Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

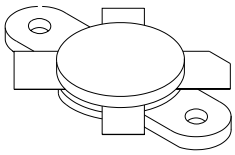
SD2904

RF POWER TRANSISTORS HF/VHF/UHF N-CHANNEL MOSFETs

- GOLD METALLIZATION
- COMMON SOURCE CONFIGURATION
- 2 - 500 MHz
- 30 WATTS
- 28 VOLTS
- 9.5 dB MIN. AT 400 MHz
- CLASS A OR AB OPERATION
- EXCELLENT THERMAL STABILITY

DESCRIPTION

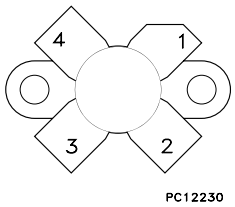
The SD2904 is a gold metallized N-Channel MOS field-effect RF power transistor. It is intended for use in 28 V DC large signal applications up to 500 MHz



M113
epoxy sealed

ORDER CODE	BRANDING
SD2904	SD2904

PIN CONNECTION



1. Drain 3.Gate
2. Source 4. Source

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

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$	Drain Source Voltage	65	V
V_{DGR}	Drain-Gate Voltage (R_{GS}=1MΩ)	65	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current	5	A
P_{DISS}	Power Dissipation	100	W
T_j	Max. Operating Junction Temperature	200	°C
T_{STG}	Storage Temperature	-65 to 150	°C

THERMAL DATA

$R_{th(j-c)}$	Junction-Case Thermal Resistance	1.75	°C/W
$R_{th(c-s)}$	Case-Heatsink Thermal Resistance *	0.30	°C/W

* Determined using a flat aluminum or copper heatsink with thermal compound applied (Dow Corning 340 or equivalent).

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

STATIC

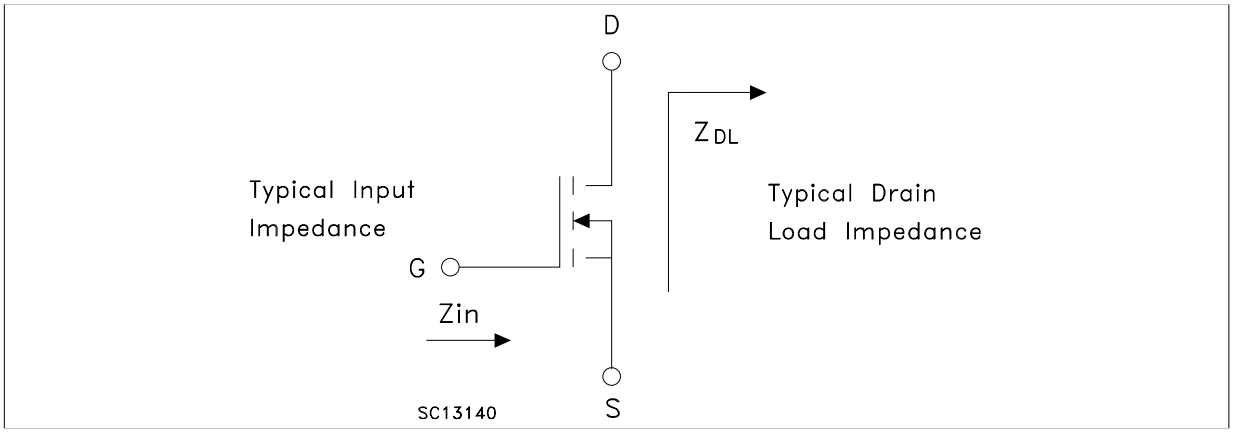
Symbol	Parameter			Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	V_{GS} = 0V	I_{DS} = 30 mA		65			V
I_{DSS}	V_{GS} = 0V	V_{DS} = 28 V				3	mA
I_{GSS}	V_{GS} = 20V	V_{DS} = 0 V				2	µA
$V_{GS(Q)}$	V_{DS} = 10V	I_D = 60 mA		1.0		6.0	V
$V_{DS(ON)}$	V_{GS} = 10V	I_D = 3 A				1.6	V
g_{FS}	V_{DS} = 10V	I_D = 3 A		1.2			mho
C_{ISS}	V_{GS} = 0V	V_{DS} = 28 V	f = 1 MHz		47		pF
C_{OSS}	V_{GS} = 0V	V_{DS} = 28 V	f = 1 MHz		35		pF
C_{RSS}	V_{GS} = 0V	V_{DS} = 28 V	f = 1 MHz		7		pF

REF. 1021310H

DYNAMIC

Symbol	Parameter				Min.	Typ.	Max.	Unit
P_{OUT}	f = 400 MHz	V_{DD} = 28 V		I_{DQ} = 50 mA	30			W
G_{PS}	f = 400 MHz	V_{DD} = 28 V	P_{out} = 30 W	I_{DQ} = 50 mA	9.5	11.5		dB
η_D	f = 400 MHz	V_{DD} = 28 V	P_{out} = 30 W	I_{DQ} = 50 mA	45	55		%
Load Mismatch	f = 400 MHz All Angles	V_{DD} = 28 V	P_{out} = 30 W	I_{DQ} = 50 mA	10:1			VSWR

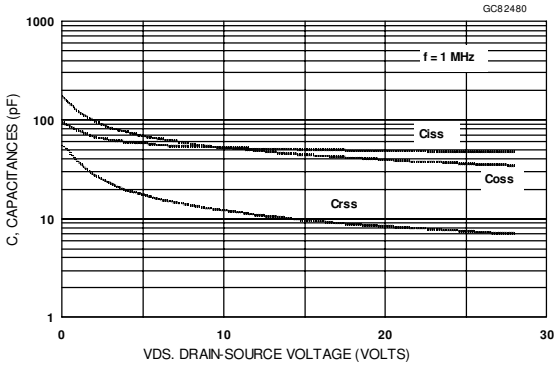
IMPEDANCE DATA



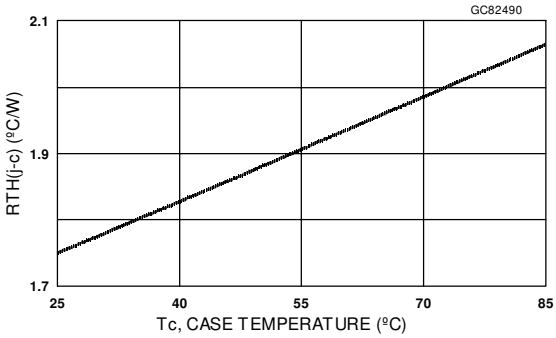
FREQ.	Z_{IN} (Ω)	Z_{DL} (Ω)
400 MHz	2.0 - j 2.4	5.6 + j 0.4

TYPICAL PERFORMANCE

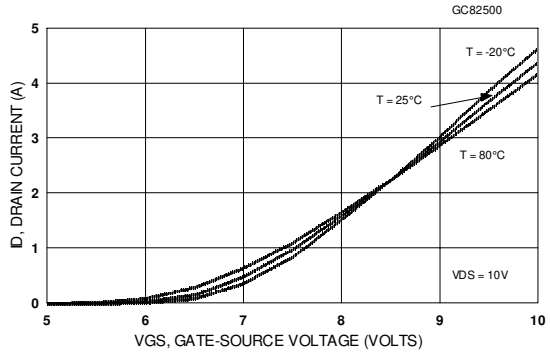
Capacitance vs Drain-Source Voltage



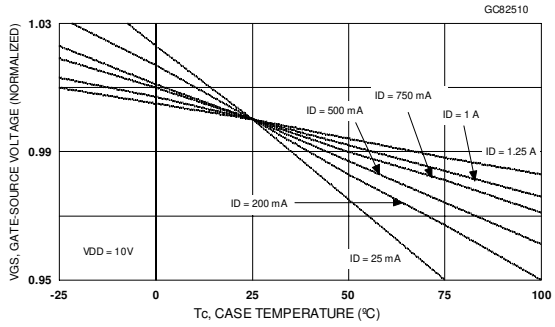
Maximum Thermal Resistance vs Case Temperature



Drain Current vs Gate Voltage

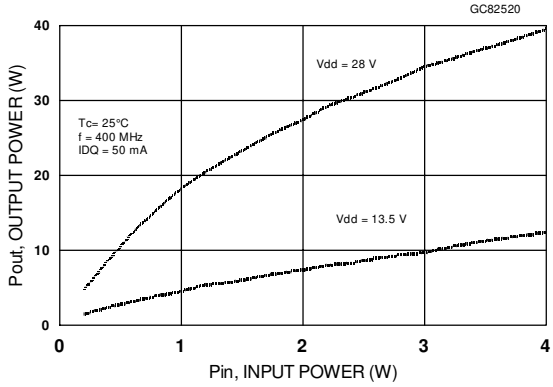


Gate-Source Voltages vs Case Temperature

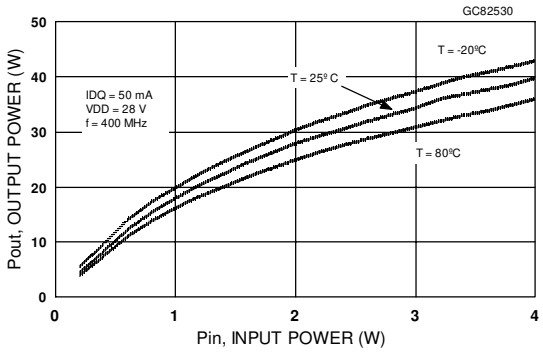


TYPICAL PERFORMANCE

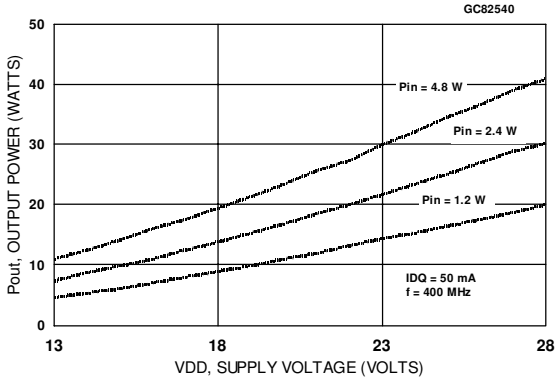
Output Power vs Input Power



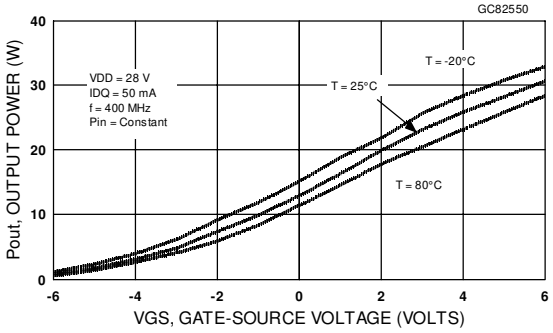
Output Power vs Input Power



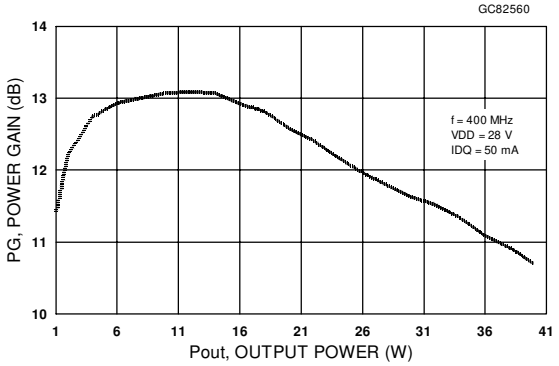
Output Power vs Voltage Supply



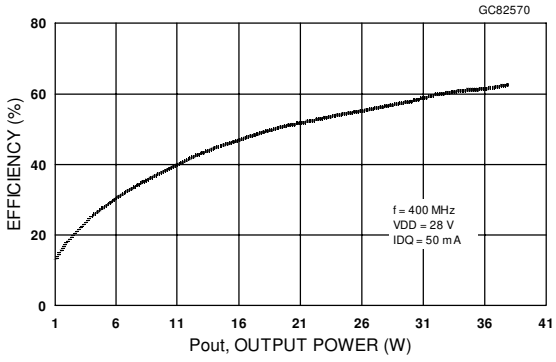
Output Power vs Gate Voltage



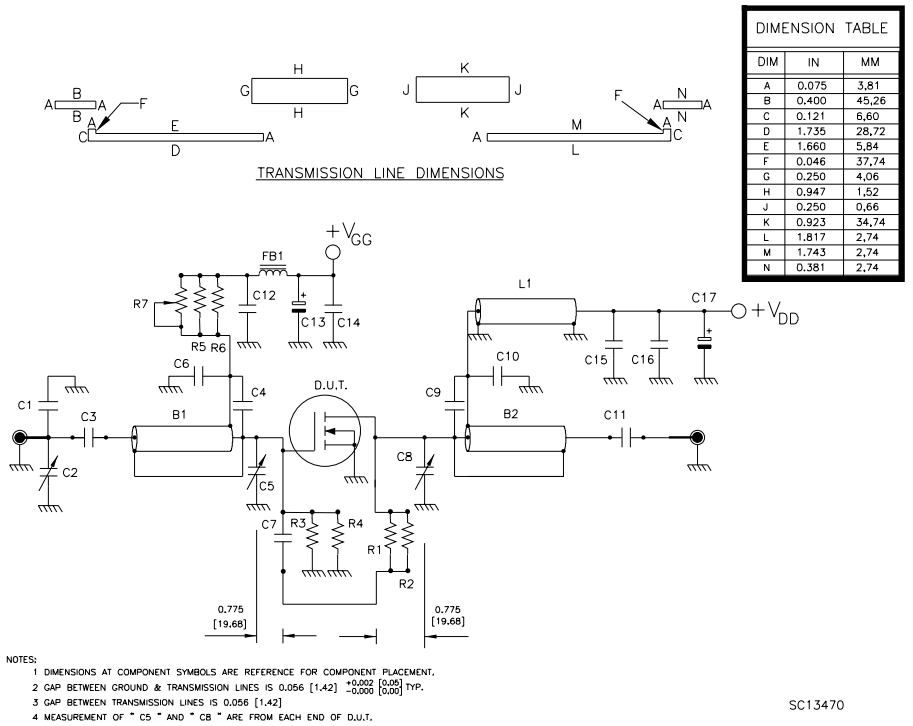
Power Gain vs Output Power



Efficiency vs Output Power



400 MHz Test Circuit Schematic

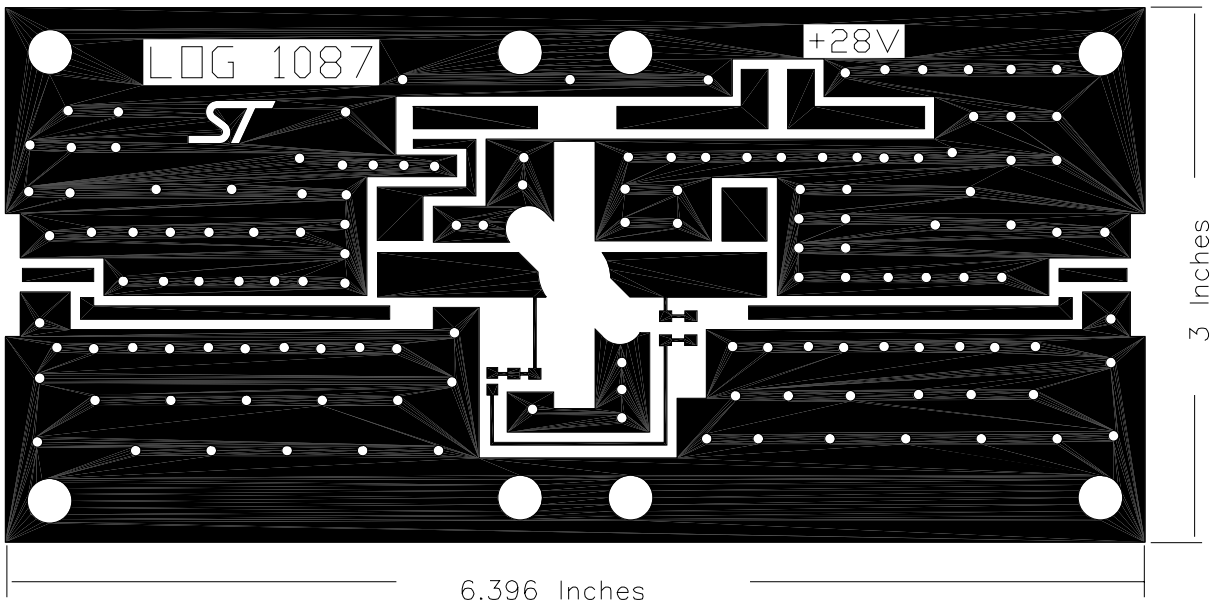


400 MHz Test Circuit Component Part List

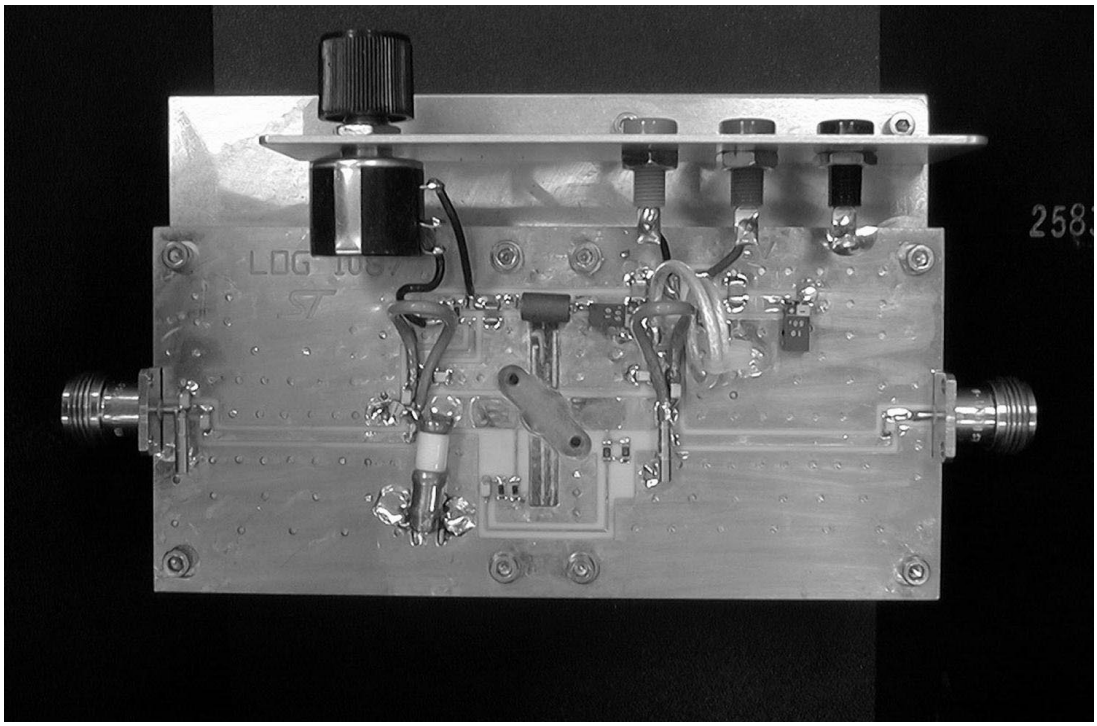
R7	534-1-1-203	SPECTROL	534 SERIES 3.09W, 10 TURN WIREWOUND PRECISION POTENTIOMETER
R6	CR1206-4W-471JT	VENKEL	470K OHM 1/4 W SURFACE MOUNT CHIP RESISTOR
R5	CR1206-4W-471JT	VENKEL	470K OHM 1/4 W SURFACE MOUNT CHIP RESISTOR
R4	CR1206-4W-471JT	VENKEL	470K OHM 1/4 W SURFACE MOUNT CHIP RESISTOR
R3	CR1206-4W-471JT	VENKEL	470K OHM 1/4 W SURFACE MOUNT CHIP RESISTOR
R2	CR1206-4W-821JT	VENKEL	820K OHM 1/4 W SURFACE MOUNT CHIP RESISTOR
R1	CR1206-4W-821JT	VENKEL	820K OHM 1/4 W SURFACE MOUNT CHIP RESISTOR
FB1	2943666671	FAIR-RITE CORP.	EMI SHIELD BEAD, 2 1/2 WOUND WITH TINNED COPPER WIRE #24 AWG
L1	RG316		INDUCTOR, RG316, 50 OHMS, NOM. O.D. 0.090[2.29] 5.5[139.70] LG. FLEXIBLE COAXIAL CABLE OR EQUIVALENT
B2	RG316-25		BALUN, RG316-25, 25 OHM, NOM. O.D. 0.090[2.29], L=3.00[76.20] FLEXIBLE COAXIAL CABLE OR EQUIVALENT
B1	RG316-25		BALUN, RG316-25, 25 OHM, NOM. O.D. 0.090[2.29], L=3.00[76.20] FLEXIBLE COAXIAL CABLE OR EQUIVALENT
C17	SKR100M1HD11	MALLORY	10μF/50V ALUMINUM ELECTROLYTIC RADIAL LEAD CAPACITOR
C16	C1812X7R501-104KNE	VENKEL	0.1μ/500V SURFACE MOUNT CERAMIC CHIP CAPACITOR
C15	ATC200B103MW50X	ATC	10000pF ATC 200B SURFACE MOUNT CERAMIC CHIP CAPACITOR
C14	C1812X7R501-104KNE	VENKEL	0.1μ/500V SURFACE MOUNT CERAMIC CHIP CAPACITOR
C13	SKR100M1HD11	MALLORY	10μF/50V ALUMINUM ELECTROLYTIC RADIAL LEAD CAPACITOR
C12	ATC200B103MW50X	ATC	10000pF ATC 200B SURFACE MOUNT CERAMIC CHIP CAPACITOR
C11	ATC100B121KP300X	ATC	120pF ATC 100B SURFACE MOUNT CERAMIC CHIP CAPACITOR
C10	ATC100B121KP300X	ATC	120pF ATC 100B SURFACE MOUNT CERAMIC CHIP CAPACITOR
C9	ATC100B300KW500X	ATC	30pF ATC 100B SURFACE MOUNT CERAMIC CHIP CAPACITOR
C8	27291PC	JOHANSON	0.8-8.0pF GIGA-TRIM VARIABLE CAPACITOR
C7	ATC100B121KP300X	ATC	120pF ATC 100B SURFACE MOUNT CERAMIC CHIP CAPACITOR
C6	ATC100B121KP300X	ATC	120pF ATC 100B SURFACE MOUNT CERAMIC CHIP CAPACITOR
C5	5601PC	JOHNANSON	1-30pF STANDARD AIR DIELECT. VARIABLE CAPACITOR
C4	ATC100B470KW500X	ATC	47pF ATC 100B SURFACE MOUNT CERAMIC CHIP CAPACITOR
C3	ATC100B121KP300X	ATC	120pF ATC 100B SURFACE MOUNT CERAMIC CHIP CAPACITOR
C2	27291PC	JOHANSON	0.8-8.0pF GIGA-TRIM VARIABLE CAPACITOR
C1	ATC100B4R3CP500X	ATC	4.3pF ATC 100B SURFACE MOUNT CERAMIC CHIP CAPACITOR
PCB	N0320X1011HE	ROGERS CORP.	WOVEN GLASS REINFORCED HYDROCARBON CERAMIC 0.032" THK, εr = 3.38, 1 Oz ED Cu BOTH SIDES
COMPONENT	PART NO	VENDOR	DESCRIPTION

SC13750

400MHz Test Circuit Photomaster

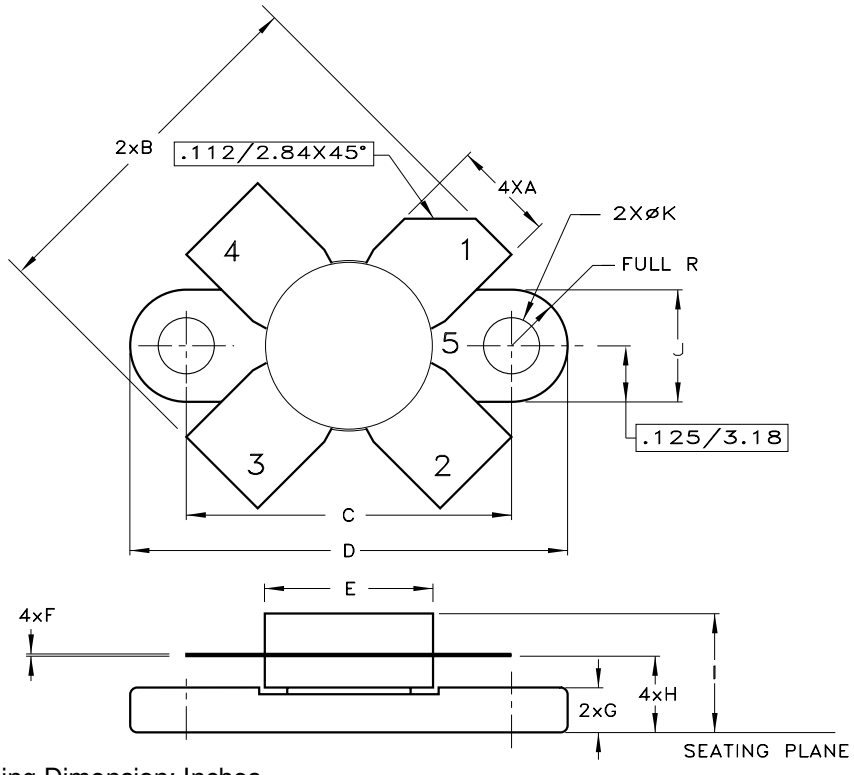


Production Test Fixture



M113 (.380 DIA 4/L N/HERM W/FLG) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	5.59		5.84	0.220		0.230
B	19.81		20.83	0.780		0.820
C	18.29		18.54	0.720		0.730
D	24.64		24.89	0.970		0.980
E	9.40		9.78	0.370		0.385
F	0.10		0.15	0.004		0.006
G	2.16		2.67	0.085		0.105
H	4.06		4.57	0.160		0.180
I			7.14			0.281
J	6.22		6.48	0.245		0.255
K	3.05		3.30	0.120		0.130



Controlling Dimension: Inches

1010936D