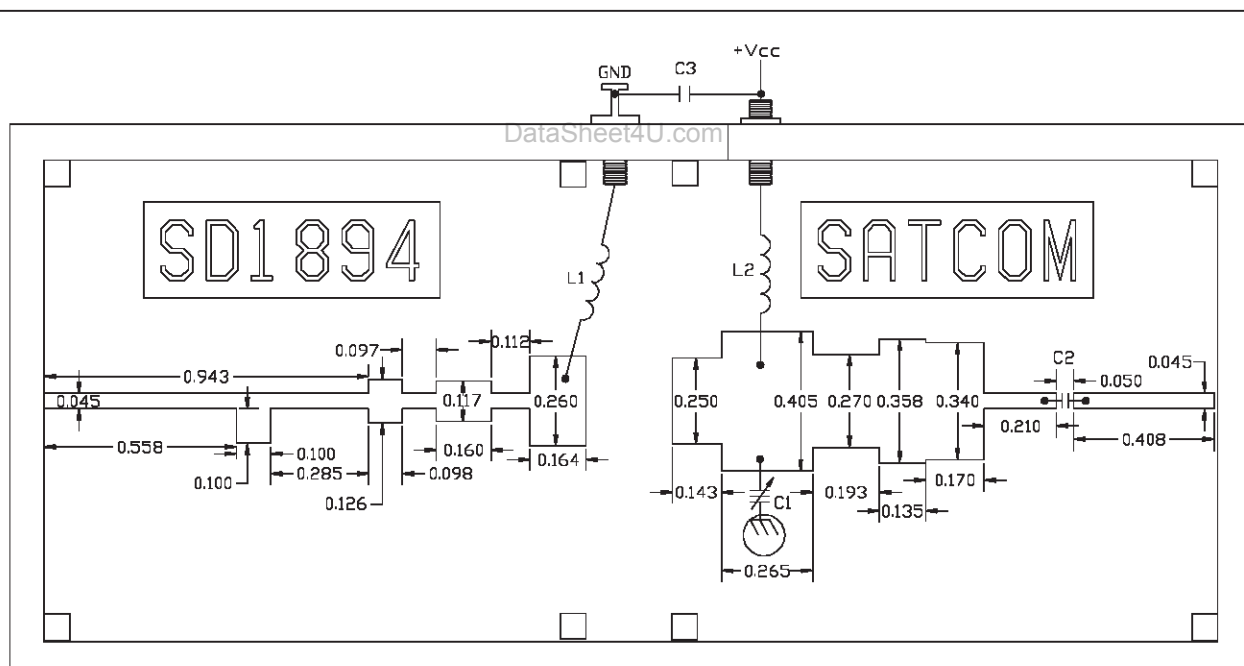
INPUT POWER vs OUTPUT POWER

IMPEDANCE DATA

TYPICAL INPUT
IMPEDANCETYPICAL COLLECTOR LOAD
IMPEDANCE

FREQ.	Z _{IN} (Ω)	Z _{CL} (Ω)
1600 MHz	31.6 + j 21.4	5.2 + j 14.7
1620 MHz	38.0 + j 15.0	5.6 + j 14.55
1635 MHz	38.8 + j 11.3	5.85 + j 14.45
1650 MHz	36.0 + j 9.1	6.1 + j 14.3
1665 MHz	34.3 + j 8.77	6.37 + j 14.2

TEST CIRCUIT



C1 : .6 - 4.5 pf Johanson
 C2 : 39pf ATC Chip Capacitor
 C3 : .1μf Ceramic

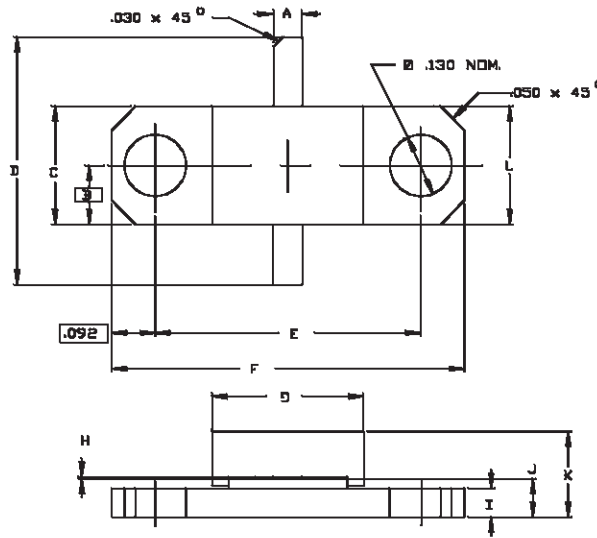
L1 : 10 Turns, AWG #28, .080" I.D.
 L2 : 4 Turns, AWG #28, .080" I.D.

Board Material: Er = 10.2, Thickness .050"

SD1894

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0170
UDCS No. 1010996 rev B



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			

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