

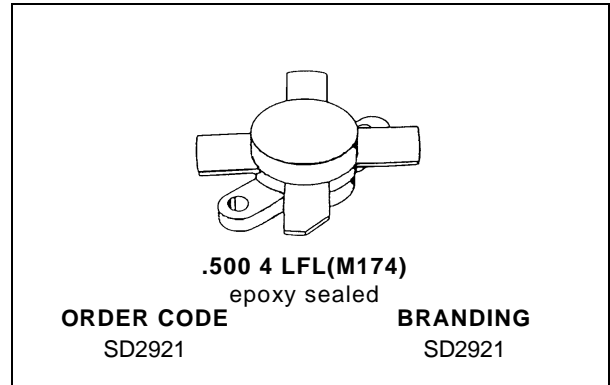


# SD2921

## RF & MICROWAVE TRANSISTORS HF/VHF/UHF N-CHANNEL MOSFETS

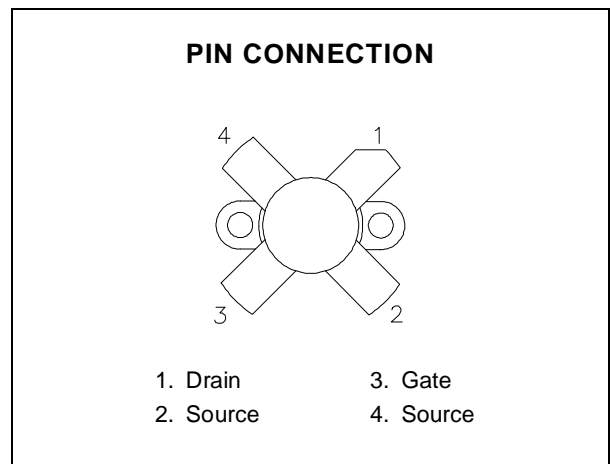
PRELIMINARY DATA

- GOLD METALLIZATION
- NO THERMAL RUNAWAY
- COMMON SOURCE CONFIGURATION
- $P_{OUT} = 150W$  MIN. WITH 12.5 dB GAIN @ 175 MHz



### DESCRIPTION

The SD2921 is a gold metallized N-Channel MOS field-effect RF power transistor. The SD2921 is intended for use in 50 V dc large signal applications up to 200 MHz.



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

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$	Drain-Source Voltage	125	V
$V_{DGR}$	Drain-Gate Voltage ( $R_{GS} = 1.0 M\Omega$ )	125	V
$V_{GS}$	Gate-Source Voltage	$\pm 40$	V
$I_D$	Drain Current	16	A
$P_{DISS}$	Power Dissipation ( $T_{heatsink} \leq 25^{\circ}C$ )	219	W
$T_J$	Junction Temperature	+200	$^{\circ}C$
$T_{STG}$	Storage Temperature	- 65 to +150	$^{\circ}C$

### THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	0.6	$^{\circ}C/W$
$R_{TH(c-s)}$	Case-Heatsink Thermal Resistance	0.2	$^{\circ}C/W$

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

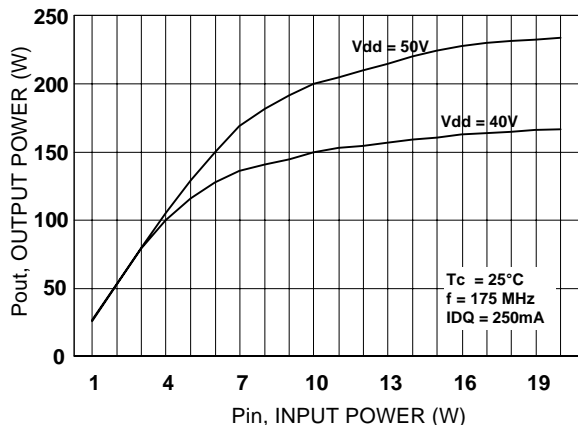
Symbol	Test Conditions		Value			Unit	
			Min.	Typ.	Max.		
$V_{(\text{BR})\text{DSS}}$	$V_{\text{GS}} = 0\text{V}$	$I_{\text{DS}} = 100\text{ mA}$	125	—	—	V	
$I_{\text{DSS}}$	$V_{\text{GS}} = 0\text{V}$	$V_{\text{DS}} = 50\text{V}$	—	—	5	mA	
$I_{\text{GSS}}$	$V_{\text{GS}} = 20\text{V}$	$V_{\text{DS}} = 0\text{V}$	—	—	1	$\mu\text{A}$	
$V_{\text{GS}(\text{TH})}$	$V_{\text{DS}} = 10\text{V}$	$I_{\text{D}} = 250\text{ mA}$	1.0	—	5.0	V	
$V_{\text{DS}(\text{ON})}$	$V_{\text{GS}} = 10\text{V}$	$I_{\text{D}} = 10\text{A}$	—	—	3.0	V	
$G_{\text{FS}}$	$V_{\text{DS}} = 10\text{V}$	$I_{\text{D}} = 5\text{A}$	4.0	—	—	mhos	
$C_{\text{ISS}}$	$V_{\text{GS}} = 0\text{V}$	$V_{\text{DS}} = 50\text{V}$	$F = 1\text{MHz}$	—	411	425	pf
$C_{\text{OSS}}$	$V_{\text{GS}} = 0\text{V}$	$V_{\text{DS}} = 50\text{V}$	$F = 1\text{MHz}$	—	198	220	pf
$C_{\text{RSS}}$	$V_{\text{GS}} = 0\text{V}$	$V_{\text{DS}} = 50\text{V}$	$F = 1\text{MHz}$	—	27	30	pf

**DYNAMIC**

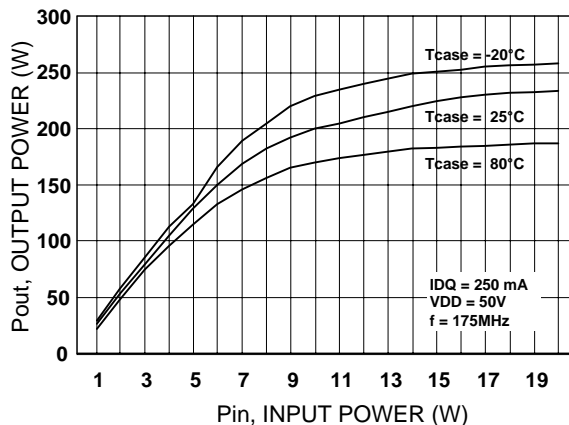
Symbol	Test Conditions		Value			Unit		
			Min.	Typ.	Max.			
$P_{\text{OUT}}$	$f = 175\text{MHz}$	$V_{\text{DD}} = 50\text{V}$	$I_{\text{DQ}} = 250\text{mA}$	150	—	—	W	
$G_{\text{PS}}$	$f = 175\text{MHz}$	$V_{\text{DD}} = 50\text{V}$	$P_{\text{out}} = 150\text{ W}$	$I_{\text{DQ}} = 250\text{mA}$	12.5	14.0	—	dB
$\eta_{\text{D}}$	$f = 175\text{MHz}$	$V_{\text{DD}} = 50\text{V}$	$P_{\text{out}} = 150\text{ W}$	$I_{\text{DQ}} = 250\text{mA}$	50	55	—	%

TYPICAL PERFORMANCE

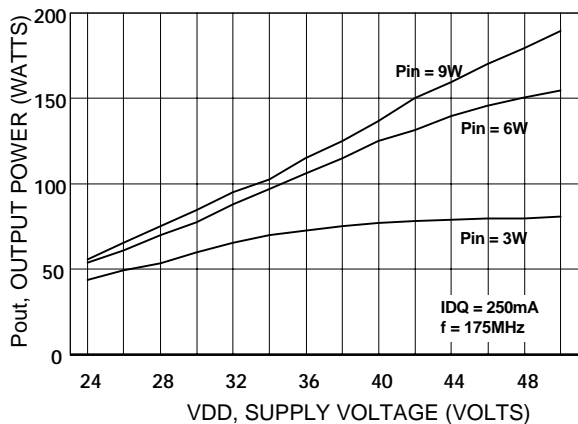
OUTPUT POWER VS INPUT POWER



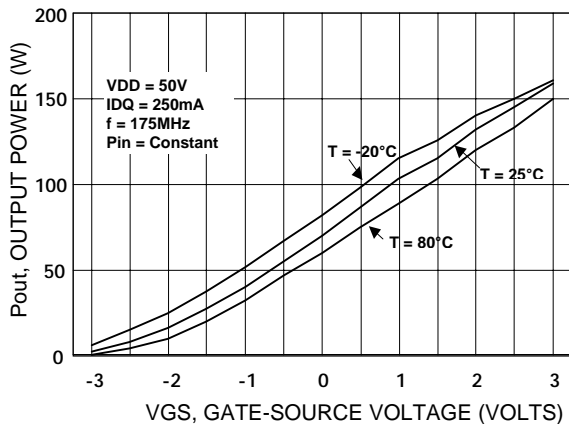
OUTPUT POWER VS INPUT POWER



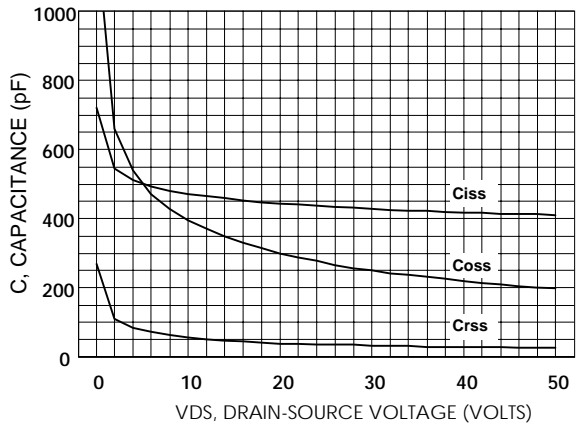
OUTPUT POWER VS SUPPLY VOLTAGE



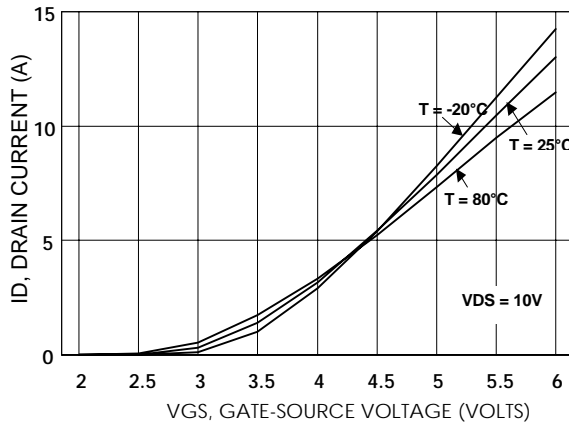
OUTPUT POWER VS GATE VOLTAGE



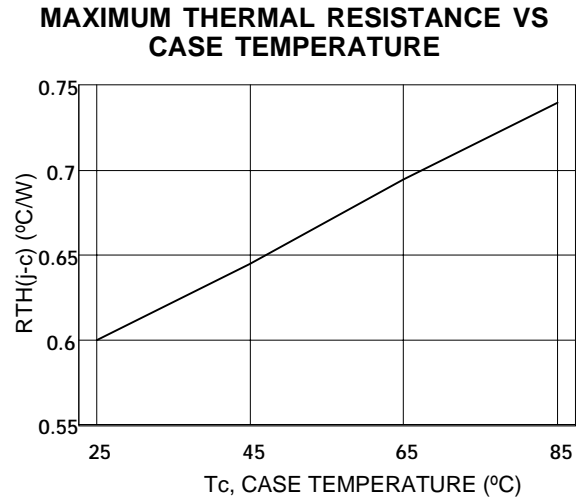
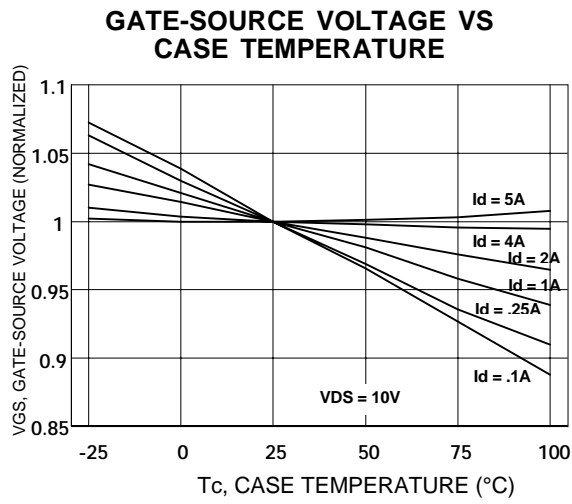
CAPACITANCE VS DRAIN-SOURCE VOLTAGE



DRAIN CURRENT VS GATE VOLTAGE

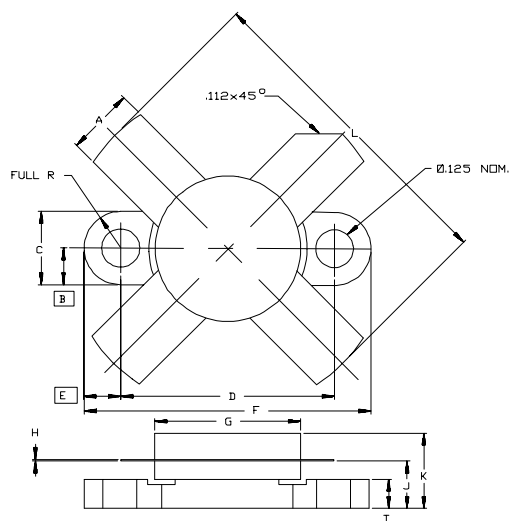


TYPICAL PERFORMANCE



## PACKAGE MECHANICAL DATA

Ref.: Dwg. No. 12-0174  
UDCS No. 1011000 rev C



SGS-THOMSON MICROELECTRONICS			CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm		MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.220/5,59	.230/5,84	K		.280/7,11
B	.125/3,18		L	.980/24,89	1.050/26,67
C	.245/6,22	.255/6,48			
D	.720/18,28	.730/18,54			
E	.125/3,18				
F	.970/24,64	.980/24,89			
G	.495/12,57	.505/12,83			
H	.003/0,08	.007/0,18			
I	.090/2,29	.110/2,79			
J	.150/3,81	.175/4,45			

Information furnished is believed to be accurate and reliable. However, STMicroelectronics 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 STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics

©1998 STMicroelectronics - All Rights Reserved

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - France - Germany - Italy - Japan - Korea

Malaysia - Malta - Mexico - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland

Taiwan - Thailand - United Kingdom - U.S.A.