

**120W - 28V - .8GHz**  
**GOLD METALIZED MULTI-PURPOSE**  
**SILICON DMOS RF FET**

**FEATURES**

- METAL GATE
- EXTRA LOW  $C_{rss}$
- BROAD BAND
- SIMPLE BIAS CIRCUITS
- LOW NOISE
- HIGH GAIN

**APPLICATIONS**

- HF/VHF/UHF COMMUNICATIONS  
from DC to 800 MHz

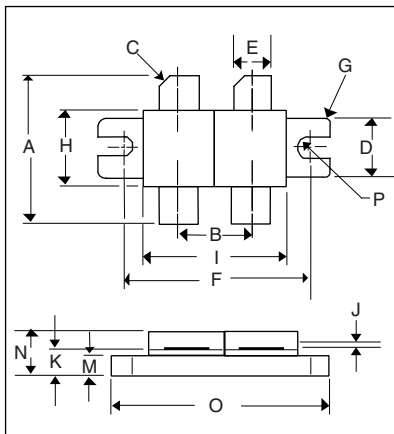
**ABSOLUTE MAXIMUM RATINGS**  
( $T_{CASE} = 25^{\circ}C$  unless otherwise stated)

$P_D$	Power Dissipation	337W
$BV_{DSS}$	Drain-source breakdown voltage	65V
$V_{GS}$	Gate-source voltage	$\pm 20V$
$I_D$	Drain Current	40A
$T_{stg}$	Storage temperature	-65 to 150°C
$T_j$	Maximum operating junction temperature	200°C
$R_{THj-case}$	Thermal resistance junction-case	Max. 0.52°C/W

**ELECTRICAL CHARACTERISTICS** ( $T_{CASE} = 25^{\circ}C$  unless otherwise stated)

Parameter		Test Conditions		Min.	Typ.	Max.	Unit
<u>PER SIDE</u>							
$BV_{DSS}$	Breakdown voltage, drain source	$V_{GS}=0$	$I_D=100mA$	65			Vdc
$I_{DSS}$	Drain leakage current	$V_{DS}=28V$	$V_{GS}=0$			5	mAdc
$I_{GSS}$	Gate leakage current	$V_{GS}=20V$	$V_{DS}=0$			1	$\mu$ Adc
$V_{GS(th)}$	Gate threshold voltage	$I_D=10mA$	$V_{DS}=V_{GS}$	1		7	Vdc
$g_{fs}$	Transconductance (300 $\mu$ s pulse)	$V_{DS}=10V$	$I_D=4A$	4.0			Mhos
<u>TOTAL DEVICE</u>							
$G_{ps}$	Common source power gain	$P_O=120W$		10			dB
$\eta$	Drain efficiency	$V_{DS}=28V$ $I_{DQ}=4A$		40			%
VSWR	Load mismatch tolerance	$f=.8GHz$		10:1			
<u>PER SIDE</u>							
$C_{iss}$	Input capacitance	$V_{DS}=0V$	$V_{GS}=-5V$ $f=1MHz$			250	pF
$C_{oss}$	Output capacitance	$V_{DS}=28V$	$V_{GS}=0$ $f=1MHz$			100	pF
$C_{rss}$	Reverse transfer capacitance	$V_{DS}=28V$	$V_{GS}=0$ $f=1MHz$			7.5	pF

**DIMENSIONS**



DM	Millimeter	TOL	Inches	TOL
A	19.05	.50	.750	.020
B	10.8	.13	.425	.005
C	45°	.05	45°	5°
D	9.78	.13	.385	.005
E	5.71	.13	.225	.005
F	27.94	.13	1.100	.005
G	1.52R	.13	.060R	.005
H	10.16	.13	.400	.005
I	22.22	MAX	.875	MAX
J	0.13	.02	.005	.001
K	2.72	.13	.107	.005
M	1.65	.13	.065	.005
N	5.08	.50	.200	.020
O	34.04	.13	1.340	.005
P	1.57R	.08	.062R	.003

**HAZARDOUS MATERIAL WARNING**

The ceramic portion of the device between leads and metal flange is beryllium oxide. Beryllium oxide dust is highly toxic and care must be taken during handling and mounting to avoid damage to this area. THESE DEVICES MUST NEVER BE THROWN AWAY WITH GENERAL INDUSTRIAL OR DOMESTIC WASTE.

U.S. PATENTS 5,121,176 & 5,179,032  
GLOBAL PATENTS PENDING

\*C204

\*PSPICE MODEL FOR POINT NINE RF N-CHANNEL VERTICAL DMOS POWER FET

\*May 2004

```
*          _____GATE
*          I   _____DRAIN
*          I   I   _____SOURCE
*          I   I   I
.SUBCKT C204  10  20  30
*Cin1,Cin2 & Lin model the input side of the package
Cin1  10  30  0.79p
Lin   10  11  0.38n
Cin2  11  30  0.79p

LG    11  12  0.4n      ;Gate bond wire inductance
CGS   12  13  212p     ;Gate-source capacitance
MOS   14  12  13      13  C204 L=0.9U W=0.218      ;D G S B LEVEL1
JFET  16  13  14      C204                          ;D G S
DBODY 13  16          C204                          ;P N
LS    13  30  0.15n   ;Source bond wire inductance
CGD   12  16  6p      ;Gate-drain feedback capacitance

*Cout1,Cout2 & Lout model the output side of the package
Cout1 16  30  1.38p
Lout   16  20  0.73n
Cout2 20  30  1.15p

.MODEL C204 NMOS (VTO=3.52 KP=7.77E-4 LAMBDA=0.0224 RD=0.03 RS=0.15)
.MODEL C204 NJF (VTO=-5.8 BETA=0.732 LAMBDA=1.357)
.MODEL C204 D (CJO=300P RS=0.25 VJ=0.7 M=0.33 BV=70)

.ENDS
```