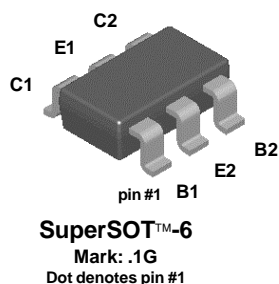


## FMBA06



### NPN Multi-Chip General Purpose Amplifier

This device is designed for general purpose amplifier applications at collector currents to 300 mA. Sourced from Process 33.

#### Absolute Maximum Ratings\*

$T_A = 25^\circ\text{C}$  unless otherwise noted

Symbol	Parameter	Value	Units
$V_{CEO}$	Collector-Emitter Voltage	80	V
$V_{CBO}$	Collector-Base Voltage	80	V
$V_{EBO}$	Emitter-Base Voltage	4.0	V
$I_C$	Collector Current - Continuous	500	mA
$T_J, T_{stg}$	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

\* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

#### NOTES:

- 1) These ratings are based on a maximum junction temperature of 150 degrees C.
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

#### Thermal Characteristics

$T_A = 25^\circ\text{C}$  unless otherwise noted

Symbol	Characteristic	Max	Units
		FMBA06	
$P_D$	Total Device Dissipation Derate above $25^\circ\text{C}$	700	mW
		5.6	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	180	$^\circ\text{C/W}$

NPN Multi-Chip General Purpose Amplifier  
(continued)

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
--------	-----------	-----------------	-----	-----	-----	-------

OFF CHARACTERISTICS

V <sub>(BR)CEO</sub>	Collector-Emitter Sustaining Voltage*	I <sub>C</sub> = 1.0 mA, I <sub>B</sub> = 0	80			V
V <sub>(BR)EBO</sub>	Emitter-Base Breakdown Voltage	I <sub>E</sub> = 100 µA, I <sub>C</sub> = 0	4.0			V
I <sub>CEO</sub>	Collector-Cutoff Current	V <sub>CE</sub> = 60 V, I <sub>B</sub> = 0			0.1	µA
I <sub>CBO</sub>	Collector-Cutoff Current	V <sub>CB</sub> = 80 V, I <sub>E</sub> = 0			0.1	µA

ON CHARACTERISTICS

h <sub>FE</sub>	DC Current Gain	I <sub>C</sub> = 10 mA, V <sub>CE</sub> = 1.0 V I <sub>C</sub> = 100 mA, V <sub>CE</sub> = 1.0 V	100 100			
V <sub>CE(sat)</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 100 mA, I <sub>B</sub> = 10 mA			0.25	V
V <sub>BE(on)</sub>	Base-Emitter On Voltage	I <sub>C</sub> = 100 mA, V <sub>CE</sub> = 1.0 V			1.2	V

SMALL SIGNAL CHARACTERISTICS

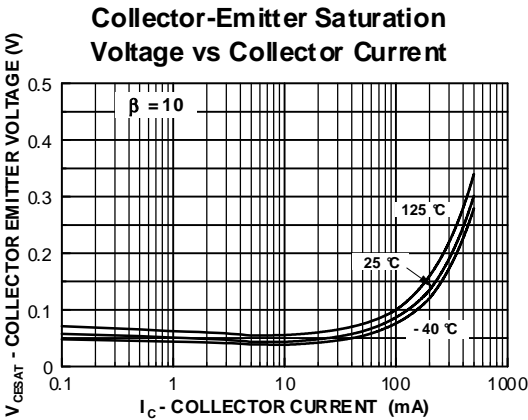
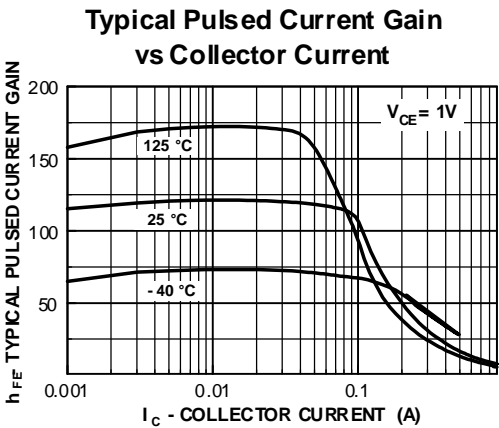
f <sub>T</sub>	Current Gain - Bandwidth Product	I <sub>C</sub> = 10 mA, V <sub>CE</sub> = 2.0 V, f = 100 MHz		100		MHz
----------------	----------------------------------	---	--	-----	--	-----

\*Pulse Test: Pulse Width ≤ 300 µs, Duty Cycle ≤ 2.0%

Spice Model

NPN (Is=8.324f Xti=3 Eg=1.11 Vaf=100 Bf=12.16K Ne=1.368 Ise=73.27f Ikf=.1096 Xtb=1.5 Br=11.1 Nc=2 Isc=0 Ikr=0 Rc=.25 Cjc=18.36p Mjc=.3843 Vjc=.75 Fc=.5 Cje=55.61p Mje=.3834 Vje=.75 Tr=72.15n Tf=516.1p Itf=.5 Vtf=4 Xtf=6 Rb=10)

Typical Characteristics



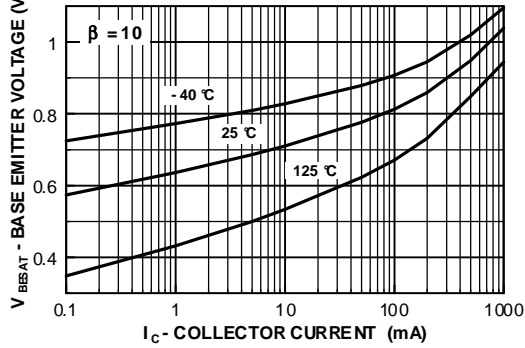
# NPN Multi-Chip General Purpose Amplifier

(continued)

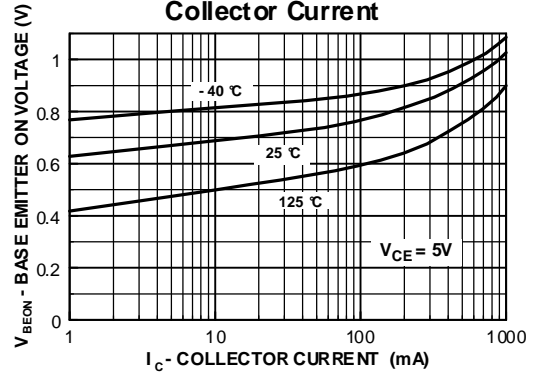
FMBA06

## Typical Characteristics (continued)

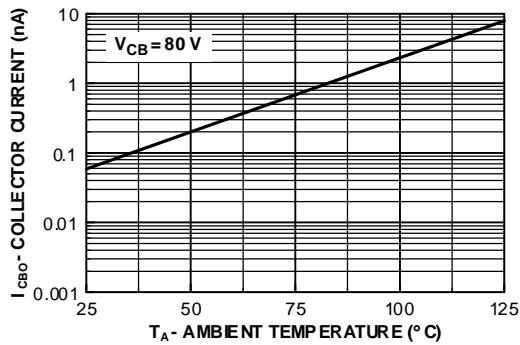
**Base-Emitter Saturation Voltage vs Collector Current**



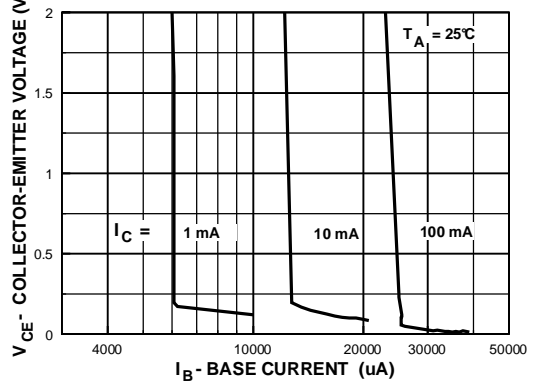
**Base Emitter ON Voltage vs Collector Current**



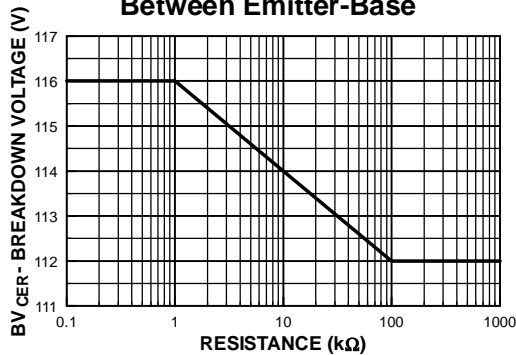
**Collector-Cutoff Current vs Ambient Temperature**



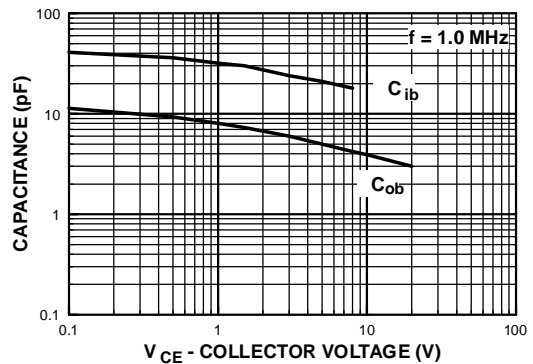
**Collector Saturation Region**



**Collector-Emitter Breakdown Voltage with Resistance Between Emitter-Base**



**Input and Output Capacitance vs Reverse Voltage**



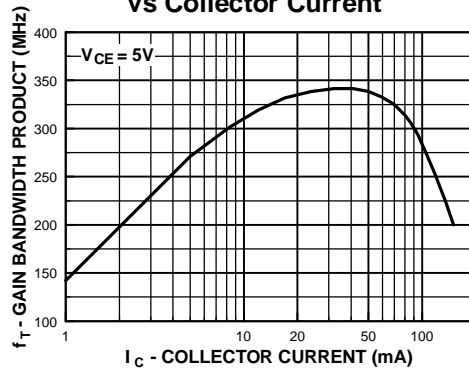
# NPN Multi-Chip General Purpose Amplifier

(continued)

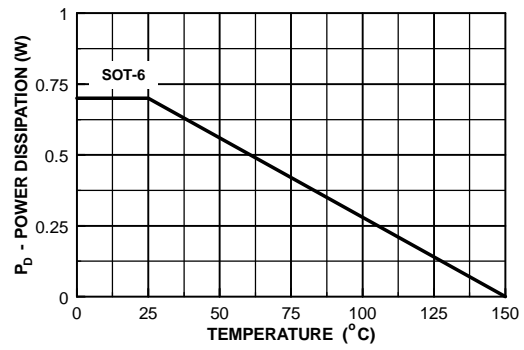
FMBA06

## Typical Characteristics (continued)

Gain Bandwidth Product  
vs Collector Current



Power Dissipation vs  
Ambient Temperature



## TRADEMARKS

The following are registered and unregistered trademarks Fairchild Semiconductor owns or is authorized to use and is not intended to be an exhaustive list of all such trademarks.

ACEx™	FASTr™	PowerTrench®	SyncFET™
Bottomless™	GlobalOptoisolator™	QFET™	TinyLogic™
CoolFET™	GTO™	QS™	UHC™
CROSSVOLT™	HiSeC™	QT Optoelectronics™	VCX™
DOME™	ISOPLANAR™	Quiet Series™	
E <sup>2</sup> CMOS™	MICROWIRE™	SILENT SWITCHER®	
EnSigna™	OPTOLOGIC™	SMART START™	
FACT™	OPTOPLANAR™	SuperSOT™-3	
FACT Quiet Series™	PACMAN™	SuperSOT™-6	
FAST®	POP™	SuperSOT™-8	

## DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

## LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, or (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

## PRODUCT STATUS DEFINITIONS

### Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	This datasheet contains preliminary data, and supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
Obsolete	Not In Production	This datasheet contains specifications on a product that has been discontinued by Fairchild semiconductor. The datasheet is printed for reference information only.