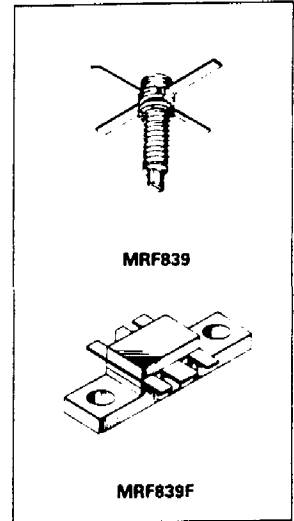


**MRF839**  
**MRF839F**

3 W 806-960 MHz  
 RF POWER  
 TRANSISTORS  
 COMMON-EMITTER  
 NPN SILICON



**MAXIMUM RATINGS**

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	16	Vdc
Collector-Base Voltage	$V_{CBO}$	36	Vdc
Emitter-Base Voltage	$V_{EBO}$	3.5	Vdc
Collector-Current — Continuous	$I_C$	0.6	Adc
Operating Junction Temperature	$T_J$	200	°C
Total Device Dissipation ( $T_C = 110\text{ C}$ Derate above 110 C)	PD	10 111	Watts W/°C
Storage Temperature Range	$T_{stg}$	-65 to +150	°C

**THERMAL CHARACTERISTICS**

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	9	°C/W

**ELECTRICAL CHARACTERISTICS ( $T_C = 25\text{ °C}$  unless otherwise noted.)**

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

Collector-Emitter Breakdown Voltage ( $I_C = 5\text{ mAdc}$ , $I_B = 0$ )	$V_{(BR)CEO}$	16	—	—	Vdc
Collector-Emitter Breakdown Voltage ( $I_C = 5\text{ mAdc}$ , $V_{BE} = 0$ )	$V_{(BR)CES}$	36	—	—	Vdc
Emitter-Base Breakdown Voltage ( $I_E = 0.1\text{ mAdc}$ , $I_C = 0$ )	$V_{(BR)EBO}$	3.5	—	—	Vdc
Collector Cutoff Current ( $V_{CE} = 15\text{ Vdc}$ , $V_{BE} = 0$ , $T_C = 25\text{ °C}$ )	$I_{CES}$	—	—	1	mAdc

**ON CHARACTERISTICS**

DC Current Gain ( $I_C = 100\text{ mAdc}$ , $V_{CE} = 5\text{ Vdc}$ )	$h_{FE}$	10	90	150	—
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**DYNAMIC CHARACTERISTICS**

Output Capacitance ( $V_{CB} = 15\text{ Vdc}$ , $I_E = 0$ , $f = 1\text{ MHz}$ )	$C_{ob}$	—	6.5	10	pF
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**FUNCTIONAL TESTS (FIGURE 1)**

Common-Emitter Amplifier Power Gain ( $P_{out} = 3\text{ W}$ , $V_{CC} = 12.5\text{ Vdc}$ , $f = 870\text{ MHz}$ )	$G_{PE}$	8	10	—	dB
Collector Efficiency ( $P_{out} = 3\text{ W}$ , $V_{CC} = 12.5\text{ Vdc}$ , $f = 870\text{ MHz}$ )	$\eta_c$	55	63	—	%
Load Mismatch Stress ( $V_{CC} = 15.5\text{ Vdc}$ , $P_{in} = 0.5\text{ W}$ , $f = 870\text{ MHz}$ , $V_{SWR} = 20:1$ , all phase angles)	—	No Degradation in Output Power			

