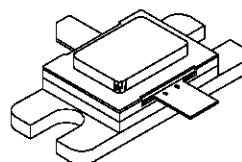


RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

- DESIGNED FOR HIGH POWER PULSED IFF
- 600 WATTS (min.) IFF 1030 or 1090 MHz
- REFRACTORY GOLD METALLIZATION
- 6.0 dB MIN. GAIN
- LOW THERMAL RESISTANCE FOR RELIABILITY AND RUGGEDNESS
- 30:1 LOAD VSWR CAPABILITY AT SPECIFIED OPERATING CONDITIONS
- INPUT MATCHED, COMMON BASE CONFIGURATION



.400 x .500 2LFL (M112)
hermetically sealed

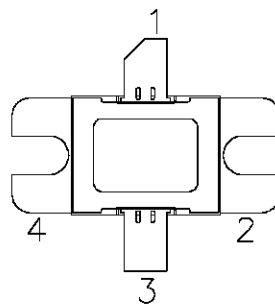
ORDER CODE
SD1542-42

BRANDING
SD1542-42

DESCRIPTION

The SD1542-42 is a hermetically sealed, gold metallized, silicon NPN power transistor. The SD1542-42 is designed for applications requiring high peak power and low duty cycles such as IFF. The SD1542-42 is packaged in a hermetic metal/ceramic package with internal input matching, resulting in improved broadband performance and low thermal resistance.

PIN CONNECTION



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

ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}C$)

Symbol	Parameter	Value	Unit
V_{CC}	Collector-Supply Voltage*	55	V
I_C	Device Current* ($T_C \leq 100^{\circ}C$)	45	A
P_{DISS}	Power Dissipation*	1670	W
T_J	Junction Temperature	+200	$^{\circ}C$
T_{STG}	Storage Temperature	- 65 to +200	$^{\circ}C$

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance*	0.06	$^{\circ}C/W$
---------------	-----------------------------------	------	---------------

* Applies only to rated RF operation.

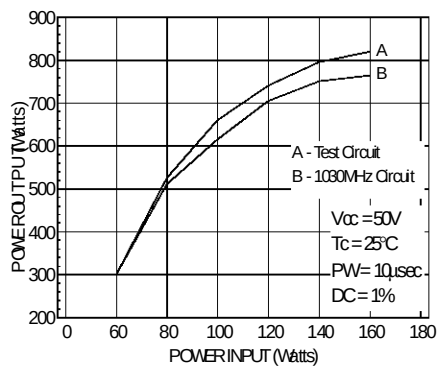
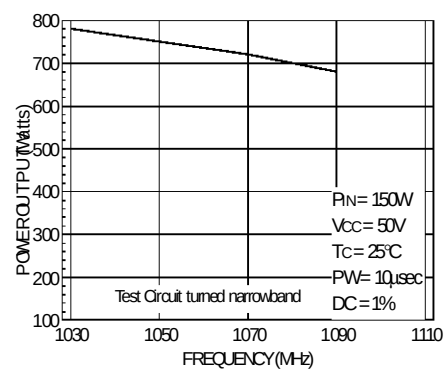
ELECTRICAL SPECIFICATIONS ($T_{\text{case}} = 25^{\circ}\text{C}$)**STATIC**

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BV_{CBO}	$I_C = 25 \text{ mA}$ $I_E = 0 \text{ mA}$	65	—	—	V
BV_{CER}	$I_C = 25 \text{ mA}$ $R_{BE} = 10 \Omega$	65	—	—	V
BV_{EBO}	$I_E = 10 \text{ mA}$ $I_C = 0 \text{ mA}$	3.5	—	—	V
I_{CES}	$V_{CE} = 50 \text{ V}$ $V_{BE} = 0 \text{ V}$	—	—	60	mA
h_{FE}	$V_{CE} = 5 \text{ V}$ $I_C = 2 \text{ A}$	10	—	250	—

DYNAMIC

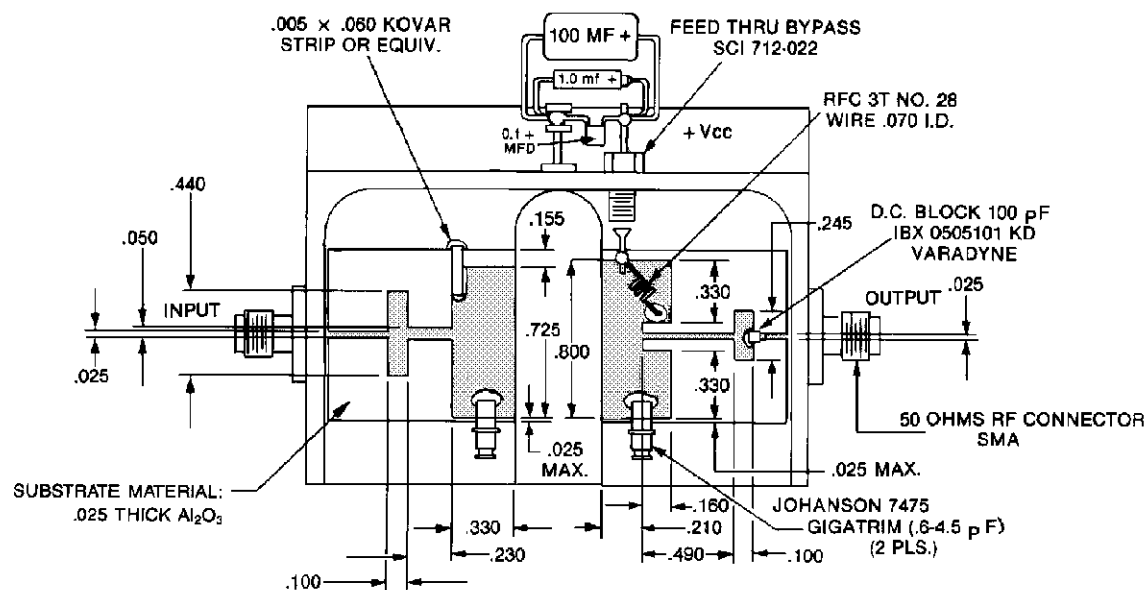
Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
P_{OUT}	$f = 1090 \text{ MHz}$ $P_{IN} = 150 \text{ W}$ $V_{CC} = 50 \text{ V}$	600	680	—	W
η_C	$f = 1090 \text{ MHz}$ $P_{IN} = 150 \text{ W}$ $V_{CC} = 50 \text{ V}$	35	40	—	%
G_P	$f = 1090 \text{ MHz}$ $P_{IN} = 150 \text{ W}$ $V_{CC} = 50 \text{ V}$	6.0	6.6	—	dB

Note: Pulse Width = 10 μSec , Duty Cycle = 1%

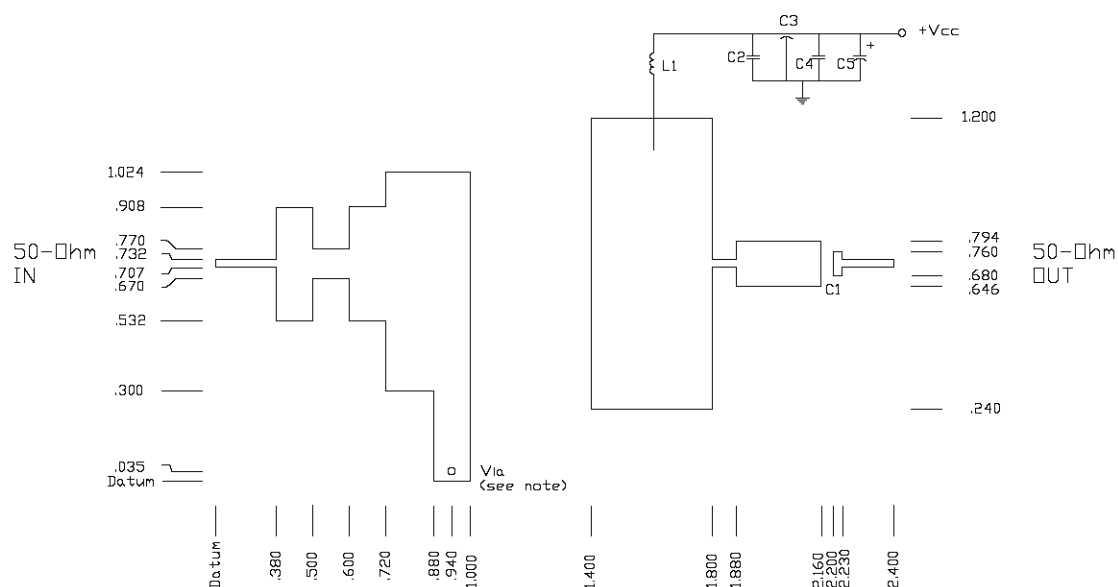
TYPICAL PERFORMANCE**POWER OUTPUT vs POWER INPUT****POWER OUTPUT vs FREQUENCY**

TEST CIRCUIT (1090 MHz)

Ref.: Dwg. No. C125410



1030 MHz TYPICAL CIRCUIT

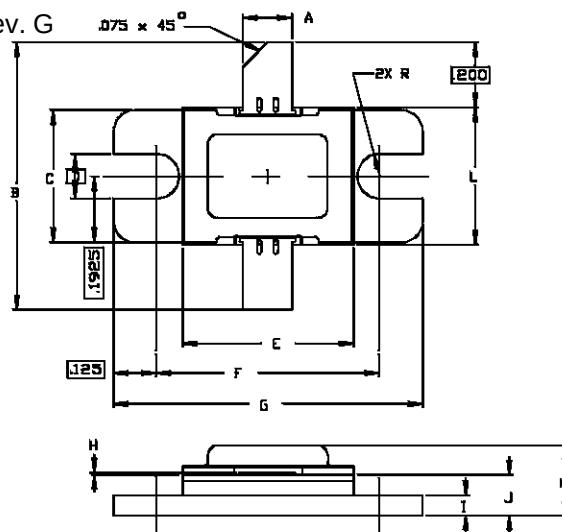


C1 DC block 100 pF chip
 C2 0.1 uF Monolithic
 C3 Feedthrough 1500 pF
 C4 1.0 uF Film 63 V
 C5 100 uF Electrolytic 63 V
 L1 1/2 turn #18 wire .620 ID
 Substrate:
 RT Duroid 6010-2
 $\epsilon_r=10.2$ $h=0.025"$

Notes:
 1. Insert pin in via hole for emitter ground return.
 2. All dimensions are in inches.

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0112 rev. G



SGS-THOMSON MICROELECTRONICS		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.145/3,68	.155/3,93
B	.750/19,05	
C	.380/9,65	.390/9,91
D	.130/3,30	
E	.495/12,57	.507/12,88
F	.640/16,26	.655/16,64
G	.890/22,61	.910/23,11
H	.002/0,05	.006/0,15
I	.055/1,40	.065/1,65
J	.115/2,92	.135/3,43
K		.230/5,84
L	.395/10,03	.407/10,34

Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

©1995 SGS-THOMSON Microelectronics - All Rights Reserved

SGS-THOMSON Microelectronics GROUP OF COMPANIES

Australia - Brazil - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.