

*Advance Information*

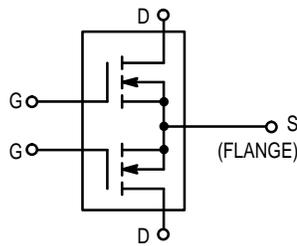
The RF MOSFET Line

**RF POWER**

**Field-Effect Transistor**

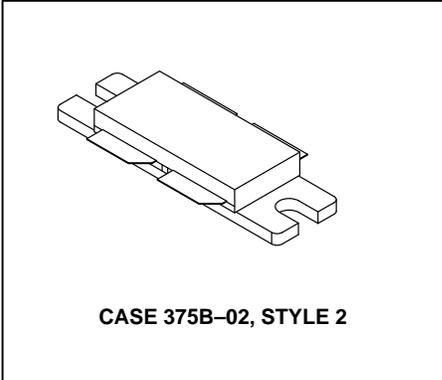
**N-Channel Enhancement-Mode Lateral MOSFET**

- High Gain, Rugged Device
- Broadband Performance from HF to 1 GHz
- Bottom Side Source Eliminates DC Isolators, Reducing Common Mode Inductances



**MRF185**

**85 WATTS, 1.0 GHz  
28 VOLTS  
LATERAL N-CHANNEL  
BROADBAND  
RF POWER MOSFET**



**MAXIMUM RATINGS**

Rating	Symbol	Value	Unit
Drain-Source Voltage	$V_{DSS}$	65	Vdc
Gate-Source Voltage	$V_{GS}$	$\pm 20$	Vdc
Storage Temperature Range	$T_{stg}$	- 65 to +150	$^{\circ}C$
Operating Junction Temperature	$T_J$	200	$^{\circ}C$
Total Device Dissipation @ $T_C = 25^{\circ}C$ Derate above $25^{\circ}C$	$P_D$	250 1.45	Watts W/ $^{\circ}C$

**THERMAL CHARACTERISTICS**

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.7	$^{\circ}C/W$

**ELECTRICAL CHARACTERISTICS** ( $T_C = 25^{\circ}C$  unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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**OFF CHARACTERISTICS**

Drain-Source Breakdown Voltage ( $V_{GS} = 0 V, I_D = 1 \mu A_{dc}$ )	$V_{(BR)DSS}$	65	-	-	Vdc
Zero Gate Voltage Drain Current ( $V_{DS} = 28 V, V_{GS} = 0 V$ )	$I_{DSS}$	-	-	1	$\mu A_{dc}$
Gate-Source Leakage Current ( $V_{GS} = 20 V, V_{DS} = 0 V$ )	$I_{GSS}$	-	-	1	$\mu A_{dc}$

**NOTE – CAUTION** – MOS devices are susceptible to damage from electrostatic charge. Reasonable precautions in handling and packaging MOS devices should be observed.

**ELECTRICAL CHARACTERISTICS – continued** ( $T_C = 25^\circ\text{C}$  unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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**ON CHARACTERISTICS**

Gate Quiescent Voltage ( $V_{DS} = 26\text{ V}$ , $I_D = 300\text{ mA}$ per side)	$V_{GS(Q)}$	3	4	5	Vdc
Delta Quiescent Voltage between sides ( $V_{DS} = 26\text{ V}$ , $I_D = 300\text{ mA}$ per side)	$\Delta V_{GS(Q)}$	–	0.15	0.3	Vdc
Drain–Source On–Voltage ( $V_{GS} = 10\text{ V}$ , $I_D = 3\text{ A}$ per side)	$V_{DS(on)}$	–	0.75	1	Vdc
Forward Transconductance ( $V_{DS} = 10\text{ V}$ , $I_D = 3\text{ A}$ per side)	$g_{fs}$	1.6	2	–	s

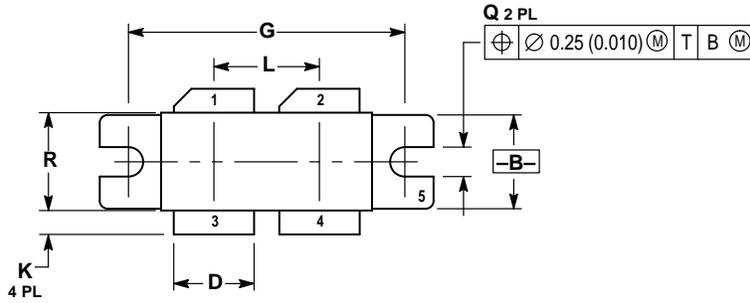
**DYNAMIC CHARACTERISTICS**

Output Capacitance ( $V_{DS} = 28\text{ V}$ , $V_{GS} = 0\text{ V}$ , $f = 1\text{ MHz}$ )	$C_{oss}$	–	38	–	pF
Reverse Transfer Capacitance ( $V_{DS} = 28\text{ V}$ , $V_{GS} = 0\text{ V}$ , $f = 1\text{ MHz}$ )	$C_{rss}$	–	4.6	6	pF

**FUNCTIONAL CHARACTERISTICS**

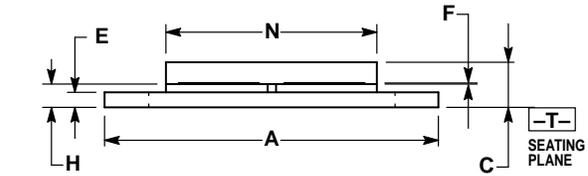
Common Source Power Gain ( $V_{DD} = 28\text{ V}$ , $P_{out} = 85\text{ W}$ , $f = 960\text{ MHz}$ , $I_{DQ} = 600\text{ mA}$ )	$G_{ps}$	11	14	–	dB
Drain Efficiency ( $V_{DD} = 28\text{ V}$ , $P_{out} = 85\text{ W}$ , $f = 960\text{ MHz}$ , $I_{DQ} = 600\text{ mA}$ )	$\eta$	45	55	–	%
Load Mismatch ( $V_{DD} = 28\text{ Vdc}$ , $P_{out} = 85\text{ W}$ , $f = 960\text{ MHz}$ , $I_{DQ} = 600\text{ mA}$ , Load VSWR 5:1 at All Phase Angles)	$\Psi$	No Degradation in Output Power			

# PACKAGE DIMENSIONS



- NOTES:  
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
 2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.330	1.350	33.79	34.29
B	0.375	0.395	9.52	10.03
C	0.180	0.210	4.57	5.33
D	0.320	0.340	8.13	8.64
E	0.060	0.070	1.52	1.77
F	0.004	0.006	0.11	0.15
G	1.100 BSC		27.94 BSC	
H	0.093	0.108	2.36	2.74
K	0.085	0.115	2.16	2.92
L	0.425 BSC		10.80 BSC	
N	0.845	0.875	21.46	22.23
Q	0.118	0.130	3.00	3.30
R	0.390	0.410	9.91	10.41



- STYLE 2:  
 PIN 1. DRAIN  
 2. DRAIN  
 3. GATE  
 4. GATE  
 5. SOURCE

**CASE 375B-02  
 ISSUE A**

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