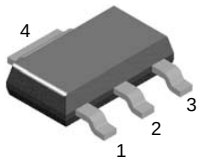
PNP Low Saturation Transistor

FZT790A



1. Base
2., 4. Collector
3. Emitter

SOT−223
CASE 318H

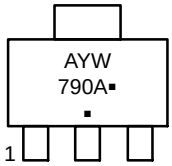
Description

These devices are designed with high current gain and low saturation voltage with collector currents up to 3 A continuous.

Features

- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant

MARKING DIAGRAM



A	= Assembly Location
Y	= Year
W	= Work Week
790A	= Specific Device Code
▪	= Pb−Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

ABSOLUTE MAXIMUM RATINGS (Notes 1, 2)

(Values are at T_A = 25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector−Emitter Voltage	V_{CEO}	−40	V
Collector−Base Voltage	V_{CBO}	−50	V
Emitter−Base Voltage	V_{EBO}	−5	V
Collector Current − Continuous	I_C	−3	A
Operating and Storage Junction Temperature Range	T_J, T_{STG}	−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.

1. These ratings are based on a maximum junction temperature of 150°C.
2. These are steady−state limits. **onsemi** should be consulted on applications involving pulsed or low−duty−cycle operations.

THERMAL CHARACTERISTICS (Note 3)

(Values are at T_A = 25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Total Power Dissipation	P_D	2	W
Dissipation Derate Above 25°C	P_D	16	mW/°C
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$	62.5	°C/W

3. PCB size: FR−4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

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ELECTRICAL CHARACTERISTICS

(Values are at T_A = 25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Max.	Unit
BV_{CEO}	Collector−Emitter Breakdown Voltage	I_C = −10 mA, I_B = 0	−40		V
BV_{CBO}	Collector−Base Breakdown Voltage	I_C = −100 μA, I_E = 0	−50		V
BV_{EBO}	Emitter−Base Breakdown Voltage	I_E = −100 μA, I_C = 0	−5.0		V
I_{CBO}	Collector Cut−Off Current	V_{CB} = −30 V, I_E = 0		−100	nA
		V_{CB} = −30 V, I_E = 0, T_A = 100°C		−10	μA
I_{EBO}	Emitter Cut−Off Current	V_{EB} = −4 V, I_C = 0		−100	nA
h_{FE}	DC Current Gain (Note 4)	V_{CE} = −2.0 V, I_C = −10 mA	300		
		V_{CE} = −2.0 V, I_C = −500 mA	250		
		V_{CE} = −2.0 V, I_C = −1.0 A	200		
		V_{CE} = −2.0 V, I_C = −2.0 A	150		
V_{CE}(sat)	Collector−Emitter Saturation Voltage (Note 4)	I_C = −500 mA, I_B = −5.0 mA		−0.25	V
		I_C = −1.0 A, I_B = −10 mA		−0.45	
		I_C = −2.0 A, I_B = −50 mA		−0.75	
V_{BE}(sat)	Base−Emitter Saturation Voltage (Note 4)	I_C = −1.0 A, I_B = −10 mA		−1.0	V
V_{BE}(on)	Base−Emitter On Voltage (Note 4)	I_C = −1.0 A, V_{CE} = −2.0 V		−1.0	V
f_T	Transition Frequency	I_C = −50 mA, V_{CE} = −5.0 V, f = 50 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 ≤ 300 μs, duty cycle ≤ 2.0%

ORDERING INFORMATION

Part Number	Top Mark	Package	Shipping†
FZT790A	790A	SOT−223 (Pb−Free)	4,000 Units/ 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.

TYPICAL PERFORMANCE CHARACTERISTICS

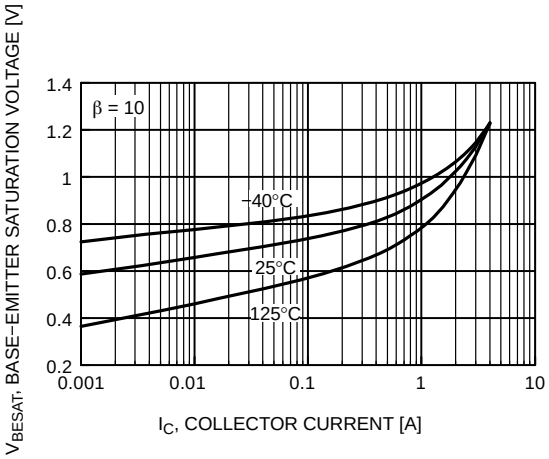


Figure 1. Base−Emitter Saturation Voltage vs. Collector Current

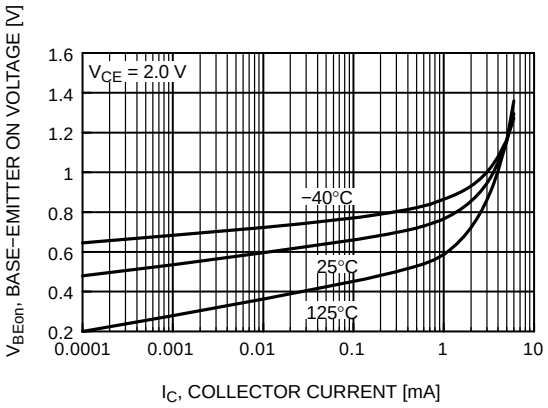


Figure 2. Base−Emitter On Voltage vs. Collector Current

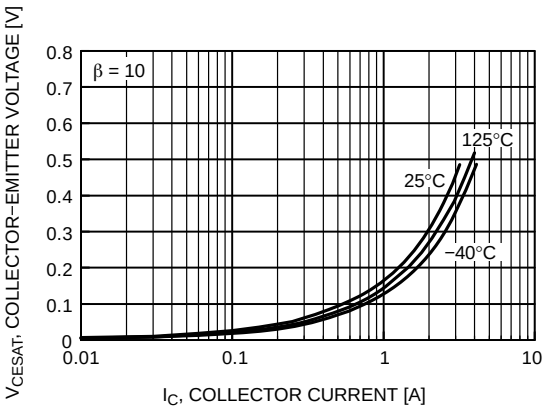


Figure 3. Collector−Emitter Saturation Voltage vs. Collector Current

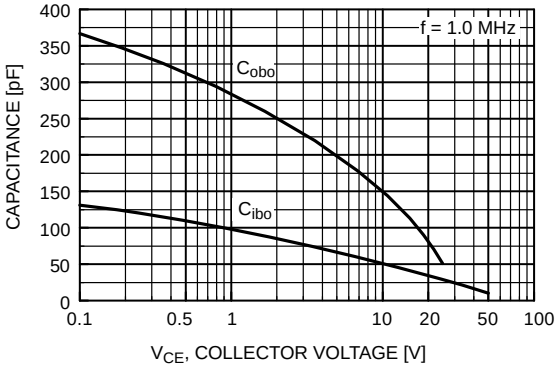


Figure 4. Input/Output Capacitance vs. Reverse Bias Voltage

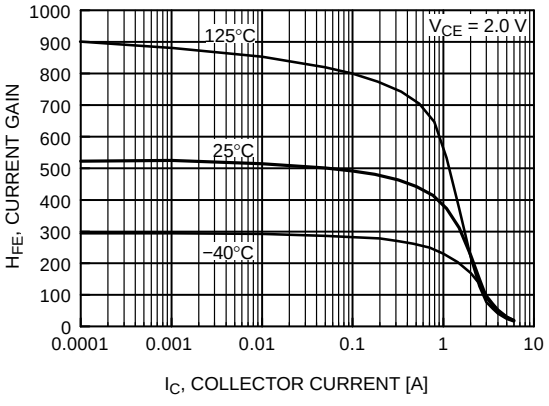


Figure 5. Current Gain vs. Collector Current

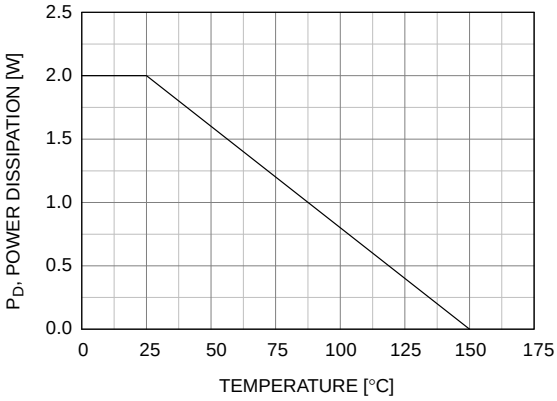
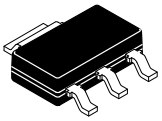


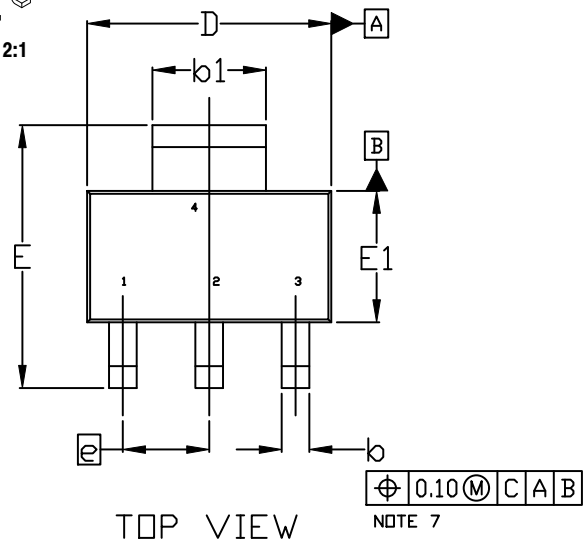
Figure 6. Power Dissipation vs. Ambient Temperature

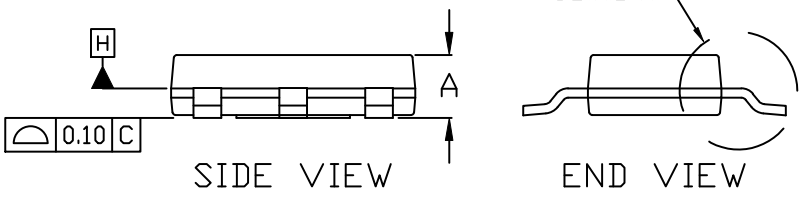


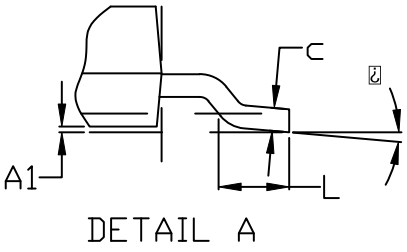
SCALE 2:1

SOT−223
CASE 318H
ISSUE B

DATE 13 MAY 2020

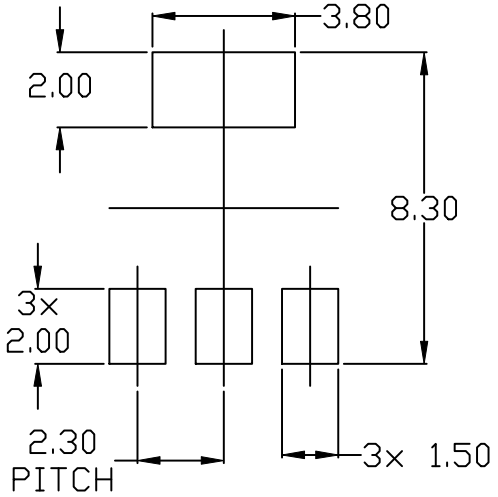






NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSIONS D & E1 ARE DETERMINED AT DATUM H. DIMENSIONS DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. SHALL NOT EXCEED 0.23mm PER SIDE.
4. LEAD DIMENSIONS b AND b1 DO NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBBAR PROTRUSION IS 0.08mm PER SIDE.
5. DATUMS A AND B ARE DETERMINED AT DATUM H.
6. A1 IS DEFINED AS THE VERTICAL DISTANCE FROM THE SEATING PLANE TO THE LOWEST POINT OF THE PACKAGE BODY.
7. POSITIONAL TOLERANCE APPLIES TO DIMENSIONS b AND b1.

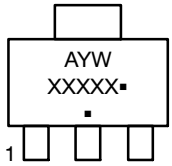
DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	---	---	1.80
A1	0.02	0.06	0.11
b	0.60	0.74	0.88
b1	2.90	3.00	3.10
c	0.24	---	0.35
D	6.30	6.50	6.70
E	6.70	7.00	7.30
E1	3.30	3.50	3.70
e	2.30 BSC		
L	0.25	---	---
θ	0°	---	10°



RECOMMENDED MOUNTING FOOTPRINT

* 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 DIAGRAM*



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

(Note: Microdot may be in either location)

*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. Some products may not follow the Generic Marking.

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