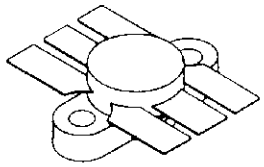
SGS-THOMSON MICROELECTRONICS

SD4013

RF & MICROWAVE TRANSISTORS UHF COMMUNICATIONS APPLICATIONS

PRELIMINARY DATA

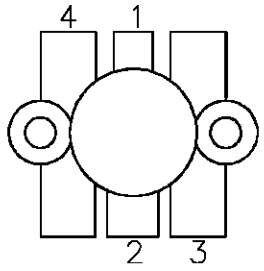
- REFRACTORY/GOLD METALLIZATION
- INTERNAL INPUT MATCHING
- METAL/CERAMIC PACKAGE
- EMITTER BALLASTED
- 20:1 VSWR CAPABILITY
- P_{OUT} = 25 W MIN. WITH 9 dB GAIN



.500 6LFL (M111)
epoxy sealed

ORDER CODE	BRANDING
SD4013	SUMIL25

PIN CONNECTION



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

DESCRIPTION

The SD4013 is a gold metallized epitaxial silicon NPN planar transistor using diffused emitter ballast resistors for superior ruggedness.

The SD4013 can withstand 20:1 VSWR under rated operating conditions and is internally input matched to optimize power gain and efficiency over the band.

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

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	30	V
V_{EBO}	Emitter-Base Voltage	3.5	V
I_C	Device Current	3.0	A
P_{DISS}	Power Dissipation	70	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	2.5	°C/W

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

STATIC

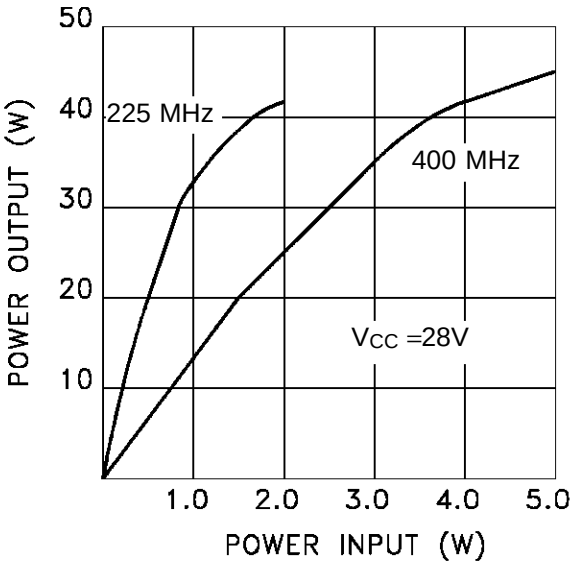
Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 50mA	I_E = 0mA	60	—	—	V
BV_{EBO}	I_E = 5mA	I_C = 0mA	3.5	—	—	V
BV_{CES}	I_C = 50mA	V_{BE} = 0mA	60	—	—	V
I_{CBO}	V_{CB} = 30V	I_E = 0mA	—	—	3.0	mA
h_{FE}	V_{CE} = 5V	I_C = 500mA	10	30	120	—

DYNAMIC

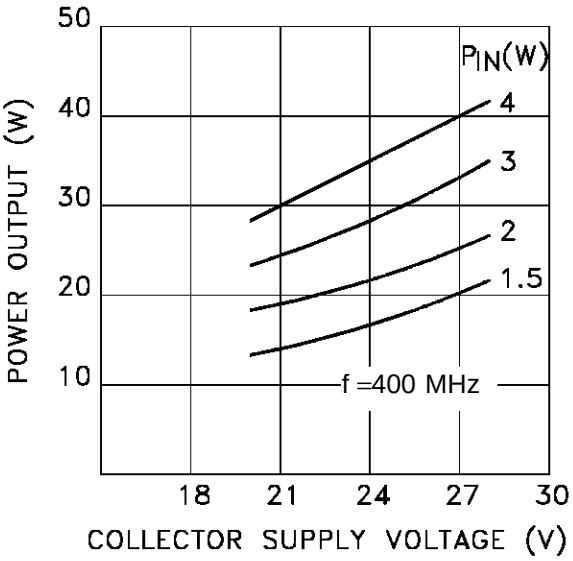
Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
P_{OUT}	f = 400 MHz	V_{CC} = 28V	25	—	—	W
P_{IN}	f = 400 MHz	V_{CC} = 28V	—	—	3.15	W
η_c	f = 400 MHz	V_{CC} = 28V	50	55	—	%
G_P	f = 400 MHz	V_{CC} = 28V	9.0	10.5	—	dB
VSWR	f = 400 MHz	V_{CC} = 28V	20:1	—	—	—
C_{OB}	f = 1 MHz	V_{CB} = 28V	—	—	30	pF

TYPICAL PERFORMANCE

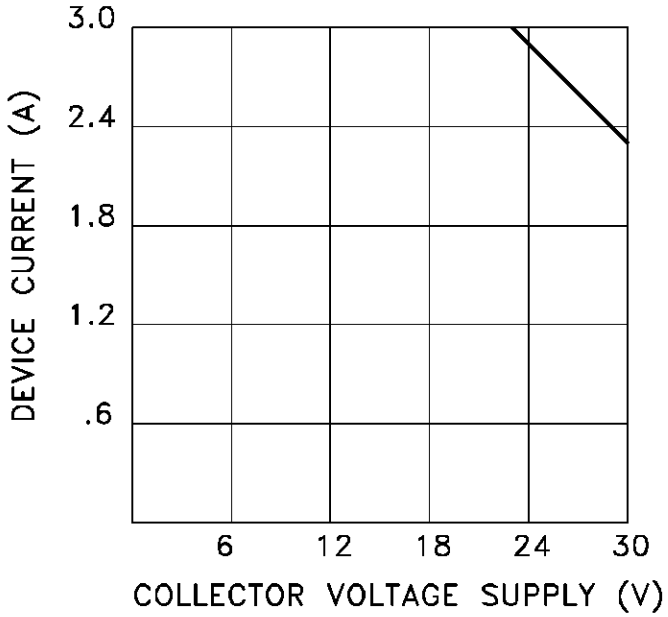
POWER INPUT vs POWER OUTPUT



POWER OUTPUT vs COLLECTOR SUPPLY VOLTAGE

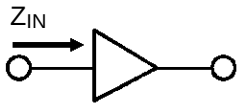


DC SAFE OPERATING AREA

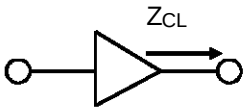


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE



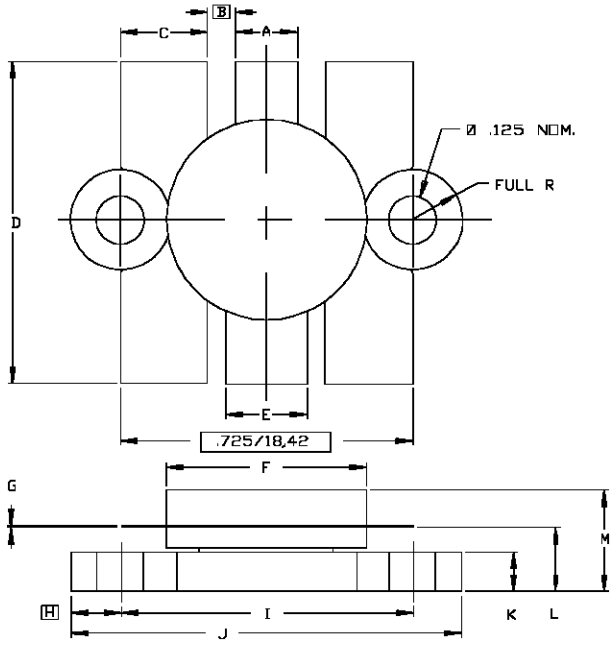
TYPICAL COLLECTOR LOAD IMPEDANCE



FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
225 MHz	1.40 + j 2.5	7.55 + j 0.0
275 MHz	1.25 + j 3.3	7.5 – j 0.05
300 MHz	1.10 + j 4.0	7.5 – j 1.00
350 MHz	1.10 + j 4.7	6.8 – j 1.15
400 MHz	1.70 + j 5.1	6.0 – j 1.30

PACKAGE MECHANICAL DATA

Ref.: Dwg. No. 12-0111



SGS-THOMSON MICROELECTRONICS		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.150/3,43	.160/4,06
B	.045/1,14	
C	.210/5,33	.220/5,59
D	.835/21,21	.865/21,97
E	.200/5,08	.210/5,33
F	.490/12,45	.510/12,95
G	.003/0,08	.007/0,18
H	.125/3,18	
I	.720/18,29	.730/18,54
J	.970/24,64	.980/24,89

CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
K	.095/2,41	.105/2,67
L	.150/3,81	.170/4,32
M		.280/7,11