

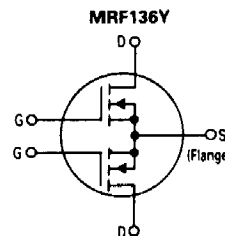
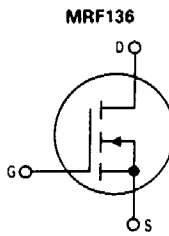
**The RF TMOS Line**  
**RF Power Field-Effect Transistors**  
**N-Channel Enhancement-Mode TMOS**

**MRF136**  
**MRF136Y**

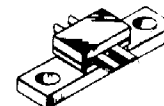
15 W, 30 W 2-400 MHz  
N-CHANNEL  
TMOS BROADBAND  
RF POWER FETs

... designed for wideband large-signal amplifier and oscillator applications in the 2 to 400 MHz range, in either single ended or push-pull configuration.

- Guaranteed 28 Volt, 150 MHz Performance
- **MRF136**  
Output Power = 15 Watts  
Narrowband Gain = 16 dB (Typ)  
Efficiency = 60% (Typical)
- **MRF136Y**  
Output Power = 30 Watts  
Broadband Gain = 14 dB (Typ)  
Efficiency = 54% (Typical)
- Small-Signal and Large-Signal Characterization
- 100% Tested For Load Mismatch At All Phase Angles With 30:1 VSWR
- Space Saving Package For Push-Pull Circuit Applications — MRF136Y
- Excellent Thermal Stability, Ideally Suited For Class A Operation
- Facilitates Manual Gain Control, ALC and Modulation Techniques



MRF136



MRF136Y

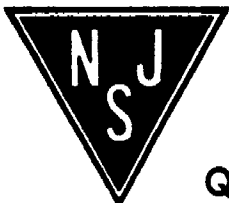
**MAXIMUM RATINGS**

Rating	Symbol	Value		Unit
		MRF136	MRF136Y	
Drain-Source Voltage	V <sub>DSS</sub>	65	65	V <sub>dc</sub>
Drain-Gate Voltage (R <sub>GS</sub> = 1 MΩ)	V <sub>DGR</sub>	65	65	V <sub>dc</sub>
Gate-Source Voltage	V <sub>GS</sub>	± 40		V <sub>dc</sub>
Drain-Current — Continuous	I <sub>D</sub>	2.5	5	A <sub>dc</sub>
Total Device Dissipation (at T <sub>C</sub> = 25°C Derate above 25°C)	P <sub>D</sub>	55 0.314	100 0.571	Watts W/°C
Storage Temperature Range	T <sub>stg</sub>	- 65 to + 150		°C
Operating Junction Temperature	T <sub>J</sub>	200		°C

**THERMAL CHARACTERISTICS**

Characteristic	Symbol	Max		Unit
		MRF136	MRF136Y	
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	3.2	1.75	°C/W

\*Handling and Packaging — MOS devices are susceptible to damage from electrostatic charge. Reasonable precautions in handling and packaging MOS devices should be observed.



## MRF136, MRF136Y

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

Characteristic	Symbol	Min	Typ	Max	Unit	
<b>OFF CHARACTERISTICS (NOTE 1)</b>						
Drain-Source Breakdown Voltage ( $V_{GS} = 0, I_D = 5 \text{ mA}$ )	$V_{(BR)DSS}$	65	—	—	Vdc	
Zero-Gate Voltage Drain Current ( $V_{DS} = 28 \text{ V}, V_{GS} = 0$ )	$I_{DSS}$	—	—	2	mAdc	
Gate-Source Leakage Current ( $V_{GS} = 40 \text{ V}, V_{DS} = 0$ )	$I_{GSS}$	—	—	1	$\mu\text{Adc}$	
<b>ON CHARACTERISTICS (NOTE 1)</b>						
Gate Threshold Voltage ( $V_{DS} = 10 \text{ V}, I_D = 25 \text{ mA}$ )	$V_{GS(th)}$	1	3	6	Vdc	
Forward Transconductance ( $V_{DS} = 10 \text{ V}, I_D = 250 \text{ mA}$ )	$g_{fs}$	250	400	—	mmhos	
<b>DYNAMIC CHARACTERISTICS (NOTE 1)</b>						
Input Capacitance ( $V_{DS} = 28 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz}$ )	$C_{iss}$	—	24	—	pF	
Output Capacitance ( $V_{DS} = 28 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz}$ )	$C_{oss}$	—	27	—	pF	
Reverse Transfer Capacitance ( $V_{DS} = 28 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz}$ )	$C_{rss}$	—	5.5	—	pF	
<b>FUNCTIONAL CHARACTERISTICS (NOTE 2)</b>						
Noise Figure ( $V_{DS} = 28 \text{ Vdc}, I_D = 500 \text{ mA}, f = 150 \text{ MHz}$ )	MRF136	NF	—	1	—	dB
Common Source Power Gain (Figure 1) ( $V_{DD} = 28 \text{ Vdc}, P_{out} = 15 \text{ W}, f = 150 \text{ MHz}, I_{DQ} = 25 \text{ mA}$ )	MRF136	$G_{ps}$	13	16	—	dB
Common Source Power Gain (Figure 2) ( $V_{DD} = 28 \text{ Vdc}, P_{out} = 30 \text{ W}, f = 150 \text{ MHz}, I_{DQ} = 100 \text{ mA}$ )	MRF136Y	$G_{ps}$	12	14	—	dB
Drain Efficiency (Figure 1) ( $V_{DD} = 28 \text{ Vdc}, P_{out} = 15 \text{ W}, f = 150 \text{ MHz}, I_{DQ} = 25 \text{ mA}$ )	MRF136	$\eta$	50	60	—	%
Drain Efficiency (Figure 2) ( $V_{DD} = 28 \text{ Vdc}, P_{out} = 30 \text{ W}, f = 150 \text{ MHz}, I_{DQ} = 100 \text{ mA}$ )	MRF136Y	$\eta$	50	54	—	%
Electrical Ruggedness (Figure 1) ( $V_{DD} = 28 \text{ Vdc}, P_{out} = 15 \text{ W}, f = 150 \text{ MHz}, I_{DQ} = 25 \text{ mA},$ $V_{SWR} 30:1$ at all Phase Angles)	MRF136	$\psi$	No Degradation in Output Power			
Electrical Ruggedness (Figure 2) ( $V_{DD} = 28 \text{ Vdc}, P_{out} = 30 \text{ W}, f = 150 \text{ MHz}, I_{DQ} = 100 \text{ mA},$ $V_{SWR} 30:1$ at all Phase Angles)	MRF136Y	$\psi$	No Degradation in Output Power			

Notes: 1. For MRF136Y, each side measured separately.  
2. For MRF136Y measured in push-pull configuration.