

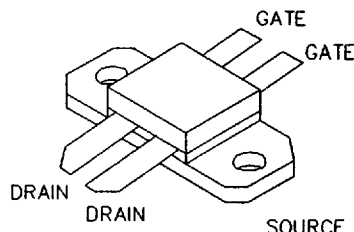
T-39-13

## POLYFET RF DEVICES

EXO-73

General Description

Silicon vertical DMOS designed specifically for RF applications. Immune to forward and reverse bias secondary breakdown. "POLYFET"™ process features gold metal for greatly extended lifetime. Low output capacitance and high  $F_t$  enhance broad band performance.



PATENTED GOLD METALIZED  
SILICON RF POWER MOSFET

BROADBAND TO 600 MHZ

Push Pull  
Package Style AQ

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

| Total Device Dissipation | Junction to Case Thermal Resistance | Maximum Junction Temperature | Storage Temperature                          | DC Drain Current | Drain to Gate Voltage | Drain to Source Voltage | Gate to Source Voltage |
|--------------------------|-------------------------------------|------------------------------|----------------------------------------------|------------------|-----------------------|-------------------------|------------------------|
| 100 Watts                | 1.75 $^\circ\text{C}/\text{W}$      | 200 $^\circ\text{C}$         | -65 $^\circ\text{C}$ to 150 $^\circ\text{C}$ | 4 A              | 45 V                  | 45 V                    | 40 V                   |

## RF CHARACTERISTICS (12 WATTS OUTPUT)

| SYMBOL   | PARAMETER                | MINIMUM | TYPICAL | MAXIMUM | UNITS    | TEST CONDITIONS                                                         |
|----------|--------------------------|---------|---------|---------|----------|-------------------------------------------------------------------------|
| $G_{ps}$ | Common Source Power Gain | 10      |         |         | dB       | $I_{DQ} = 0.8\text{A}$ , $V_{DS} = 12.5\text{V}$ , $F = 400\text{ MHz}$ |
| $\eta$   | Drain Efficiency         |         | 60      |         | %        | $I_{DQ} = 0.8\text{A}$ , $V_{DS} = 12.5\text{V}$ , $F = 400\text{ MHz}$ |
| VSWR     | Load Mismatch Tolerance  |         |         | 20 : 1  | Relative | $I_{DQ} = 0.8\text{A}$ , $V_{DS} = 12.5\text{V}$ , $F = 400\text{ MHz}$ |

## ELECTRICAL CHARACTERISTICS (EACH SIDE)

| SYMBOL     | PARAMETER                          | MINIMUM | TYPICAL | MAXIMUM | UNITS         | TEST CONDITIONS                                                     |
|------------|------------------------------------|---------|---------|---------|---------------|---------------------------------------------------------------------|
| $BV_{DSS}$ | Drain Breakdown Voltage            | 40      |         |         | V             | $I_D = 0.05\text{A}$ , $V_{GS} = 0\text{V}$                         |
| $I_{DSS}$  | Zero Bias Drain Current            |         |         | 1       | mA            | $V_{DS} = 12.5\text{V}$ , $V_{GS} = 0\text{V}$                      |
| $I_{GSS}$  | Gate Leakage Current               |         |         | 1       | $\mu\text{A}$ | $V_{DS} = 0\text{V}$ , $V_{GS} = 40\text{V}$                        |
| $V_{GS}$   | Gate Bias for Drain Current        | 1       |         | 7       | V             | $I_D = 0.1\text{A}$ , $V_{GS} = V_{DS}$                             |
| $g_M$      | Forward Transconductance           |         | 0.8     |         | MHO           | $V_{DS} = 12.5\text{V}$ , $I_D = 1.0\text{A}$ , $F = 120\text{ Hz}$ |
| $C_{iss}$  | Common Source Input Capacitance    |         | 40      |         | pFD           | $V_{DS} = 12.5\text{V}$ , $V_{GS} = 0\text{V}$ , $F = 1\text{ MHz}$ |
| $C_{rss}$  | Common Source Feedback Capacitance |         | 6       |         | pFD           | $V_{DS} = 12.5\text{V}$ , $V_{GS} = 0\text{V}$ , $F = 1\text{ MHz}$ |
| $C_{oss}$  | Common Source Output Capacitance   |         | 30      |         | pFD           | $V_{DS} = 12.5\text{V}$ , $V_{GS} = 0\text{V}$ , $F = 1\text{ MHz}$ |

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