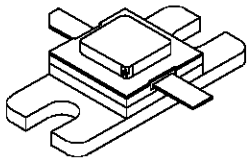
SGS-THOMSON MICROELECTRONICS

SD1540-08

RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

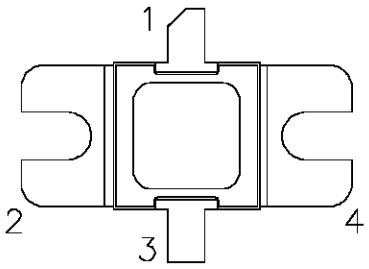
- DESIGNED FOR HIGH POWER PULSED IFF, DME, TACAN APPLICATIONS
- 350 WATTS (typ.) IFF 1030 - 1090 MHz
- 300 WATTS (min.) DME 1025 - 1150 MHz
- 290 WATTS (typ.) TACAN 960 - 1215 MHz
- 6.3 dB MIN. GAIN
- REFRACTORY GOLD METALLIZATION
- EMITTER BALLASTING AND LOW THERMAL RESISTANCE FOR RELIABILITY AND RUGGEDNESS
- 20:1 LOAD VSWR CAPABILITY AT SPECIFIED OPERATING CONDITIONS
- INPUT/OUTPUT MATCHED, COMMON BASE CONFIGURATION



.400 x .400. 2LFL (M138)
hermetically sealed

ORDER CODE	BRANDING
SD1540-08	SD1540-8

PIN CONNECTION



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

DESCRIPTION

The SD1540-08 is a gold metallized silicon, NPN power transistor designed for applications requiring high peak power and low duty cycles such as IFF, DME and TACAN. The SD1540 is packaged in a metal/ceramic package with internal input/output matching resulting in improved broadband performance and a low thermal resistance.

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

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	65	V
V_{CES}	Collector-Emitter Voltage	65	V
V_{EBO}	Emitter-Base Voltage	3.5	V
I_C	Device Current	22	A
P_{DISS}	Power Dissipation	875	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	0.20	°C/W

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

STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 10mA	I_E = 0mA	65	—	—	V
BV_{CES}	I_C = 25mA	V_{BE} = 0V	65	—	—	V
BV_{EBO}	I_E = 5mA	I_C = 0mA	3.5	—	—	V
I_{CES}	V_{CE} = 50V	I_E = 0mA	—	—	25	mA
h_{FE}	V_{CE} = 5V	I_C = 1A	10	—	—	—

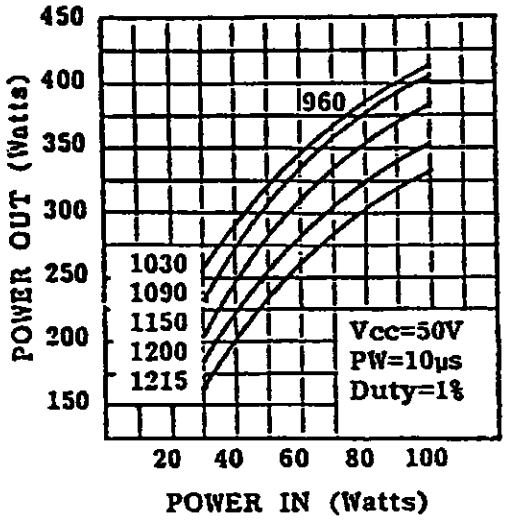
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 1025 — 1150MHz	P_{IN} = 70 W	V_{CE} = 50 V	300	—	—	W
G_P	f = 1025 — 1150MHz	P_{IN} = 70 W	V_{CE} = 50 V	6.3	—	—	dB
η_C	f = 1025 — 1150MHz	P_{IN} = 70 W	V_{CE} = 50 V	35	—	—	%

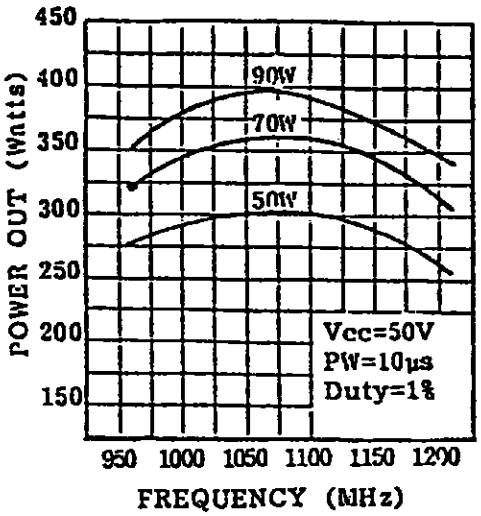
Note: Pulse Width = 10µSec, Duty Cycle = 1%
This device is suitable for use under other pulse width/duty cycle conditions.
Please contact the factory for specific applications assistance.

TYPICAL PERFORMANCE

POWER OUTPUT vs POWER INPUT

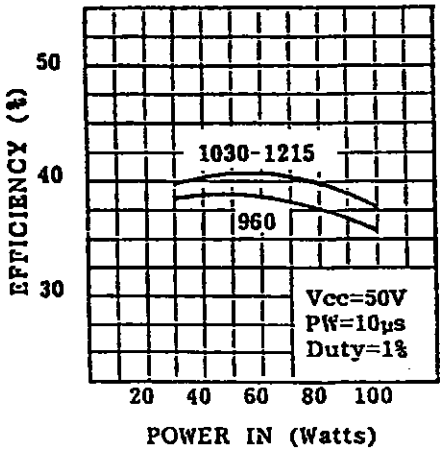


POWER OUTPUT vs FREQUENCY

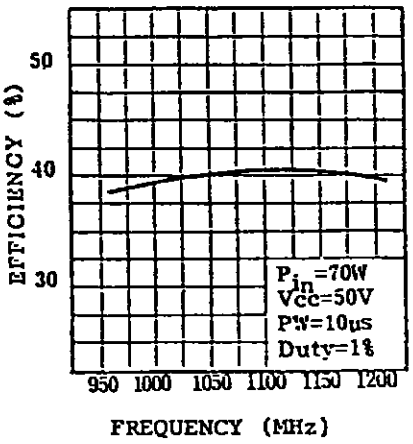


TYPICAL PERFORMANCE (cont'd)

EFFICIENCY vs POWER INPUT

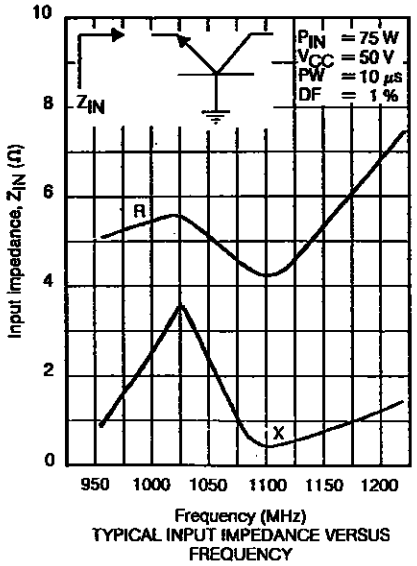


EFFICIENCY vs FREQUENCY



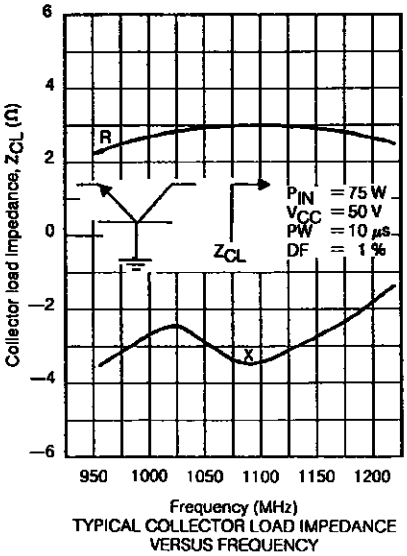
IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE



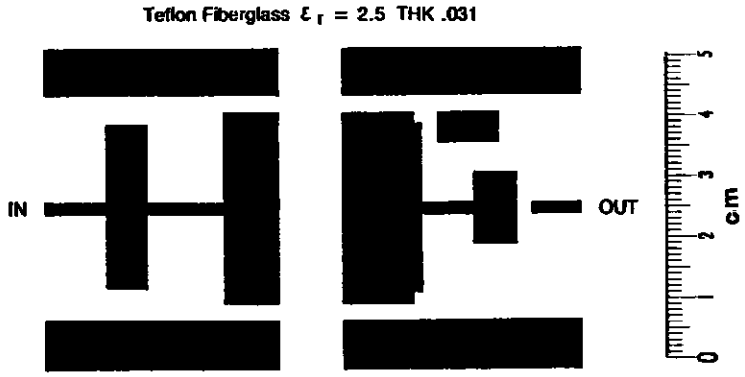
TYPICAL INPUT IMPEDANCE VERSUS FREQUENCY

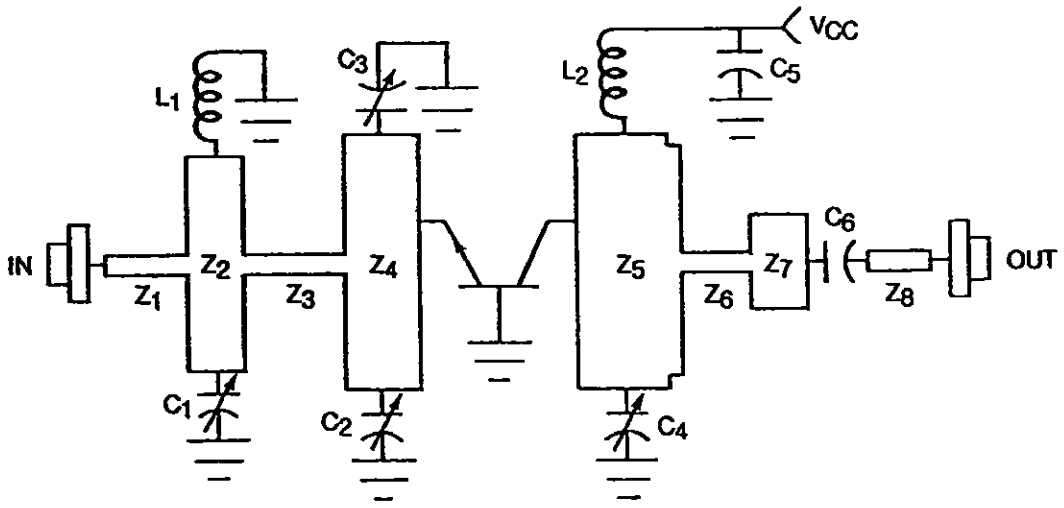
TYPICAL COLLECTOR LOAD IMPEDANCE



TYPICAL COLLECTOR LOAD IMPEDANCE VERSUS FREQUENCY

TEST CIRCUIT





All Dimension are in Inches

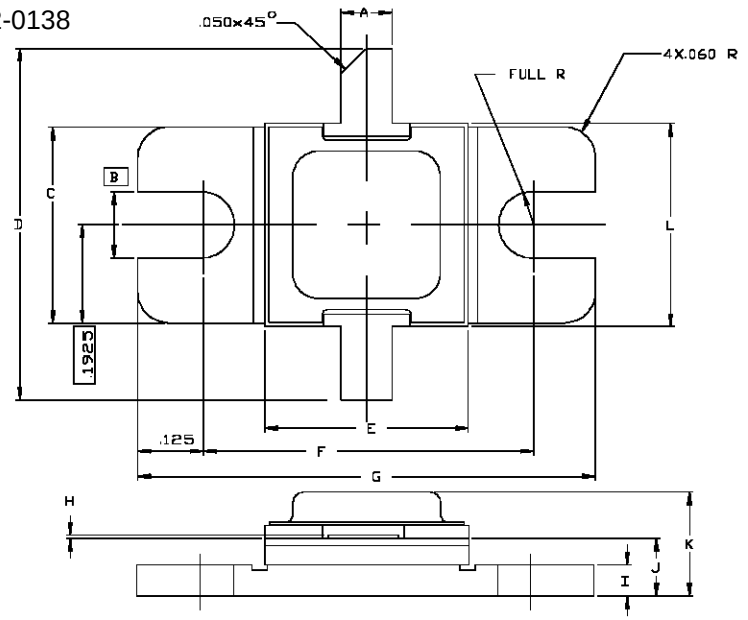
C1,C2.
C3, C4 : .6 - 4.5pF JOHANSON Gigatrim
C5 : 1000µF, 63V, Electrolytic
C6 : 100pF Chip Capacitor Across .090 Gap

L1 : 2 Turns #24 .12 I.D., Spaced Wire Diameter
L2 : 4 Turns #24, .07 I.D., Spaced Wire Diameter

Z1 : .404 x .075
Z2 : .263 x .995
Z3 : .483 x .077
Z4 : .350 x 1.203
Z5 : .505 x 1.200 with Two Notches .05 Long By .068 Wide
Z6 : .335 x .076
Z7 : .260 x .442
Z8 : .310 x .082

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0138



SGS-THOMSON MICROELECTRONICS		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.095/2,41	.105/2,67
B	.125/3,18	
C	.380/9,65	.390/9,91
D	.780/19,81	
E	.392/9,96	.408/10,36
F	.645/16,38	.655/16,64
G	.895/22,73	.905/22,99
H	.002/0,05	.006/0,15
I	.055/1,40	.065/1,65
J	.105/2,67	.130/3,30

CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
K		.230/5,84
L	.392/9,96	.408/10,36