

# NPN Multi-Chip General Purpose Amplifier

## FMBA06

### Description

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

### ABSOLUTE MAXIMUM RATINGS (Notes 1, 2, 3)

(T<sub>A</sub> = 25°C, unless otherwise noted)

Symbol	Parameter	Value	Unit
V <sub>CEO</sub>	Collector–Emitter Voltage	80	V
V <sub>CBO</sub>	Collector–Base Voltage	80	V
V <sub>EBO</sub>	Emitter–Base Voltage	4.0	V
I <sub>C</sub>	Collector Current – Continuous	500	mA
T <sub>J</sub> , T <sub>STG</sub>	Operating and Storage Junction Temperature Range	–55 to +150	°C

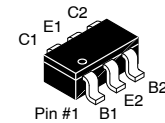
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

- These ratings are based on a maximum junction temperature of 150°C.
- These are steady-state limits. **onsemi** should be consulted on applications involving pulsed or low duty cycle operations.
- These Ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

### THERMAL CHARACTERISTICS

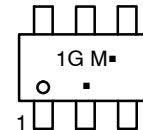
(T<sub>A</sub> = 25°C, unless otherwise noted)

Symbol	Parameter	Maximum	Unit
		FMBA06	
P <sub>D</sub>	Total Device Dissipation	700	mW
	Derate Above 25°C	5.6	mW/°C
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	180	°C/W



TSOT23 6-Lead  
CASE 419AG

### MARKING DIAGRAM



1G = Specific Device Code  
M = Date Code  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
FMBA06	TSOT23 (Pb-Free, Halide Free)	3000 / Tape & Reel

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, [BRD8011/D](http://BRD8011/D).

# FMBA06

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
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### OFF CHARACTERISTICS

$V_{(BR)CEO}$	Collector-Emitter Sustaining Voltage (Note 4)	$I_C = 1.0\text{ mA}, I_B = 0$	80	–	–	V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 100\text{ }\mu\text{A}, I_C = 0$	4.0	–	–	V
$I_{CEO}$	Collector-Cutoff Current	$V_{CE} = 60\text{ V}, I_B = 0$	–	–	0.1	$\mu\text{A}$
$I_{CBO}$	Collector-Cutoff Current	$V_{CB} = 80\text{ V}, I_E = 0$	–	–	0.1	$\mu\text{A}$

### ON CHARACTERISTICS

$h_{FE}$	DC Current Gain	$I_C = 10\text{ mA}, V_{CE} = 1.0\text{ V}$	100	–	–	
		$I_C = 100\text{ mA}, V_{CE} = 1.0\text{ V}$	100	–	–	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 100\text{ mA}, I_B = 10\text{ mA}$	–	–	0.25	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C = 100\text{ mA}, V_{CE} = 1.0\text{ V}$	–	–	1.2	V

### SMALL SIGNAL CHARACTERISTICS

$f_T$	Current Gain – Bandwidth Product	$I_C = 10\text{ mA}, V_{CE} = 2.0\text{ V}, f = 100\text{ MHz}$	–	100	–	MHz
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Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

4. Pulse Test: Pulse Width  $\leq 300\text{ }\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

## TYPICAL CHARACTERISTICS

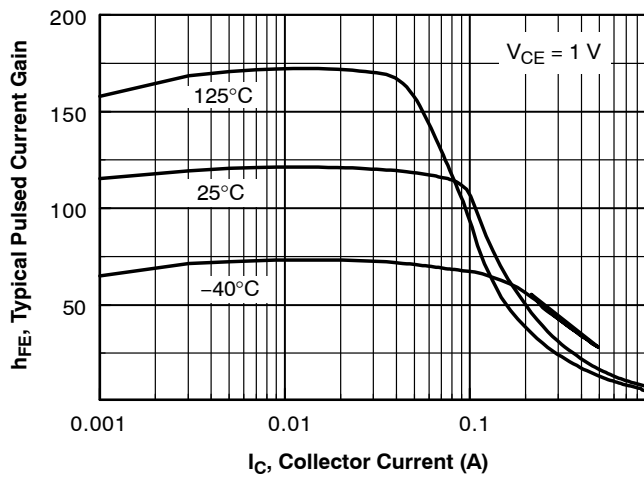


Figure 1. Typical Pulsed Current Gain vs. Collector Current

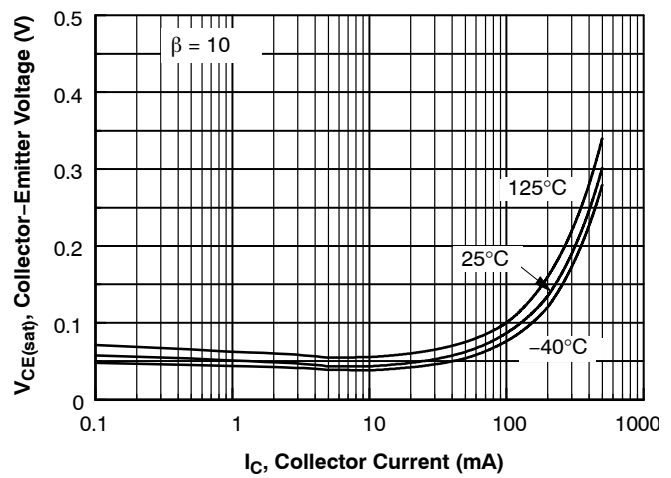


Figure 2. Collector-Emitter Saturation Voltage vs. Collector Current

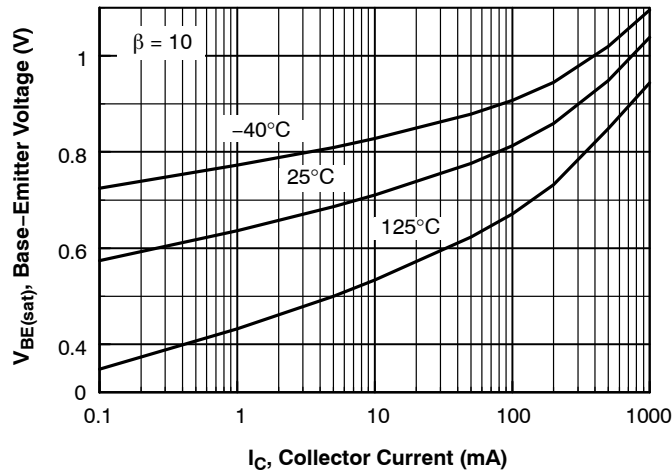


Figure 3. Base-Emitter Saturation Voltage vs. Collector Current

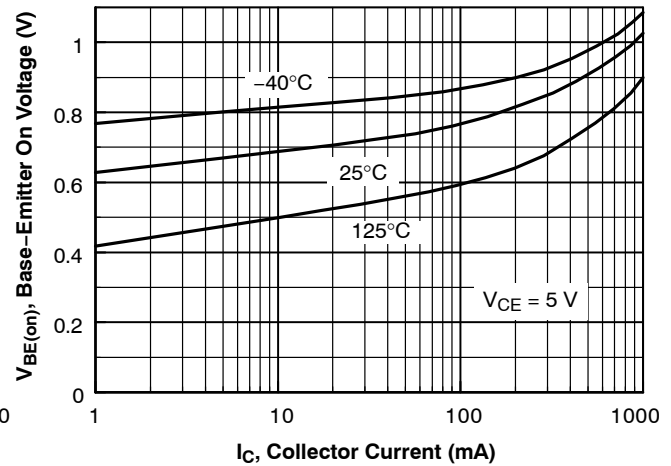


Figure 4. Base Emitter On Voltage vs. Collector Current

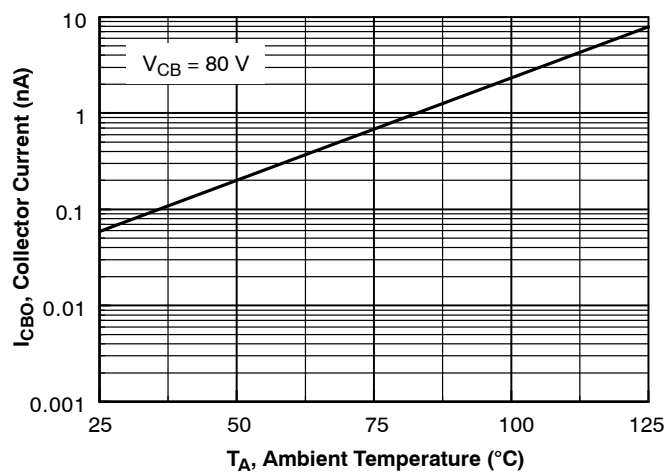


Figure 5. Collector Cut-Off Current vs. Ambient Temperature

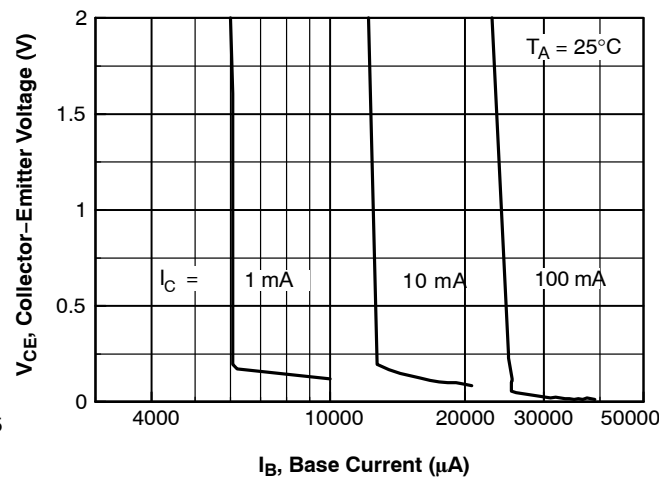


Figure 6. Collector Saturation Region

## TYPICAL CHARACTERISTICS (Continued)

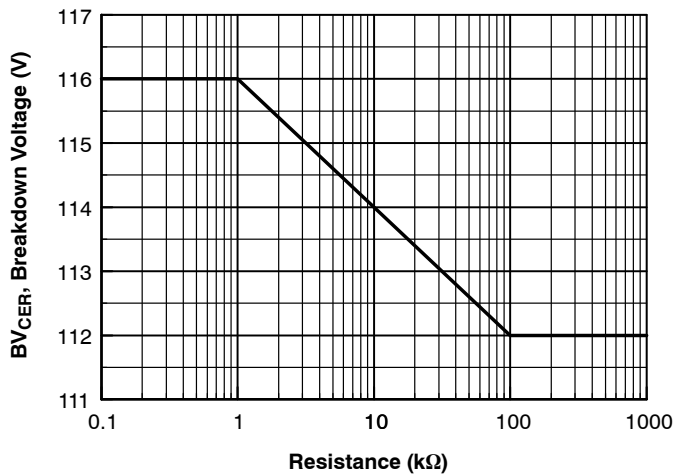


Figure 7. Collector-Emitter Breakdown Voltage with Resistance between Emitter-Base

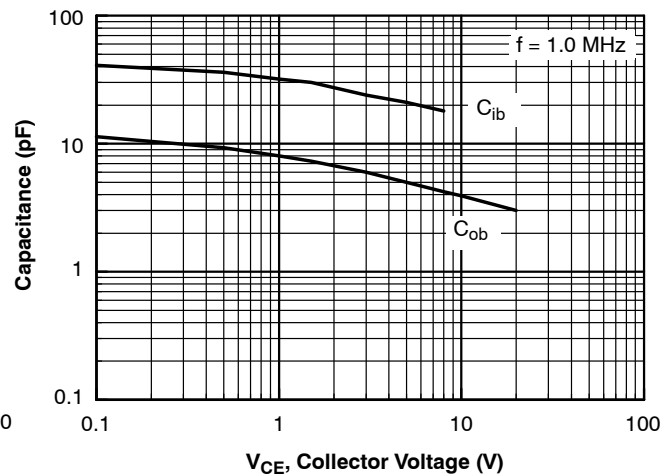


Figure 8. Input and Output Capacitance vs. Reverse Voltage

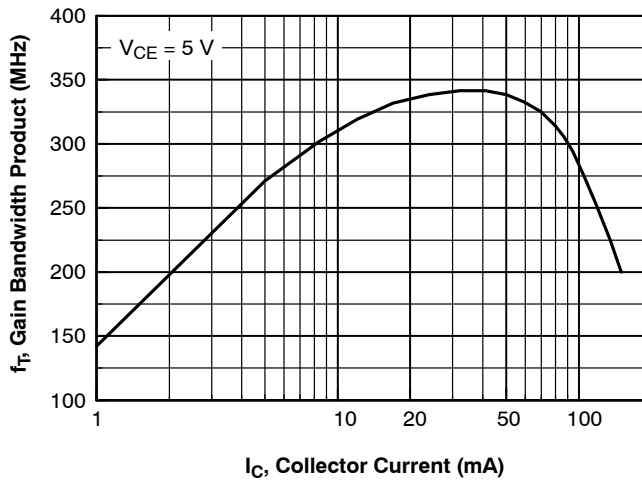


Figure 9. Gain Bandwidth Product vs. Collector Current

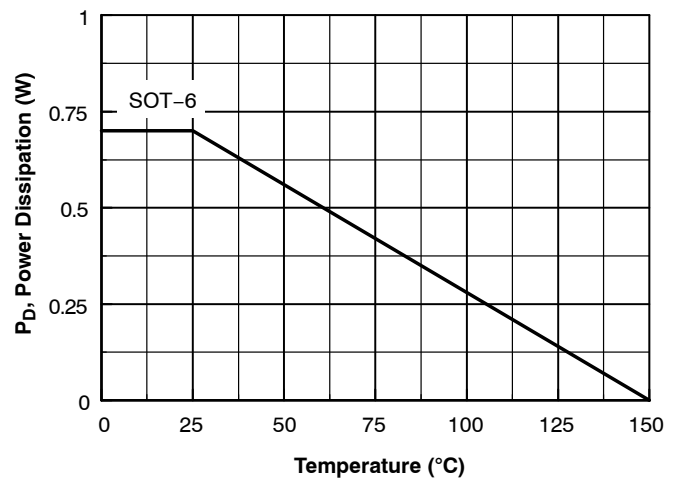


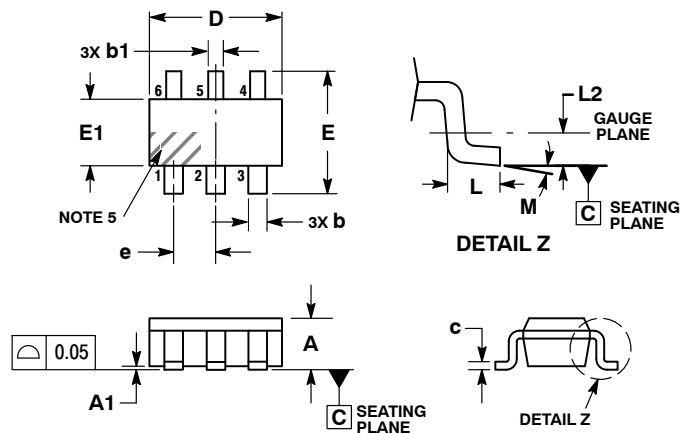
Figure 10. Power Dissipation vs. Ambient Temperature



1  
SCALE 2:1

TSOT23 6-Lead  
CASE 419AG-01  
ISSUE O

DATE 01 FEB 2010

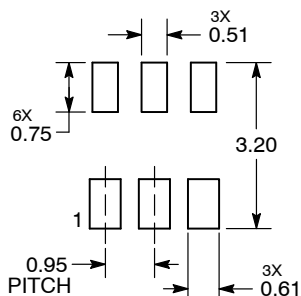


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E1 DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.15 PER SIDE. DIMENSIONS D AND E1 ARE DETERMINED AT DATUM H.
5. PIN ONE INDICATOR MUST BE LOCATED IN THE INDICATED ZONE.

MILLIMETERS			
DIM	MIN	NOM	MAX
A	0.75	0.82	0.90
A1	---	---	0.10
b	0.40	0.45	0.50
b1	0.30	0.35	0.40
c	0.08	0.14	0.20
D	2.80	2.90	3.00
E	2.60	2.80	3.00
E1	1.50	1.60	1.70
e	0.95 BSC		
L	0.30	0.45	0.60
L2	0.25 BSC		
M	0°	---	8°

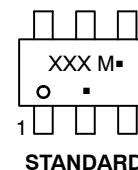
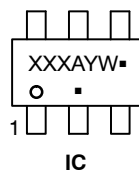
RECOMMENDED  
SOLDERING FOOTPRINT\*



DIMENSIONS: MILLIMETERS

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

GENERIC  
MARKING DIAGRAMS\*



XXX = Specific Device Code  
A = Assembly Location  
Y = Year  
W = Work Week  
▪ = Pb-Free Package

XXX = Specific Device Code  
M = Date Code  
▪ = Pb-Free Package

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present.

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