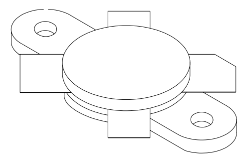
SD2918

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

ADVANCE DATA

- GOLD METALLIZATION
- EXCELLENT THERMAL STABILITY
- COMMON SOURCE CONFIGURATION
- P_{out} = 30 W MIN. WITH 18 dB GAIN @ 30 MHz



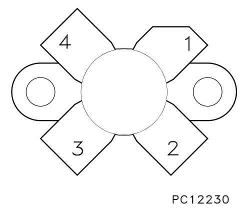
M113
epoxy sealed

ORDER CODE	BRANDING
SD2918	TSD2918

DESCRIPTION

The SD2918 is a gold metallized N-Channel MOS field-effect RF power transistor. It is intended for use in 50 V DC large signal applications up to 200 MHz

PIN CONNECTION



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

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

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$	Drain Source Voltage	125	V
V_{DGR}	Drain-Gate Voltage (R_{GS}= 1 MΩ)	125	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current	6	A
P_{DISS}	Power Dissipation	175	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	1.0	°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

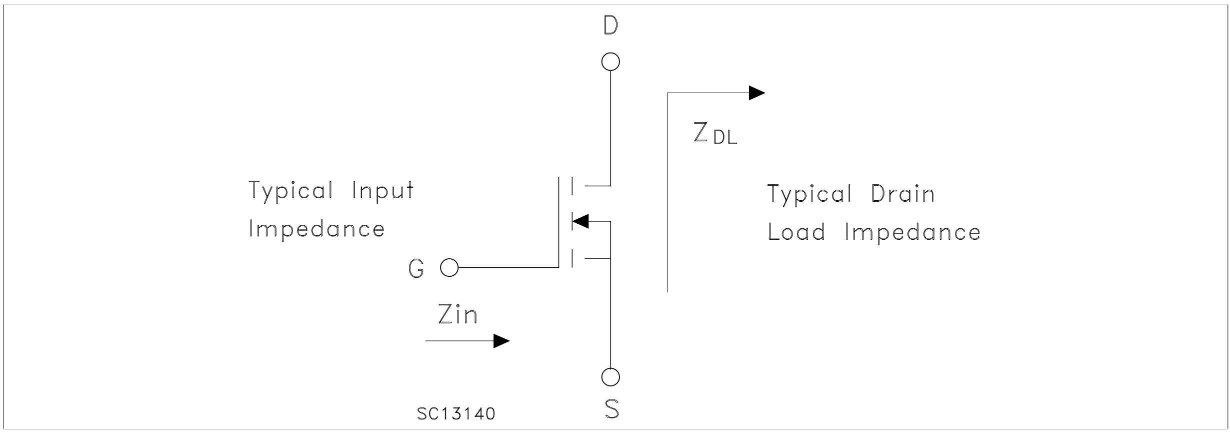
Symbol	Parameter			Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	V_{GS} = 0V	I_{DS} = 10 mA		125			V
I_{DSS}	V_{GS} = 0V	V_{DS} = 50 V				1.0	mA
I_{GSS}	V_{GS} = 20V	V_{DS} = 0 V				1	µA
$V_{GS(Q)}$	V_{DS} = 10V	I_D = 10 mA		1.0		5.0	V
$V_{DS(ON)}$	V_{GS} = 10V	I_D = 2.5 A				5.0	V
g_{FS}	V_{DS} = 10V	I_D = 2.5 A		0.8			mho
C_{ISS}	V_{GS} = 0V	V_{DS} = 50 V	f = 1 MHz		58		pF
C_{OSS}	V_{GS} = 0V	V_{DS} = 50 V	f = 1 MHz		35.5		pF
C_{RSS}	V_{GS} = 0V	V_{DS} = 50 V	f = 1 MHz		7.5		pF

REF. 1022497C

DYNAMIC

Symbol	Parameter				Min.	Typ.	Max.	Unit
P_{OUT}	f = 30MHz	V_{DD} = 50V	P_{in} = 0.475 W	I_{DQ} = 100 mA	30			W
G_{PS}	f = 30MHz	V_{DD} = 50V	P_{out} = 30 W	I_{DQ} = 100 mA	18	22		dB
η_D	f = 30MHz	V_{DD} = 50V	P_{out} = 30 W	I_{DQ} = 100 mA	50	55		%
Load Mismatch	f = 30MHz All Angles	V_{DD} = 50V	P_{out} = 30 W	I_{DQ} = 100 mA	30:1			VSWR

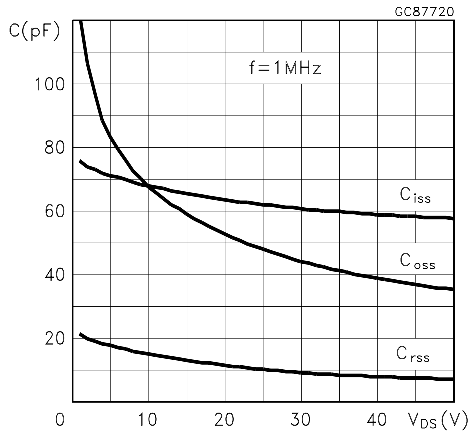
IMPEDANCE DATA



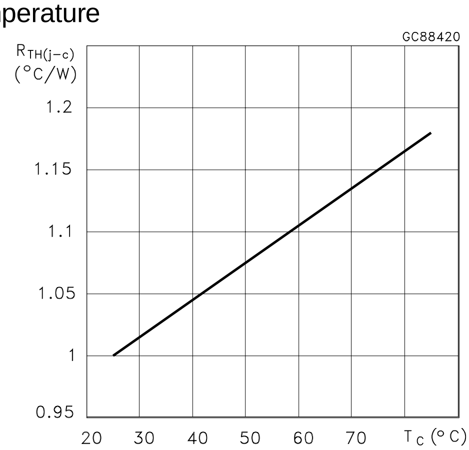
FREQ.	Z_{IN} (Ω)	Z_{DL} (Ω)
30 MHz	24.4 - j 13.4	28.8 + j 7.2

TYPICAL PERFORMANCE

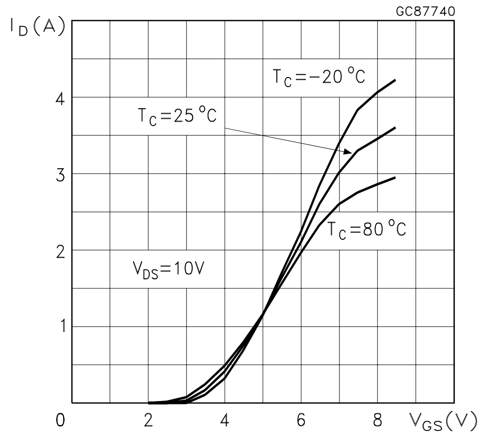
Capacitance vs Drain-Source Voltage



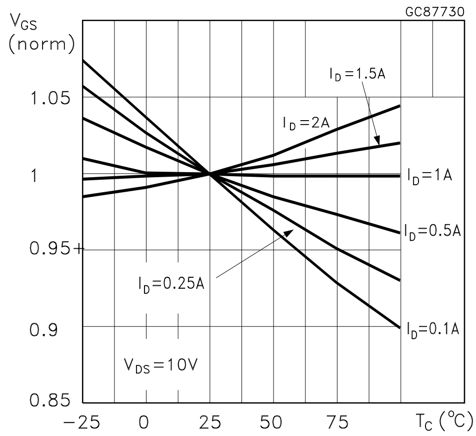
Maximum Thermal Resistance vs Case Temperature



Drain Current vs Gate Voltage

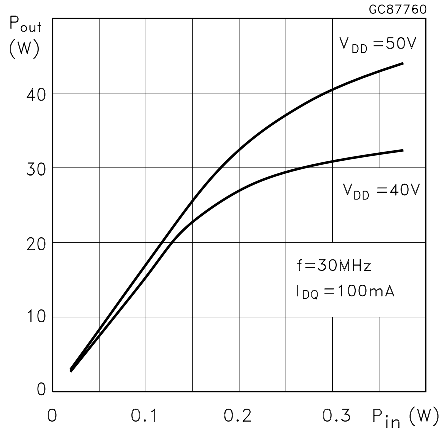


Gate-Source Voltages vs Case Temperature

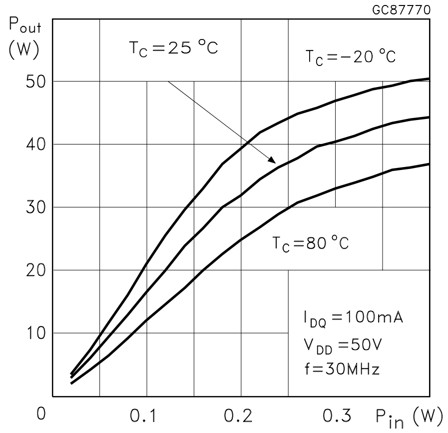


TYPICAL PERFORMANCE

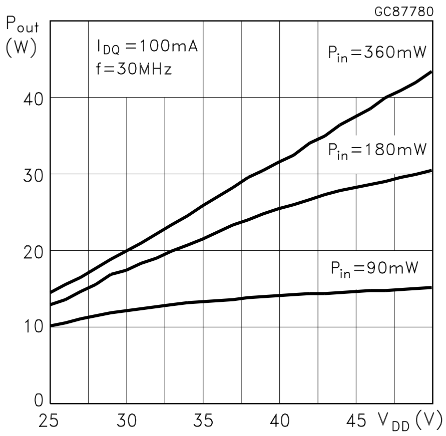
Output Power vs Input Power



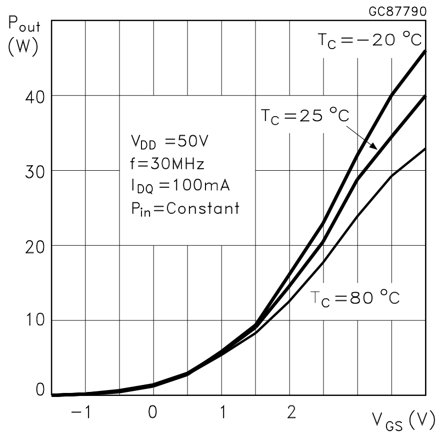
Output Power vs Input Power



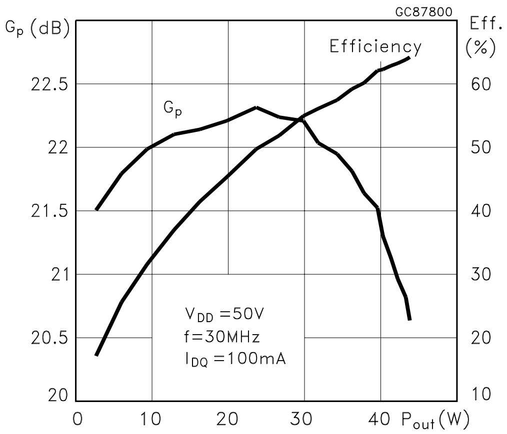
Output Power vs Voltage Supply



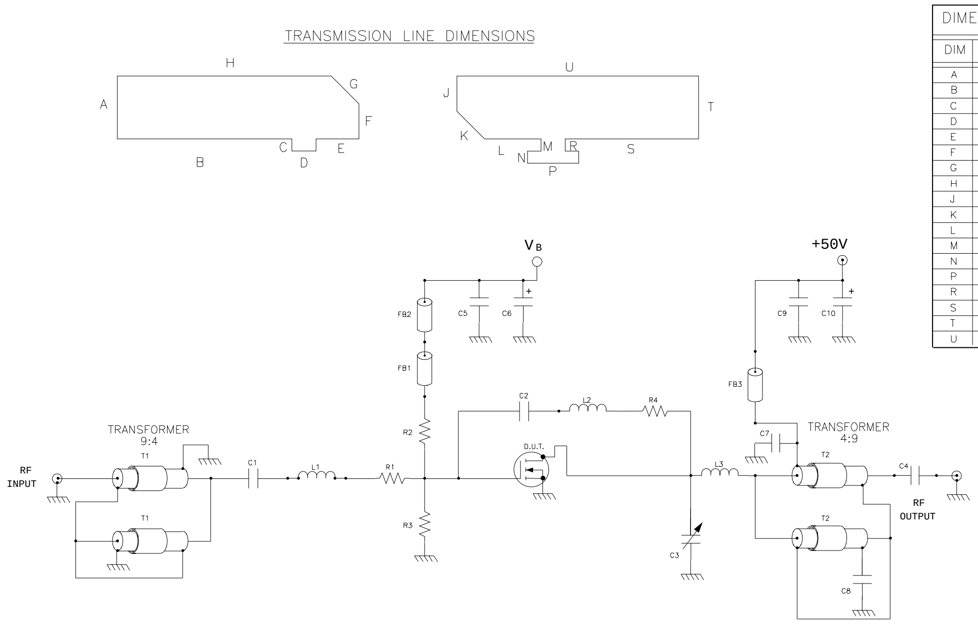
Output Power vs Gate Voltage



Power Gain & Efficiency vs Output Power



30 MHz Test Circuit Schematic



DIMENSION TABLE

DIM	IN	MM
A	0.260	6,60
B	0.723	18,36
C	0.050	1,27
D	0.100	2,54
E	0.178	4,52
F	0.145	3,68
G	0.162	4,11
H	0.885	22,48
J	0.145	3,68
K	0.162	4,11
L	0.233	5,92
M	0.050	1,27
N	0.050	1,27
P	0..212	5,38
R	0.056	1,42
S	0.552	14,02
T	0.260	6,60
U	1.000	25,40

GC14720

NOTES:
1. DIMENSIONS AT COMPONENT SYMBOLS ARE REFERENCE FOR COMPONENT PLACEMENT.
2. GAP BETWEEN GROUND & TRANSMISSION LINE = 0.056 [1.42] $^{+0.002}_{-0.000}$ $^{[0.05]}_{[0.00]}$ TYP.

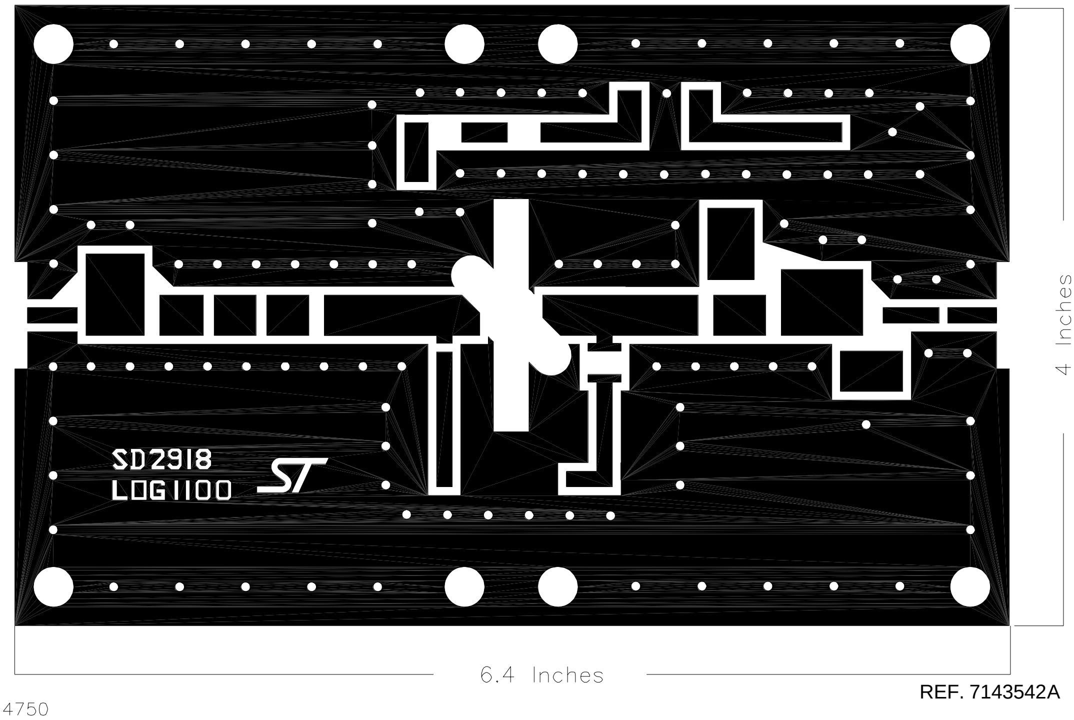
REF. 7143542A

30 MHz Test Circuit Component Part List

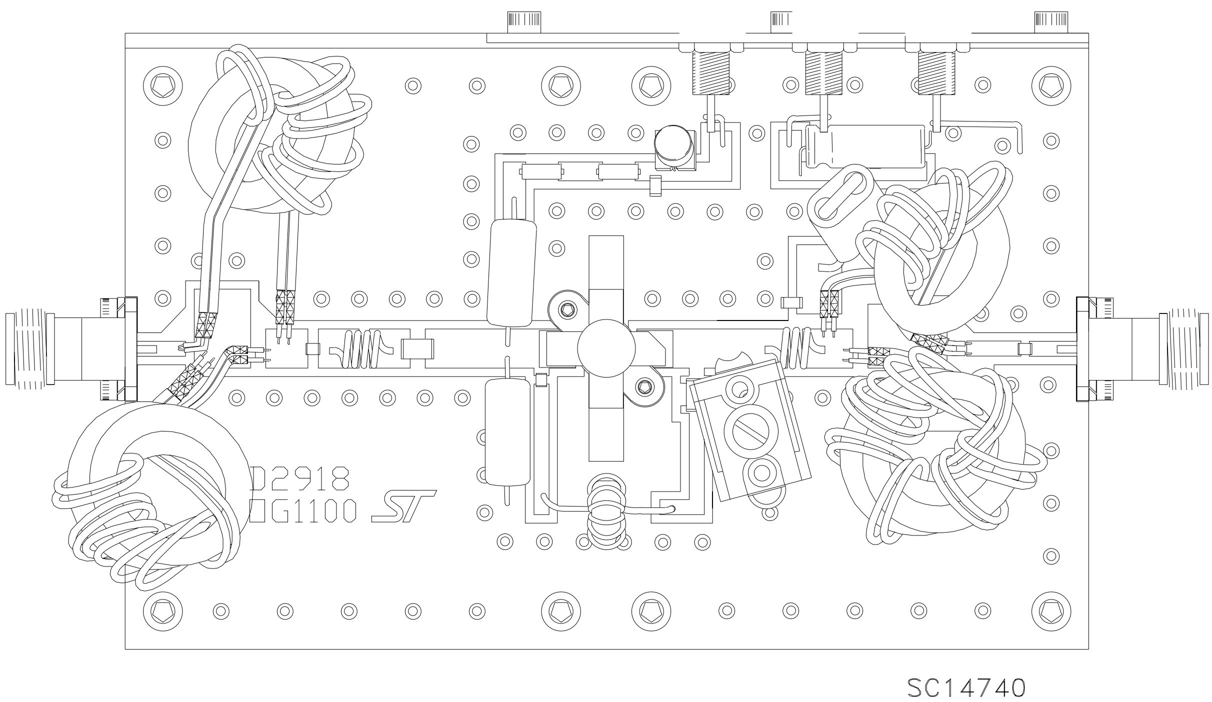
COMPONENT	PART NO	VENDOR	DESCRIPTION
R4	CR2512-1W-101JB	VENKEL	100 OHM, 1W SURFACE MOUNT CHIP RESISTOR
R3	29SJ901	XICON	160 OHM, 1W CARBON FILM AXIAL-LEAD RESISTOR
R2	29SJ901	XICON	160 OHM, 1W CARBON FILM AXIAL-LEAD RESISTOR
R1	CR2512-1W-3R9JT	VENKEL	3.9 OHM, 1W SURFACE MOUNT CHIP RESISTOR
FB3	2843000102	FAIR-RITE CORP.	MULTI-APERATURE CORE
FB2	2743021447	FAIR-RITE CORP.	SHIELD BEAD SURFACE MOUNT EMI
FB1	2743021447	FAIR-RITE CORP.	SHIELD BEAD SURFACE MOUNT EMI
L3	8073	BELDEN	INDUCTOR, 3 TURNS AIR WOUND #14AWG, ID=0.375[9.53], POLY COATED MAGNET WIRE
L2	1557	ALPHA	INDUCTOR, 7 TURNS AROUND SHIELD BEAD (PT# FAIR-RITE 2643801102) #16AWG HOOK UP WIRE.
L1	8073	BELDEN	INDUCTOR, 4 TURNS AIR WOUND #14AWG, ID=0.375[9.53], POLY COATED MAGNET WIRE
C10	SKA100M160	MALLORY	10µF/160V AXIAL-LEAD ALUMINIUM ELECTROLYTIC CAPACITOR
C9	C1812X7R501-103KNE	VENKEL	0.01µF/500V SURFACE MOUNT CERAMIC CHIP CAPACITOR
C8	C1812X7R501-103KNE	VENKEL	0.01µF/500V SURFACE MOUNT CERAMIC CHIP CAPACITOR
C7	C1812X7R501-103KNE	VENKEL	0.01µF/500V SURFACE MOUNT CERAMIC CHIP CAPACITOR
C6	RVS-50V100M-R	ELNA	10µF/50V VERTICAL SURFACE MOUNT CHIP ALUMINUM ELECTROLYTIC CAPACITOR
C5	C1812X7R501-103KNE	VENKEL	0.01µF/500V SURFACE MOUNT CERAMIC CHIP CAPACITOR
C4	ATC200B103KW50X	ATC	10000pF ATC 200B SURFACE MOUNT CERAMIC CHIP CAPACITOR
C3	463	ARCO	20-180pF TYPE ST46 STANDARD 3 TURNS VARIABLE CAPACITOR
C2	ATC200B103KW50X	ATC	10000pF ATC 200B SURFACE MOUNT CERAMIC CHIP CAPACITOR
C1	ATC200B103KW50X	ATC	10000pF ATC 200B SURFACE MOUNT CERAMIC CHIP CAPACITOR
T2			TRANSORMER, 4:9 75.0 OHM, O.D. 0.090 1" LG. COAXIAL CABLE 5TURNS AROUND SHIELD BEAD (PT#2643801002 FAIR-RITE CORP.)
T1			TRANSORMER, 9:4 75.0 OHM, O.D. 0.090 1" LG. COAXIAL CABLE 5TURNS AROUND SHIELD BEAD (PT#2643801002 FAIR-RITE CORP.)
PCB	G0300M1026	ROGERS CORP	WOVEN FIBERGLASS REINFORCED PTFE 0.030" THK, ε_r = 2.55, 2 Oz ED Cu BOTH SIDES

SC14730

30 MHz Test Circuit Photomaster

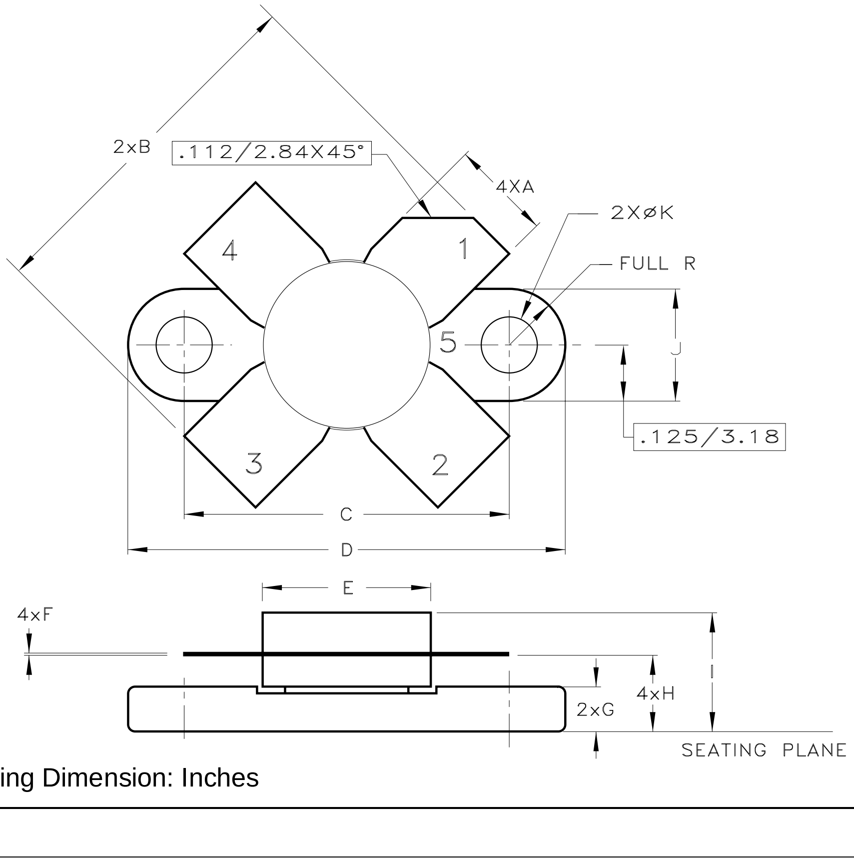


30 MHz Production Test Fixture



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

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - China - Finland - France - Germany - Hong Kong - India - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - U.S.A.

http://www.st.com