

# New Jersey Semi-Conductor Products, Inc.

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U.S.A.

## MRF641

15 W, 470 MHz  
CONTROLLED Q  
RF POWER  
TRANSISTOR  
NPN SILICON

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### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CE0}$	16	Vdc
Collector-Base Voltage	$V_{CBO}$	36	Vdc
Emitter-Base Voltage	$V_{EBC}$	4.0	Vdc
Collector Current — Continuous	$I_C$	3.0	Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	43.7 0.25	Watts W/ $^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-65 to +150	$^\circ\text{C}$

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	4.0	$^\circ\text{C}/\text{W}$

### 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 ( $I_C = 20\text{ mAdc}$ , $I_B = 0$ )	$V_{(BR)CEO}$	16	—	—	Vdc
Collector-Emitter Breakdown Voltage ( $I_C = 20\text{ mAdc}$ , $V_{BE} = 0$ )	$V_{(BR)CES}$	36	—	—	Vdc
Emitter-Base Breakdown Voltage ( $I_E = 5.0\text{ mAdc}$ , $I_C = 0$ )	$V_{(BR)EBO}$	4.0	—	—	Vdc
Collector Cutoff Current ( $V_{CE} = 15\text{ Vdc}$ , $V_{BE} = 0$ , $T_C = 25^\circ\text{C}$ )	$I_{CES}$	—	—	5.0	mAdc

### ON CHARACTERISTICS

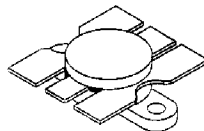
DC Current Gain ( $I_C = 1.0\text{ Adc}$ , $V_{CE} = 5.0\text{ Vdc}$ )	$h_{FE}$	30	70	150	—
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### DYNAMIC CHARACTERISTICS

Output Capacitance ( $V_{CE} = 12.5\text{ Vdc}$ , $I_E = 0$ , $f = 1.0\text{ MHz}$ )	$C_{ob}$	—	40	60	pF
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### FUNCTIONAL TESTS

Common-Emitter Amplifier Power Gain ( $V_{CC} = 12.5\text{ Vdc}$ , $P_{out} = 15\text{ W}$ , $f = 470\text{ MHz}$ )	$G_{ps}$	7.8	8.5	—	dB
Collector Efficiency ( $V_{CC} = 12.5\text{ Vdc}$ , $P_{out} = 15\text{ W}$ , $f = 470\text{ MHz}$ )	$\eta$	55	60	—	%
Output Mismatch Stress ( $V_{CC} = 16\text{ Vdc}$ , $P_{in} = 3.0\text{ W}$ , $f = 470\text{ MHz}$ , VSWR = 20:1, All Phase Angles)	$\psi$	No Degradation in Output Power			



CASE 316-01,

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Quality Semi-Conductors

