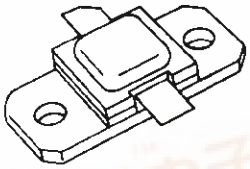
SGS-THOMSON MICROELECTRONICS

SD8250

RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

- REFRACTORY/GOLD METALLIZATION
- EMITTER SITE BALLASTED
- 5:1 VSWR CAPABILITY @ 1.75 dB RF OVERDRIVE
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT MATCHING
- OVERLAY GEOMETRY
- METAL/CERAMIC HERMETIC PACKAGE
- P_{OUT} = 250 W MIN. WITH 8.0 dB GAIN



.400 x .400 2LFL (S036)
hermetically sealed

ORDER CODE	BRANDING
SD8250	STAN250A

DESCRIPTION

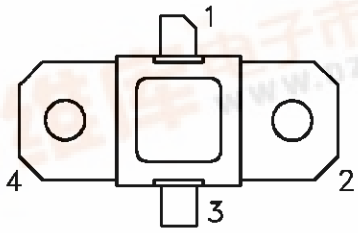
The SD8250 is a high power Class C transistor specifically designed for TACAN/DME pulsed output and driver applications.

This device is designed for operation under moderate pulse width and duty cycle pulse conditions and is capable of withstanding 5:1 output VSWR at rated RF overdrive.

Low RF thermal resistance and computerized automatic wire bonding techniques ensure high reliability and product consistency.

The SD8250 is supplied in the AMPAC™ Hermetic Metal/Ceramic package with internal Input/Output matching structures.

PIN CONNECTION



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

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

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation* ($T_C \leq 90°C$)	575	W
I_C	Device Current*	20	A
V_{CC}	Collector-Supply Voltage*	55	V
T_J	Junction Temperature (Pulsed RF Operation)	250	°C
T_{STG}	Storage Temperature	– 65 to +200	°C

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance(1)	0.28	°C/W

*Applies only to rated RF amplifier operation
(1) Infra-Red Scan of Hot Spot Junction Temperature at Rated RF Operating Conditions

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

STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 35mA	I_E = 0mA	65	—	—	V
BV_{EBO}	I_E = 15mA	I_C = 0mA	4.0	—	—	V
BV_{CES}	I_C = 25mA	I_B = 0mA	60	—	—	V
I_{CES}	V_{BE} = 0V	V_{CE} = 50V	—	—	20	mA
h_{FE}	V_{CE} = 5V	I_C = 1A	10	—	—	—

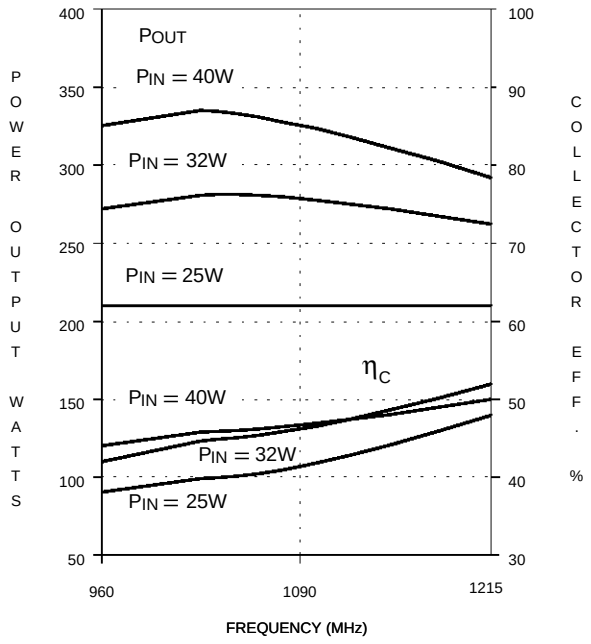
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 960 — 1215 MHz	P_{IN} = 40 W	V_{CC} = 50 V	250	295	—	W
η_C	f = 960 — 1215 MHz	P_{IN} = 40 W	V_{CC} = 50 V	38	44	—	%
P_G	f = 960 — 1215 MHz	P_{IN} = 40 W	V_{CC} = 50 V	8.0	8.7	—	dB

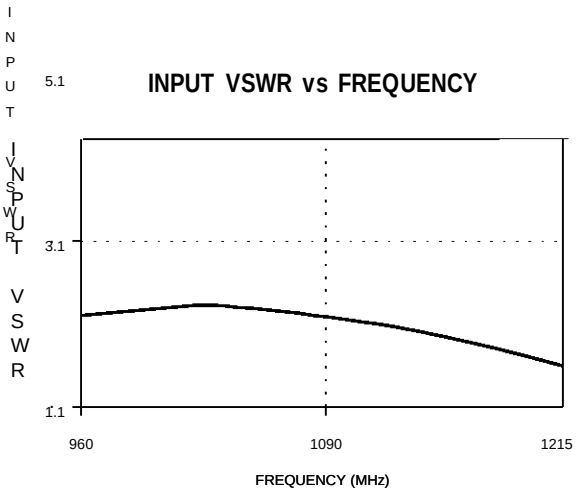
Note: Pulse Width = 20µSec
Duty Cycle = 5%
T_C = 25°C

TYPICAL PERFORMANCE

TYPICAL BROADBAND POWER AMPLIFIER

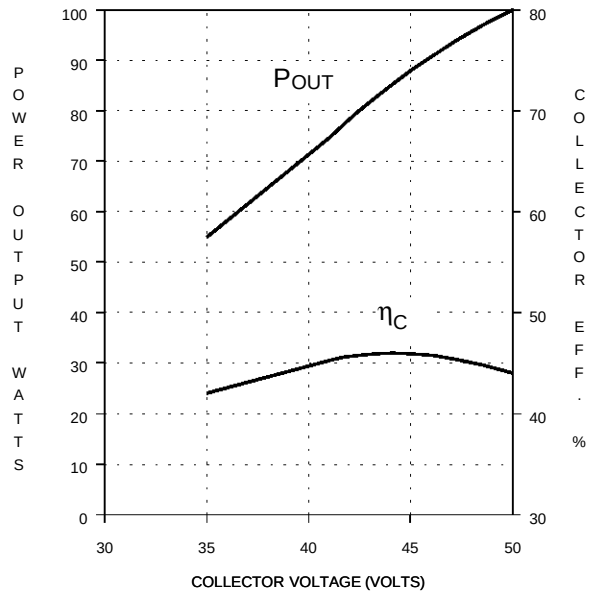


INPUT VSWR vs FREQUENCY



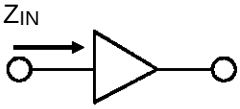
TYPICAL PERFORMANCE (cont'd)

TYPICAL POWER OUTPUT & COLLECTOR EFFICIENCY vs COLLECTOR VOLTAGE

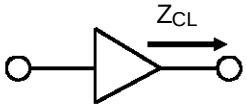


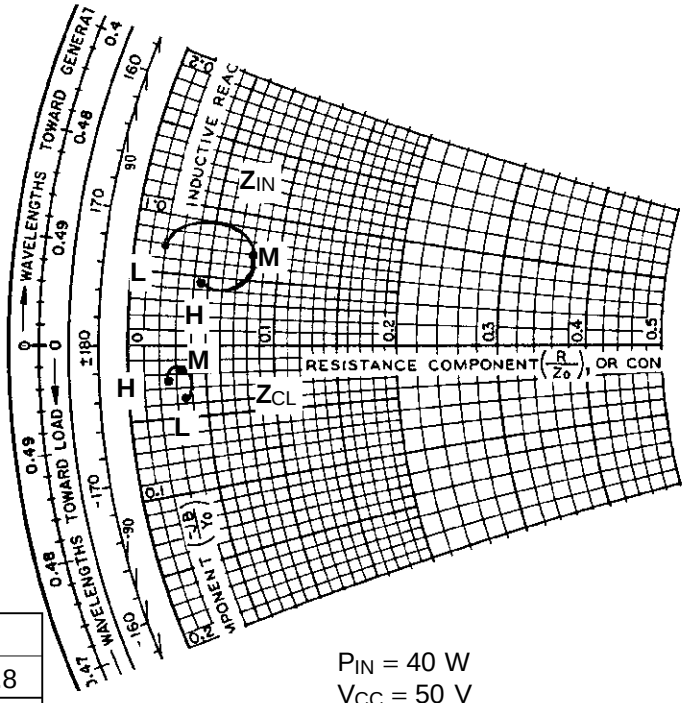
IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE



TYPICAL COLLECTOR LOAD IMPEDANCE

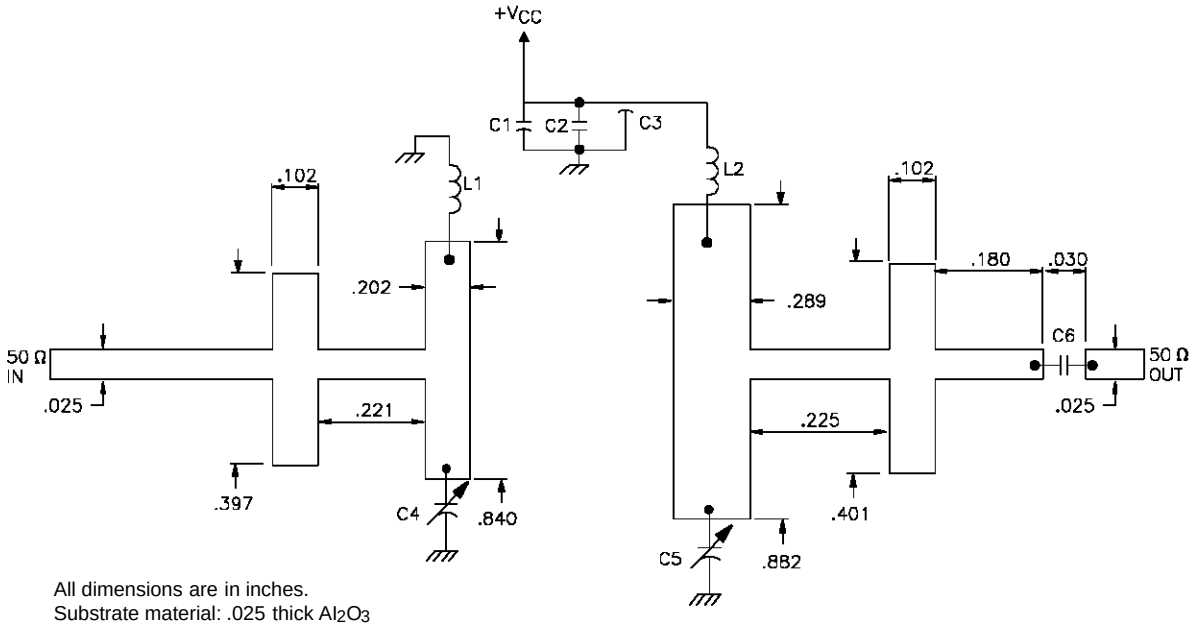




FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
L = 960 MHz	1.0 + j 3.5	1.9 – j 1.8
M = 1090 MHz	4.0 + j 3.5	1.6 – j 0.9
H =1215 MHz	2.2 + j 2.2	1.4 – j 1.1

P_{IN} = 40 W
V_{CC} = 50 V
Normalized to 50 ohms

TEST CIRCUIT

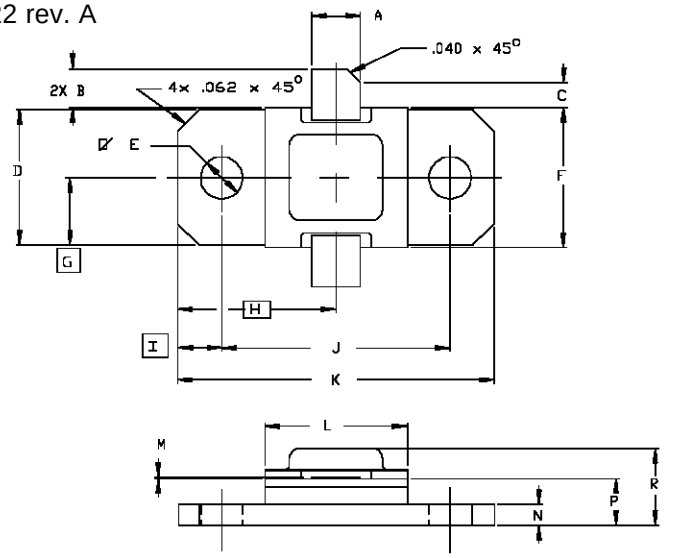


All dimensions are in inches.
Substrate material: .025 thick Al_2O_3

C1	:	100 µF Electrolytic Capacitor, 63V	C5	:	Johanson 7475 Gigatrim .6 — 4.5 pF
C2	:	.1 µF Ceramic Capacitor	C6	:	D.C. Block 100 pF
C3	:	Feedthru Bypass SCI 712-022	L1	:	#26 Wire, 4 Turn .062 I.D.
C4	:	Johanson 7475 Gigatrim .6 — 4.5 pF	L2	:	#26 Wire, 4 Turn .062 I.D.

PACKAGE MECHANICAL DATA

Ref.: Dwg. No. 12-0222 rev. A



SGS-THOMSON MICROELECTRONICS		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.135/3,43	.145/3,68
B	.100/2,54	.120/3,05
C	.050/1,27	
D	.376/9,55	.396/10,06
E	.110/2,79	.130/3,30
F	.395/10,03	.407/10,34
G	.193/4,90	
H	.450/11,43	
I	.125/3,18	
J	.640/16,26	.660/16,76

CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
K	.890/22,61	.910/23,11
L	.395/10,03	.415/10,54
M	.003/0,08	.006/0,15
N	.052/1,32	.072/1,83
P	.118/3,00	.131/3,33
R		.230/5,84