

Advance Information

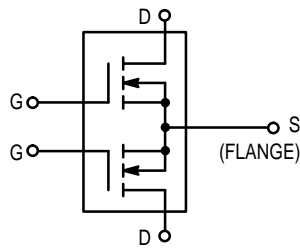
The RF MOSFET Line

RF POWER

Field-Effect Transistor

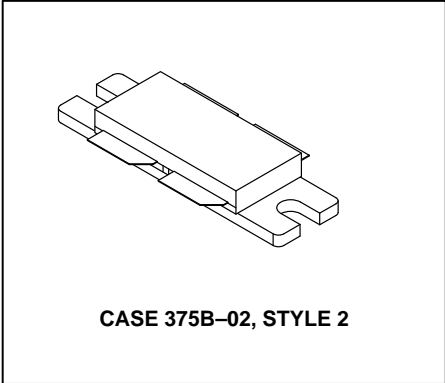
N-Channel Enhancement-Mode Lateral MOSFET

- 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}	± 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	μA_{dc}
Gate-Source Leakage Current ($V_{GS} = 20 V, V_{DS} = 0 V$)	I_{GSS}	-	-	1	μA_{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

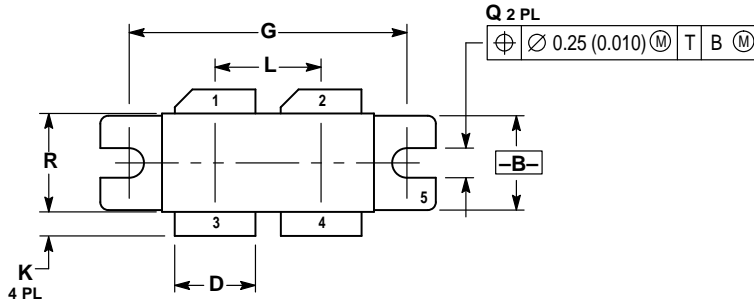
DYNAMIC CHARACTERISTICS

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

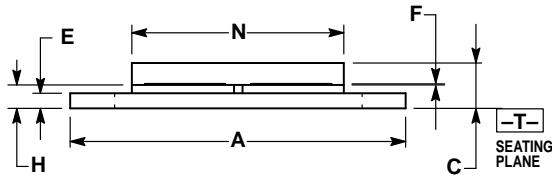
Common Source Power Gain ($V_{DD} = 28\text{ V}$, $P_{out} = 85\text{ W}$, $f = 960\text{ MHz}$, $I_{DQ} = 600\text{ mA}$)	G_{ps}	11	14	–	dB
Drain Efficiency ($V_{DD} = 28\text{ V}$, $P_{out} = 85\text{ W}$, $f = 960\text{ MHz}$, $I_{DQ} = 600\text{ mA}$)	η	45	55	–	%
Load Mismatch ($V_{DD} = 28\text{ Vdc}$, $P_{out} = 85\text{ W}$, $f = 960\text{ MHz}$, $I_{DQ} = 600\text{ mA}$, Load VSWR 5:1 at All Phase Angles)	Ψ	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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