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.

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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!


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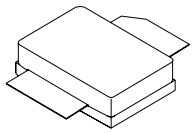
# SD57030-01

## RF POWER TRANSISTORS
## The *LdmoST* FAMILY

N-CHANNEL ENHANCEMENT-MODE LATERAL MOSFETs

- EXCELLENT THERMAL STABILITY
- COMMON SOURCE CONFIGURATION
- $P_{OUT}$ = 30 W WITH 13 dB gain @ 945 MHz
- BeO FREE PACKAGE



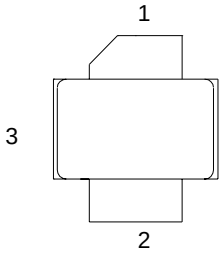
**M250**
epoxy sealed

| ORDER CODE | BRANDING |
|---|---|
| SD57030-01 | TSD57030-01 |

### DESCRIPTION

The SD57030-01 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 SD57030-01 is designed for high gain and broadband performance operating in common source mode at 28 V. It is ideal for base station applications requiring high linearity.

**PIN CONNECTION**




1. Drain
2. Gate
3. 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 ($R_{GS}$ = 1 MΩ) | 65 | V |
| $V_{GS}$ | Gate-Source Voltage | + 20 | V |
| $I_D$ | Drain Current | 4 | A |
| $P_{DISS}$ | Power Dissipation (@ Tc = 70°C) | 74 | W |
| Tj | Max. Operating Junction Temperature | 200 | °C |
| $T_{STG}$ | Storage Temperature | -65 to + 200 | °C |

### THERMAL DATA

| | | | |
|---|---|---|---|
| $R_{th(j-c)}$ | Junction -Case Thermal Resistance | 1.75 | °C/W |

## ELECTRICAL SPECIFICATION ($T_{CASE}$ = 25°C)

### STATIC

| Symbol | Test Conditions | | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $V_{(BR)DSS}$ | $V_{GS}$ = 0 V | $I_{DS}$ = 10 mA | | 65 | | | V |
| $I_{DSS}$ | $V_{GS}$ = 0 V | $V_{DS}$ = 28 V | | | | 1 | µA |
| $I_{GSS}$ | $V_{GS}$ = 20 V | $V_{DS}$ = 0 V | | | | 1 | µA |
| $V_{GS(Q)}$ | $V_{DS}$ = 28 V | $I_D$ = 50 mA | | 2.0 | | 5.0 | V |
| $V_{DS(ON)}$ | $V_{GS}$ = 10 V | $I_D$ = 3 A | | | 1.3 | | V |
| $G_{FS}$ | $V_{DS}$ = 10 V | $I_D$ = 3 A | | | 1.8 | | mho |
| $C_{ISS}$* | $V_{GS}$ = 0 V | $V_{DS}$ = 28 V | f = 1 MHz | | 58 | | pF |
| $C_{OSS}$ | $V_{GS}$ = 0 V | $V_{DS}$ = 28 V | f = 1 MHz | | 34 | | pF |
| $C_{RSS}$ | $V_{GS}$ = 0 V | $V_{DS}$ = 28 V | f = 1 MHz | | 2.7 | | pF |

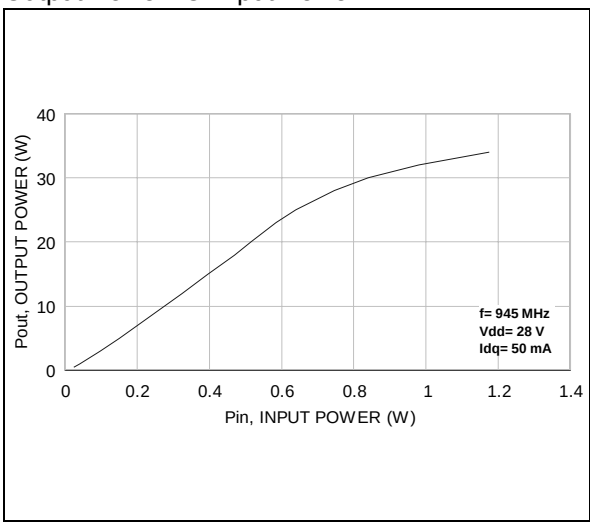
Ref. 7143417B

### DYNAMIC

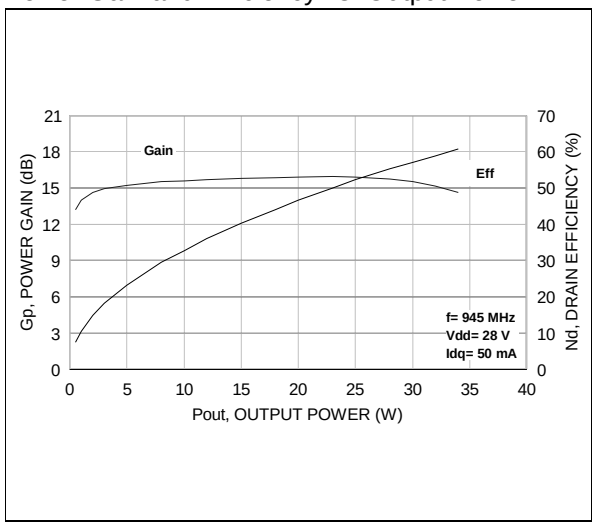
| Symbol | Test Conditions | | | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|---|
| $P_{OUT}$ | $V_{DD}$ = 28 V | $I_{DQ}$ = 50 mA | | f = 945 MHz | 30 | | | W |
| $G_{PS}$ | $V_{DD}$ = 28 V | $I_{DQ}$ = 50 mA | $P_{OUT}$ = 30 W | f = 945 MHz | 13 | 15 | | dB |
| $\eta_D$ | $V_{DD}$ = 28 V | $I_{DQ}$ = 50 mA | $P_{OUT}$ = 30 W | f = 945 MHz | 50 | 60 | | % |
| Load mismatch | $V_{DD}$ = 28 V<br>ALL PHASE ANGLES | $I_{DQ}$ = 50 mA | $P_{OUT}$ = 28 W | f = 945 MHz | 10:1 | | | VSWR |

## TYPICAL PERFORMANCE (CW)

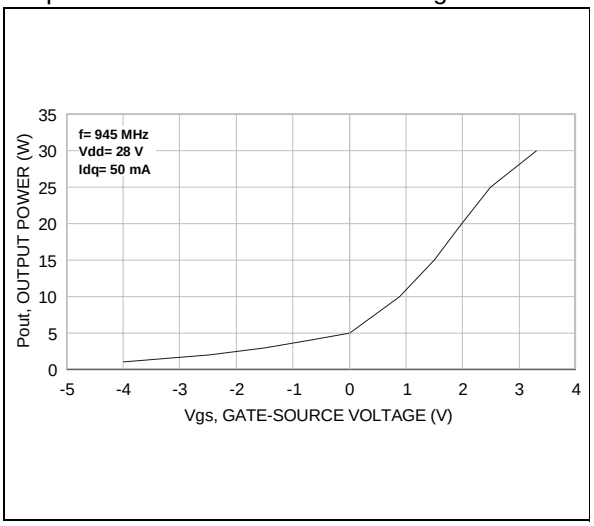
Output Power vs. Input Power



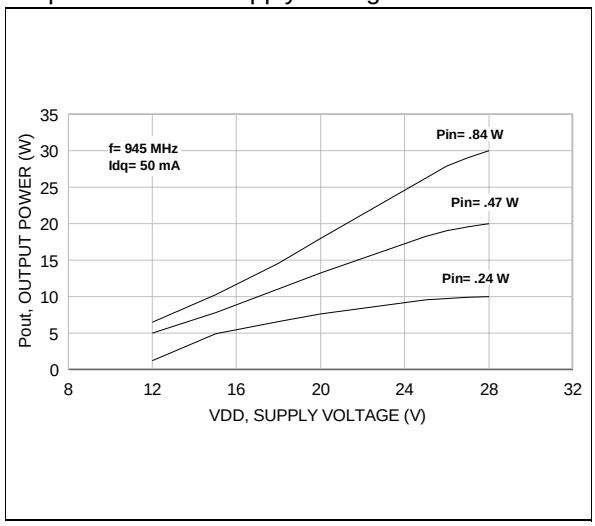

Power Gain and Efficiency vs. Output Power



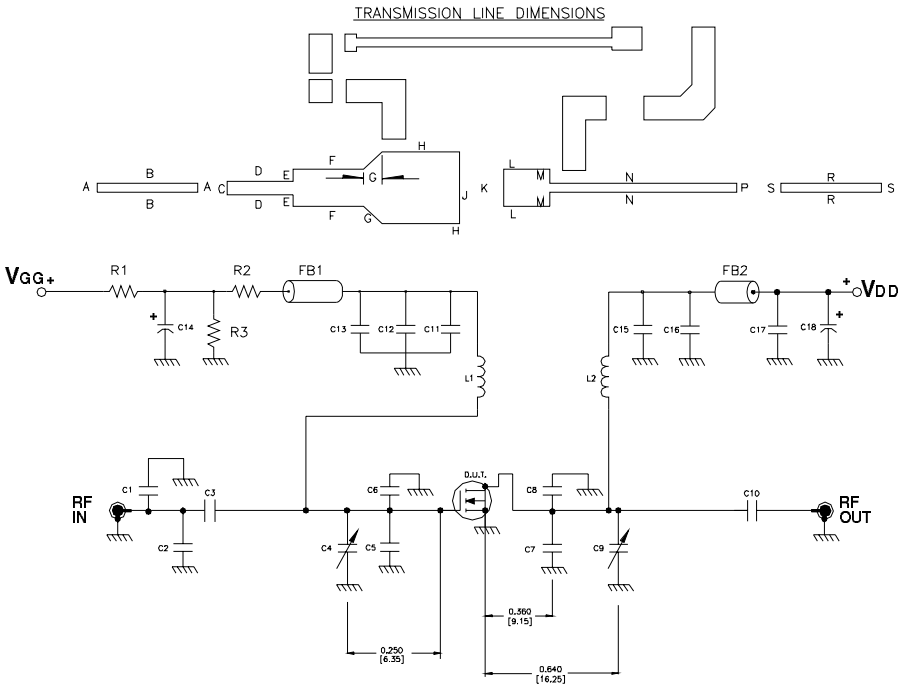

Output Power vs. Gate Source Voltage




Output Power vs. Supply Voltage



## TEST CIRCUIT SCHEMATIC



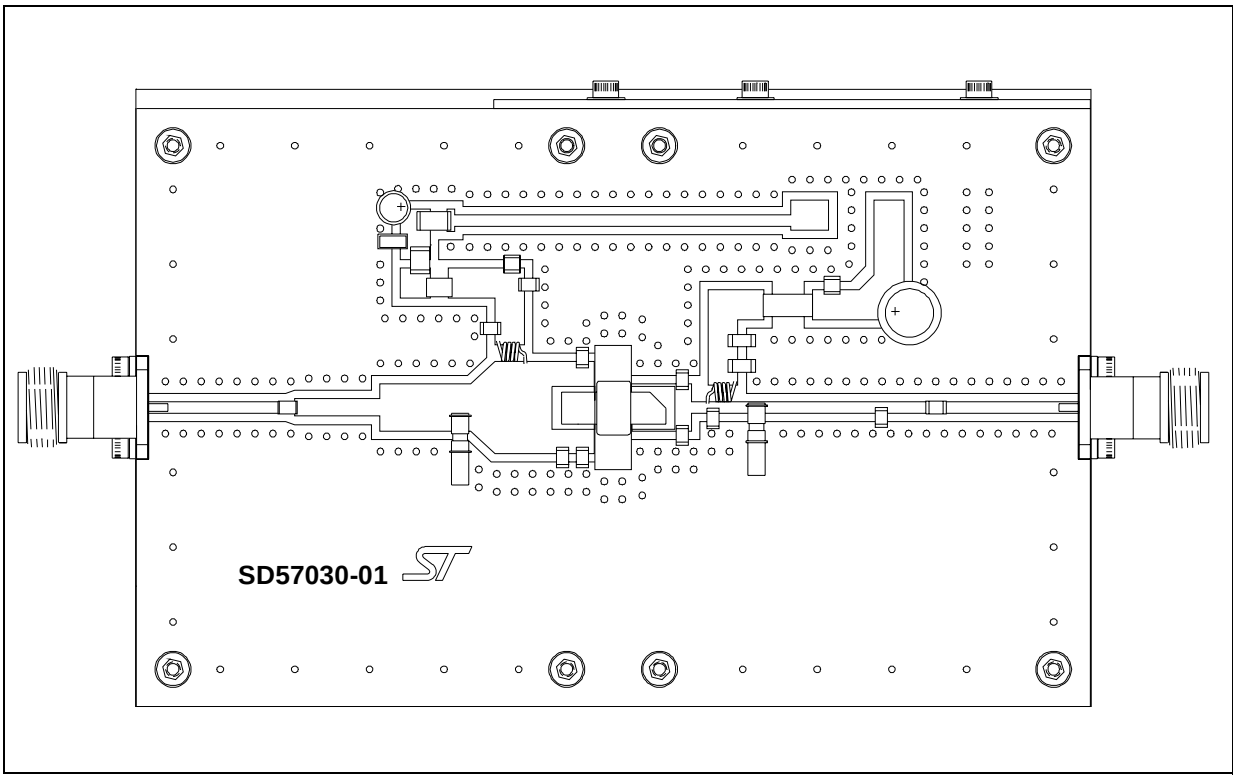

| DIMENSION TABLE | | |
|---|---|---|
| DIM | IN | MM |
| A | 0.076 | 1,93 |
| B | 0.925 | 23,50 |
| C | 0.116 | 2,95 |
| D | 0.570 | 14,48 |
| E | 0.100 | 2,54 |
| F | 0.609 | 15,47 |
| G | 0.160 | 4,06 |
| H | 0.667 | 16,94 |
| J | 0.616 | 15,65 |
| K | 0.316 | 18,03 |
| L | 0.396 | 10,06 |
| M | 0.120 | 3,05 |
| N | 1.610 | 40,89 |
| P | 0.076 | 1,93 |
| R | 0.925 | 23,50 |
| S | 0.076 | 1,93 |

NOTES:
1. DIMENSIONS AT COMPONENT SYMBOLS ARE REFERENCE FOR COMPONENT PLACEMENT.
2. GAP BETWEEN GROUND & TRANSMISSION LINE = 0.056 [1.42] +0.002 [0.05] -0.000 [0.00] TYP.
3. DIMENSIONS OF INPUT AND OUTPUT COMPONENT FROM EDGE OF TRANSMISSION LINES.

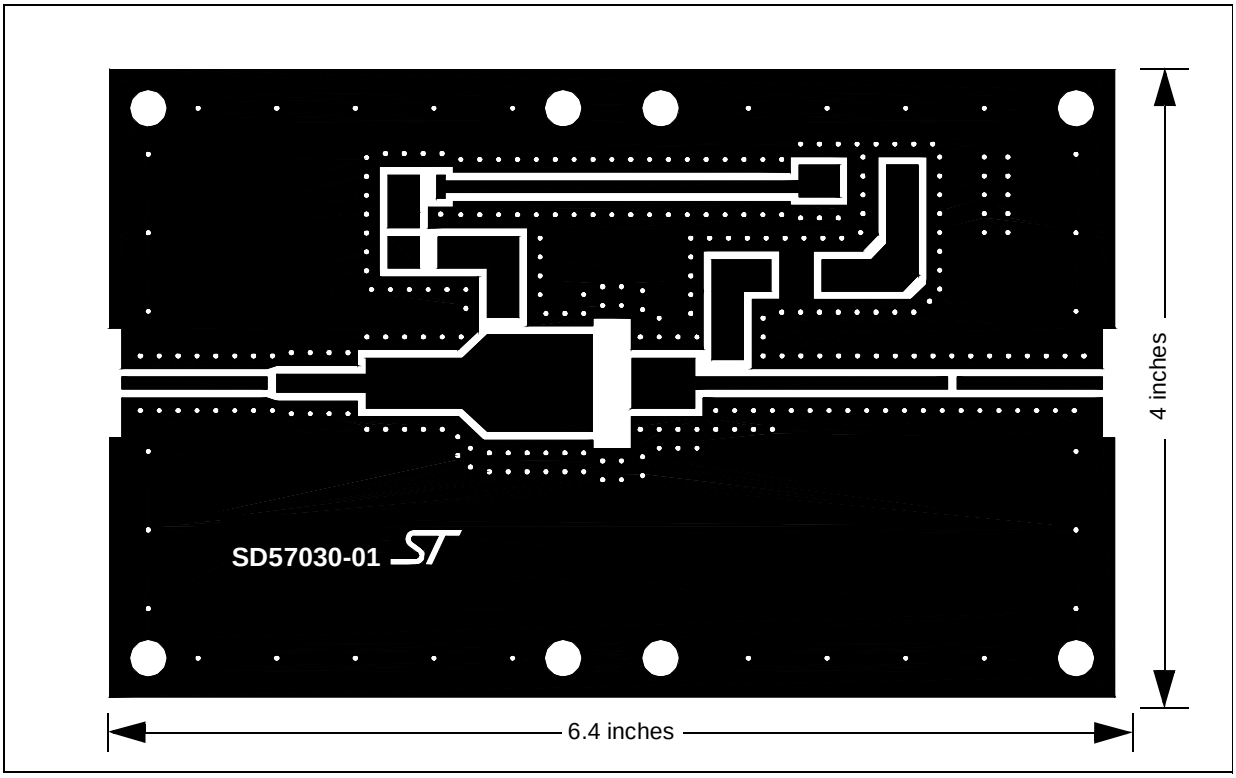
## TEST CIRCUIT COMPONENT PART LIST

| COMPONENT | DESCRIPTION |
|---|---|
| C19 | 200 µF / 63V ALLUMINIUM ELECTROLYTIC RADIAL LEAD CAPACITOR |
| C18, C14 | 0.1 µF / 500V SURFACE MOUNT CERAMIC CHIP CAPACITOR |
| C17 | 100 pF ATC 100B SURFACE MOUNT CERAMIC CHIP CAPACITOR |
| C16, C12, C11,C1 | 47 pF ATC 100B SURFACE MOUNT CERAMIC CHIP CAPACITOR |
| C15 | 10 µF / 50V ALUMINIUM ELECTROLYTIC RADIAL LEAD CAPACITOR |
| C13 | 100 pF ATC 700B SURFACE MOUNT CERAMIC CHIP CAPACITOR |
| C9, C2 | 0.8-8.0 pF GIGA TRIM VARIABLE CAPACITOR |
| C8 | 6.2 pF ATC 100B SURFACE MOUNT CERAMIC CHIP CAPACITOR |
| C7, C6, C5 ,C4 | 10 pF ATC 100B SURFACE MOUNT CERAMIC CHIP CAPACITOR |
| C3 | 3 pF ATC 100B SURFACE MOUNT CERAMIC CHIP CAPACITOR |
| R3 | 120 0-IM, 2W SURFACE MOUNT CERAMIC CHIP CAPACITOR |
| R2 | 4.7 M OHM 1W SURFACE MOUNT CERAMIC CHIP CAPACITOR |
| R1 | 18 K OHM, 1W SURFACE MOUNT CERAMIC CHIP CAPACITOR |
| FB2, FB1 | SHIELD BEAD SURFACE MOUNT EMI |
| L2, L1 | INDUCTOR, 5 TURNS AIR WOUND #22AWG, ID=0.059[1.49], NYLON COATED MAGNET WIRE |
| PCB | WOVEN FIBERGLASS REINFORCED PTFE 0.080'' THK, εr=2.55, 2 Oz EDCu BOTH SIDE |

**TEST CIRCUIT**

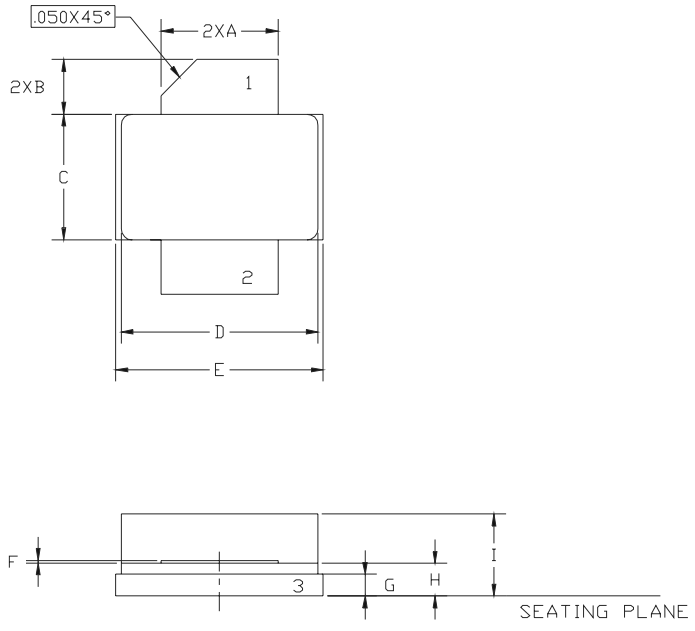



**TEST CIRCUIT PHOTOMASTER**



## M250 (.230 x .360 2L N/HERM W/FLG) MECHANICAL DATA

| DIM. | mm | | | Inch | | |
|---|---|---|---|---|---|---|
| | MIN. | TYP. | MAX | MIN. | TYP. | MAX |
| A | 5.21 | | 5.71 | 0.205 | | 0.225 |
| B | 2.16 | | 2.92 | 0.085 | | 0.115 |
| C | 5.59 | | 6.09 | 0.220 | | 0.240 |
| D | 8.89 | | 9.40 | 0.350 | | 0.370 |
| E | 9.40 | | 9.91 | 0.370 | | 0.390 |
| F | 0.11 | | 0.15 | 0.004 | | 0.006 |
| G | 0.89 | | 1.14 | 0.035 | | 0.045 |
| H | 1.45 | | 1.70 | 0.057 | | 0.067 |
| I | 2.67 | | 3.94 | 0.105 | | 0.155 |




Controlling dimension: Inches

1022729B