

## NPN Silicon RF Power Transistors

**MRF652  
MRF652S**

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	16	Vdc
Collector-Base Voltage	$V_{CBO}$	36	Vdc
Emitter-Base Voltage	$V_{EBO}$	4.0	Vdc
Collector Current --- Continuous	$I_C$	2.0	Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	25 143	Watts mW/ $^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-65 to +150	$^\circ\text{C}$
Operating Junction Temperature	$T_J$	200	$^\circ\text{C}$

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	7.0	$^\circ\text{C/W}$

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

Characteristic	Symbol	Min	Typ	Max	Unit
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### OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ( $I_C = 25 \text{ mAdc}$ , $I_B = 0$ )	$V_{(BR)CEO}$	16	---	---	Vdc
Collector-Emitter Breakdown Voltage ( $I_C = 25 \text{ mAdc}$ , $V_{BE} = 0$ )	$V_{(BR)CES}$	36	---	---	Vdc
Collector-Base Breakdown Voltage ( $I_C = 25 \text{ mAdc}$ , $I_E = 0$ )	$V_{(BR)CBO}$	36	---	---	Vdc
Emitter-Base Breakdown Voltage ( $I_E = 5.0 \text{ mAdc}$ , $I_C = 0$ )	$V_{(BR)EBO}$	4.0	---	---	Vdc
Collector Cutoff Current ( $V_{CE} = 15 \text{ Vdc}$ , $V_{BE} = 0$ )	$I_{CES}$	---	---	1.0	mAdc

### ON CHARACTERISTICS

DC Current Gain ( $I_C = 200 \text{ mAdc}$ , $V_{CE} = 5.0 \text{ Vdc}$ )	$h_{FE}$	10	---	150	---
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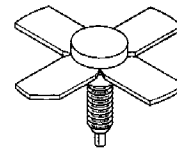
Characteristic	Symbol	Min	Typ	Max	Unit
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### DYNAMIC CHARACTERISTICS

Output Capacitance ( $V_{CB} = 15 \text{ Vdc}$ , $I_E = 0$ , $f = 1.0 \text{ MHz}$ )	$C_{ob}$	---	9.5	15	pF
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### FUNCTIONAL TESTS

Common-Emitter Amplifier Power Gain ( $V_{CC} = 12.5 \text{ Vdc}$ , $P_{out} = 5.0 \text{ W}$ )	$f = 512 \text{ MHz}$ $f = 870 \text{ MHz}$	$G_{pe}$	10 ---	11 6.0	---	dB
Collector Efficiency ( $V_{CC} = 12.5 \text{ Vdc}$ , $P_{out} = 5.0 \text{ W}$ , $f = 512 \text{ MHz}$ )		$\eta$	60	65	---	%
Load Mismatch ( $V_{CC} = 15.5 \text{ Vdc}$ , $P_{in} = 500 \text{ mW}$ , $f = 512 \text{ MHz}$ , VSWR = 30:1, At All Phase Angles)		$\psi$	No Degradation in Output Power			



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