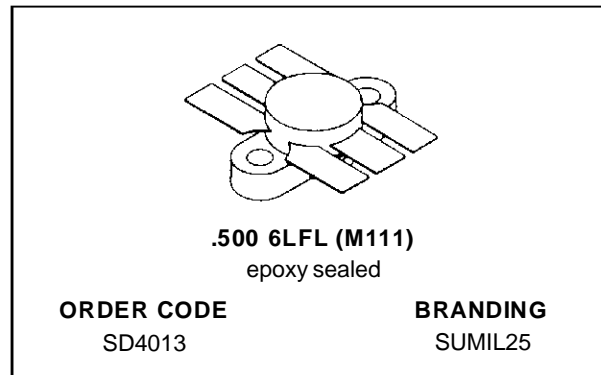


RF & MICROWAVE TRANSISTORS UHF COMMUNICATIONS APPLICATIONS

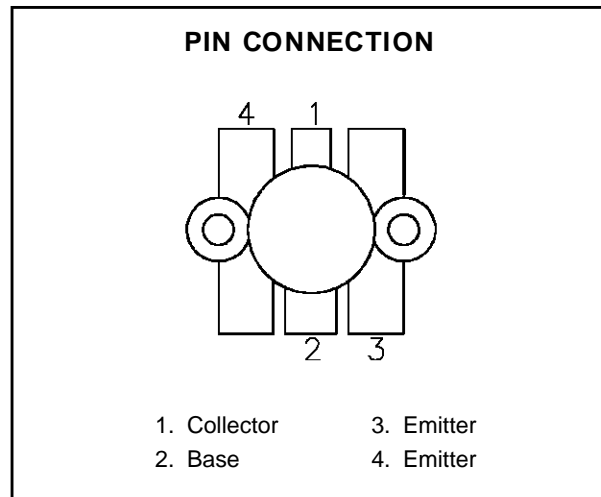
PRELIMINARY DATA

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


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 ($T_{case} = 25^{\circ}\text{C}$)

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	$^{\circ}\text{C}$
T_{STG}	Storage Temperature	- 65 to +150	$^{\circ}\text{C}$

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	2.5	$^{\circ}\text{C/W}$
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SD4013

ELECTRICAL SPECIFICATIONS ($T_{\text{case}} = 25^{\circ}\text{C}$)

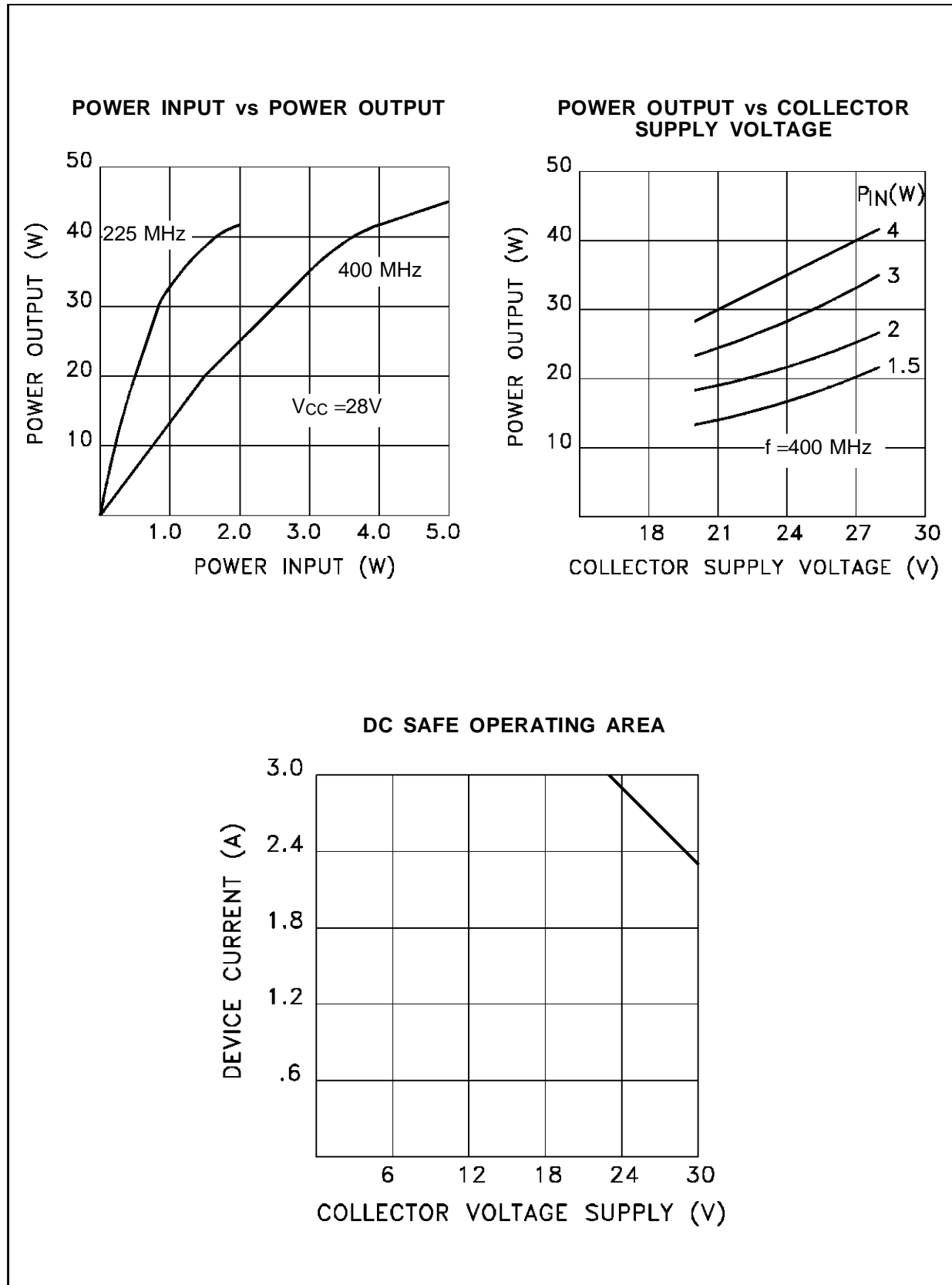
STATIC

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

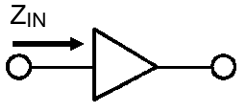
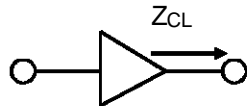
DYNAMIC

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

TYPICAL PERFORMANCE



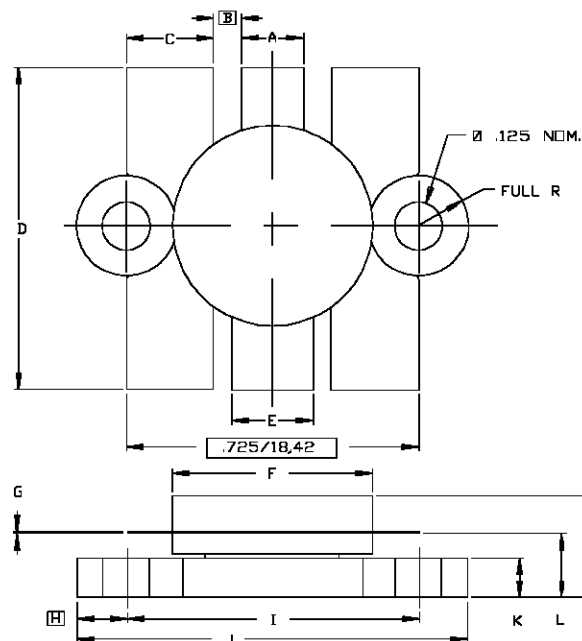
IMPEDANCE DATA

TYPICAL INPUT
IMPEDANCETYPICAL 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			CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm		MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.150/3,43	.160/4,06	K	.095/2,41	.105/2,67
B	.045/1,14		L	.150/3,81	.170/4,32
C	.210/5,33	.220/5,59	M		.280/7,11
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			

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