

MOTOROLA

SEMICONDUCTOR

TECHNICAL DATA

T-33-05

The RF Line

NPN Silicon

High Frequency Transistor

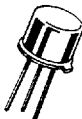
... specifically designed for CRT driver applications requiring high frequency and high voltage, such as high resolution color graphics video monitors.

- High Voltage — $V_{(BR)CBO} = 120\text{ V Min}$
- High Cutoff Frequency — $f_T = 1000\text{ MHz Min}$
- Low Output Capacitance — $C_{cb} = 2.5\text{ pF Max @ }V_{CB} = 15\text{ V}$
- Gold Metallization

LT1839

$f_T = 1000\text{ MHz MIN}$
HIGH FREQUENCY
TRANSISTOR
NPN SILICON

2



CASE 79-04, STYLE 1
(TO-39)

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	300	mA _{dc}
Operating Junction Temperature	T_J	200	°C
Storage Temperature Range	T_{stg}	- 65 to + 200	°C

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ($I_C = 1\text{ mA}, I_B = 0$)	$V_{(BR)CEO}$	70	—	—	Vdc
Collector-Base Breakdown Voltage ($I_C = 0.1\text{ mA}, I_E = 0$)	$V_{(BR)CBO}$	120	—	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 0.1\text{ mA}, I_C = 0$)	$V_{(BR)EBO}$	3	—	—	Vdc
Collector Cutoff Current ($V_{CB} = 80\text{ V}, I_E = 0$)	I_{CBO}	—	—	20	μA_{dc}
Collector Cutoff Current ($V_{CE} = 80\text{ V}, V_{BE} = 0$)	I_{CES}	—	—	100	μA_{dc}

ON CHARACTERISTICS

DC Current Gain ($I_C = 50\text{ mA}, V_{CE} = 5\text{ V}$)	h_{FE}	20	—	60	—
Collector-Emitter Saturation Voltage ($I_C = 50\text{ mA}, I_B = 5\text{ mA}$)	$V_{CE(sat)}$	—	—	800	mV

DYNAMIC CHARACTERISTICS

Collector-Base Capacitance ($V_{CB} = 15\text{ V}, I_E = 0, f = 1\text{ MHz}$)	C_{cb}	—	—	2.5	pF
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FUNCTIONAL TESTS

Cutoff Frequency ($V_{CE} = 10\text{ V}, I_C = 80\text{ mA}, f = 250\text{ MHz}$)	f_T	1	—	—	GHz
Insertion Gain ($V_{CE} = 10\text{ V}, I_C = 50\text{ mA}, f = 200\text{ MHz}$)	$ S_{21} ^2$	13	—	—	dB

TYPICAL CHARACTERISTICS

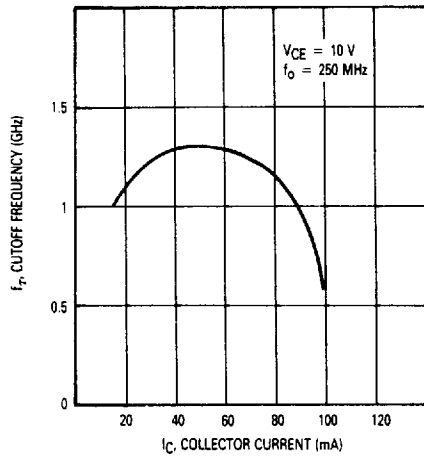


Figure 1. Gain Bandwidth Product versus Collector Current

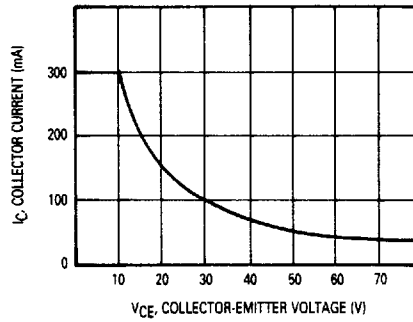


Figure 2. Safe Operating Area

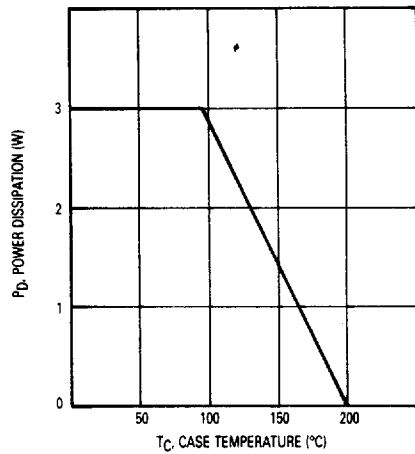


Figure 3. Power Dissipation versus Temperature

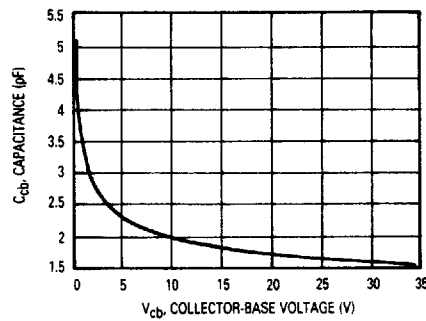


Figure 4. Junction Capacitance versus Voltage