

**SD57060**

RF POWER TRANSISTORS The *LdmoST* FAMILY

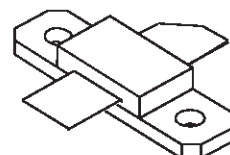
PRELIMINARY DATA

N-CHANNEL ENHANCEMENT-MODE LATERAL MOSFETs

- EXCELLENT THERMAL STABILITY
- COMMON SOURCE CONFIGURATION
- $P_{OUT} = 60\text{ W}$ with 11.5 dB gain @ 945 MHz
- BeO FREE PACKAGE

DESCRIPTION

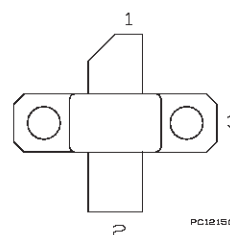
The SD57060 is a common source N-Channel enhancement-mode lateral Field-Effect RF power transistor designed for broadband commercial and industrial applications at frequencies up to 1.0 GHz. The SD57060 is designed for high gain and broadband performance operating in common source mode at 28V. It is ideal for base station applications requiring high linearity.

**M243**

epoxy sealed

ORDER CODE
SD57060**BRANDING**
TSD57060

PIN CONNECTION



1. Drain 3. Source
2. Gate

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

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$	Drain Source Voltage	65	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current	7	A
P_{DISS}	Power Dissipation (@ $T_c = 70^{\circ}\text{C}$)	108	W
T_j	Max. Operating Junction Temperature	200	$^{\circ}\text{C}$
T_{STG}	Storage Temperature	-65 to 150	$^{\circ}\text{C}$

THERMAL DATA ($T_{case} = 70\text{ }^{\circ}\text{C}$)

$R_{th(j-c)}$	Junction-Case Thermal Resistance	1.2	$^{\circ}\text{C/W}$
$R_{th(c-s)^*}$	Case-Heatsink Thermal Resistance	0.45	$^{\circ}\text{C/W}$

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

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

STATIC

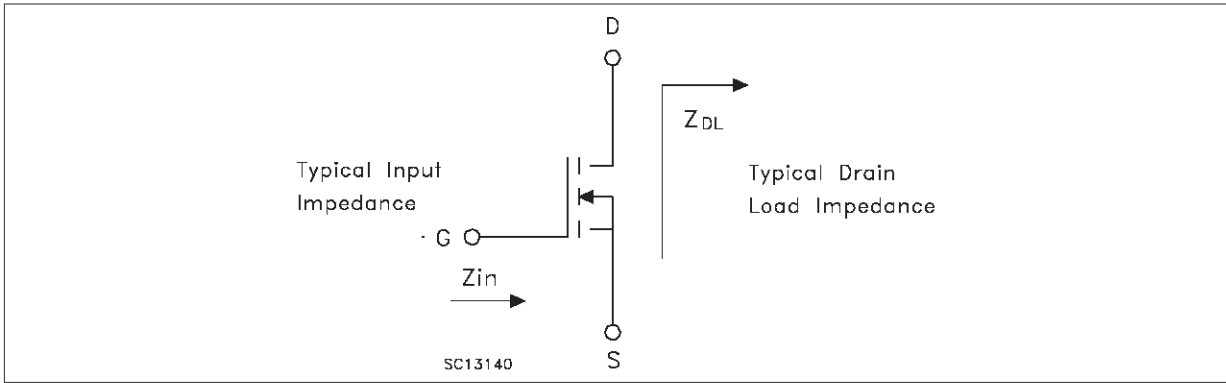
Symbol	Parameter			Min.	Typ.	Max.	Unit
V _{(BR)DSS}	V _{GS} = 0V	I _{DS} = 1 mA		65			V
I _{DSS}	V _{GS} = 0V	V _{DS} = 28 V				1	μA
I _{GSS}	V _{GS} = 20V	V _{DS} = 0 V				1	μA
V _{GS(Q)}	V _{DS} = 28V	I _D = 100 mA		2.0		5.0	V
V _{DS(ON)}	V _{GS} = 10V	I _D = 3 A			0.7	0.8	V
G _{FS}	V _{DS} = 10V	I _D = 3 A		2.5			mho
C _{ISS}	V _{GS} = 0V	V _{DS} = 28 V	f = 1 MHz		88		pF
C _{OSS}	V _{GS} = 0V	V _{DS} = 28 V	f = 1 MHz		44		pF
C _{RSS}	V _{GS} = 0V	V _{DS} = 28 V	f = 1 MHz		1.7		pF

REF. 7143417B

DYNAMIC

Symbol	Parameter			Min.	Typ.	Max.	Unit
P _{OUT}	f = 945 MHz	V _{DD} = 28 V	I _{DQ} = 100 mA	60			W
G _P	f = 945 MHz	V _{DD} = 28 V	P _{out} = 60 W	11.5	15		dB
η _D	f = 945 MHz	V _{DD} = 28 V	P _{out} = 60 W	53	60		%
Load Mismatch	f = 945 MHz	V _{DD} = 28 V	P _{out} = 60 W	5:1			VSWR
	ALL PHASE ANGLES						

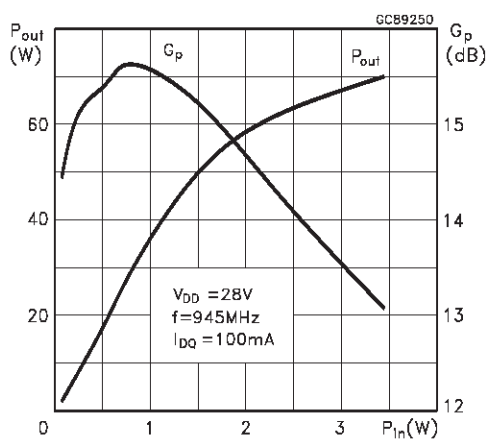
IMPEDANCE DATA



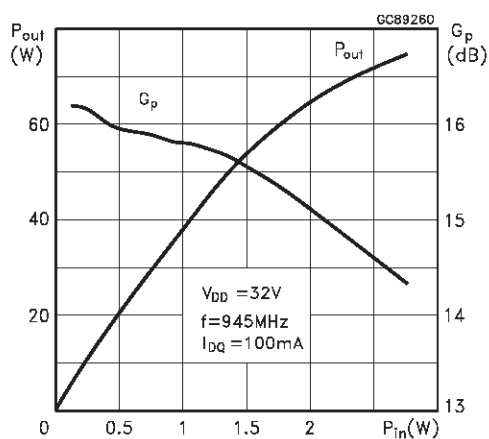
FREQ.	Z _{IN} (Ω)	Z _{DL} (Ω)
925 MHz	0.8 - j 0.095	1.5 + j 0.48
945 MHz	0.7 - j 0.65	1.6 + j 0.25
960 MHz	0.7 - j 0.1	1.7 + j 0.130

TYPICAL PERFORMANCE

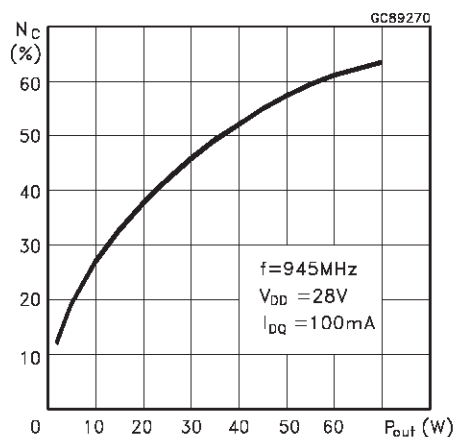
Output Power and Power Gain vs Input Power



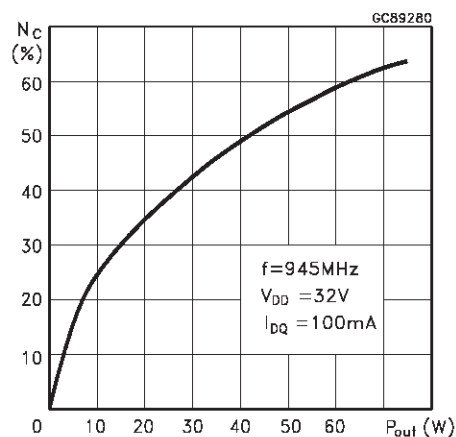
Output Power and Power Gain vs Input Power



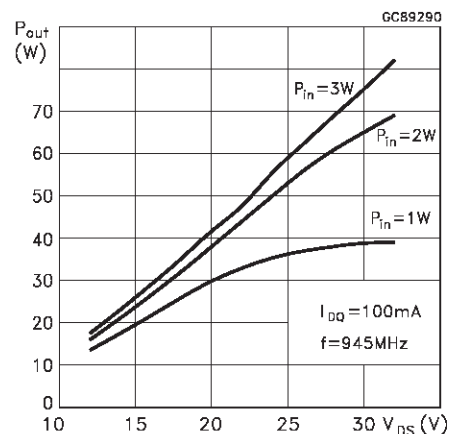
Efficiency vs Output Power



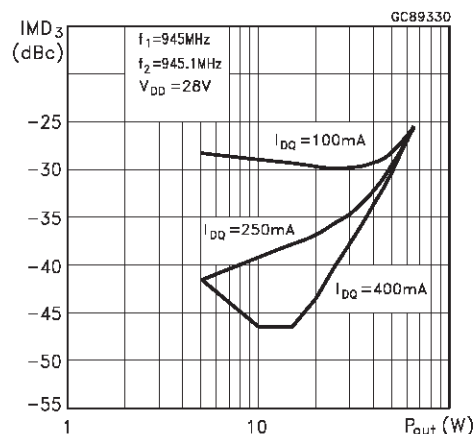
Efficiency vs Output Power



Output Power vs Drain-Source Voltage

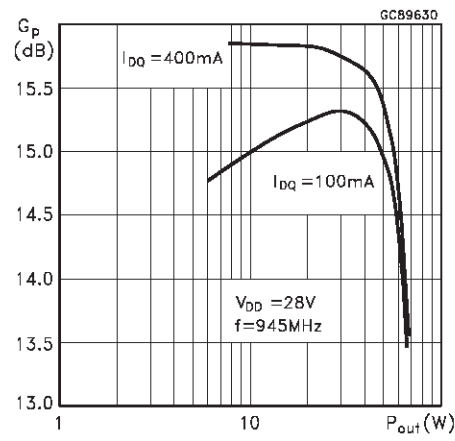


Intermodulation Distorsion vs Output Power

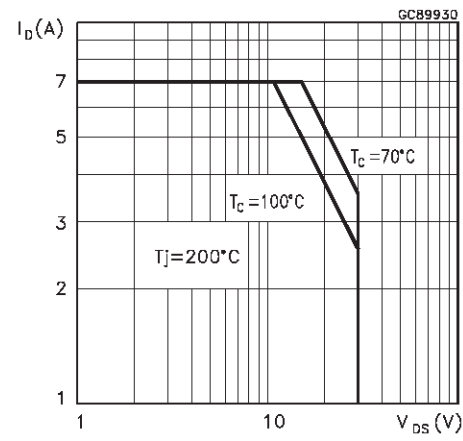


TYPICAL PERFORMANCE

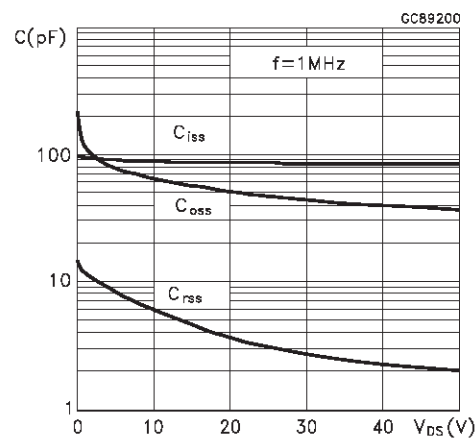
Power Gain vs Output Power



Safe Operating Area



Capacitance vs Drain-Source Voltage



COMMON SOURCE S-PARAMETERS

(V_{DS} = 13.5 V, I_{DS} = 2 A)

FREQ(MHz)	s11 MAG	s11 ang	s21 MAG	s21 ang	s12 MAG	s12 ang	s22 MAG	s22 ang
50	0.896	-168.86	15.679	85.012	0.0116	-5.1128	0.796	-170.27
60	0.896	-169.3	14.859	84.592	0.0116	-5.4369	0.796	-170.49
70	0.896	-169.76	14.004	84.14	0.0116	-5.7912	0.797	-170.7
80	0.896	-170.23	13.122	83.644	0.0115	-6.0658	0.797	-170.9
90	0.897	-170.71	12.213	83.074	0.0115	-6.3789	0.798	-171.1
100	0.897	-171.19	11.285	82.404	0.0114	-6.8198	0.799	-171.29
150	0.9	-173.39	6.9575	76.841	0.0111	-9.6817	0.808	-171.96
200	0.905	-174.29	4.751	71.951	0.0103	-11.87	0.821	-171.79
250	0.912	-174.64	3.637	68.471	0.0097	-12.957	0.836	-171.36
300	0.92	-174.9	2.889	64.839	0.0089	-13.493	0.851	-171.03
350	0.927	-175.08	2.428	62.538	0.0083	-11.937	0.866	-170.76
400	0.934	-175.3	2.077	58.748	0.0077	-11.228	0.881	-170.6
450	0.941	-175.5	1.802	56.081	0.0071	-8.7753	0.894	-170.49
500	0.947	-175.73	1.592	51.84	0.0066	-7.5009	0.907	-170.47
550	0.952	-176.02	1.379	48.632	0.0059	-4.8834	0.917	-170.55
600	0.956	-176.29	1.221	45.777	0.0053	0.12909	0.927	-170.67
650	0.96	-176.6	1.049	42.778	0.0048	5.0249	0.936	-170.82
700	0.962	-176.9	0.924	42.212	0.0043	13.591	0.943	-170.94
750	0.965	-177.22	0.814	40.376	0.0039	22.729	0.95	-171.05
800	0.968	-177.51	0.723	41.348	0.0036	37.954	0.956	-171.14
850	0.97	-177.83	0.662	40.788	0.0037	51.305	0.961	-171.16
900	0.972	-178.19	0.6	41.719	0.0041	63.188	0.966	-171.24
950	0.974	-178.56	0.566	41.469	0.0047	73.463	0.971	-171.24
1000	0.975	-178.96	0.523	41.747	0.0055	80.707	0.974	-171.25
1050	0.976	-179.28	0.504	41.439	0.0064	88.27	0.977	-171.26
1100	0.978	-179.62	0.477	40.692	0.0074	92.504	0.979	-171.36
1150	0.979	-179.85	0.466	39.239	0.0084	96.743	0.981	-171.43
1200	0.981	179.9	0.444	36.775	0.0097	98.282	0.982	-171.5
1250	0.982	179.68	0.431	34.788	0.011	99.121	0.983	-171.58
1300	0.983	179.52	0.408	31.862	0.0125	98.773	0.983	-171.71
1350	0.984	179.35	0.395	30.219	0.0136	97.973	0.983	-171.86
1400	0.985	179.24	0.382	26.465	0.0148	97.464	0.984	-171.94
1450	0.987	179.13	0.365	23.869	0.0157	95.39	0.984	-171.98
1500	0.988	179.09	0.351	21.267	0.0165	93.871	0.985	-171.98

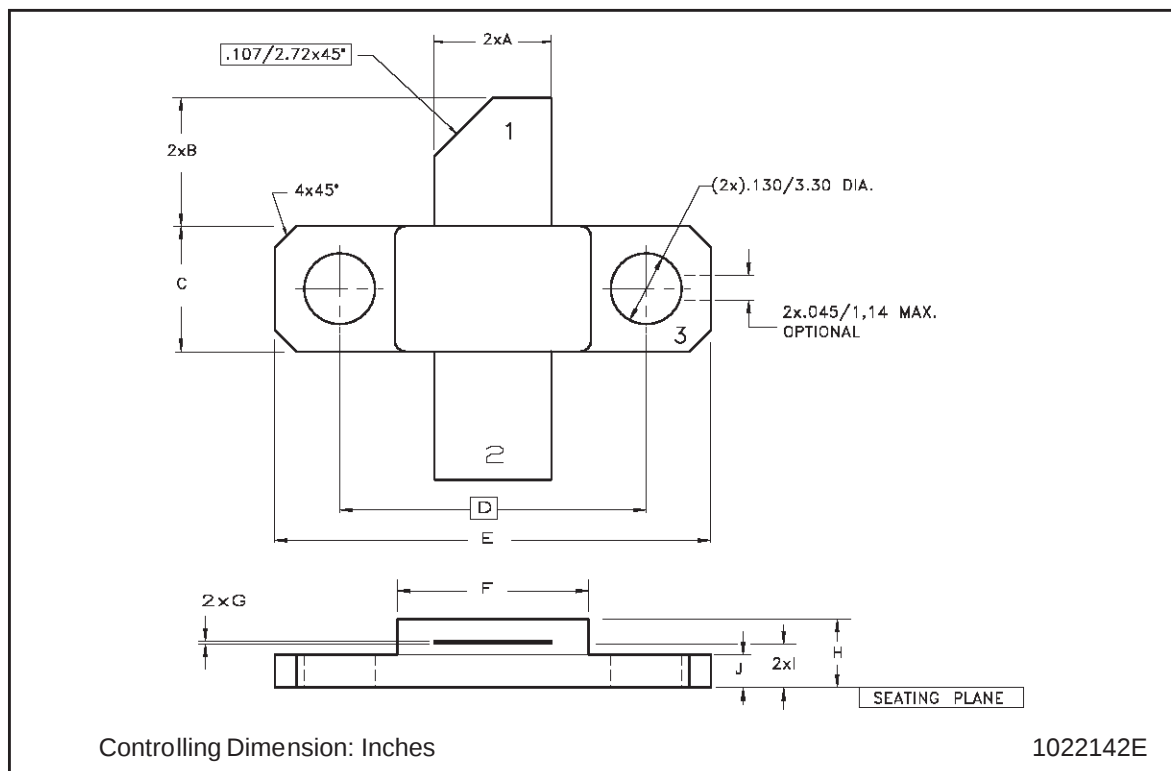
COMMON SOURCE S-PARAMETERS

(V_{DS} = 28 V, I_{DS} = 2 A)

FREQ(MHz)	s11 MAG	s11 ang	s21 MAG	s21 ang	s12 MAG	s12 ang	s22 MAG	s22 ang
50	0.857	-159.69	22.757	85.934	0.0114	-3.8342	0.67	-161.72
60	0.86	-160.69	21.547	85.328	0.0113	-4.4852	0.672	-162.07
70	0.862	-161.73	20.287	84.672	0.0112	-5.1512	0.674	-162.41
80	0.865	-162.8	18.987	83.933	0.0111	-5.8379	0.677	-162.74
90	0.869	-163.89	17.65	83.083	0.011	-6.5533	0.679	-163.07
100	0.872	-164.98	16.286	82.083	0.011	-7.4226	0.683	-163.39
150	0.891	-169.66	9.9447	74.03	0.0103	-12.13	0.708	-164.66
200	0.905	-171.43	6.719	67.256	0.0094	-15.548	0.74	-164.87
250	0.915	-172.29	5.074	62.268	0.0086	-17.236	0.774	-164.99
300	0.926	-172.84	3.978	57.533	0.0077	-18.625	0.806	-165.35
350	0.935	-173.34	3.297	54.035	0.0069	-17.313	0.834	-165.82
400	0.943	-173.79	2.775	49.488	0.0061	-16.81	0.86	-166.35
450	0.951	-174.24	2.376	46.121	0.0054	-13.006	0.881	-166.85
500	0.957	-174.67	2.061	41.541	0.0048	-9.175	0.898	-167.35
550	0.962	-175.11	1.766	38.23	0.0041	-2.5323	0.913	-167.83
600	0.966	-175.53	1.546	35.173	0.0035	-7.641	0.925	-168.25
650	0.969	-175.95	1.32	32.548	0.0031	19.501	0.937	-168.57
700	0.972	-176.34	1.162	31.674	0.0031	34.423	0.946	-168.81
750	0.974	-176.75	1.021	29.983	0.0032	48.345	0.954	-168.93
800	0.976	-177.15	0.91	30.341	0.0035	62.927	0.96	-168.98
850	0.977	-177.57	0.826	29.318	0.004	74.982	0.967	-168.95
900	0.978	-177.98	0.749	29.508	0.0047	81.962	0.973	-168.88
950	0.979	-178.41	0.696	28.477	0.0054	87.332	0.978	-168.77
1000	0.979	-178.85	0.639	27.949	0.0063	90.913	0.982	-168.72
1050	0.98	-179.24	0.601	26.768	0.0072	95.707	0.984	-168.75
1100	0.981	-179.61	0.561	25.598	0.0082	98.95	0.985	-168.87
1150	0.981	-179.95	0.533	23.746	0.0094	101.25	0.986	-169.13
1200	0.982	179.72	0.498	21.331	0.011	102.03	0.985	-169.64
1250	0.983	179.44	0.472	19.005	0.012	102.21	0.981	-170.42
1300	0.984	179.23	0.44	16.272	0.0131	101.78	0.976	-171.5
1350	0.985	179.02	0.417	14.424	0.0143	100.61	0.969	-172.89
1400	0.986	178.85	0.394	11.161	0.0156	99.505	0.96	-174.72
1450	0.986	178.7	0.372	8.789	0.0163	97.699	0.949	-176.87
1500	0.986	178.6	0.354	6.5533	0.0168	96.68	0.94	-178.58

M243 (.230 x .360 WIDE 2/L N/HERM W/FLG) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	5.21		5.72	0.205		0.225
B	5.46		6.48	0.215		0.255
C	5.59		6.10	0.220		0.240
D		14.27			0.562	
E	20.07		20.57	0.790		0.810
F	8.89		9.40	0.350		0.370
G	0.10		0.15	0.004		0.006
H	3.18		4.45	0.125		0.175
I	1.83		2.24	0.072		0.088
J	1.27		1.78	0.050		0.070



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. Specification 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 trademark of STMicroelectronics

© 2000 STMicroelectronics – Printed in Italy – All Rights Reserved

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>