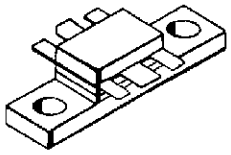
SGS-THOMSON MICROELECTRONICS

SD1423

RF & MICROWAVE TRANSISTORS 800-960MHz BASE STATION APPLICATIONS

- 800 - 960 MHz
- 24 VOLTS
- EFFICIENCY 50%
- COMMON EMITTER
- GOLD METALLIZATION
- CLASS AB LINEAR OPERATION
- P_{OUT} = 15 W MIN. WITH 8.0 dB GAIN



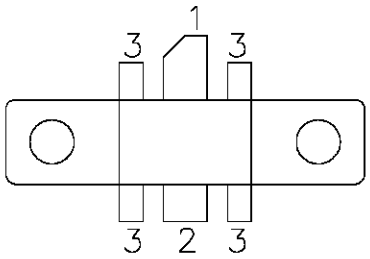
.230 6LFL (M118)
epoxy sealed

ORDER CODE	BRANDING
SD1423	SD1423

DESCRIPTION

The SD1423 is a gold metallization epitaxial silicon NPN planar transistor using diffused emitter ballast resistors for high linearity Class AB operation for cellular base station applications. The SD1423 is designed as a medium power output device or as the driver for the SD1424.

PIN CONNECTION



1. Collector
2. Base
3. Emitter

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

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	48	V
V_{CEO}	Collector-Emitter Voltage	25	V
V_{CES}	Collector-Emitter Voltage	45	V
V_{EBO}	Emitter-Base Voltage	3.5	V
I_C	Device Current	2.5	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	°C/W

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

STATIC

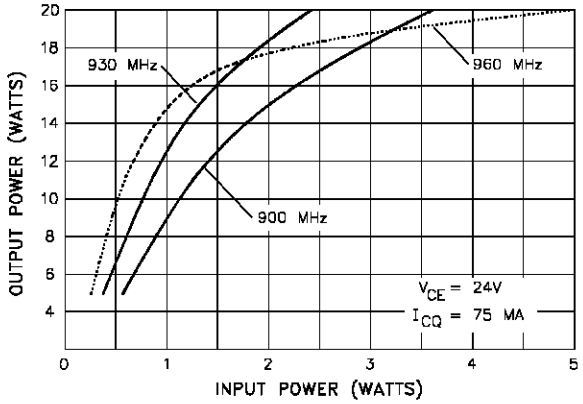
Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 50mA	I_E = 0mA	48	50	—	V
BV_{CEO}	I_C = 20mA	I_B = 0mA	25	30	—	V
BV_{EBO}	I_E = 5mA	I_C = 0mA	3.5	4.0	—	V
I_{CBO}	V_{CB} = 24V	I_E = 0mA	—	—	1.0	mA
h_{FE}	V_{CE} = 10V	I_C = 100mA	20	—	100	—

DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 960 MHz	V_{CC} = 24 V	I_{CQ} = 75 mA	15	—	—	W
P_G	f = 960 MHz	V_{CC} = 24 V	I_{CQ} = 75 mA	8	—	—	dB
η_C	f = 960 MHz	V_{CC} = 24 V	I_{CQ} = 75 mA	45	50	—	%
C_{OB}	f = 1 MHz	V_{CB} = 24V		—	20	24	pF

TYPICAL PERFORMANCE

POWER OUTPUT vs POWER INPUT

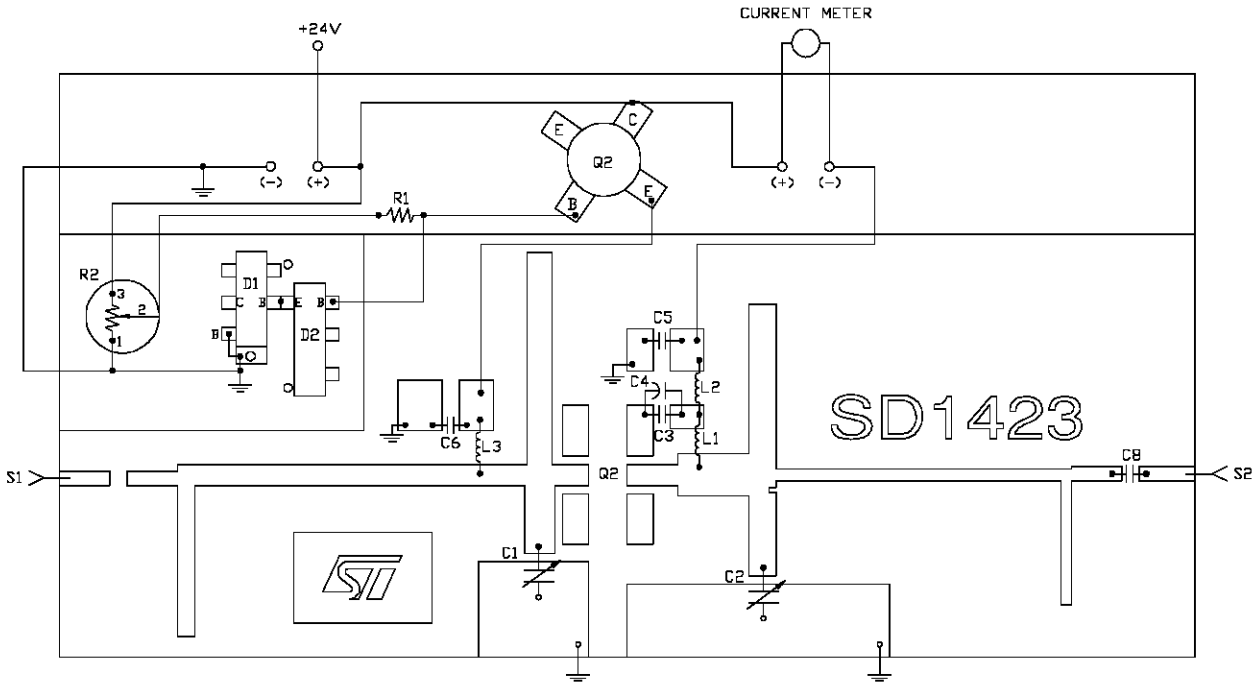


IMPEDANCE DATA

FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
900 MHz	1.30 + j 1.98	3.99 + j 5.55
930 MHz	1.42 + j 2.31	3.18 + j 4.97
960 MHz	1.45 + j 2.62	2.96 + j 4.07

P_{OUT} = 15 W
V_{CE} = 75 mA
I_{CQ} = 24 V

TEST CIRCUIT

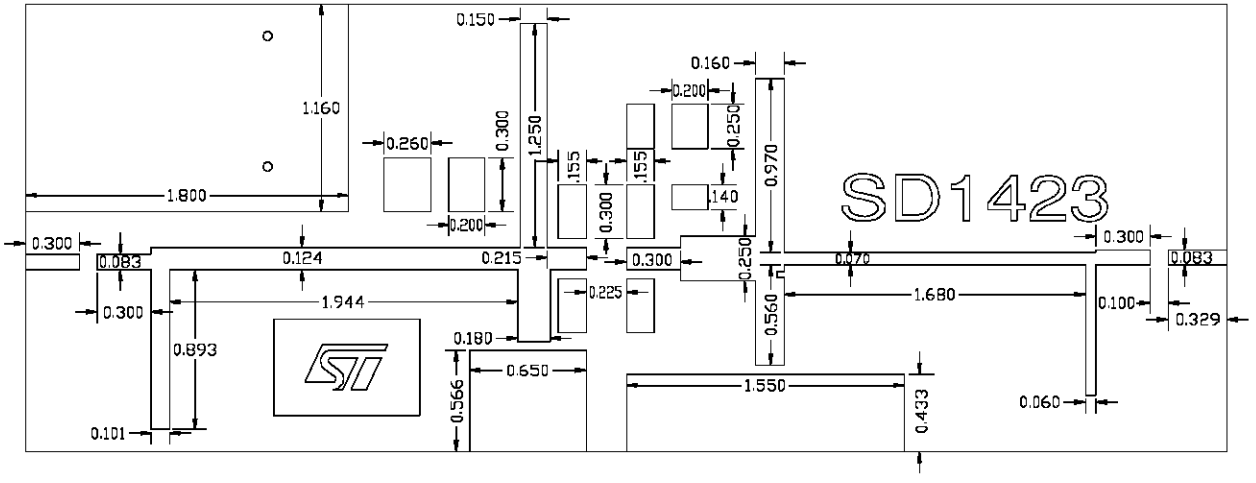


C1, C2 :0.8 - 8.0pfGigatrim Variable Capacitor
C3, C6,
C7, C8 :100pf ATC Chip Capacitor
C4 : 10µF, 63V Electrolytic
C5 : 0.1µF Capacitor CK06BX104K
D1, D2 :SD1423 trasistors used as diodes

L1, L3 :4 Turn, #22 AWG
L2 : #22 AWG, Ferrite Core
Q1: SD1423 Bias Transistor
Q2: SD1423 transistor under test
R1: 1.5 kΩ, 1/4W Resistor
R2: 5KΩ ±5% Potentiometer

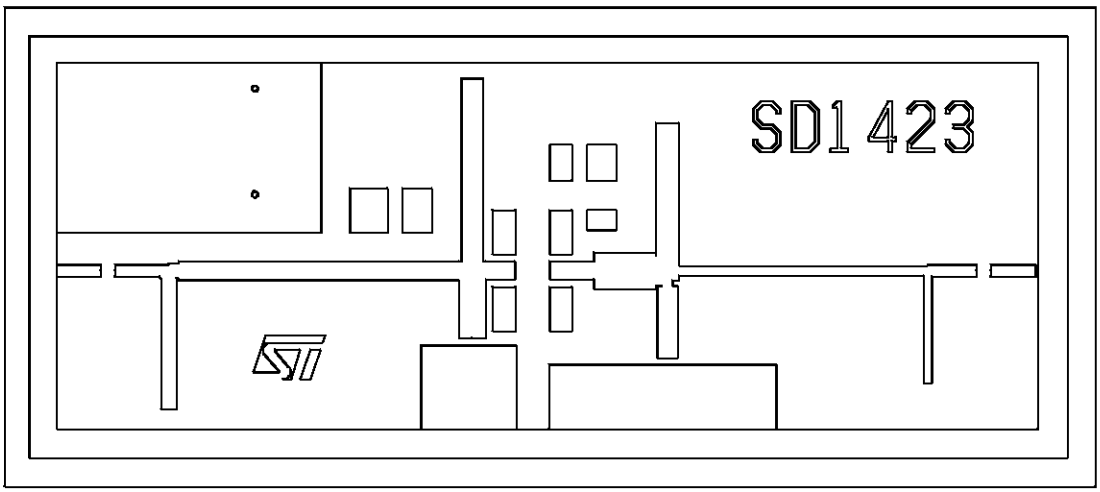
Board Material: 3M Teflon Fiberglass Er = 2.55, H = .030”

TEST CIRCUIT DIMENSIONS



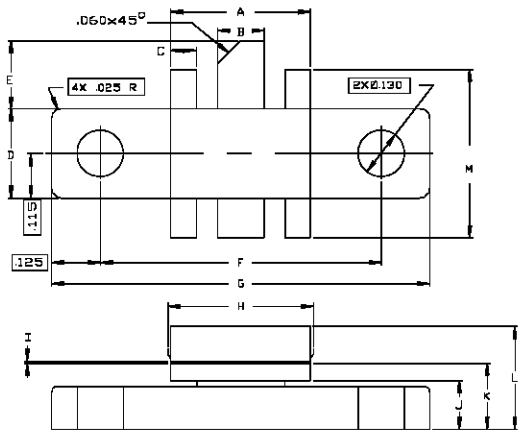
All dimensions in mils unless otherwise specified

TEST CIRCUIT LAYOUT



PACKAGE MECHANICAL DATA

Ref.: UDCS Doc. No.1010941 rev. B



SGS-THOMSON MICROELECTRONICS		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.355/9,02	.365/9,27
B	.115/2,92	.125/3,18
C	.060/1,52	.070/1,78
D	.225/5,72	.235/5,97
E	.150/3,81	.170/4,32
F	.720/18,29	.730/18,54
G	.970/24,64	.980/24,89
H	.355/9,02	.365/9,27
I	.004/0,10	.006/0,15
J	.120/3,05	.130/3,30

CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
K	.160/4,06	.180/4,57
L	.250/6,35	.275/6,99
M	.420/10,67	.450/11,43

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