



200V PNP MEDIUM POWER HIGH GAIN TRANSISTOR IN SOT223

#### Features

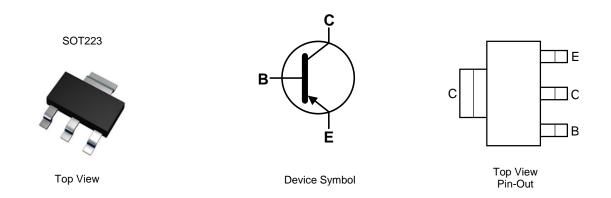
- BV<sub>CEO</sub> > -200V
- BV<sub>CBO</sub> > -200V
- I<sub>C</sub> = -500m Continuous Current
- hFE > 250 for High Gain @ -0.3A
- Very Low V<sub>CE(sat)</sub>
- Complementary NPN Type: FZT696B
- Lead-Free Finish; RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

#### **Mechanical Data**

- Case: SOT223
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Plated Leads; Solderable per MIL-STD-202, Method 208 3
- Weight: 0.112 grams (Approximate)

#### **Applications**

Battery Powered Circuits



#### Ordering Information (Notes 4)

Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FZT796ATA	AEC-Q101	FZT796A	7	12	1,000

1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.

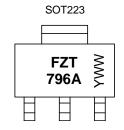
2. See http://www.diodes.com/quality/lead\_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.

3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

4. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

#### **Marking Information**

Notes:



FZT 796A = Product Type Marking Code YWW = Date Code Marking Y or  $\overline{Y}$  = Last Digit of Year (ex: 5= 2015) WW or  $\overline{W}W$  = Week Code (01~53)



#### Absolute Maximum Ratings (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-200	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-200	V
Emitter-Base Voltage	V <sub>EBO</sub>	-7	V
Continuous Collector Current	Ιc	-500	mA
Peak Pulse Current	I <sub>CM</sub>	-1	A

#### Thermal Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	
Dower Dissinction	(Note 5)	6	2	W
Power Dissipation	(Note 6)	PD	3	W
Thermal Desistance Junction to Ambient	(Note 5)	D	62.5	°C/W
Thermal Resistance, Junction to Ambient	(Note 6)	R <sub>0JA</sub>	41.7	°C/W
Thermal Resistance, Junction to Leads (Note 7)		R <sub>θJL</sub>	12.9	°C/W
Operating and Storage Temperature Range	T <sub>J,</sub> T <sub>STG</sub>	-55 to +150	°C	

### ESD Ratings (Note 8)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	ЗA
Electrostatic Discharge - Machine Model	ESD MM	400	V	С

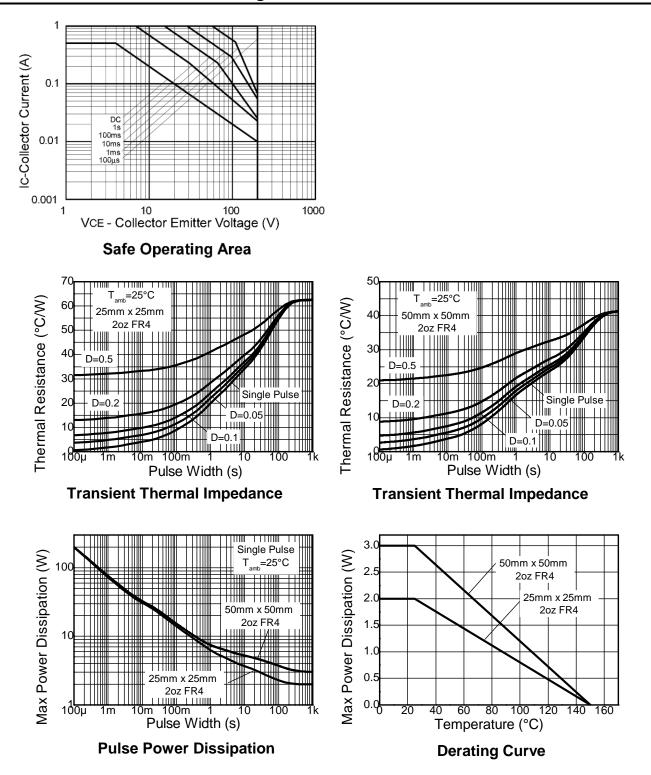
Notes: 5. For a device mounted with the collector lead on 25mm x 25mm 2oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in steady-state.

6. Same as Note 5, except the device is mounted on 50mm x 50mm 2oz copper.

Thermal resistance from junction to solder-point (at the end of the collector lead).
Refer to JEDEC specification JESD22-A114 and JESD22-A115.



#### **Thermal Characteristics and Derating Information**





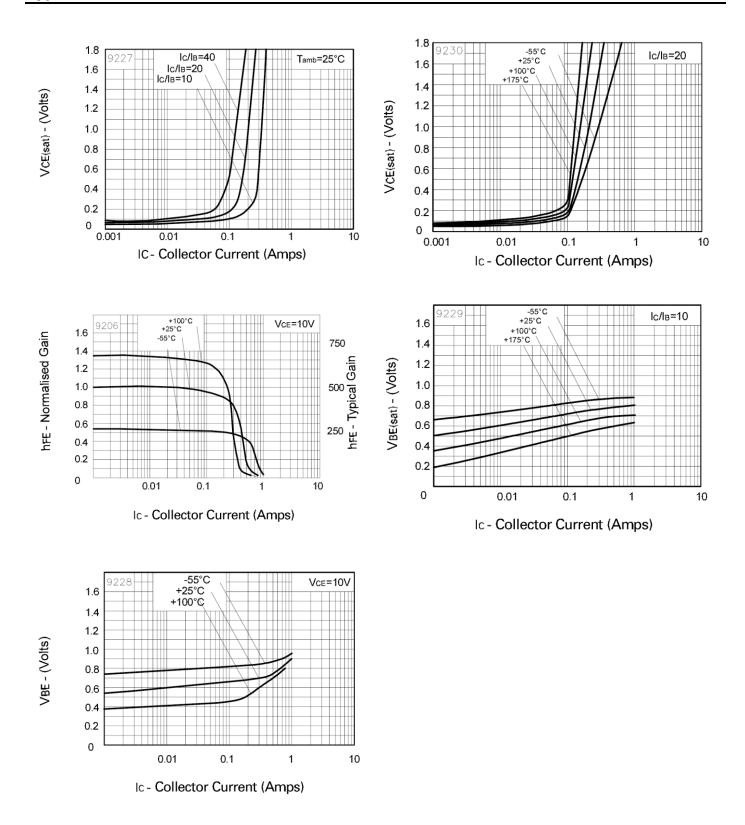
## Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	-200	_	—	V	I <sub>C</sub> = -100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV <sub>CEO</sub>	-200	_	_	V	I <sub>C</sub> = -10mA
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	-7	—	_	V	I <sub>E</sub> = -100μA
Collector-Base Cut-Off Current	I <sub>CBO</sub>	_	—	-100	nA	V <sub>CB</sub> = -150V
Collector-Emitter Cut-Off Current	I <sub>CES</sub>	—	—	-100	nA	V <sub>CE</sub> = -150V
Emitter Cut-Off Current	I <sub>EBO</sub>		—	-100	nA	V <sub>EB</sub> = -6V
DC Current Gain (Note 9)	h <sub>FE</sub>	300 300 250 100		800 — — —	_	$\begin{split} I_{C} &= -10 \text{mA}, \ V_{CE} &= -10 \text{V} \\ I_{C} &= -100 \text{mA}, \ V_{CE} &= -10 \text{V} \\ I_{C} &= -300 \text{mA}, \ V_{CE} &= -10 \text{V} \\ I_{C} &= -400 \text{mA}, \ V_{CE} &= -10 \text{V} \end{split}$
Collector-Emitter Saturation Voltage (Note 9)	V <sub>CE(sat)</sub>			-200 -300 -300	mV	$I_{C}$ = -50mA, $I_{B}$ = -2mA $I_{C}$ = -100mA, $I_{B}$ = -5mA $I_{C}$ = -200mA, $I_{B}$ = -20mA
Base-Emitter Saturation Voltage (Note 9)	V <sub>BE(sat)</sub>	_	—	-0.95	V	I <sub>C</sub> = -200mA, I <sub>B</sub> = -20mA
Base-Emitter Turn-On Voltage (Note 9)	V <sub>BE(on)</sub>	_	-0.67	_	V	I <sub>C</sub> = -200mA, V <sub>CE</sub> = -10V
Input Capacitance	C <sub>ibo</sub>	_	225	_	pF	V <sub>EB</sub> = -0.5V, f = 1MHz
Output Capacitance	C <sub>obo</sub>	_	12	_	pF	$V_{CB} = -10V, f = 1MHz$
Current Gain-Bandwidth Product	f <sub>T</sub>	100	_	_	MHz	$V_{CE} = -5V, I_C = -50mA, f=50MHz$
Turn-On Time	t <sub>on</sub>	_	100	_	ns	$V_{CC} = -50V, I_C = -100mA$
Turn-Off Time	t <sub>off</sub>	_	3,200	_	ns	$I_{B1} = -I_{B2} = 10mA$

Note: 9. Measured under pulsed conditions. Pulse width  $\leq$  300 µs. Duty cycle  $\leq$  2%.



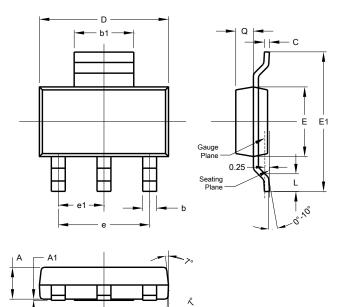
#### Typical Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)





#### **Package Outline Dimensions**

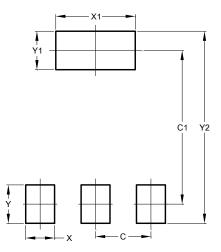
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



SOT223					
Dim	Min	Max	Тур		
Α	1.55	1.65	1.60		
A1	0.010	0.15	0.05		
b	0.60	0.80	0.70		
b1	2.90	3.10	3.00		
С	0.20	0.30	0.25		
D	6.45	6.55	6.50		
Е	3.45	3.55	3.50		
E1	6.90	7.10	7.00		
е	-	-	4.60		
e1	-	-	2.30		
L	0.85	1.05	0.95		
Q	0.84	0.94	0.89		
All C	All Dimensions in mm				

### Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



Dimensions	Value (in mm)
С	2.30
C1	6.40
Х	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00

Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device terminals and PCB tracking.



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