New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (201) 376-2922
(212) 227-6005
FAX: (201) 376-8960

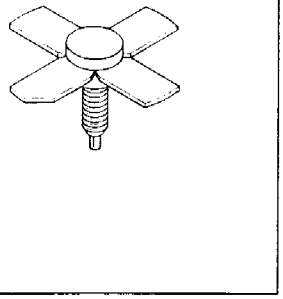
The RF Line
NPN Silicon RF Power Transistor

MRF653

10 W, 512 MHz RF POWER TRANSISTOR NPN SILICON

Designed for 12.5 Volt UHF large–signal amplifier applications in industrial and commercial FM equipment operating to 512 MHz.

- Specified 12.5 Volt, 512 MHz Characteristics
  Output Power = 10 W
  Gain = 8.0 dB (Typ)
  Efficiency = 65% (Typ)
- Gold Metallized, Emitter Ballasted for Long Life and Reliability
- Capable of 20:1 VSWR Load Mismatch at 16 V Supply Voltage



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	16.5	Vdc
Collector–Base Voltage	V_{CBO}	38	Vdc
Emitter–Base Voltage	V_{EBO}	4.0	Vdc
Collector Current — Continuous	I_C	2.75	Adc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	44 0.25	Watts W/°C
Storage Temperature Range	T_{stg}	−65 to +150	°C
Operating Junction Temperature	T_J	200	°C

THERMAL CHARACTERISTICS

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

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Breakdown Voltage (I_C = 20 mAdc, I_B = 0)	$V_{(BR)CEO}$	16.5	—	—	Vdc
Collector–Emitter Breakdown Voltage (I_C = 20 mAdc, V_{BE} = 0)	$V_{(BR)CES}$	38	—	—	Vdc
Emitter–Base Breakdown Voltage (I_E = 5.0 mAdc, I_C = 0)	$V_{(BR)EBO}$	4.0	—	—	Vdc
Collector Cutoff Current (V_{CE} = 15 Vdc, V_{BE} = 0)	I_{CES}	—	—	5.0	mAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 1.0 Adc, V_{CE} = 5.0 Vdc)	h_{FE}	20	—	120	—
DYNAMIC CHARACTERISTICS					
Output Capacitance (V_{CB} = 12.5 Vdc, I_E = 0, f = 1.0 MHz)	C_{ob}	—	22	28	pF
FUNCTIONAL TESTS					
Common–Emitter Amplifier Power Gain (V_{CC} = 12.5 Vdc, P_{out} = 10 W, f = 512 MHz)	G_{pe}	7.0	8.0	—	dB
Collector Efficiency (V_{CC} = 12.5 Vdc, P_{out} = 10 W, f = 512 MHz)	η_c	55	65	—	%
Load Mismatch Stress (V_{CC} = 16 Vdc, f = 512 MHz, P_{in} (1) = 2.6 W, VSWR = 20:1, All Phase Angles)	ψ	No Degradation in Output Power			

NOTE:
1. P_{in} = 2.0 dB over the typical input power required for 10 W output power @ 12.5 Vdc.

Quality Semi-Conductors