MRF534
MRF536
(See MM4049)

MRF542
MRF548

2

HIGH FREQUENCY TRANSISTORS NPN SILICON

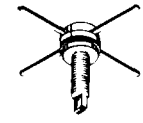
The RF Line

NPN Silicon High Frequency Transistors

. . . designed primarily for high frequency common base amplifiers used in medium and high resolution color video display monitors.

- High Collector-Base Breakdown Voltage $V_{(BR)CBO}$ = 120 V (Min)
- Stripline Opposed Base Construction
- Common Base Insertion Gain = 5.5 dB (Typ)
- Package Options for Low Cost (MRF542), High Power Dissipation (MRF548)
- **Die Source Same as MRF544**
- Emitter Ballasted for Improved Ruggedness

MRF542
CASE 317D-02, STYLE 3
PLASTIC



MRF548
CASE 244A-01, STYLE 3
(TO-117)
CERAMIC

MAXIMUM RATINGS

Rating		Symbol	Value	Unit
Collector-Emitter Voltage		V_{CEO}	70	Vdc
Collector-Base Voltage		V_{CBO}	120	Vdc
Emitter-Base Voltage		V_{EBO}	3	Vdc
Collector-Current — Continuous		I_C	400	mAdc
Operating Junction Temperature	MRF542 MRF548	T_J	150 200	°C °C
Total Device Dissipation @ T_C = 75°C (1,2)	MRF542 MRF548	P_D	3 5	Watts
Derate above 75°C	MRF542/548		40	mW/°C
Storage Temperature Range		T_{stg}	65 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	25	°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 = 1 mAdc, I_B = 0)	$V_{(BR)CEO}$	70	—	—	Vdc
Collector-Base Breakdown Voltage (I_C = 0.1 mAdc, I_E = 0)	$V_{(BR)CBO}$	120	—	—	Vdc
Emitter-Base Breakdown Voltage (I_E = 0.1 mAdc, I_C = 0)	$V_{(BR)EBO}$	3	—	—	Vdc
Collector Cutoff Current (V_{CE} = 80 Vdc, V_{BE} = 0, T_C = 25°C)	I_{CES}	—	—	100	μAdc
Collector Cutoff Current (V_{CB} = 80 Vdc, I_E = 0)	I_{CBO}	—	—	20	μAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 50 mAdc, V_{CE} = 10 Vdc)	h_{FE}	15	—	—	—
DYNAMIC CHARACTERISTICS					
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 1 MHz)	C_{ob}	—	2.9	—	pF
Collector-Base Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 1 MHz)	C_{cb}	—	2	2.5	pF
Input Capacitance (V_{EB} = 3 Vdc, f = 1 MHz)	C_{ib}	—	12.5	—	pF
FUNCTIONAL TESTS					
Common Base Gain (V_{CB} = 10 V, I_C = 100 mA, f = 250 MHz)	$\|S_{21}\|^2$	4.5	5.5	—	dB

(1) T_C, Case temperature measured on collector lead immediately adjacent to body of package.
(2) The MRF542 PowerMacro must be properly mounted for reliable operation. AN938, "Mounting Techniques in PowerMacro Transistor," discusses methods of mounting and heatsinking.

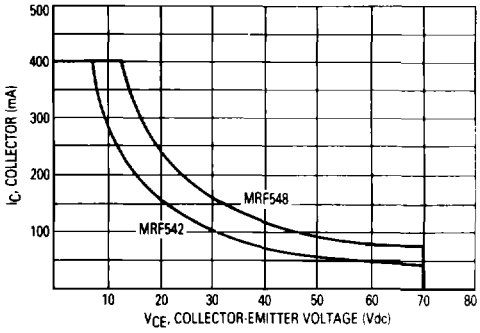


Figure 1. Safe Operating Area

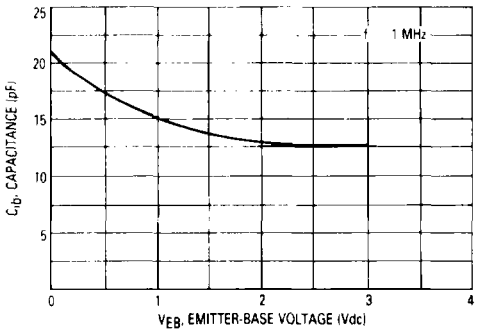


Figure 2. Input Capacitance versus Voltage

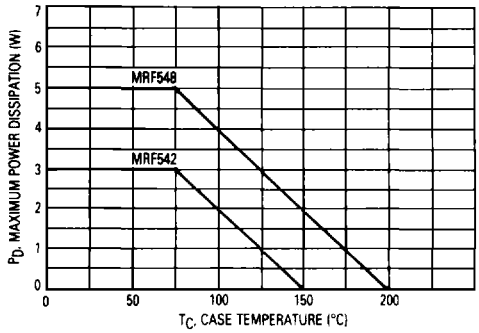


Figure 3. Power Dissipation versus Temperature

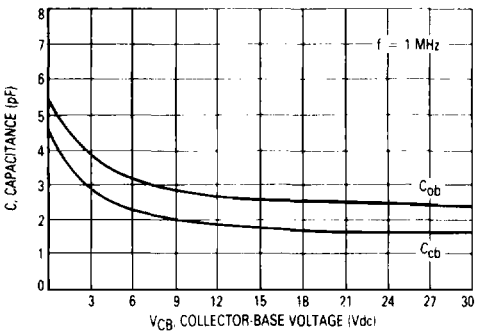


Figure 4. Junction Capacitance versus Voltage