

## SILICON N-CHANNEL MOS FET

### HF/VHF POWER AMPLIFIER

#### FEATURES

- High Breakdown Voltage.
- You Can Decrease Handling Current.
- Gate is Protected by Zenner Diodes.
- No Secondary-Breakdown.
- Wide Area of Safe Operation.
- Infinite VSWR.
- No Thermal Runaway.
- Simple Bias Circuitry.

#### ABSOLUTE MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$ )

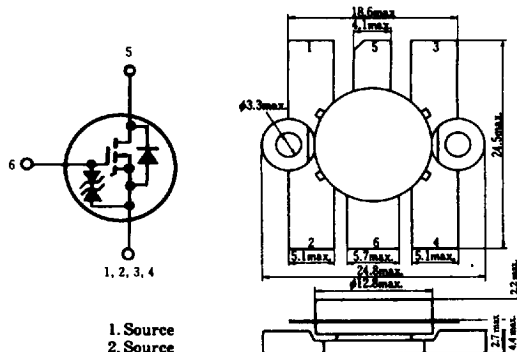
| Item                 | Symbol    | Rating          | Unit             |
|----------------------|-----------|-----------------|------------------|
| Drain-Source Voltage | $V_{DS}$  | 180             | V                |
| Gate-Source Voltage  | $V_{GS}$  | $\pm 20$        | V                |
| Drain Current        | $I_D$     | 4               | A                |
| Channel Dissipation  | $P_{ch}$  | 70              | W                |
| Channel Temperature  | $T_{ch}$  | 150             | $^\circ\text{C}$ |
| Storage Temperature  | $T_{stg}$ | $-55 \sim +150$ | $^\circ\text{C}$ |

\*Value at  $T_c=25^\circ\text{C}$

#### ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$ )

| Item                                    | Symbol        | Test Condition                                        | min.     | typ. | max. | Unit     |
|-----------------------------------------|---------------|-------------------------------------------------------|----------|------|------|----------|
| Power Output                            | $P_o$         | $V_{DS}=80\text{V}, I_{DQ}=0.1\text{A}$               | 60       | 90   | —    | W        |
| Drain Efficiency                        | $\eta$        | $P_{in}=4\text{W}, f=100\text{MHz}$                   | —        | 80   | —    | %        |
| Drain-Source Breakdown Voltage          | $V_{(BR)DS}$  | $I_D=10\text{mA}, V_{GS}=0$                           | 180      | —    | —    | V        |
| Gate-Source Breakdown Voltage           | $V_{(BR)GS}$  | $I_G=\pm 100\mu\text{A}, V_{DS}=0$                    | $\pm 20$ | —    | —    | V        |
| Zero Gate Voltage Drain Current         | $I_{DSS}$     | $V_{DS}=140\text{V}, V_{GS}=0$                        | —        | —    | 1.0  | mA       |
| Gate-Source Cutoff Voltage              | $V_{GS(off)}$ | $I_D=1\text{mA}, V_{DS}=10\text{V}$                   | 0.5      | —    | 3.0  | V        |
| Static Drain-Source On State Resistance | $R_{DS(on)}$  | $I_D=2\text{A}, V_{GS}=10\text{V}^*$                  | —        | 1.9  | 3.0  | $\Omega$ |
| Drain-Source Saturation Voltage         | $V_{DS(sat)}$ | $I_D=2\text{A}, V_{GS}=10\text{V}^*$                  | —        | 3.8  | 6.0  | V        |
| Forward Transfer Admittance             | $ y_f $       | $I_D=1.5\text{A}, V_{DS}=20\text{V}^*$                | 0.4      | 0.6  | —    | S        |
| Input Capacitance                       | $C_{iss}$     | $V_{GS}=5\text{V}, V_{DS}=0, f=1\text{MHz}$           | —        | 300  | —    | pF       |
| Output Capacitance                      | $C_{oss}$     | $V_{GS}=-5\text{V}, V_{DS}=50\text{V}, f=1\text{MHz}$ | —        | 45   | —    | pF       |
| Reverse Transfer Capacitance            | $C_{rs}$      | $V_{GD}=-50\text{V}, f=1\text{MHz}$                   | —        | 0.3  | —    | pF       |

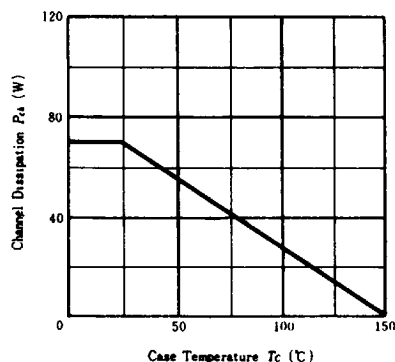
\*Pulse Test



(RFPK-A)

(Dimensions in mm)

#### POWER VS. TEMPERATURE DERATING

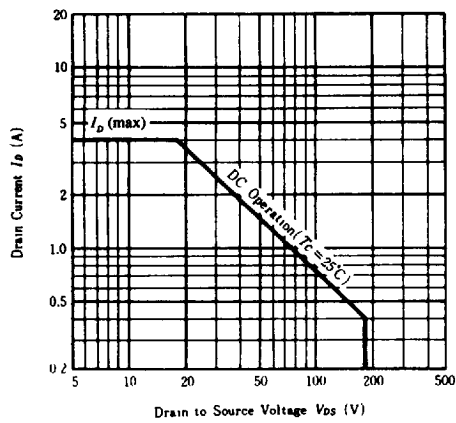


#### CAUTION: OPERATING HAZARDS

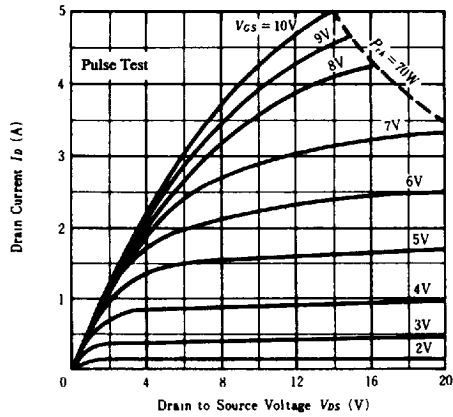
Beryllium Oxide Ceramics have been employed in these products.

Since dust or fume of the material is highly poison to the human body, please do not treat them mechanically or chemically in the manner which might expose them to the air. And it should never be thrown out with general industrial or domestic waste.

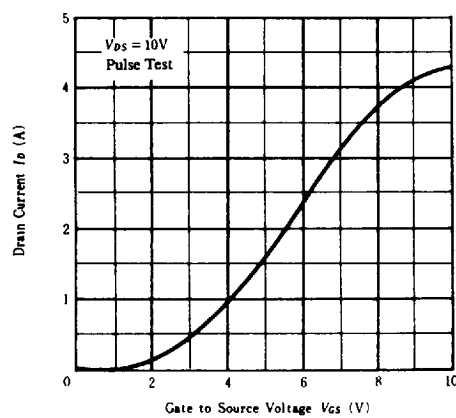
MAXIMUM SAFE OPERATION AREA



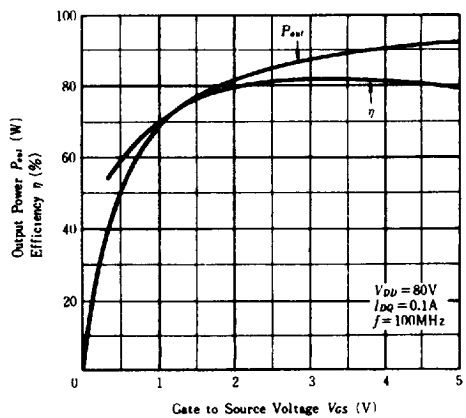
TYPICAL OUTPUT CHARACTERISTICS



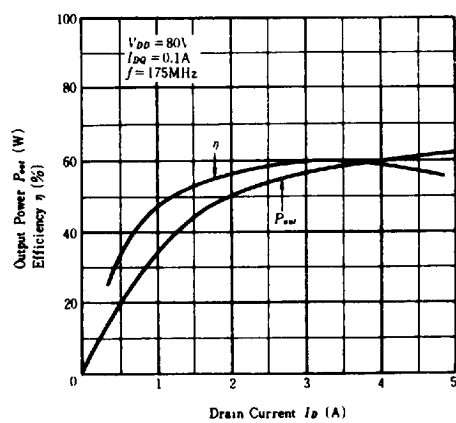
TYPICAL TRANSFER CHARACTERISTICS



INPUT POWER VS. OUTPUT POWER (1)



INPUT POWER VS. OUTPUT POWER (2)



OUTPUT POWER TEST CIRCUIT

