MOTOROLA
SEMICONDUCTOR TECHNICAL DATA

Order this document
by MRF185/D

The RF MOSFET Line

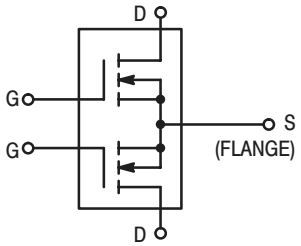
RF Power Field-Effect Transistor

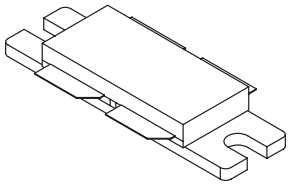
N–Channel Enhancement–Mode Lateral MOSFET

MRF185

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

1.0 GHz, 85 W, 28 V
LATERAL N–CHANNEL
BROADBAND
RF POWER MOSFET





CASE 375B–04, STYLE 1
NI–860

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	°C
Operating Junction Temperature	T_J	200	°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	250 1.45	Watts W/°C

THERMAL CHARACTERISTICS

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

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Drain–Source Breakdown Voltage (V_{GS} = 0 Vdc, I_D = 1 μAdc)	$V_{(BR)DSS}$	65	–	–	Vdc
Zero Gate Voltage Drain Current (V_{DS} = 28 Vdc, V_{GS} = 0 Vdc)	I_{DSS}	–	–	1	μAdc
Gate–Source Leakage Current (V_{GS} = 20 Vdc, V_{DS} = 0 Vdc)	I_{GSS}	–	–	1	μAdc

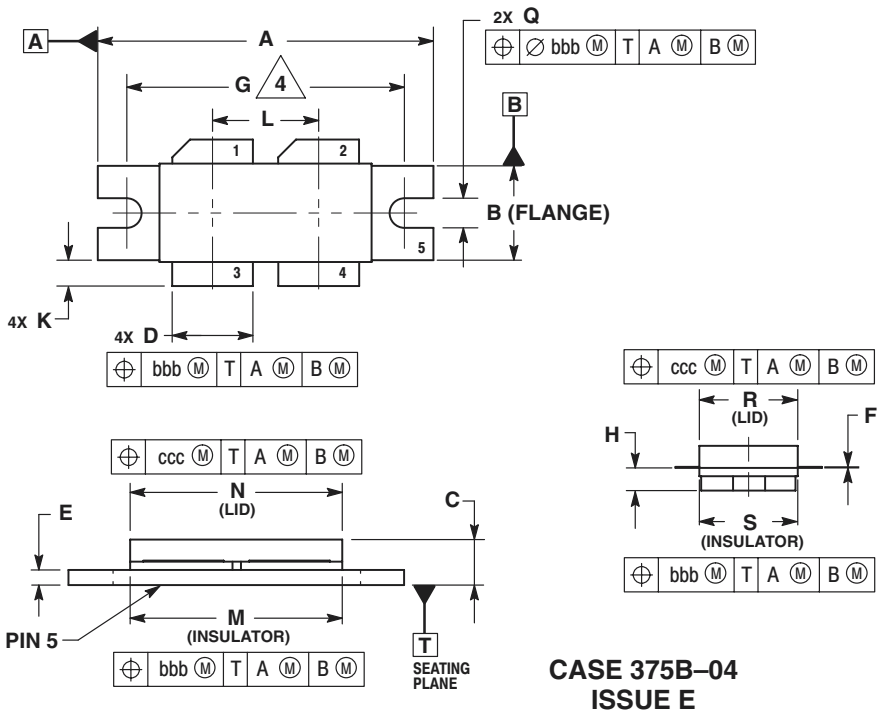
NOTE – **CAUTION** – MOS devices are susceptible to damage from electrostatic charge. Reasonable precautions in handling and packaging MOS devices should be observed.

REV 5

ELECTRICAL CHARACTERISTICS – continued (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS					
Gate Quiescent Voltage (V_{DS} = 26 V, I_D = 300 mA per side)	$V_{GS(Q)}$	3	4	5	Vdc
Delta Quiescent Voltage between sides (V_{DS} = 26 V, I_D = 300 mA per side)	$\Delta V_{GS(Q)}$	–	0.15	0.3	Vdc
Drain–Source On–Voltage (V_{GS} = 10 V, I_D = 3 A per side)	$V_{DS(on)}$	–	0.75	1	Vdc
Forward Transconductance (V_{DS} = 10 V, I_D = 3 A per side)	g_{fs}	1.6	2	–	s
DYNAMIC CHARACTERISTICS					
Output Capacitance (V_{DS} = 28 V, V_{GS} = 0 V, f = 1 MHz)	C_{oss}	–	38	–	pF
Reverse Transfer Capacitance (V_{DS} = 28 V, V_{GS} = 0 V, f = 1 MHz)	C_{rss}	–	4.6	6	pF
FUNCTIONAL CHARACTERISTICS					
Common Source Power Gain (V_{DD} = 28 V, P_{out} = 85 W, f = 960 MHz, I_{DQ} = 600 mA)	G_{ps}	11	14	–	dB
Drain Efficiency (V_{DD} = 28 V, P_{out} = 85 W, f = 960 MHz, I_{DQ} = 600 mA)	η	45	53	–	%
Load Mismatch (V_{DD} = 28 Vdc, P_{out} = 85 W, f = 960 MHz, I_{DQ} = 600 mA, Load VSWR 5:1 at All Phase Angles)	Ψ	No Degradation in Output Power			

PACKAGE DIMENSIONS



CASE 375B–04
ISSUE E
NI–860

NOTES:
1. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M–1994.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION H IS MEASURED 0.030 (0.762) AWAY FROM PACKAGE BODY.
4. RECOMMENDED BOLT CENTER DIMENSION OF 1.140 (28.96) BASED ON M3 SCREW.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	1.335	1.345	33.91	34.16
B	0.380	0.390	9.65	9.91
C	0.180	0.224	4.57	5.69
D	0.325	0.335	8.26	8.51
E	0.060	0.070	1.52	1.78
F	0.004	0.006	0.10	0.15
G	1.100 BSC		27.94 BSC	
H	0.097	0.107	2.46	2.72
K	0.085	0.115	2.16	2.92
L	0.425 BSC		10.80 BSC	
M	0.852	0.868	21.64	22.05
N	0.851	0.869	21.62	22.07
Q	0.118	0.138	3.00	3.51
R	0.395	0.405	10.03	10.29
S	0.394	0.406	10.01	10.31
bbb	0.010 REF		0.25 REF	
ccc	0.015 REF		0.38 REF	

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

How to reach us:
USA/EUROPE/Locations Not Listed: Motorola Literature Distribution; P.O. Box 5405, Denver, Colorado 80217. 1–303–675–2140 or 1–800–441–2447

JAPAN: Motorola Japan Ltd.; SPS, Technical Information Center, 3–20–1, Minami–Azabu. Minato–ku, Tokyo 106–8573 Japan. 81–3–3440–3569

ASIA/PACIFIC: Motorola Semiconductors H.K. Ltd.; Silicon Harbour Centre, 2 Dai King Street, Tai Po Industrial Estate, Tai Po, N.T. Hong Kong. 852–26668334

Technical Information Center: 1–800–521–6274

HOME PAGE: http://www.motorola.com/semiconductors/