

## Description

This bipolar junction transistor (BJT) is designed to meet the stringent requirements of automotive applications.

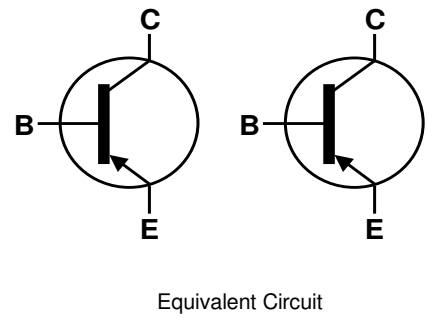
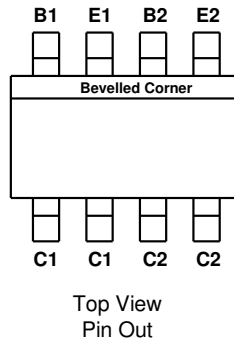
## Features

- $BV_{CEO} > -140V$
- $I_C = -0.5A$  High Continuous Current
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The ZDT795AQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

## Mechanical Data

- Case: SM-8 (8 LEAD SOT223)
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.117 grams (Approximate)

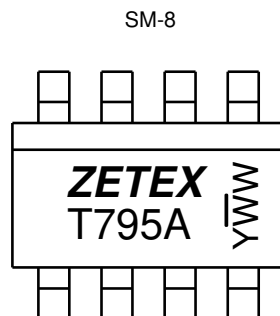


## Ordering Information (Note 4)

Part Number	Marking	Reel Size (inches)	Tape Width (mm)	Quantity Per Reel
ZDT795AQTA	T795A	7	12	1,000

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



ZETEX = Product Brand Logo  
 T795A = Product Type Marking Code  
 YWW = Date Code Marking  
 Y = Last Digit of Year (ex: 1 = 2021)  
 WW = Week Code (01 to 53)

**Absolute Maximum Ratings** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	-140	V
Collector-Emitter Voltage	$V_{CEO}$	-140	V
Emitter-Base Voltage	$V_{EBO}$	-7	V
Continuous Collector Current	$I_C$	-0.5	A
Peak Pulse Current (Note 5)	$I_{CM}$	-1	A

**Thermal Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

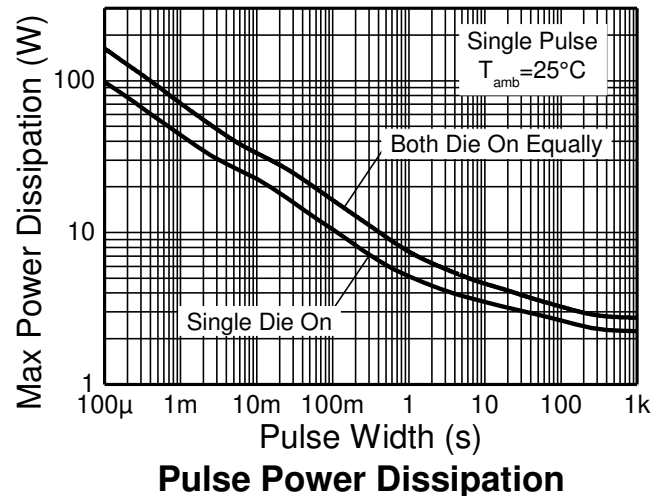
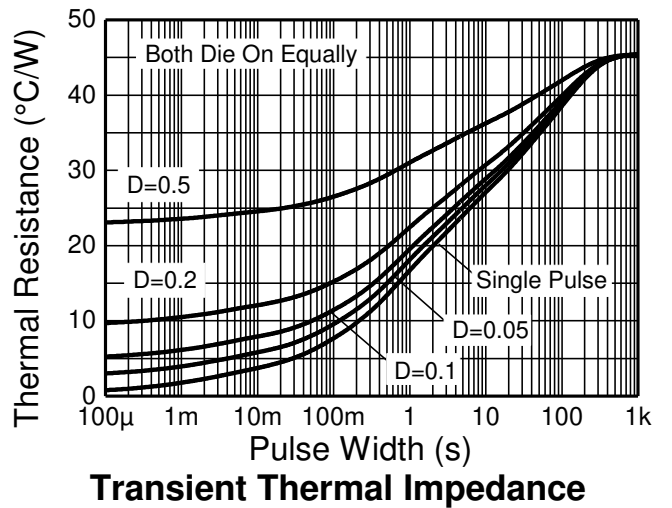
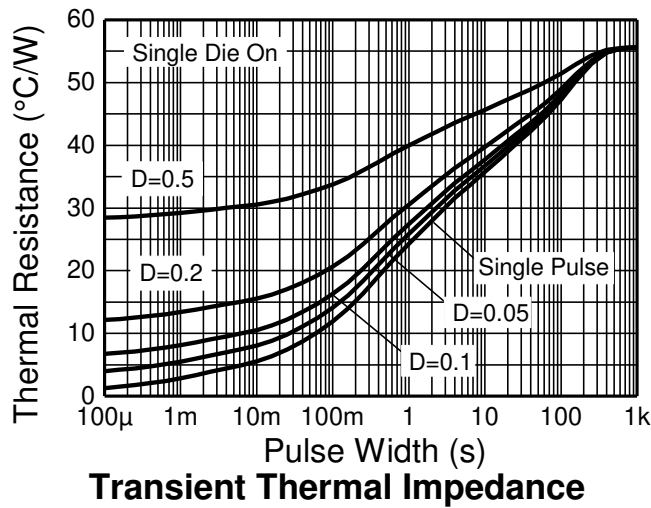
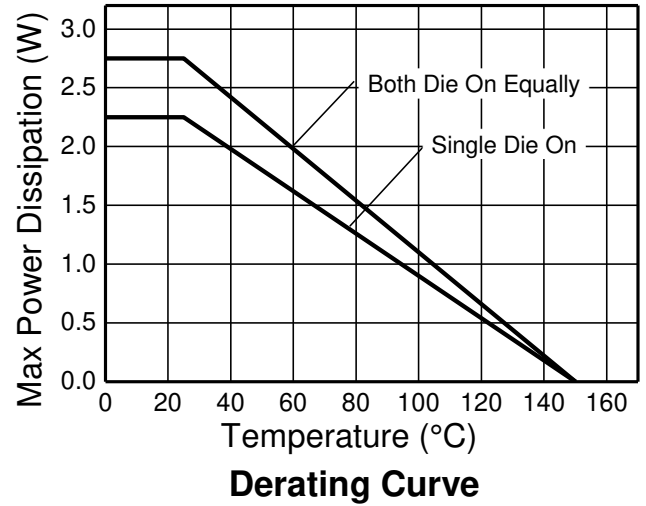
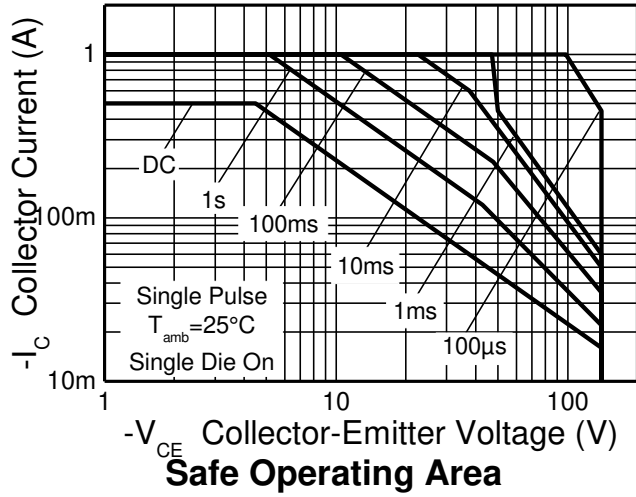
Characteristic	Symbol	Value	Unit
Collector Power Dissipation	$P_D$	(Note 5) 2.25	W
		(Note 6) 2.75	
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	(Note 5) 55.6	$^\circ\text{C/W}$
		(Note 6) 45.5	
Thermal Resistance, Junction to Leads	$R_{\theta JL}$	30.7	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

**ESD Ratings** (Note 8)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
5. For a device with any single die active and 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 both die are active and equally sharing power.
  7. Thermal resistance from junction to solder-point (at the end of the collector lead).
  8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

**Thermal Characteristics and Derating Information**

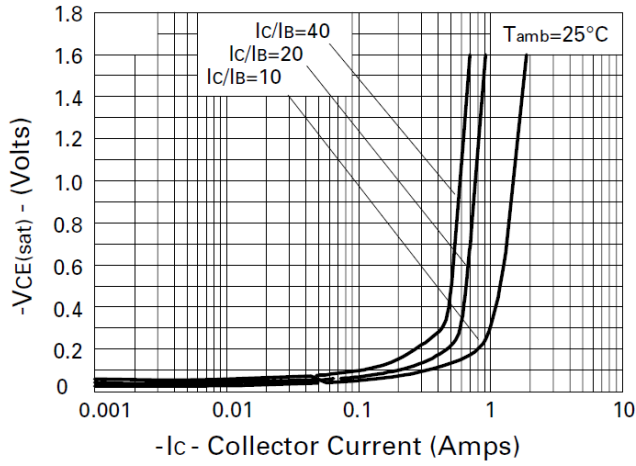


**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

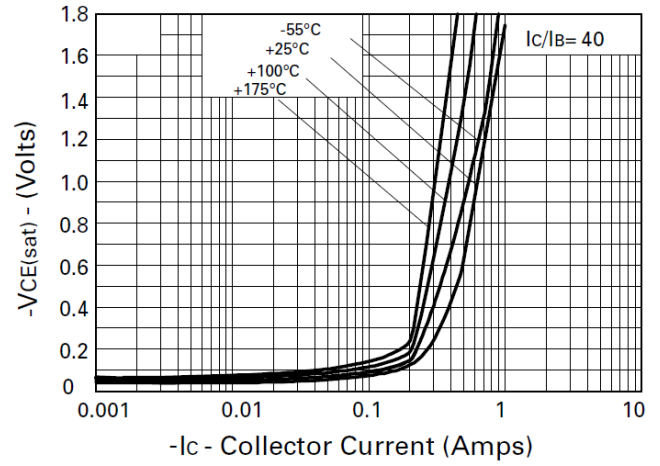
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	-140	—	—	V	I <sub>C</sub> = -100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV <sub>CEO</sub>	-140	—	—	V	I <sub>C</sub> = -10mA
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	-7	—	—	V	I <sub>E</sub> = -100μA
Collector Cutoff Current	I <sub>CBO</sub>	—	—	-0.1	μA	V <sub>CB</sub> = -100V
Emitter Cutoff Current	I <sub>EBO</sub>	—	—	-0.1	μA	V <sub>EB</sub> = -5.6V
DC Current Transfer Static Ratio (Note 9)	h <sub>FE</sub>	300	—	800	—	I <sub>C</sub> = -10mA, V <sub>CE</sub> = -2V
		250	—	—		I <sub>C</sub> = -200mA, V <sub>CE</sub> = -2V
		100	—	—		I <sub>C</sub> = -300mA, V <sub>CE</sub> = -2V
Collector-Emitter Saturation Voltage (Note 9)	V <sub>CE(sat)</sub>	—	—	-0.3	V	I <sub>C</sub> = -100mA, I <sub>B</sub> = -1mA
		—	—	-0.3		I <sub>C</sub> = -200mA, I <sub>B</sub> = -5mA
		—	—	-0.25		I <sub>C</sub> = -500mA, I <sub>B</sub> = -50mA
Base-Emitter Saturation Voltage (Note 9)	V <sub>BE(sat)</sub>	—	—	-0.95	V	I <sub>C</sub> = -500mA, I <sub>B</sub> = -50mA
Base-Emitter Turn-on Voltage (Note 9)	V <sub>BE(on)</sub>	—	-0.75	—	V	I <sub>C</sub> = -500mA, V <sub>CE</sub> = -2V
Transitional Frequency	f <sub>r</sub>	100	—	—	MHz	I <sub>C</sub> = -50mA, V <sub>CE</sub> = -5V, f = 50MHz
Output Capacitance	C <sub>obo</sub>	—	15	—	pF	V <sub>EB</sub> = -10V, f = 1MHz
Switching Time	t <sub>on</sub>	—	100	—	ns	V <sub>CC</sub> = -50V, I <sub>C</sub> = -100mA, I <sub>B1</sub> = -I <sub>B2</sub> = -10mA
	t <sub>off</sub>		1900		ns	

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

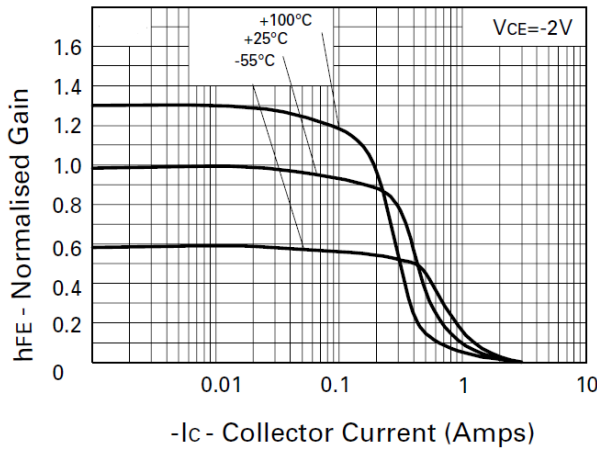
**Typical Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)



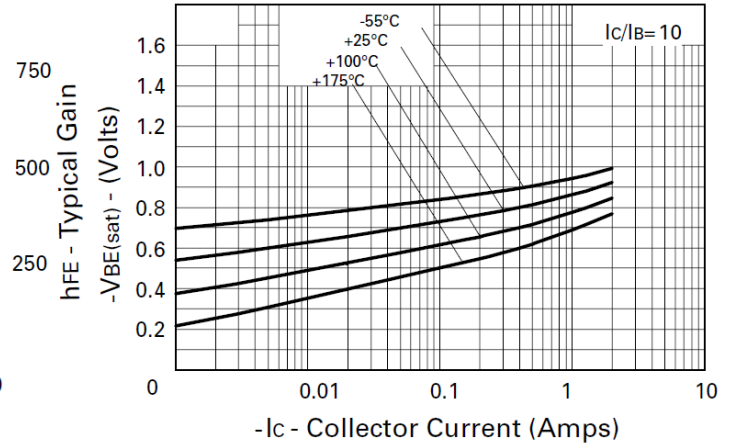
**$V_{CE(sat)}$  v  $I_C$**



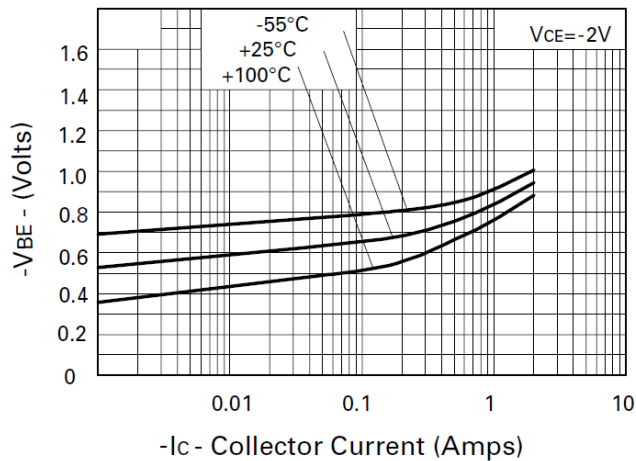
**$V_{CE(sat)}$  v  $I_C$**



**$h_{FE}$  v  $I_C$**



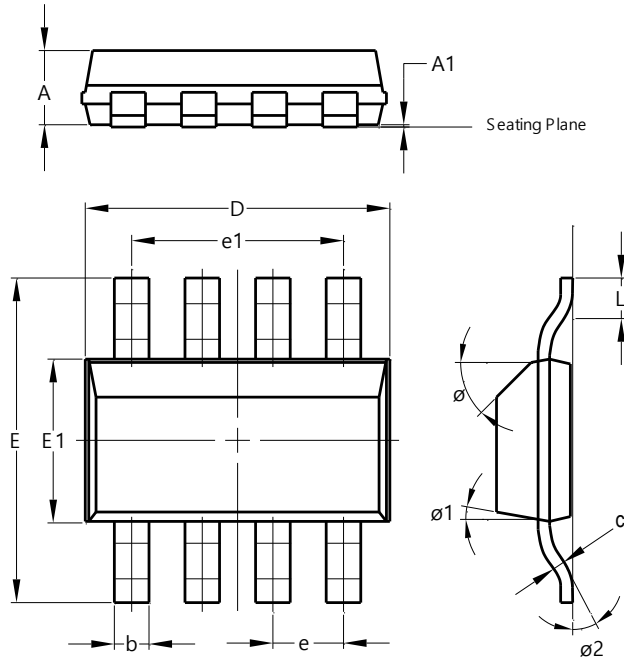
**$V_{BE(sat)}$  v  $I_C$**



## Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SM-8

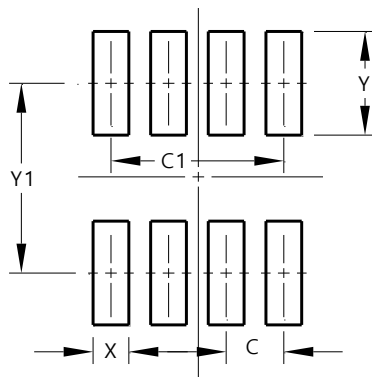


SM-8			
Dim	Min	Max	Typ
A	--	1.70	1.60
A1	0.02	0.10	0.04
b	0.70	0.90	0.80
c	0.24	0.32	0.28
D	6.30	6.70	6.60
e	1.53 REF		
e1	4.59 REF		
E	6.70	7.30	7.00
E1	3.30	3.70	3.50
L	0.75	1.00	0.90
Ø	--	--	45°
Ø1	--	15°	--
Ø2	--	--	10°
All Dimensions in mm			

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SM-8



Dimensions	Value (in mm)
C	1.52
C1	4.6
X	0.95
Y	2.80
Y1	6.80

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