



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from Europe, America and south Asia, supplying obsolete and hard-to-find components to meet their specific needs.

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Features

- $BV_{CEO} > -60V$
- $I_C = -1A$ High Continuous Current
- Low Saturation Voltage $V_{CE(sat)} < -600mV$ @ $-1A$
- Complementary NPN Type: FZT491
- **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

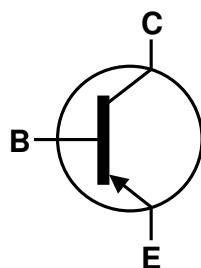
- Case: SOT223
- Case Material: Molded Plastic. "Green" Molding Compound; UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208^(e3)
- Weight: 0.112 grams (Approximate)

Applications

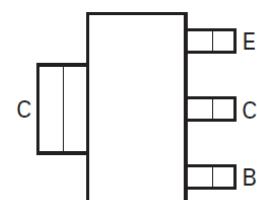
- Power MOSFET & IGBT Gate Driving
- Low Loss Power Switching



Top View



Device Symbol



Top View
Pin-Out

Ordering Information (Note 4)

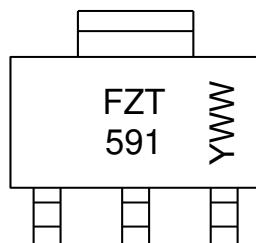
Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FZT591TA	FZT591	7	12	1,000

Notes:

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

SOT223



FZT 591 = Product Type Marking Code

YWW = Date Code Marking

Y or \bar{Y} = Last Digit of Year (ex: 5= 2015)

WW or \bar{WW} = Week Code (01~53)

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-80	V
Collector-Emitter Voltage	V_{CEO}	-60	V
Emitter-Base Voltage	V_{EBO}	-7	V
Continuous Collector Current	I_C	-1	A
Peak Pulse Current	I_{CM}	-2	A
Base Current	I_B	-200	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation	P_D	3.0	W
		2.0	
		1.6	
		1.2	
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	41.7	°C/W
		62.5	
		78.1	
		104	
Thermal Resistance Junction to Lead	$R_{\theta JL}$	19.4	
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

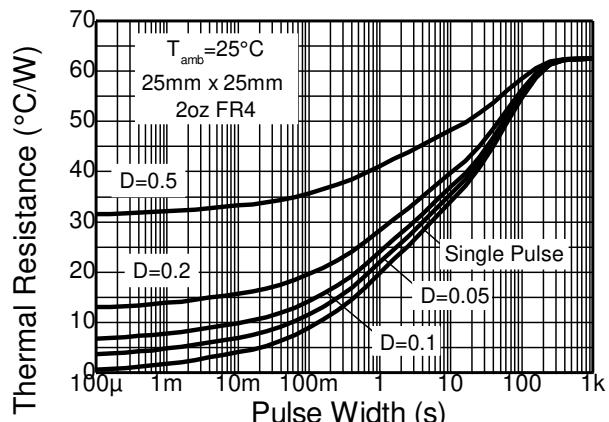
ESD Ratings (Note 8)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	8,000	V	3B
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

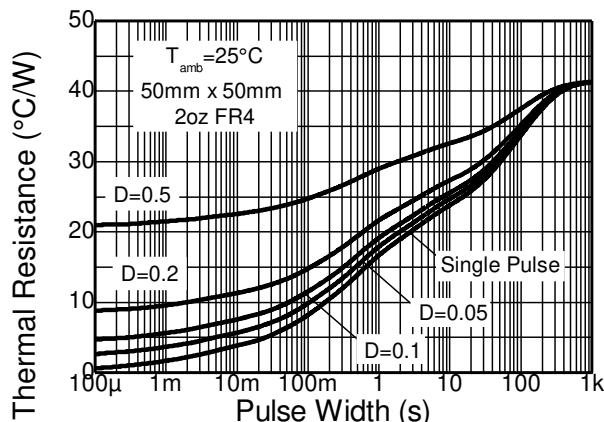
Notes:

- 5. For a device mounted with the collector lead on 50mm x 50mm 2oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
- 6. Same as Note 5, except the device is mounted on 25mm x 25mm 2oz copper.
- 7. Same as Note 5, except the device is mounted on 25mm x 25mm 1oz copper.
- 8. Same as Note 5, except the device is mounted on minimum recommended pad layout.
- 9. Thermal resistance from junction to solder-point (at the end of the collector lead).
- 10. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

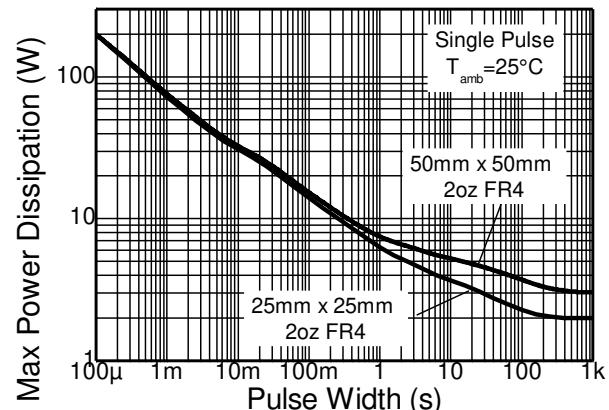
Thermal Characteristics and Derating Information



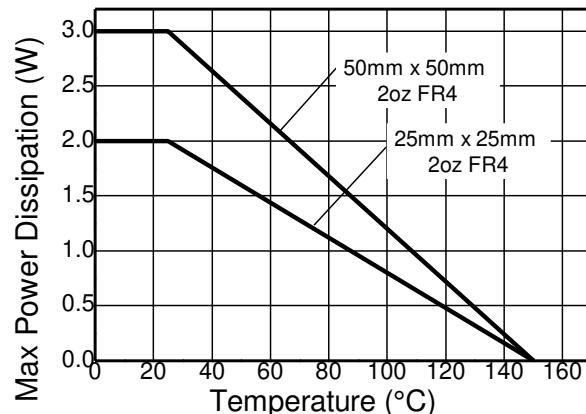
Transient Thermal Impedance



Transient Thermal Impedance



Pulse Power Dissipation



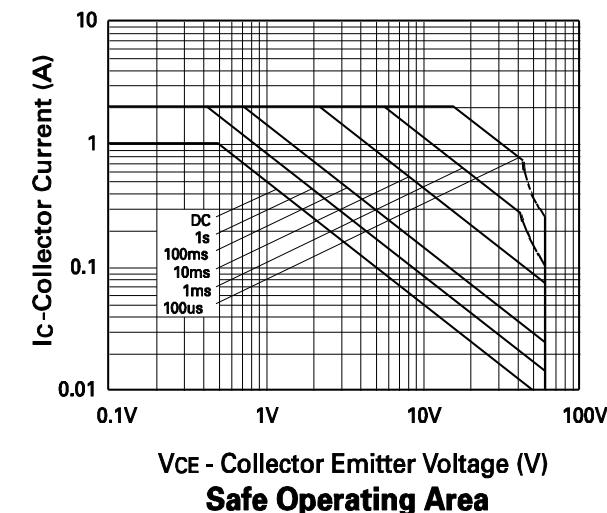
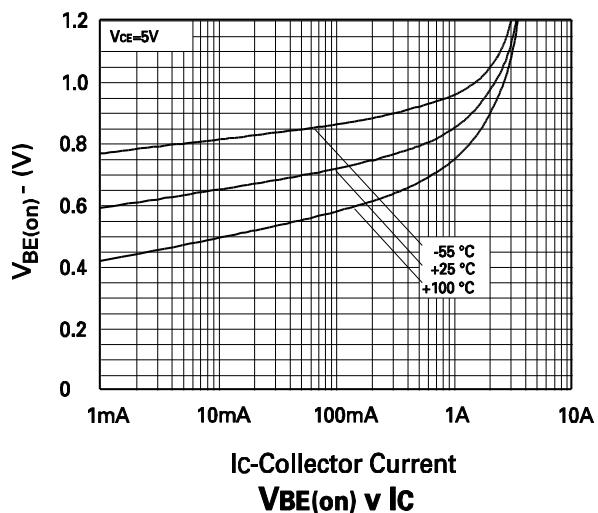
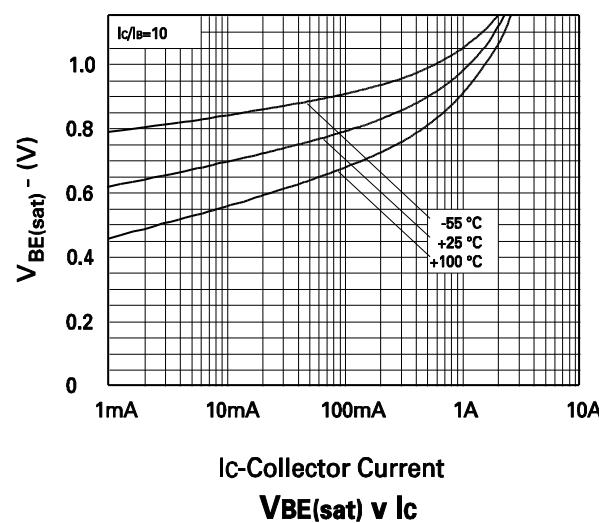
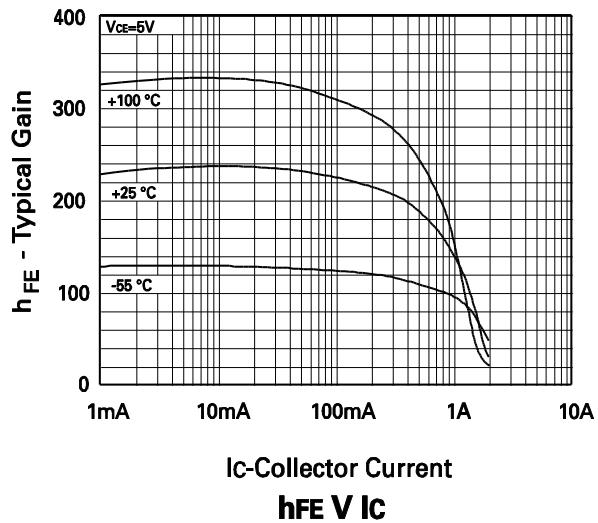
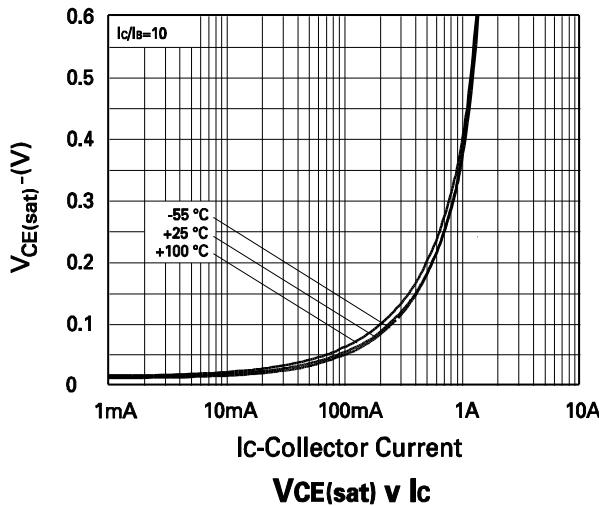
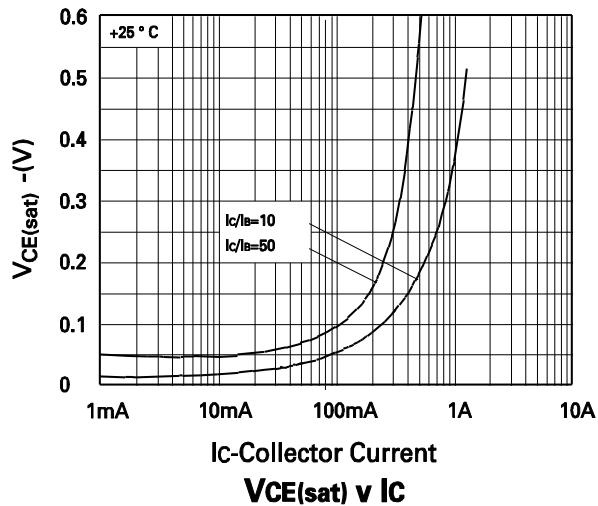
Derating Curve

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-80	—	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 11)	BV_{CEO}	-60	—	—	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	8.1	—	V	$I_E = -100\mu\text{A}$
Collector Cut-Off Current	I_{CBO}	—	<1	-100	nA	$V_{\text{CB}} = -60\text{V}$
Collector Cut-Off Current	I_{CES}	—	<1	-100	nA	$V_{\text{CES}} = -60\text{V}$
Emitter Cut-Off Current	I_{EBO}	—	<1	-100	nA	$V_{\text{EB}} = -5.6\text{V}$
Collector-Emitter Saturation Voltage (Note 11)	$V_{\text{CE}(\text{sat})}$	—	-175 -350	-300 -600	mV	$I_C = -500\text{mA}, I_B = -50\text{mA}$ $I_C = -1\text{A}, I_B = -100\text{mA}$
Base-Emitter Saturation Voltage (Note 11)	$V_{\text{BE}(\text{sat})}$	—	965	-1200	mV	$I_C = -1\text{A}, I_B = -100\text{mA}$
Base-Emitter Turn-On Voltage (Note 11)	$V_{\text{BE}(\text{on})}$	—	830	-1000	mV	$I_C = -1\text{A}, V_{\text{CE}} = -5\text{V}$
DC Current Transfer Static Ratio (Note 11)	h_{FE}	100 100 80 15	220 175 155 40	— 300 — —	—	$I_C = -1\text{mA}, V_{\text{CE}} = -5\text{V}$ $I_C = -500\text{mA}, V_{\text{CE}} = -5\text{V}$ $I_C = -1\text{A}, V_{\text{CE}} = -5\text{V}$ $I_C = -2\text{A}, V_{\text{CE}} = -5\text{V}$
Transitional Frequency	f_T	150	—	—	MHz	$V_{\text{CE}} = -10\text{V}, I_C = -50\text{mA}$ $f = 100\text{MHz}$
Output Capacitance	C_{obo}	—	—	10	pF	$V_{\text{CB}} = -10\text{V}, f = 1\text{MHz}$

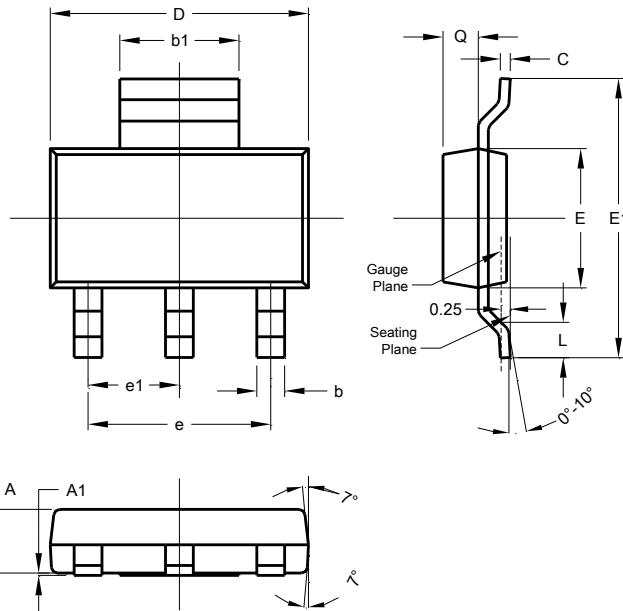
Note: 11. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

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



Package Outline Dimensions

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

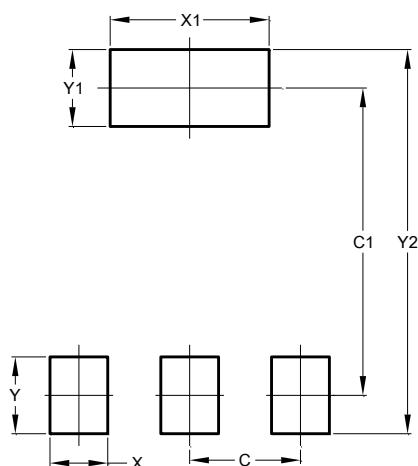


SOT223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	-	-	4.60
e1	-	-	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89

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)
C	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00

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