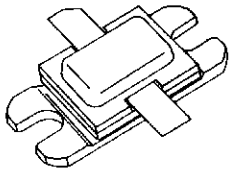
SGS-THOMSON MICROELECTRONICS

AM2729-125

RF & MICROWAVE TRANSISTORS S-BAND RADAR APPLICATIONS

- REFRACTORY/GOLD METALLIZATION
- EMITTER SITE BALLASTED
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT MATCHING
- OVERLAY GEOMETRY
- METAL/CERAMIC HERMETIC PACKAGE
- P_{OUT} = 125 W MIN. WITH 7.0 dB GAIN



.400 x .500 2LFL (S038)
hermetically sealed

ORDER CODE	BRANDING
AM2729-125	2729-125

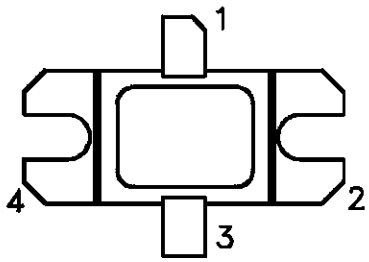
DESCRIPTION

The AM2729-125 device is a high power silicon bipolar NPN transistor specifically designed for medium pulse S-Band radar output and driver applications.

This device is characterized at 50 µsec pulse width and 10% duty cycle, but is capable of operation over a range of pulse widths, duty cycles and temperatures. Low RF thermal resistance, refractory/gold metallization and computerized automatic wire bonding techniques ensure high reliability and product consistency (including phase characteristics).

The AM2729-125 is supplied in the BIGPAC™ Hermetic Metal/Ceramic package with internal Input/Output impedance matching circuitry, and is intended for military and other high reliability applications.

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* ($T_C \leq 75°C$)	500	W
I_C	Device Current*	16	A
V_{CC}	Collector-Supply Voltage*	45	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*	0.35	°C/W

*Applies only to rated RF amplifier operation

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

STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 50 mA	I_E = 0 mA	55	65	—	V
BV_{EBO}	I_E = 10 mA	I_C = 0 mA	3.5	4.5	—	V
BV_{CES}	I_C = 50 mA	V_{BE} = 0 V	55	65	—	V
I_{CES}	V_{BE} = 0 V	V_{CE} = 40 V	—	—	40	mA
h_{FE}	V_{CE} = 5 V	I_C = 5 A	30	80	300	—

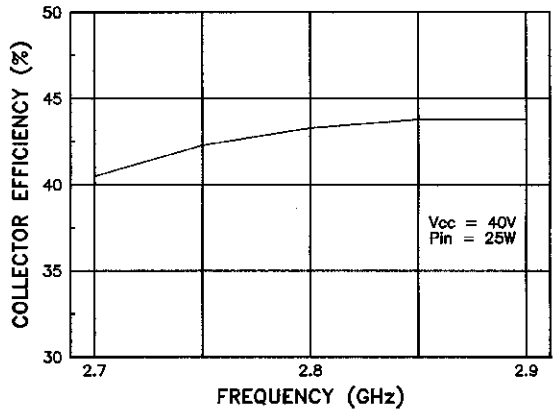
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 2700 – 2900 MHz	P_{IN} = 25 W	V_{CC} = 40 V	125	—	—	W
η_C	f = 2700 – 2900 MHz	P_{IN} = 25 W	V_{CC} = 40 V	35	—	—	%
G_P	f = 2700 – 2900 MHz	P_{IN} = 25 W	V_{CC} = 40 V	7.0	—	—	dB

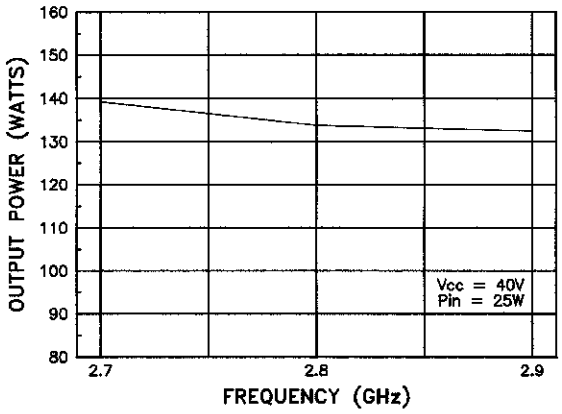
Note: Pulse Width = 50µSec
Duty Cycle = 10%

TYPICAL PERFORMANCE

TYPICAL BROADBAND EFFICIENCY

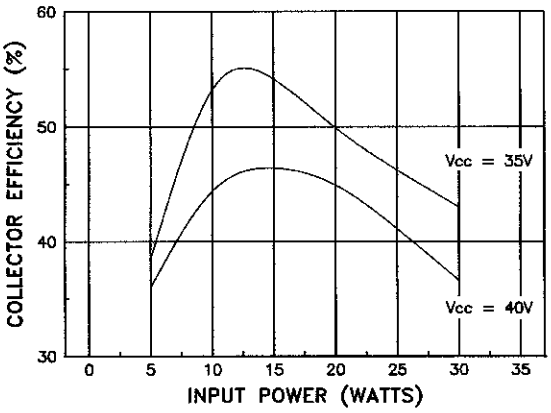


TYPICAL BROADBAND PERFORMANCE

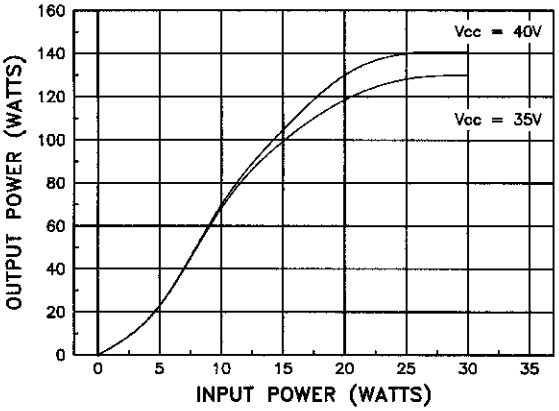


TYPICAL PERFORMANCE (cont'd)

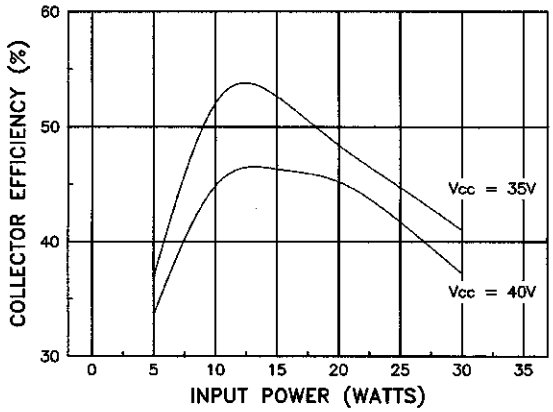
TYPICAL EFFICIENCY @ 2.7 GHz



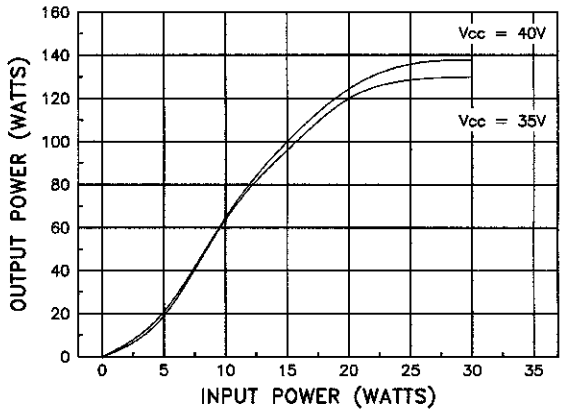
TYPICAL PERFORMANCE @ 2.7 GHz



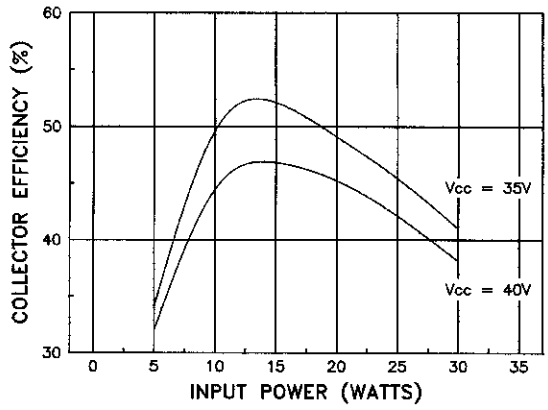
TYPICAL EFFICIENCY @ 2.8 GHz



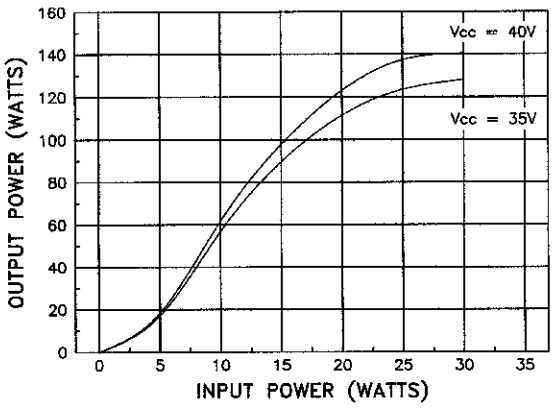
TYPICAL PERFORMANCE @ 2.8 GHz



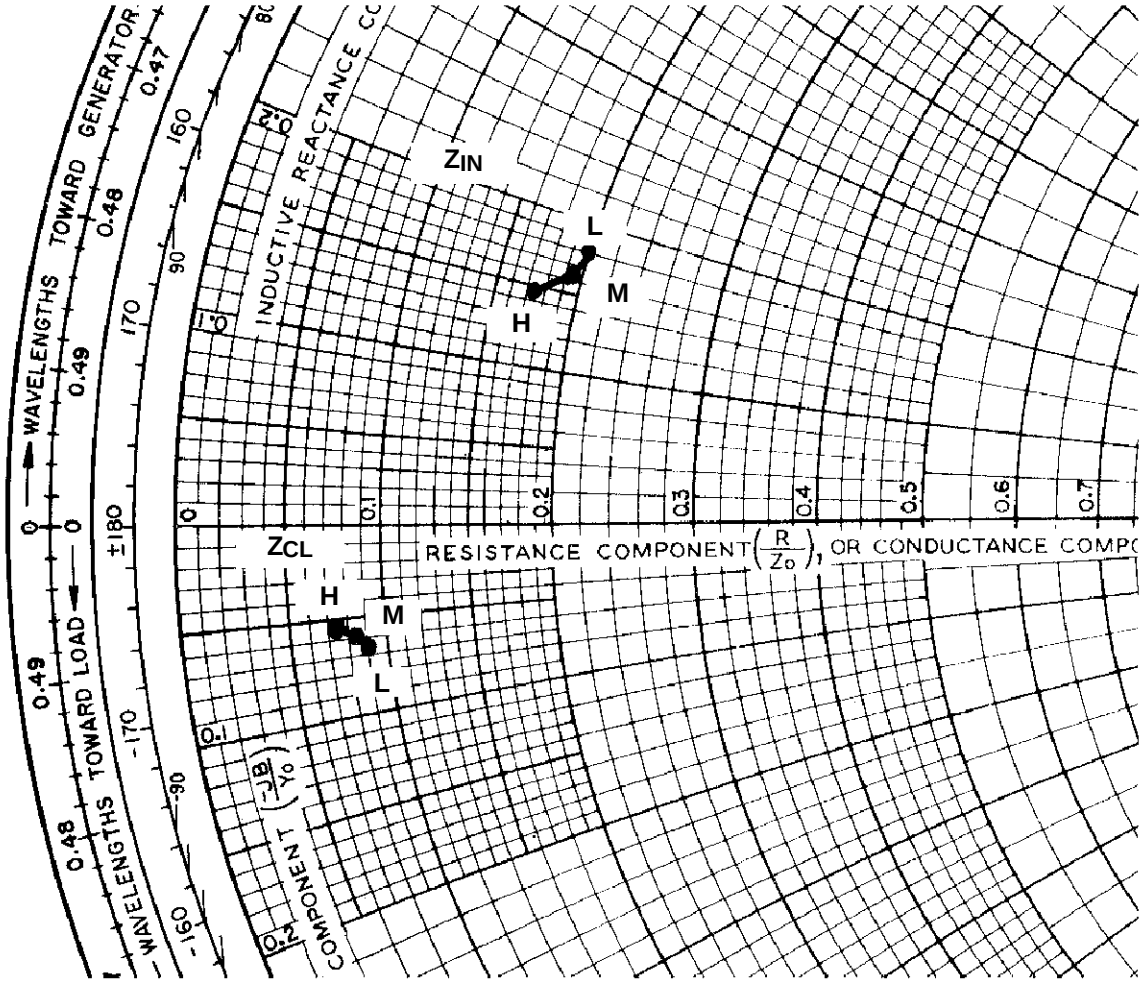
TYPICAL EFFICIENCY @ 2.9 GHz



TYPICAL PERFORMANCE @ 2.9 GHz



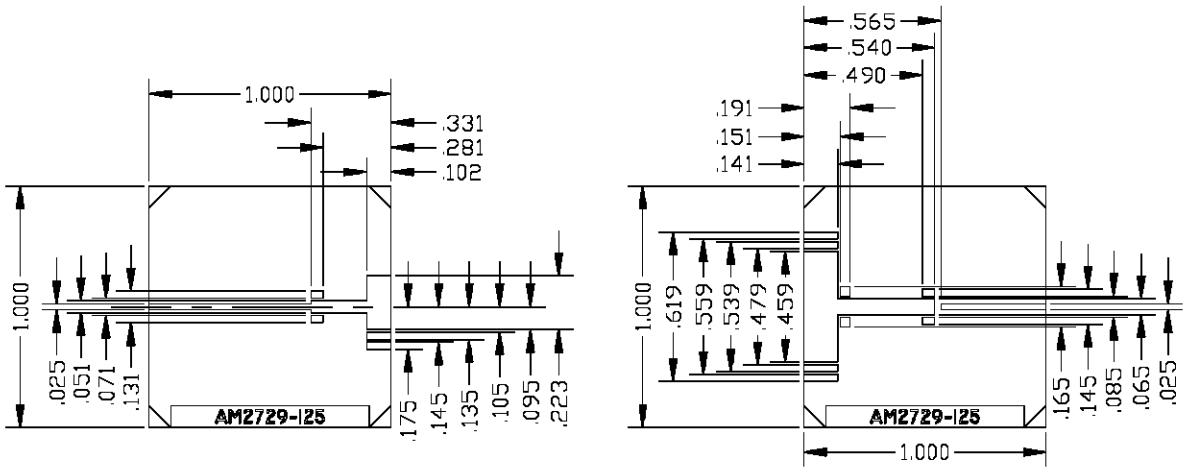
IMPEDANCE DATA



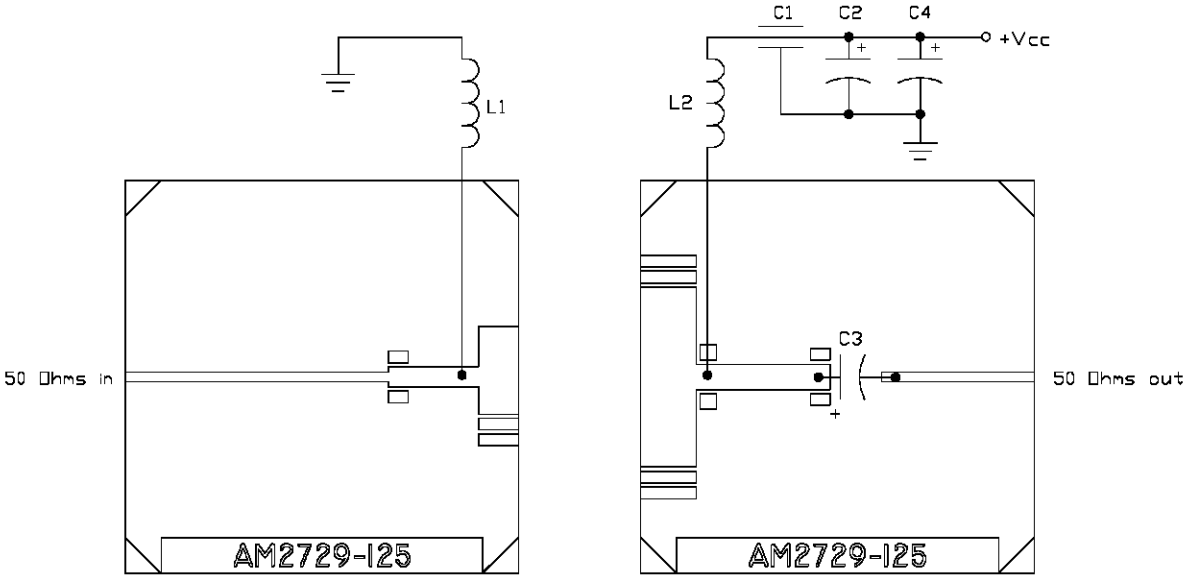
FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
H = 2.9 GHz	8.8 + j 7.3	3.7 – j 2.7
M = 2.8 GHz	9.4 + j 8.2	4.1 – j 2.9
L = 2.7 GHz	9.9 + j 9.1	4.4 – j 3.2

P_{IN} = 25 W
V_{CC} = 40 V
Normalized to 50 ohms

TEST CIRCUIT



All dimensions are in inches



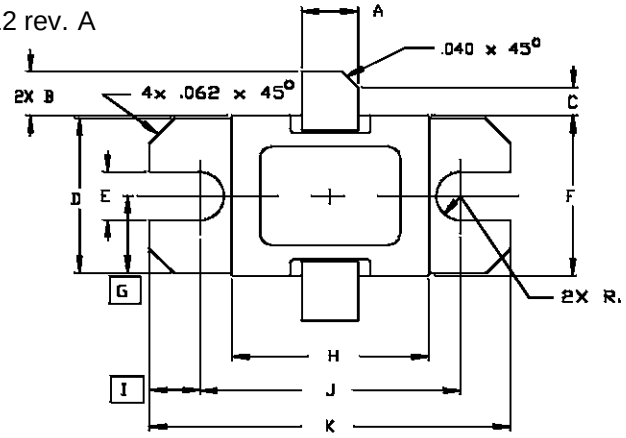
C1 : 1000pf RF Feedthrough
C2 : 0.1µF, 100V Ceramic Capacitor
C3 : 33pf Microwave Chip Capacitor
C4 : 100µF, 63V Electrolytic Capacitor

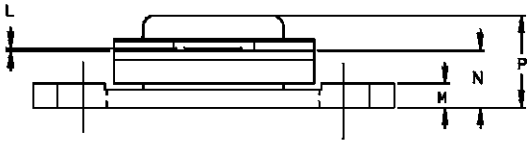
L1, L2 : #26 Wire, 2 Turns, 0.08" I.D.

Board Material: Alumina, Er = 9.6, H = 25mil

PACKAGE MECHANICAL DATA

Ref.: Dwg. No. 12-0212 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	.490/12,45	.510/12,95
I	.100/2,54	
J	.690/17,53	.710/18,03

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

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