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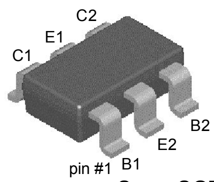
September 2008

FMBM5551
NPN General Purpose Amplifier

- This device has matched dies
- Sourced from process 16.
- See MMBT5551 for characteristics



SuperSOT™-6
Mark: .3S2
Dot denotes pin #1

Absolute Maximum Ratings *

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	160	V
V_{CBO}	Collector-Base Voltage	180	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current (DC)	600	mA
P_C	Collector Dissipation (T_C = 25°C)	0.7	W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature Range	-55 ~ 150	°C
$T_{\theta JA}$	Thermal Resistance, Junction to Ambient	180	°C/W

* Pd total, for both transistors. For each transistor, Pd = 350mW

Electrical Characteristics T_C = 25°C unless otherwise noted

Symbol	Parameter	Conditions	Min.	Max	Units
Off Characteristics					
BV_{CEO}	Collector-Emitter Voltage	I_C = 1mA, I_B = 0	160		V
BV_{CBO}	Collector-Base Voltage	I_C = 100μA, I_E = 0	180		V
BV_{EBO}	Emitter-Base Voltage	I_C = 10μA, I_C = 0	6		V
I_{CBO}	Collector Cut-off Current	V_{CB} = 120V V_{CB} = 120V, T_a = 100°C		50 50	nA μA
I_{EBO}	Emitter Cut-off Current	V_{EB} = 4V		50	nA
On Characteristics					
h_{FE1}	DC Current Gain	V_{CE} = 5V, I_C = 1mA	80		
DIVID1	Variation Ratio of h_{FE1} Between Die 1 and Die 2	h_{FE1}(Die1)/h_{FE1}(Die2)	0.9	1.1	
h_{FE2}	DC Current Gain	V_{CE} = 5V, I_C = 10mA	80	250	
DIVID2	Variation Ratio of h_{FE2} Between Die 1 and Die 2	h_{FE2}(Die1)/h_{FE2}(Die2)	0.95	1.05	

Electrical Characteristics (Continued) T_C = 25°C unless otherwise noted

Symbol	Parameter	Conditions	Min.	Max	Units
h_{FE3}	DC Current Gain	V_{CE} = 5V, I_C = 50mA	30		
DIVID3	Variation Ratio of h_{FE3} Between Die 1 and Die 2	h_{FE3}(Die1)/h_{FE3}(Die2)	0.9	1.1	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 10mA, I_B = 1mA I_C = 50mA, I_B = 5mA		0.15 0.2	V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	I_C = 10mA, I_B = 1mA I_C = 50mA, I_B = 5mA		1 1	V V
$V_{BE(on)}$	Base-Emitter On Voltage	V_{CE} = 5V, I_C = 10mA		1	V
DEL	Difference of $V_{BE(on)}$ Between Die1 and Die 2	$V_{BE(on)}$(Die1)-$V_{BE(on)}$(Die2)	-8	8	mV
Small Signal Characteristics					
C_{ob}	Output Capacitance	V_{CB} = 10V, f = 1MHz		6	pF
C_{ib}	Input Capacitance	V_{CB} = 0.5V, f = 1MHz		20	pF
f_T	Current Gain Bandwidth Product	V_{CE} = 10V, I_C = 10mA, f = 100MHz	100	300	MHz
NF	Noise Figure	V_{CE} = 5V, I_C = 200μA, f = 1MHz, R_S = 20KΩ, B = 200Hz		8	dB
h_{fe}	Small Signal Current Gain	V_{CE} = 10V, I_C = 1.0mA, f = 1.0KHz	50	250	

Typical Characteristics

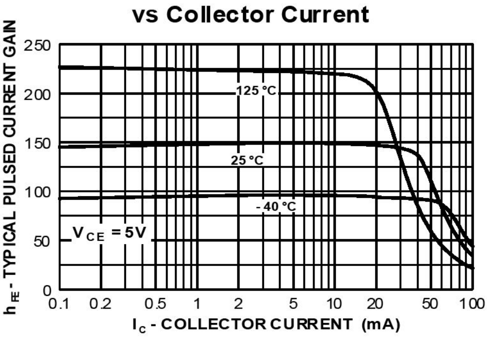


Figure 1. Typical Pulsed Current Gain vs Collector Current

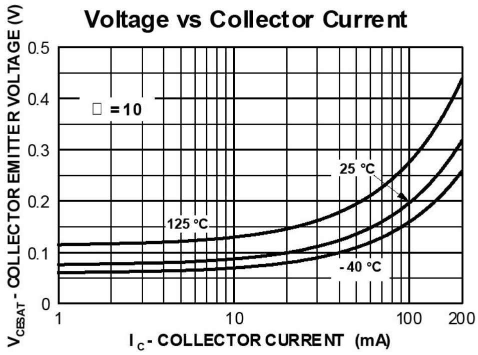


Figure 2. Collector-Emitter Saturation Voltage vs Collector Current

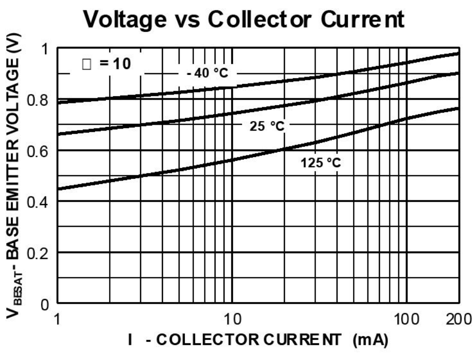


Figure 3. Base-Emitter Saturation Voltage vs Collector Current

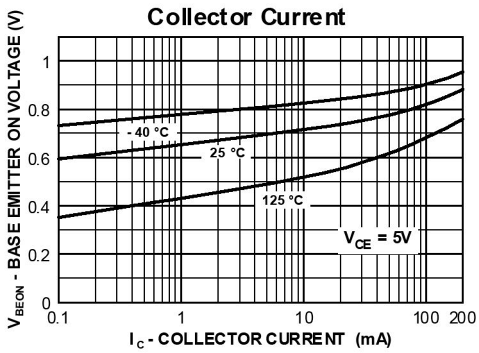


Figure 4. Base-Emitter On Voltage vs Collector Current

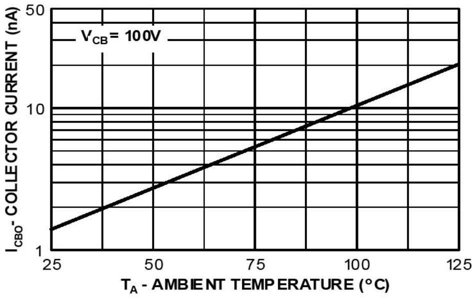


Figure 5. Collector Cutoff Current vs Ambient Temperature

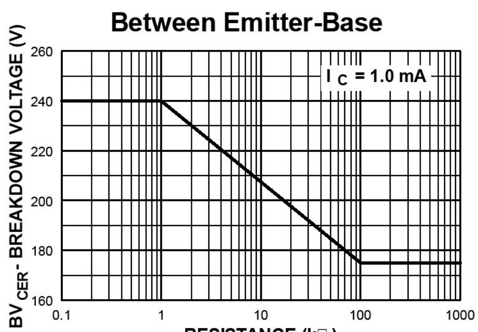


Figure 6. Collector-Emitter Breakdown Voltage with Resistance Between Emitter-Base

Typical Characteristics (Continued)

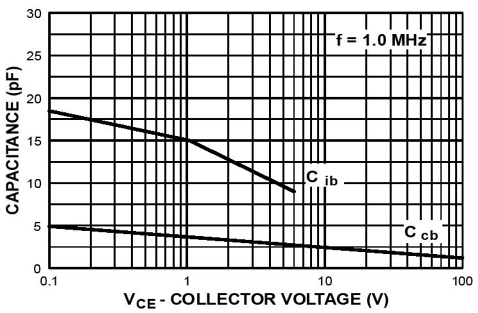


Figure 1. Input and Output Capacitance vs Reverse Voltage

vs Collector Current

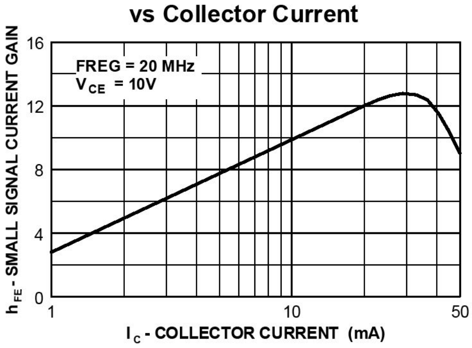
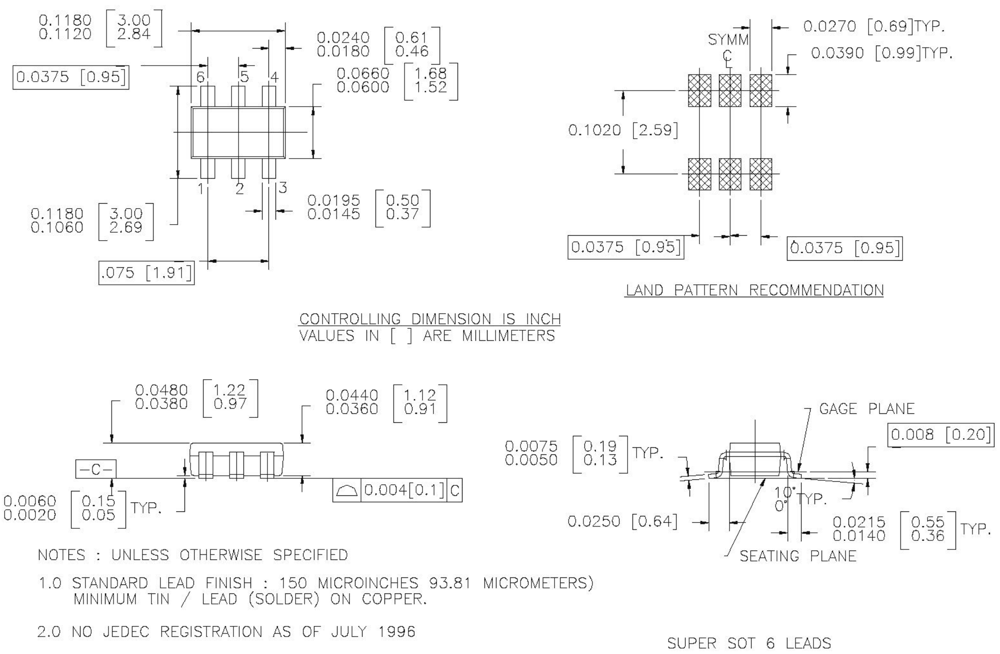


Figure 2. Small Signal current Gain vs Collector Current

Mechanical Dimensions

SuperSOT™-6



Dimensions in Millimeters

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Rev. I31

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Наши контакты:

Телефон: +7 812 627 14 35

Электронная почта: sales@st-electron.ru

Адрес: 198099, Санкт-Петербург, Промышленная ул, дом № 19, литера Н, помещение 100-Н Офис 331