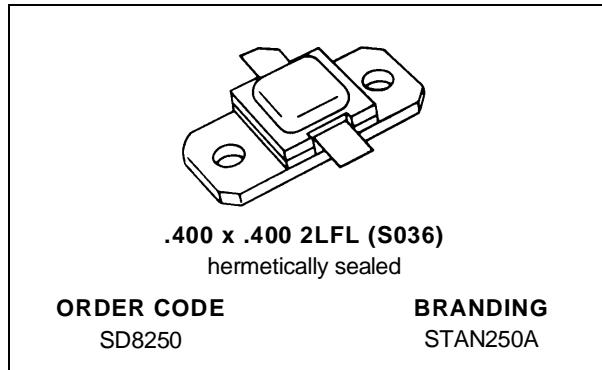


**RF & MICROWAVE TRANSISTORS
AVIONICS APPLICATIONS**

- 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

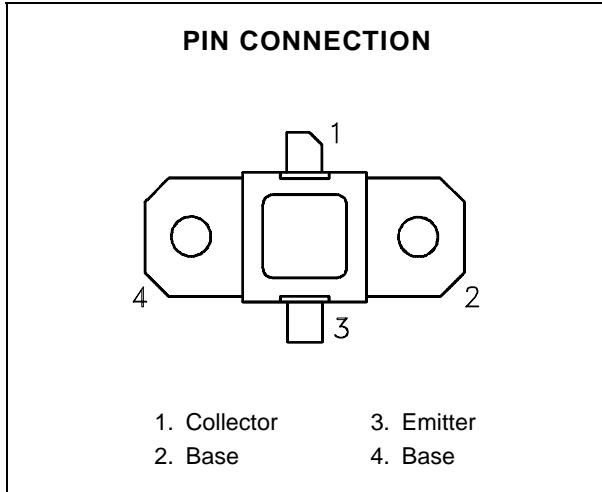

DESCRIPTION

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.


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

Symbol	Parameter	Value	Unit
P _{DISS}	Power Dissipation* (T _C ≤ 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
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*Applies only to rated RF amplifier operation

(1) Infra-Red Scan of Hot Spot Junction Temperature at Rated RF Operating Conditions

SD8250

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

STATIC

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

DYNAMIC

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

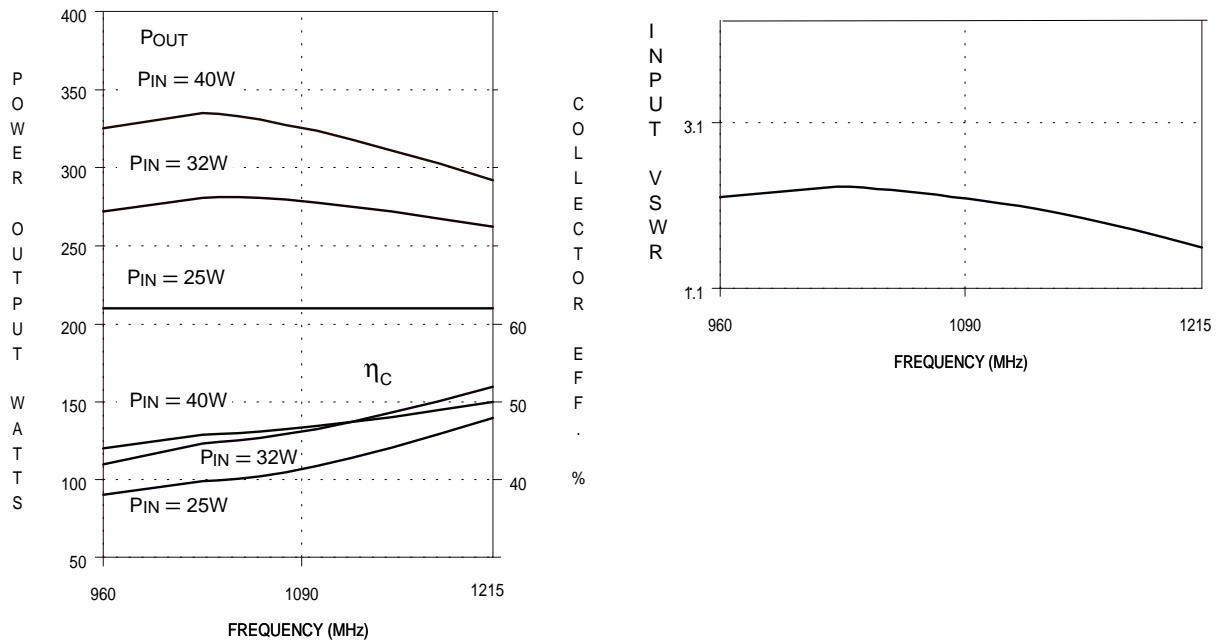
Note: Pulse Width = 20 μSec

Duty Cycle = 5%
 $T_C = 25^\circ C$

TYPICAL PERFORMANCE

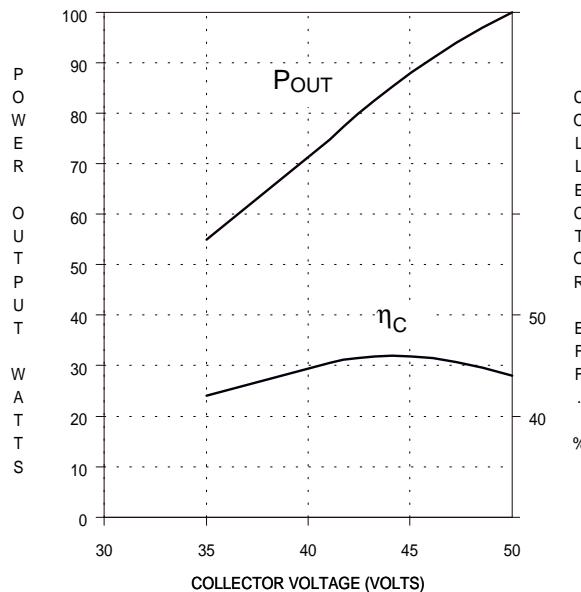
TYPICAL BROADBAND POWER AMPLIFIER

INPUT VSWR vs FREQUENCY



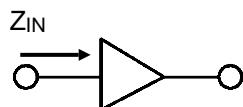
TYPICAL PERFORMANCE (cont'd)

TYPICAL POWER OUTPUT & COLLECTOR EFFICIENCY vs COLLECTOR VOLTAGE

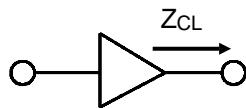


IMPEDANCE DATA

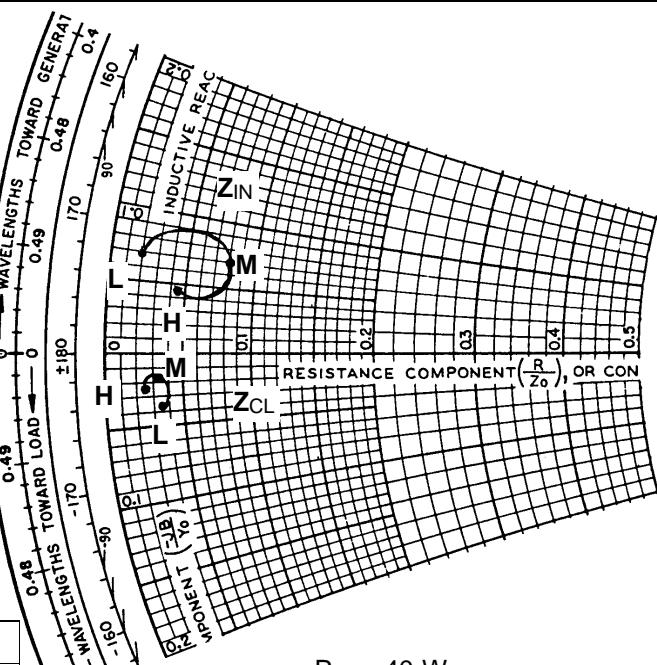
TYPICAL INPUT IMPEDANCE



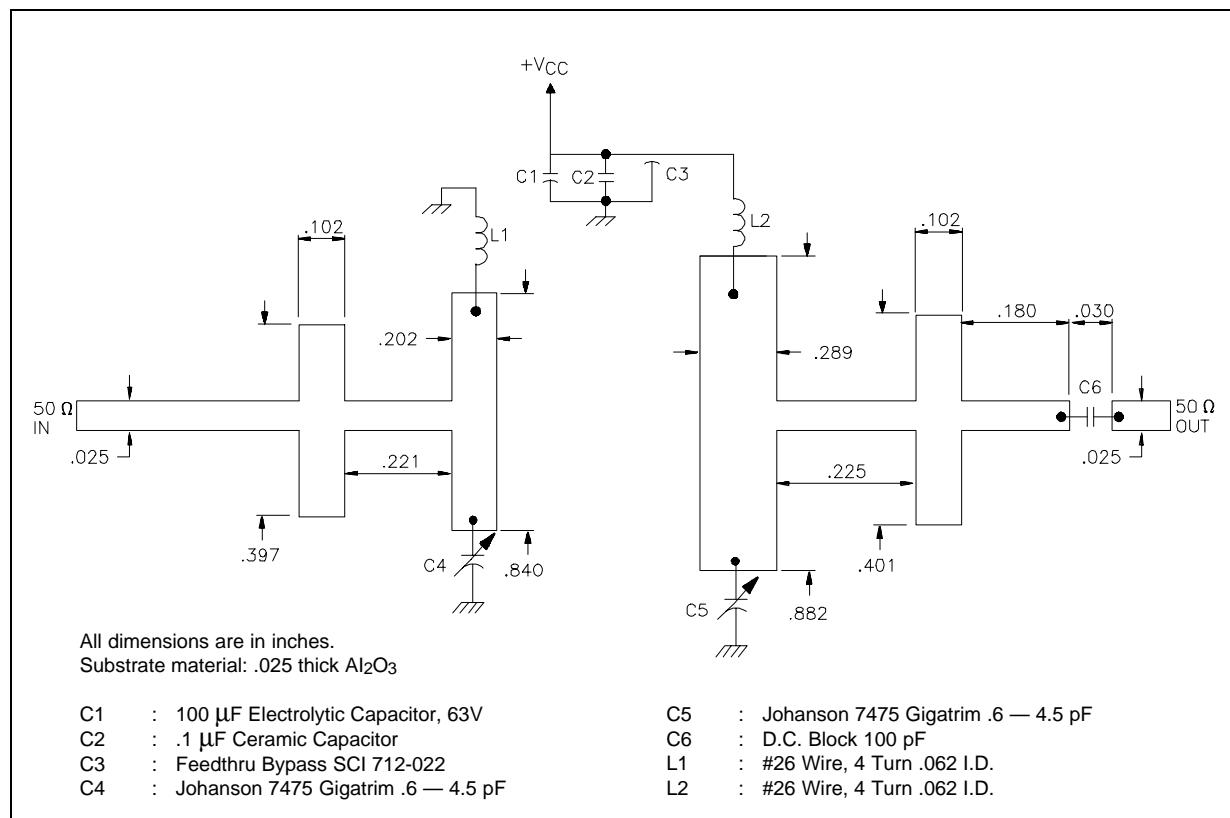
TYPICAL COLLECTOR LOAD IMPEDANCE



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



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

TEST CIRCUIT

All dimensions are in inches.

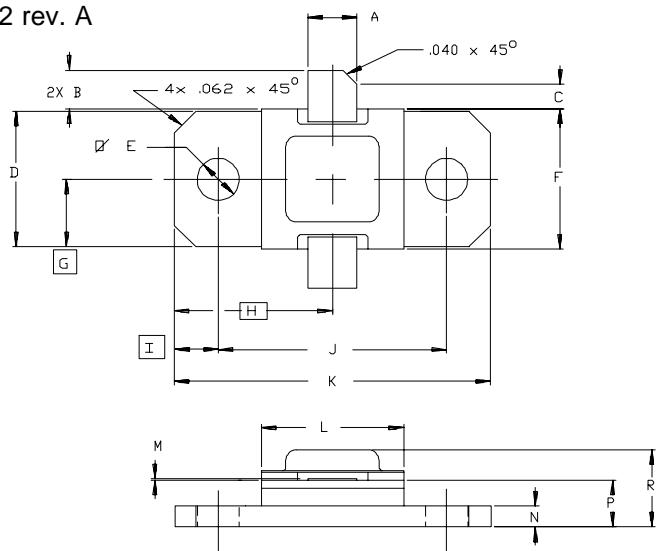
Substrate material: .025 thick Al₂O₃

C1 : 100 μ F Electrolytic Capacitor, 63V
C2 : .1 μ F Ceramic Capacitor
C3 : Feedthru Bypass SCI 712-022
C4 : Johanson 7475 Gigatrim .6 — 4.5 pF

C5 : Johanson 7475 Gigatrim .6 — 4.5 pF
C6 : D.C. Block 100 pF
L1 : #26 Wire, 4 Turn .062 I.D.
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

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