

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_A = 25°C, unless otherwise noted)

Symbol	Parameter	Value	Unit
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	°C

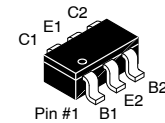
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

- 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

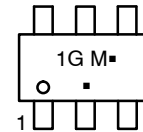
(T_A = 25°C, unless otherwise noted)

Symbol	Parameter	Maximum	Unit
		FMBA06	
P _D	Total Device Dissipation	700	mW
	Derate Above 25°C	5.6	mW/°C
R _{θJA}	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 [†]
FMBA06	TSOT23 (Pb-Free, Halide Free)	3000 / Tape & Reel

[†]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://www.onsemi.com/BRD8011/D).

FMBA06

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

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
--------	-----------	----------------	-----	-----	-----	------

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	μA
I_{CBO}	Collector–Cutoff Current	$V_{CB} = 80\text{ V}$, $I_E = 0$	–	–	0.1	μA

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
-------	----------------------------------	---	---	-----	---	-----

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

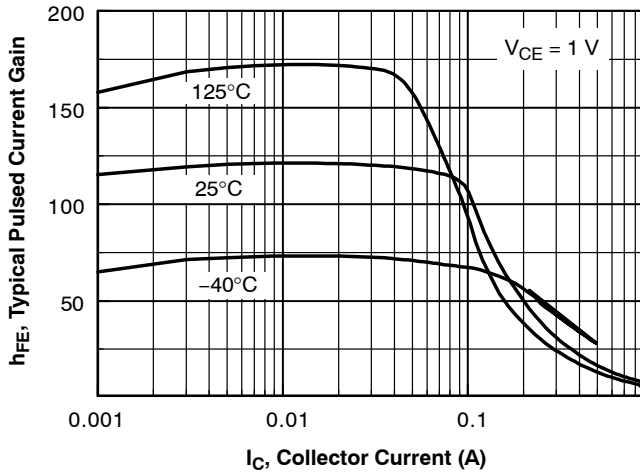


Figure 1. Typical Pulsed Current Gain vs. Collector Current

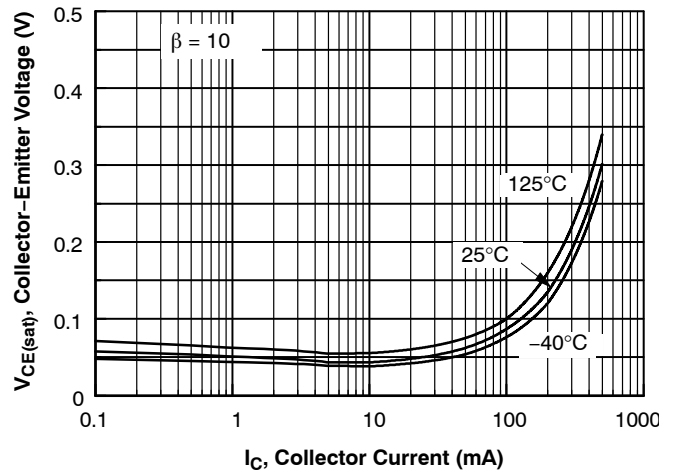


Figure 2. Collector-Emitter Saturation Voltage vs. Collector Current

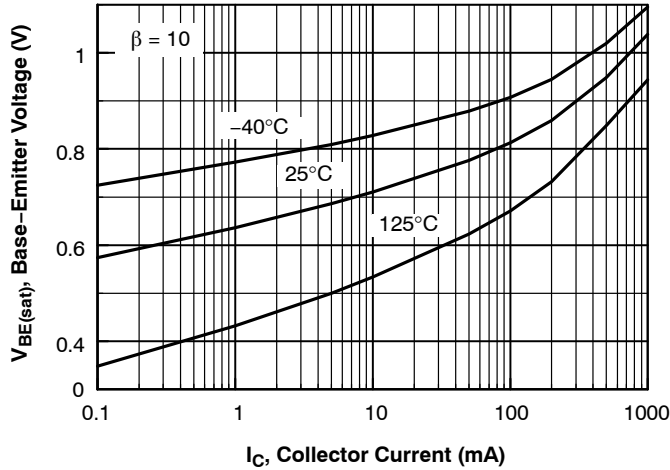


Figure 3. Base-Emitter Saturation Voltage vs. Collector Current

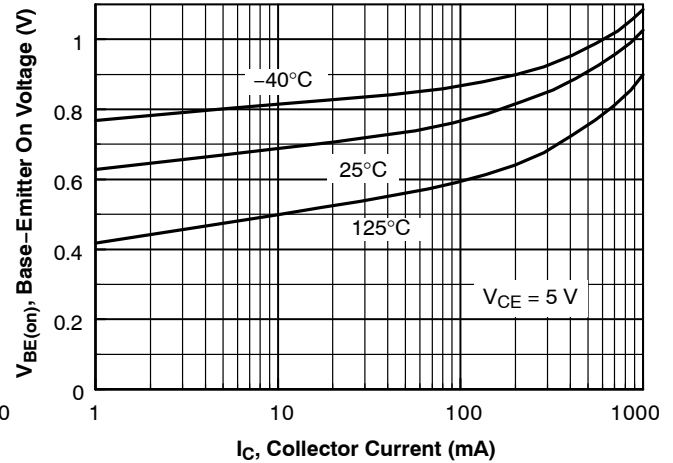


Figure 4. Base Emitter On Voltage vs. Collector Current

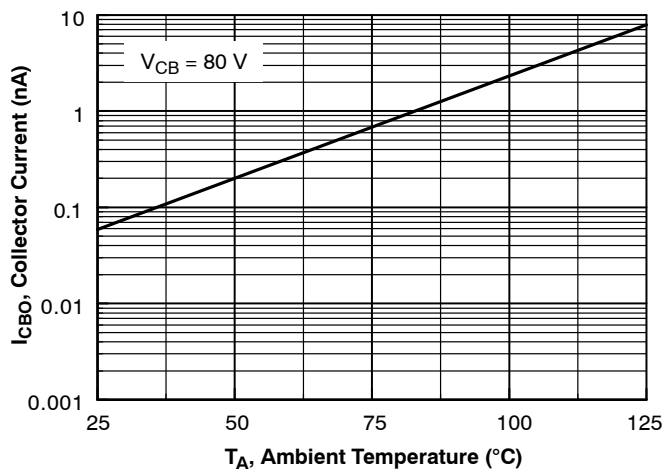


Figure 5. Collector Cut-Off Current vs. Ambient Temperature

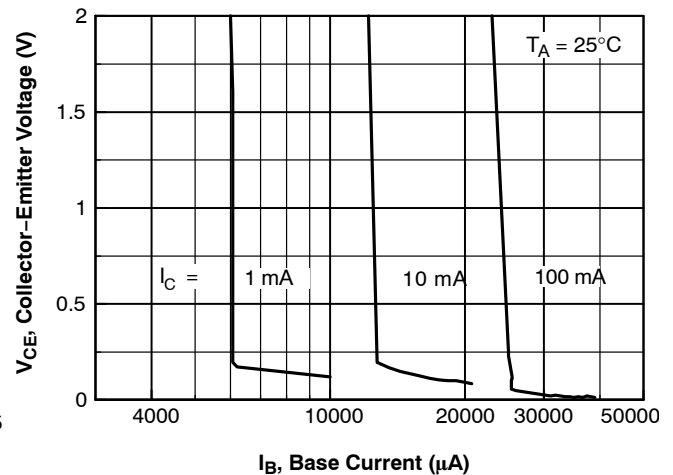


Figure 6. Collector Saturation Region

TYPICAL CHARACTERISTICS (Continued)

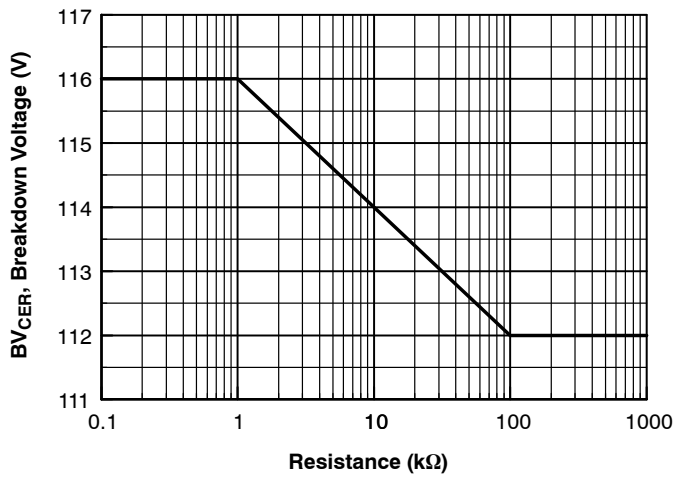


Figure 7. Collector-Emitter Breakdown Voltage with Resistance between Emitter-Base

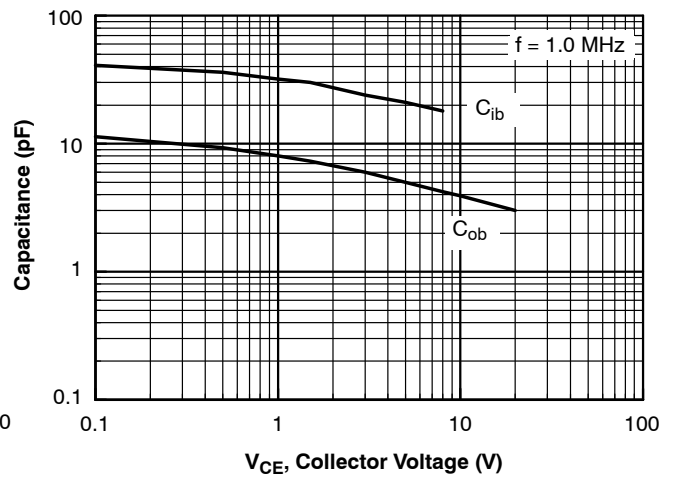


Figure 8. Input and Output Capacitance vs. Reverse Voltage

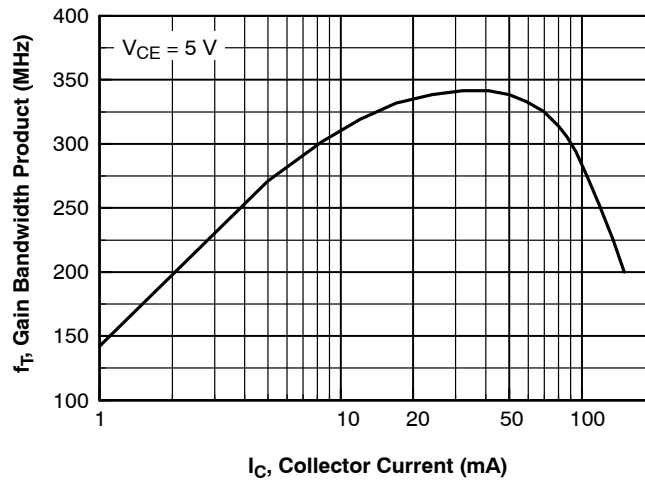


Figure 9. Gain Bandwidth Product vs. Collector Current

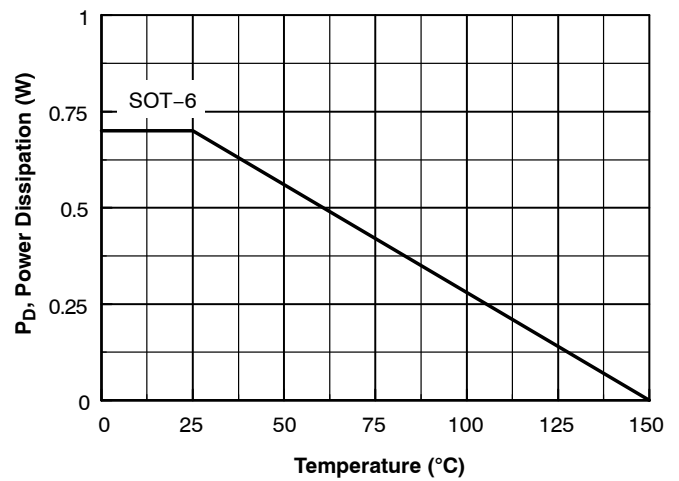
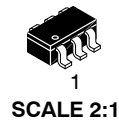
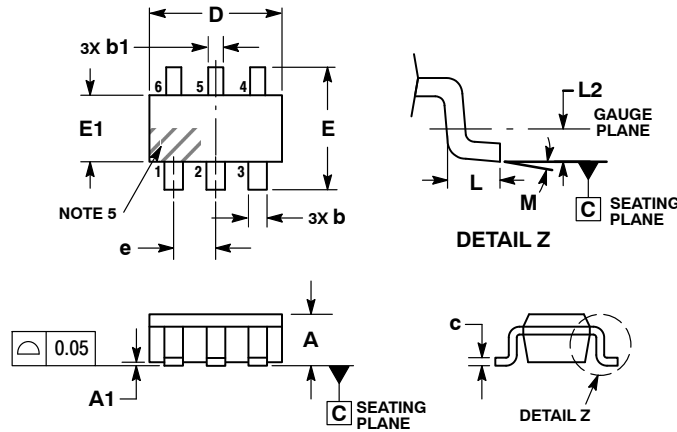


Figure 10. Power Dissipation vs. Ambient Temperature



TSOT23 6-Lead
CASE 419AG-01
ISSUE O

DATE 01 FEB 2010

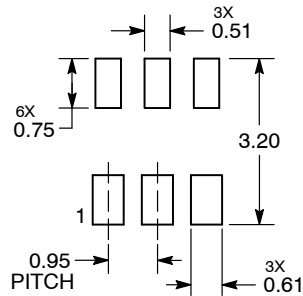


NOTES:

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°

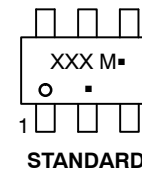
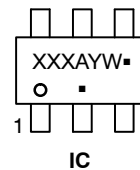
**RECOMMENDED
SOLDERING FOOTPRINT***



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.

DOCUMENT NUMBER: 98AON47619E

Electronic versions are uncontrolled except when accessed directly from the Document Repository.
 Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.

DESCRIPTION: TSOT23 6-LEAD

PAGE 1 OF 1

onsemi and Onsemi are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. onsemi does not convey any license under its patent rights nor the rights of others.

onsemi, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:

Technical Library: www.onsemi.com/design/resources/technical-documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support

For additional information, please contact your local Sales Representative at
www.onsemi.com/support/sales