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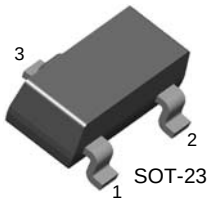
SEMICONDUCTOR®

February 2008

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.



SOT-23

1. Base 2. Emitter 3. Collector

Absolute Maximum Ratings T_a = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	30	V
V_{CEO}	Collector-Emitter Voltage	15	V
V_{EBO}	Emitter-Base Voltage	4.5	V
I_C	Collector Current - Continuous	10	mA
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	°C

Thermal Characteristics T_a=25°C unless otherwise noted

Symbol	Parameter	Max.	Units
P_D	Total Device Dissipation Derate above 25°C	225 1.8	mW mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	556	°C/W

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

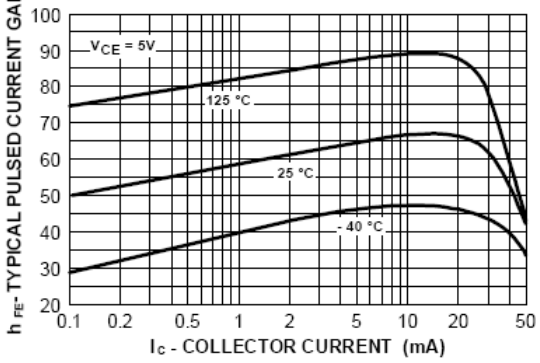
Electrical Characteristics T_a=25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
Off Characteristics					
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 1.0 μA, I_E = 0	30		V
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage*	I_C = 3.0 mA, I_B = 0	15		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 10 μA, I_C = 0	3		V
I_{CBO}	Collector-Cutoff Current	V_{CB} = 15 V, I_E = 0		50	nA
On Characteristics *					
h_{FE}	DC Current Gain	V_{CE} = 1.0V, I_C = 3.0mA	30		
$V_{CE\ (sat)}$	Collector-Emitter Saturation Voltage	I_C = 10mA, I_B = 1.0mA		0.4	V
$V_{BE\ (sat)}$	Base-Emitter Saturation Voltage	I_C = 10mA, I_B = 1.0mA		1.0	V
Small Signal Characteristics					
f_T	Current Gain Bandwidth Product	I_C = 4.0mA, V_{CE} = 10V, f = 100MHz	600		MHz

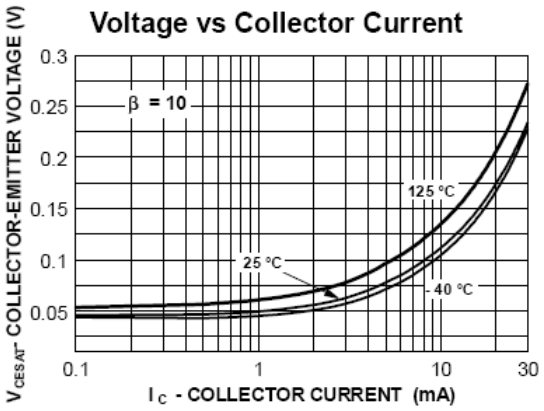
* Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Typical Characteristics

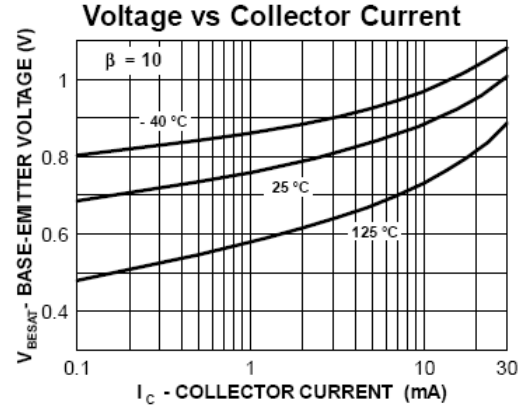
Typical Pulsed Current Gain vs Collector Current



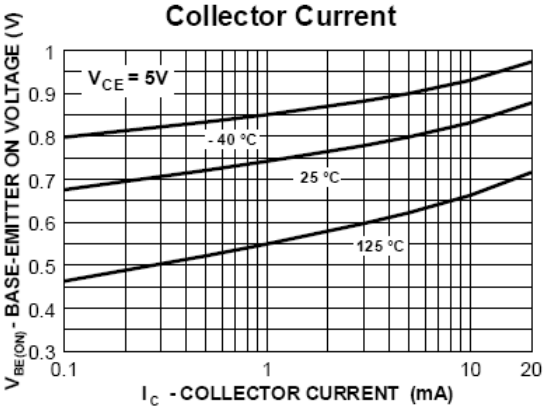
Collector-Emitter Saturation Voltage vs Collector Current



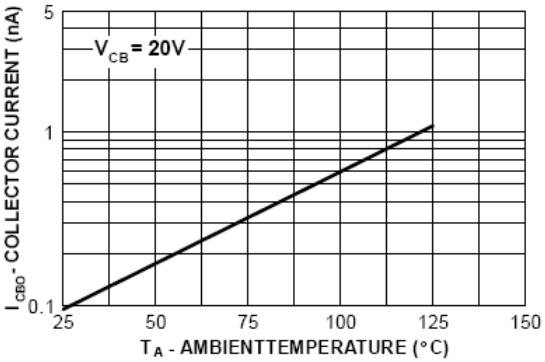
Base-Emitter Saturation Voltage vs Collector Current



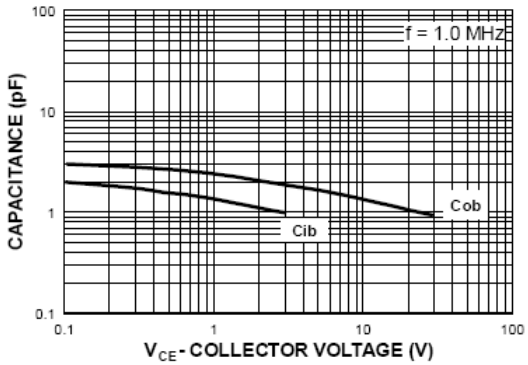
Base-Emitter ON Voltage vs Collector Current



Collector-Cutoff Current vs Ambient Temperature

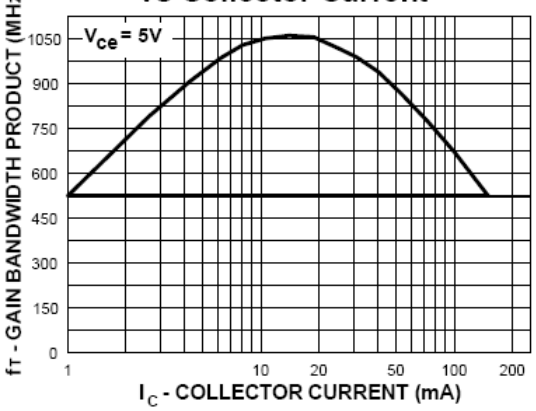


Input and Output Capacitance vs Reverse Voltage

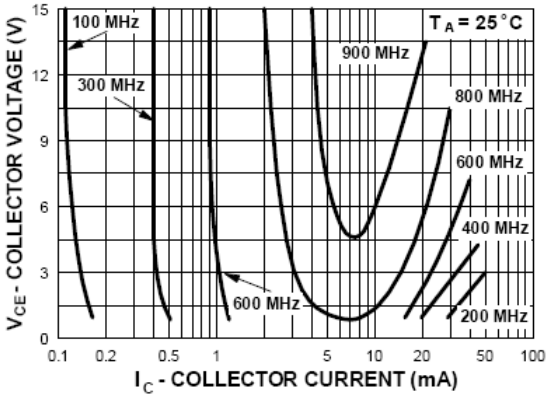


Typical Characteristics (continued)

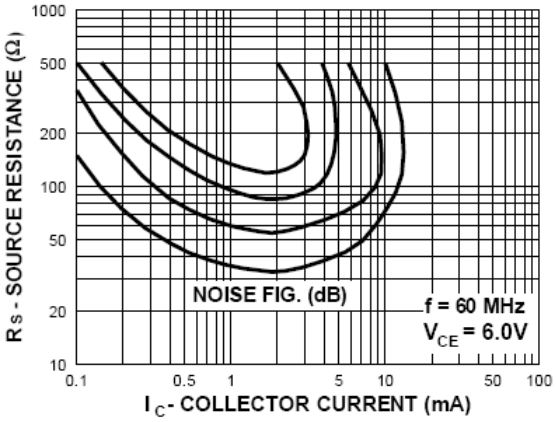
Gain Bandwidth Product vs Collector Current



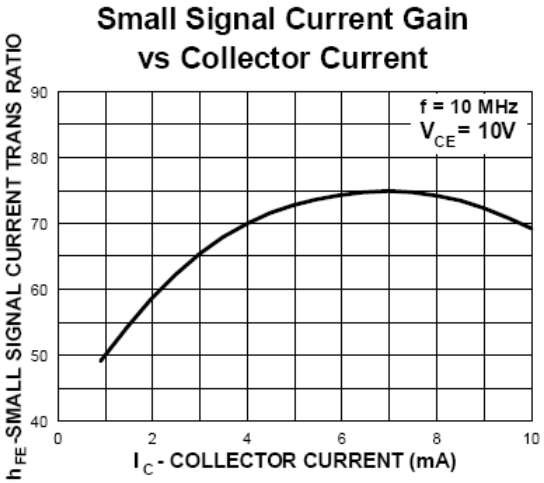
Contours of Constant Gain Bandwidth Product (f_T)



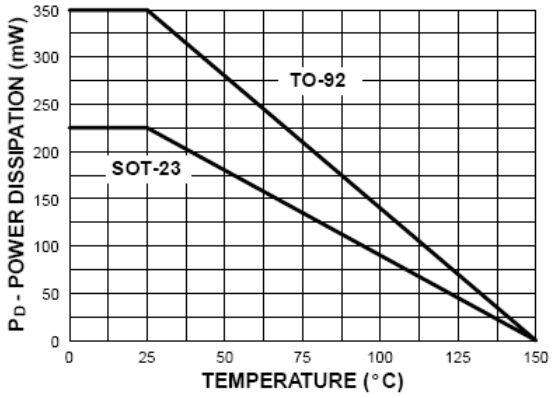
Contours of Constant Noise Figure



Small Signal Current Gain vs Collector Current

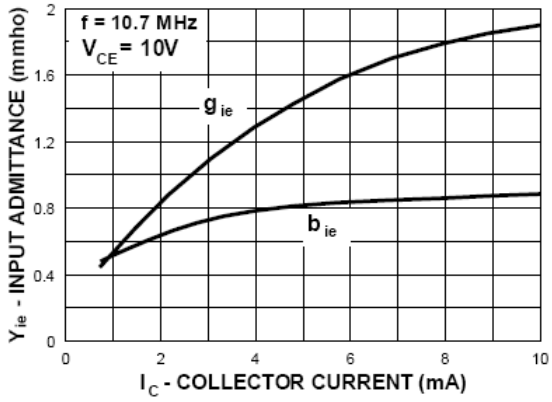


Power Dissipation vs Ambient Temperature

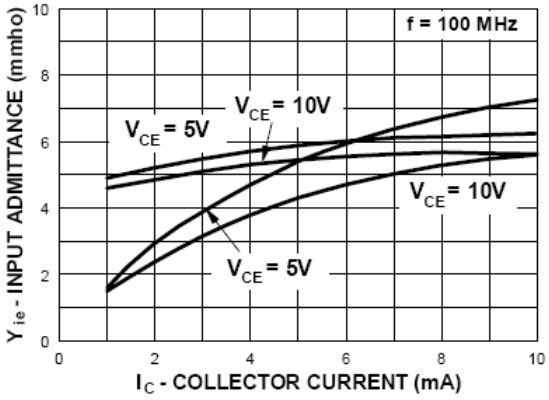


Typical Characteristics (continued)

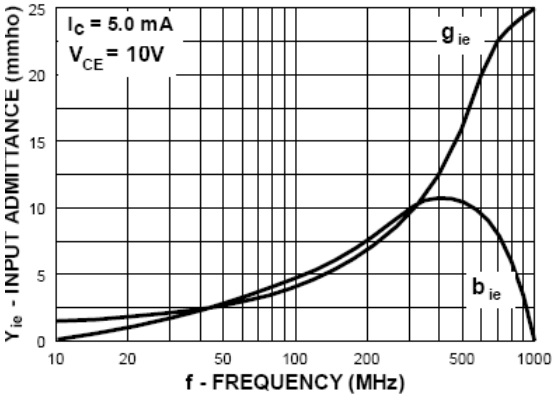
Input Admittance vs Collector Current-Output Short Circuit



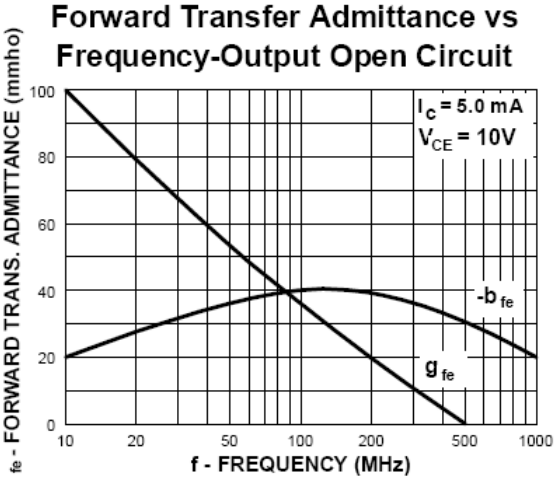
Input Admittance vs Collector Current-Output Short Circuit



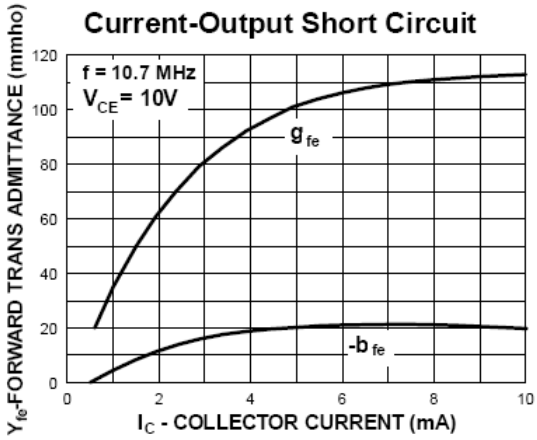
Input Admittance vs Frequency-Output Short Circuit



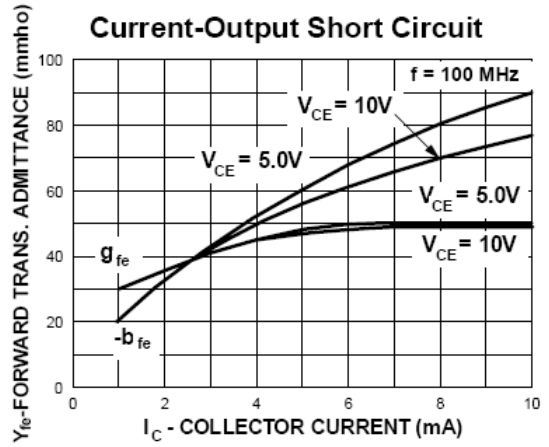
Forward Transfer Admittance vs Frequency-Output Open Circuit



Forward Trans. Admittance vs Collector Current-Output Short Circuit

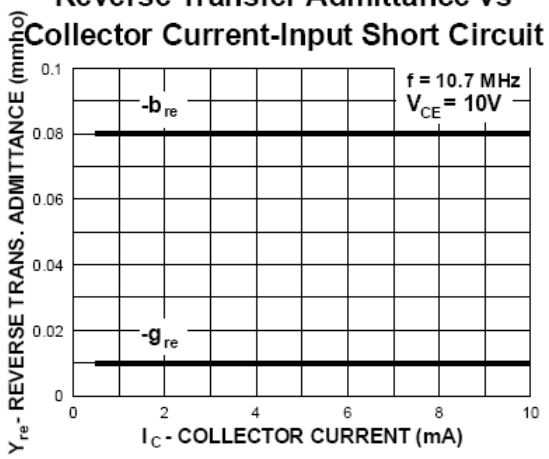


Forward Trans. Admittance vs Collector Current-Output Short Circuit

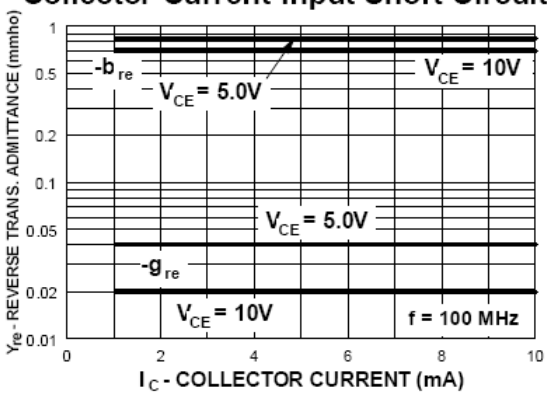


Typical Characteristics (continued)

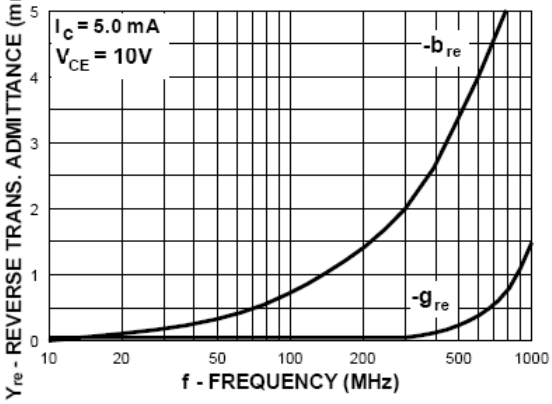
Reverse Transfer Admittance vs Collector Current-Input Short Circuit



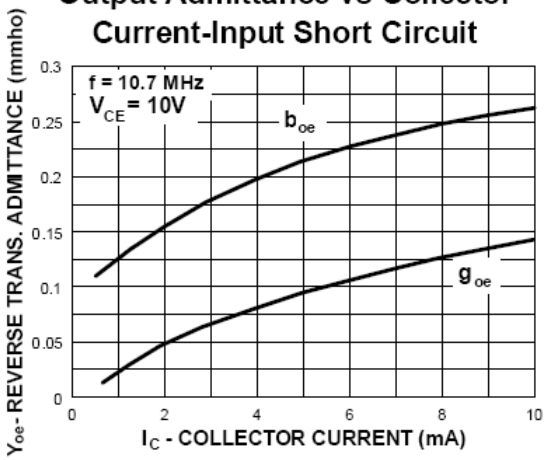
Reverse Transfer Admittance vs Collector Current-Input Short Circuit



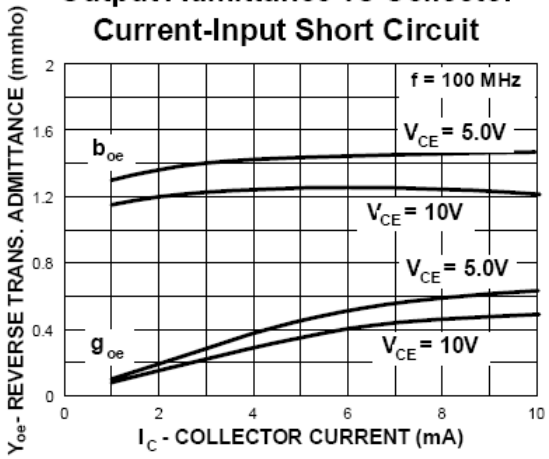
Reverse Transfer Admittance vs Frequency-Input Short Circuit



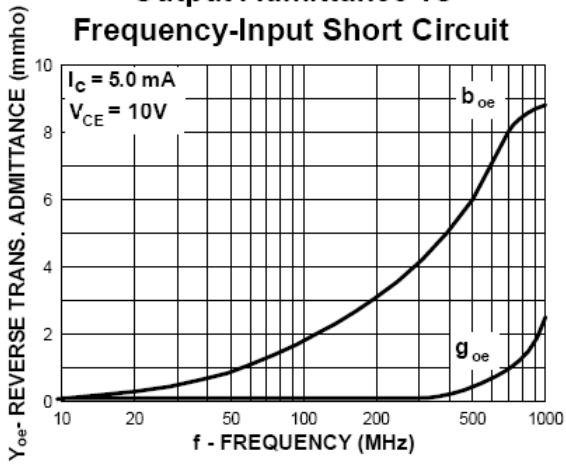
Output Admittance vs Collector Current-Input Short Circuit



Output Admittance vs Collector Current-Input Short Circuit



Output Admittance vs Frequency-Input Short Circuit



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Definition of Terms

Datasheet Identification	Product Status	Definition
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Rev. I31