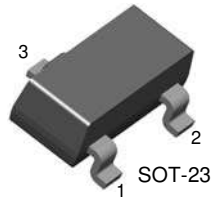


# MMBT5770

## NPN RF Transistor

- This device is designed for use as RF amplifiers, oscillators and multipliers with collector currents in the 1.0 mA to 30 mA range.
- Sourced from process 43.



1. Base 2. Emitter 3. Collector

### Absolute Maximum Ratings T<sub>a</sub> = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V <sub>CB0</sub>	Collector-Base Voltage	30	V
V <sub>CEO</sub>	Collector-Emitter Voltage	15	V
V <sub>EBO</sub>	Emitter-Base Voltage	4.5	V
I <sub>C</sub>	Collector Current - Continuous	10	mA
T <sub>J</sub> , T <sub>STG</sub>	Operating and Storage Junction Temperature Range	-55 to +150	°C

### Thermal Characteristics T<sub>a</sub> = 25°C unless otherwise noted

Symbol	Parameter	Max.	Units
P <sub>D</sub>	Total Device Dissipation Derate above 25°C	225 1.8	mW mW/°C
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	556	°C/W

\* Device mounted on FR-4PCB 1.6" × 1.6" × 0.06".

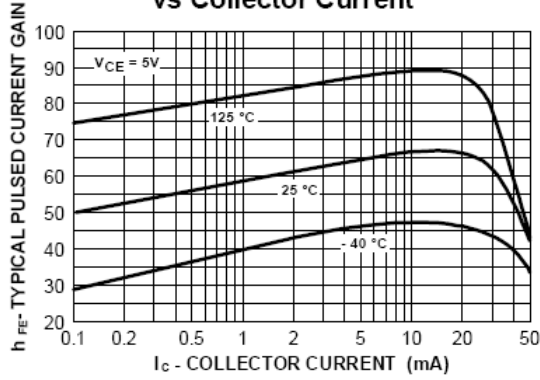
### Electrical Characteristics T<sub>a</sub> = 25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
<b>Off Characteristics</b>					
V <sub>(BR)CBO</sub>	Collector-Base Breakdown Voltage	I <sub>C</sub> = 1.0 μA, I <sub>E</sub> = 0	30		V
V <sub>CEO(sus)</sub>	Collector-Emitter Sustaining Voltage*	I <sub>C</sub> = 3.0 mA, I <sub>B</sub> = 0	15		V
V <sub>(BR)EBO</sub>	Emitter-Base Breakdown Voltage	I <sub>E</sub> = 10 μA, I <sub>C</sub> = 0	3		V
I <sub>CB0</sub>	Collector-Cutoff Current	V <sub>CB</sub> = 15 V, I <sub>E</sub> = 0		50	nA
<b>On Characteristics *</b>					
h <sub>FE</sub>	DC Current Gain	V <sub>CE</sub> = 1.0V, I <sub>C</sub> = 3.0mA	30		
V <sub>CE(sat)</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 10mA, I <sub>B</sub> = 1.0mA		0.4	V
V <sub>BE(sat)</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 10mA, I <sub>B</sub> = 1.0mA		1.0	V
<b>Small Signal Characteristics</b>					
f <sub>T</sub>	Current Gain Bandwidth Product	I <sub>C</sub> = 4.0mA, V <sub>CE</sub> = 10V, f = 100MHz	600		MHz

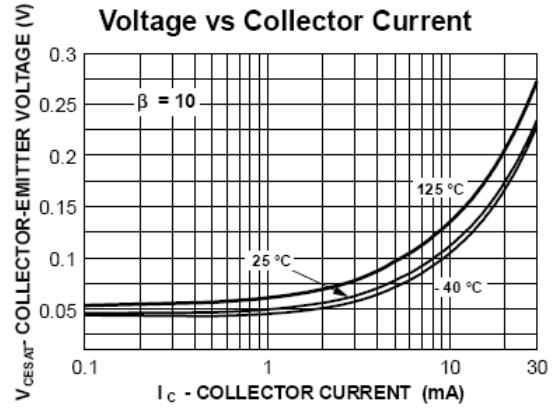
\* Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%

## Typical Characteristics

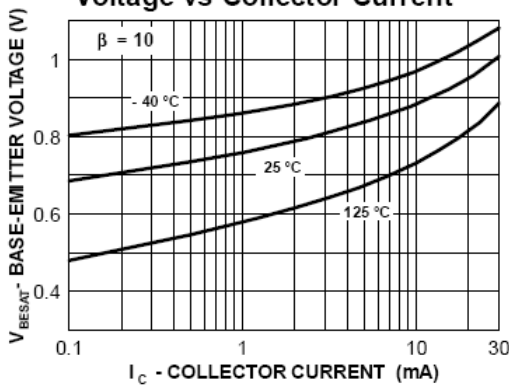
**Typical Pulsed Current Gain vs Collector Current**



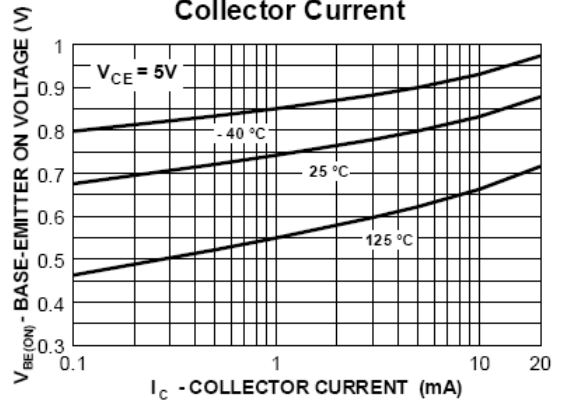
**Collector-Emitter Saturation Voltage vs Collector Current**



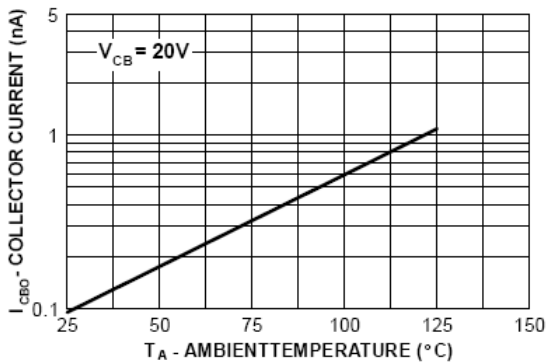
**Base-Emitter Saturation Voltage vs Collector Current**



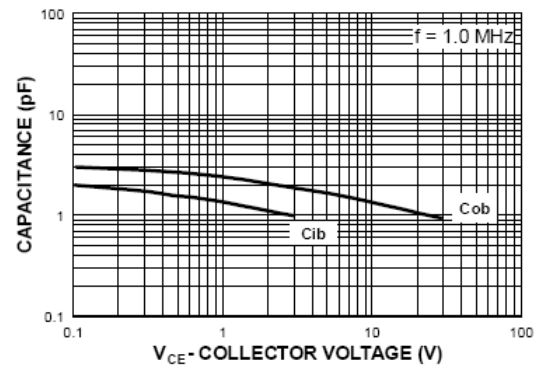
**Base-Emitter ON Voltage vs Collector Current**



**Collector-Cutoff Current vs Ambient Temperature**

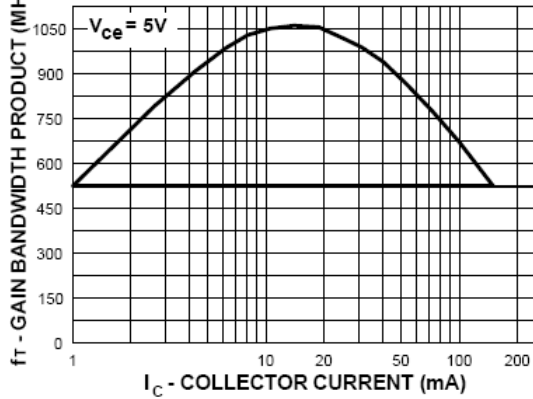


**Input and Output Capacitance vs Reverse Voltage**

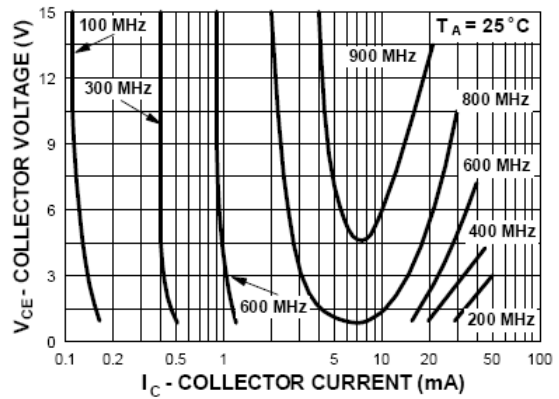


Typical Characteristics (continued)

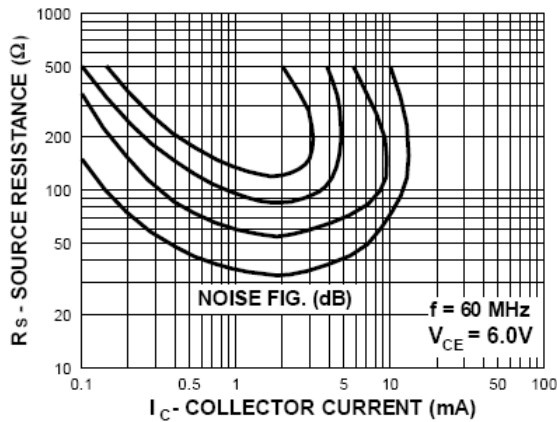
Gain Bandwidth Product vs Collector Current



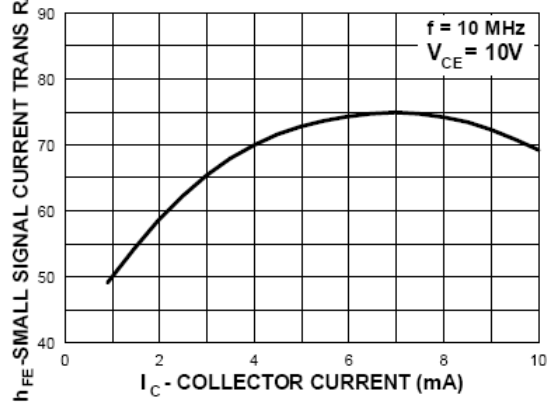
Contours of Constant Gain Bandwidth Product ( $f_T$ )



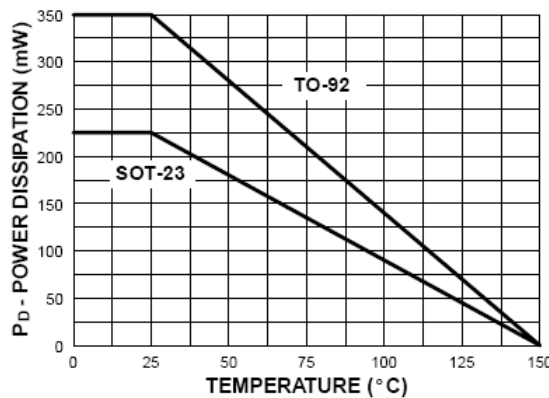
Contours of Constant Noise Figure



Small Signal Current Gain vs Collector Current

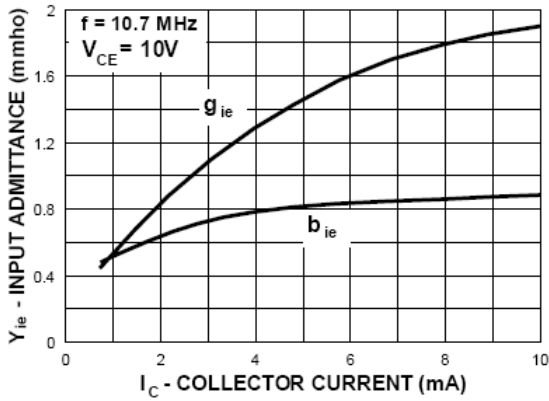


Power Dissipation vs Ambient Temperature

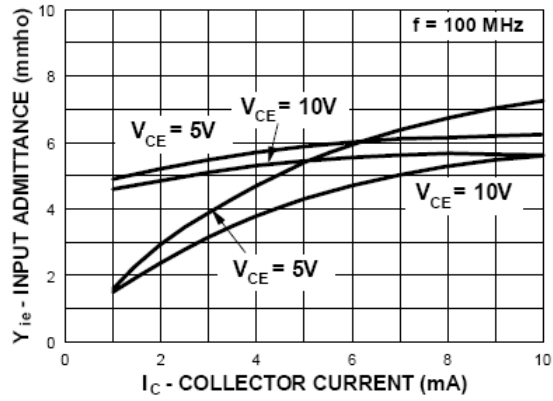


Typical Characteristics (continued)

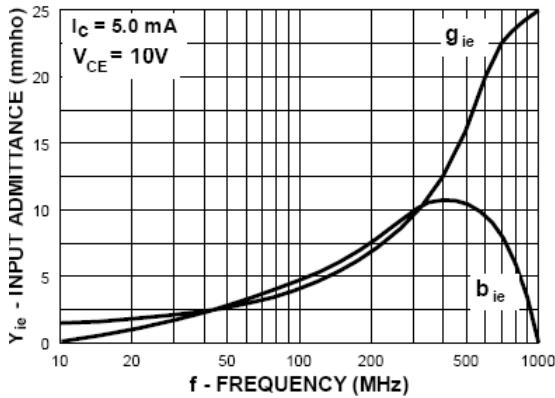
Input Admittance vs Collector Current-Output Short Circuit



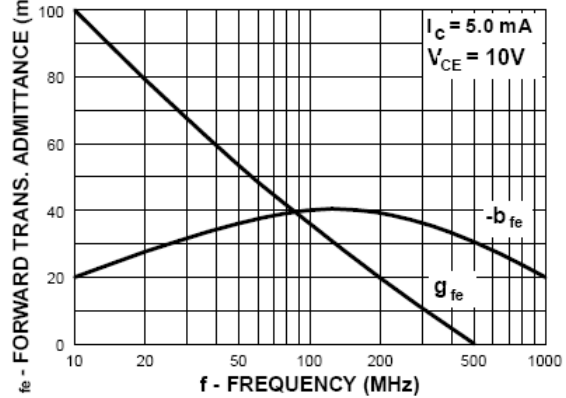
Input Admittance vs Collector Current-Output Short Circuit



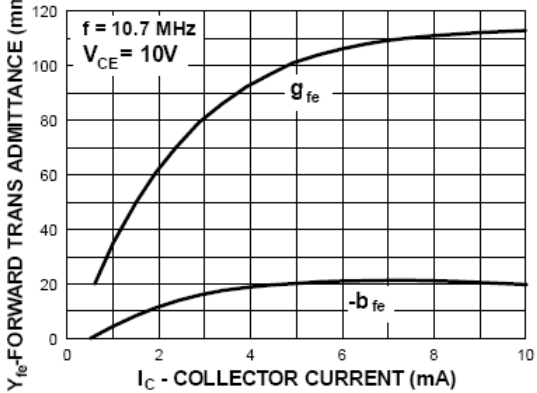
Input Admittance vs Frequency-Output Short Circuit



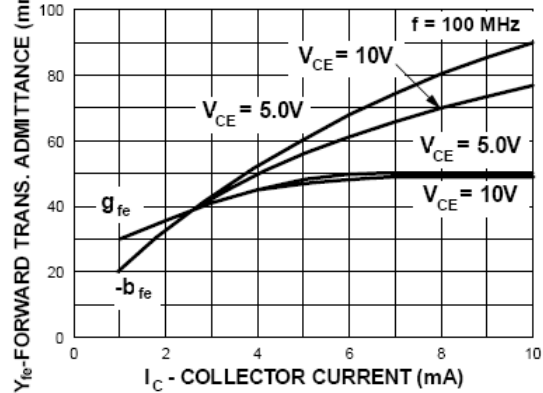
Forward Transfer Admittance vs Frequency-Output Open Circuit



Forward Trans. Admittance vs Collector Current-Output Short Circuit

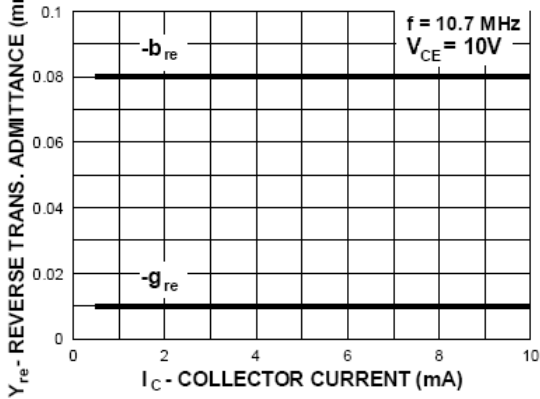


Forward Trans. Admittance vs Collector Current-Output Short Circuit

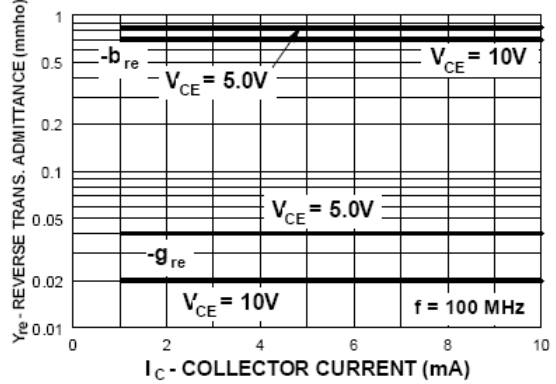


Typical Characteristics (continued)

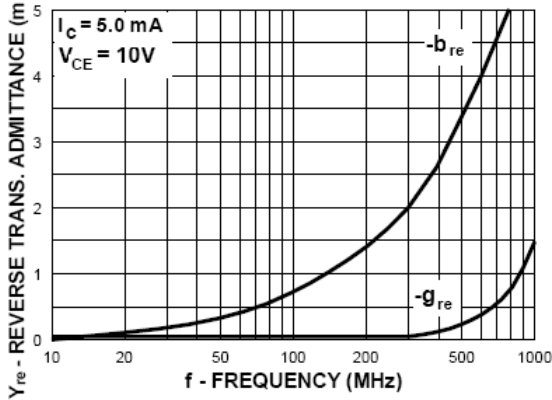
Reverse Transfer Admittance vs Collector Current-Input Short Circuit



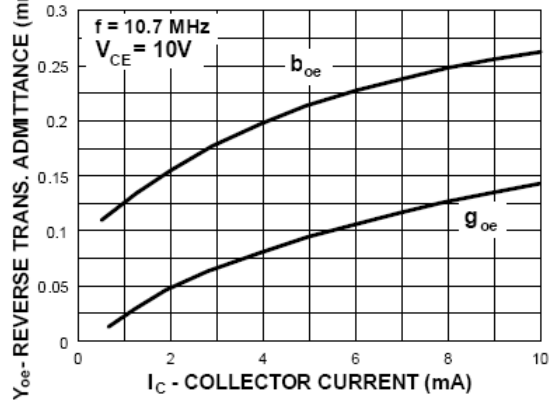
Reverse Transfer Admittance vs Collector Current-Input Short Circuit



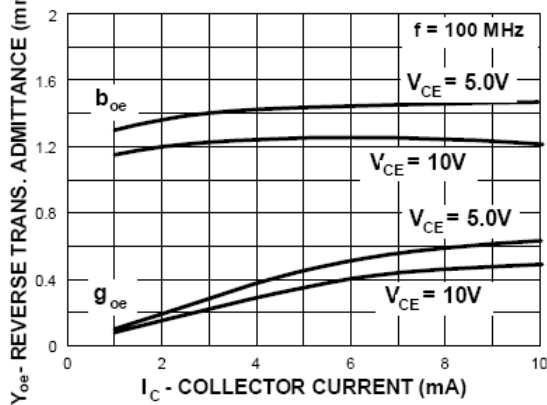
Reverse Transfer Admittance vs Frequency-Input Short Circuit



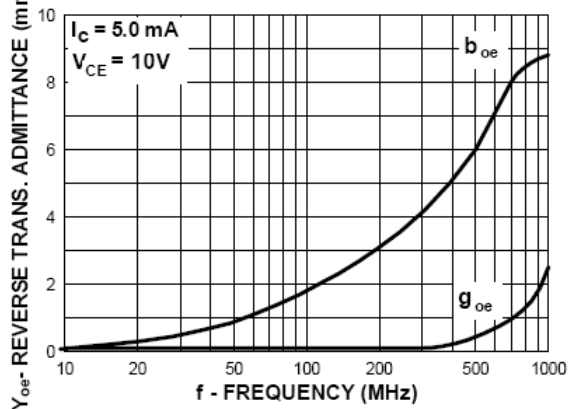
Output Admittance vs Collector Current-Input Short Circuit



Output Admittance vs Collector Current-Input Short Circuit




Output Admittance vs Frequency-Input Short Circuit





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