

Features

- $BV_{CEO} > 60V$
- Maximum Continuous Collector Current $I_C = 5A$
- $V_{CE(sat)} < 45mV @ 1A$
- $R_{CE(sat)} = 25m\Omega$
- High Power Dissipation SOT23 (Type DN) Package
- $I_{CM} = 12A$ Peak Pulse Current
- 140V Forward Blocking Voltage
- Complementary Part Number [ZXTP2027F](#)
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **An automotive-compliant part is available under a separate datasheet ([ZXTN2018FQ](#))**

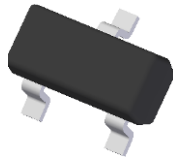
Mechanical Data

- Package: SOT23
- Package 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: 0.008 grams (Approximate)

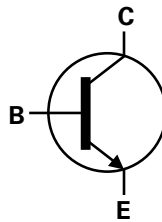
Applications

- MOSFET and IGBT gate driving
- Motor drives
- Relays, lamps and solenoid drives

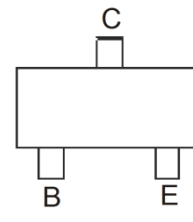
SOT23 (Type DN)



Top View



Device Symbol



Top View
Pinout

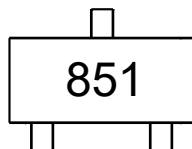
Ordering Information (Note 4)

Orderable Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
ZXTN2018FTA	SOT23 (Type DN)	851	7	8	3,000	Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 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

SOT23 (Type DN)



851 = Product Type Marking Code

Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CB0}	140	V
Collector-Emitter Voltage	V _{CEV}	140	V
Collector-Emitter Voltage	V _{CEO}	60	V
Emitter-Base Voltage	V _{EB0}	7	V
Continuous Collector Current	I _C	5	A
Base Current	I _B	1	A
Peak Pulse Current	I _{CM}	12	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Power Dissipation Linear Derating Factor	(Note 5)	P _D	1	W mW/°C
	(Note 6)		8	
	(Note 7)		1.2	
	(Note 7)		9.6	
Thermal Resistance, Junction to Ambient	(Note 5)	R _{θJA}	1.56	°C/W
	(Note 6)		12.5	
	(Note 7)		104	
Thermal Resistance, Junction to Case	(Note 8)	R _{θJC}	80	°C/W
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C

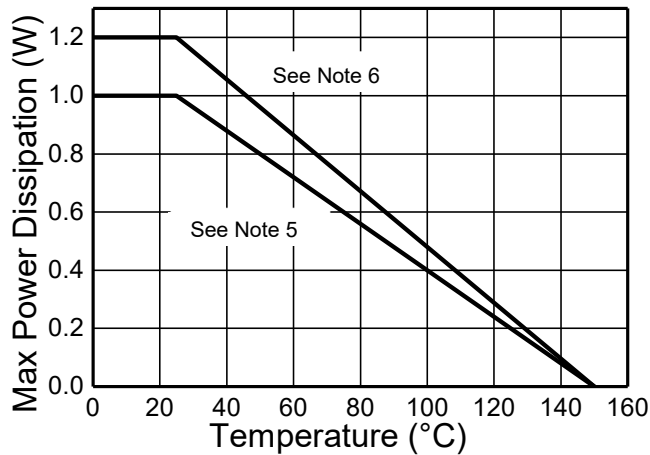
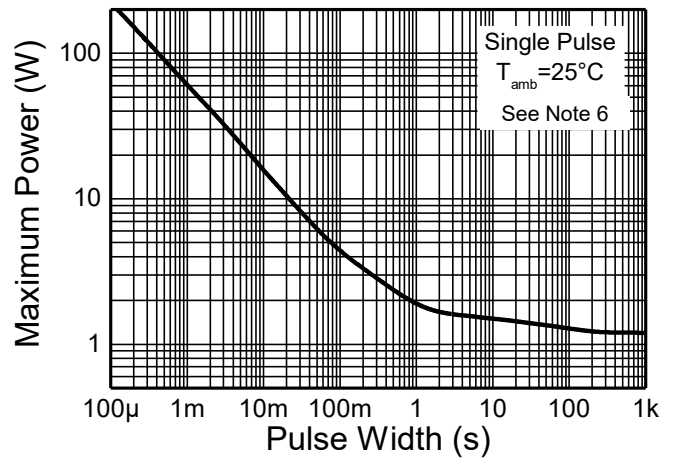
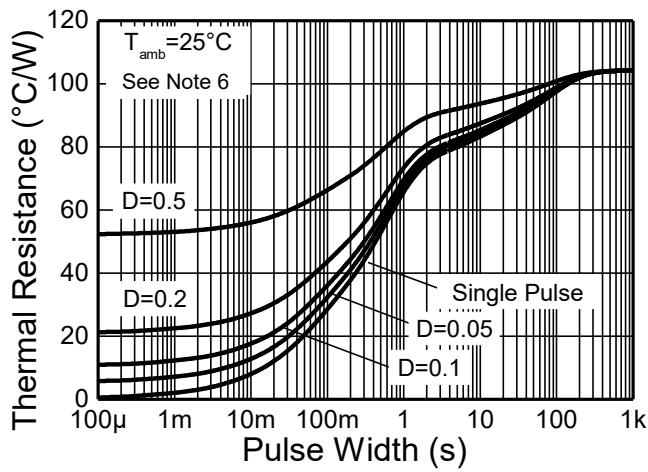
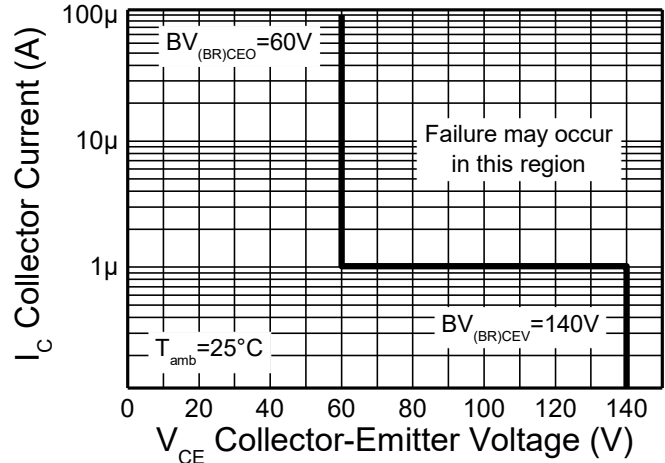
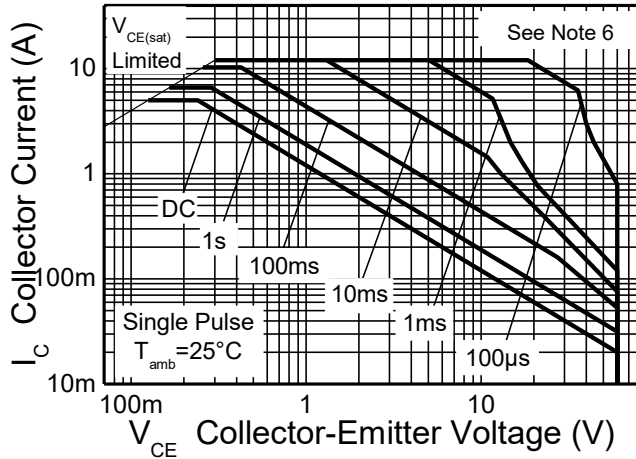
ESD Ratings (Note 9)

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 mounted with the collector lead on 15mm x 15mm 2oz copper that is on a single-sided 1.6mm FR-4 PCB; device is measured under still air conditions whilst operating in steady state.
6. Same as Note 5, except the device is mounted on 25mm x 25mm 2oz copper.
7. Same as Note 6, except measured at t < 5 seconds.
8. Thermal resistance from junction to the top of the case.
9. Refer to JEDEC specifications JESD22-A114 and JESD22-A115.

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

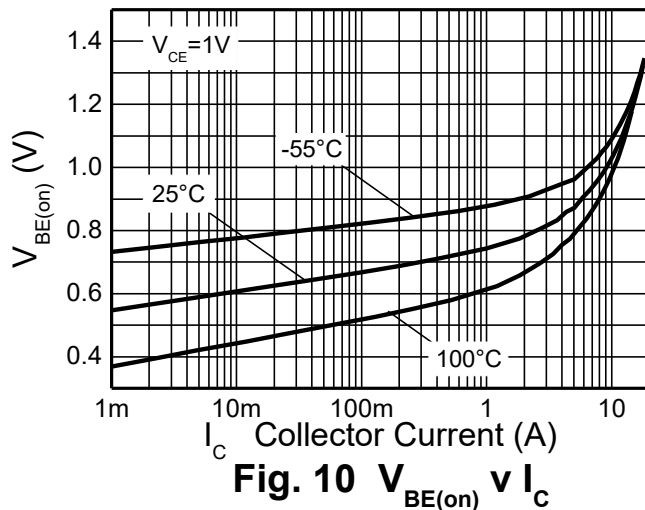
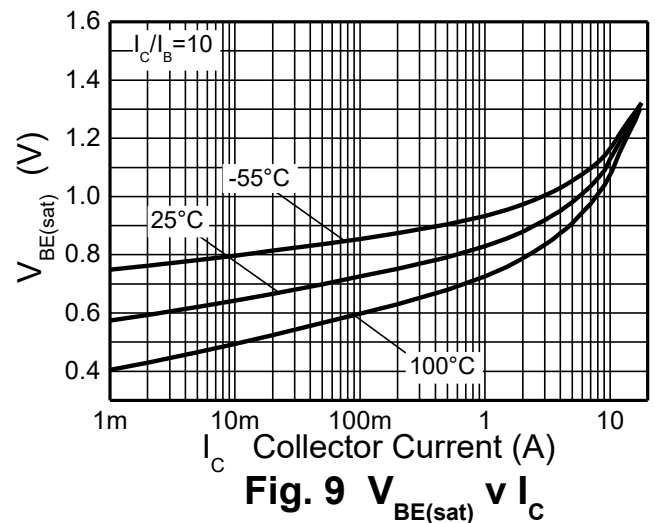
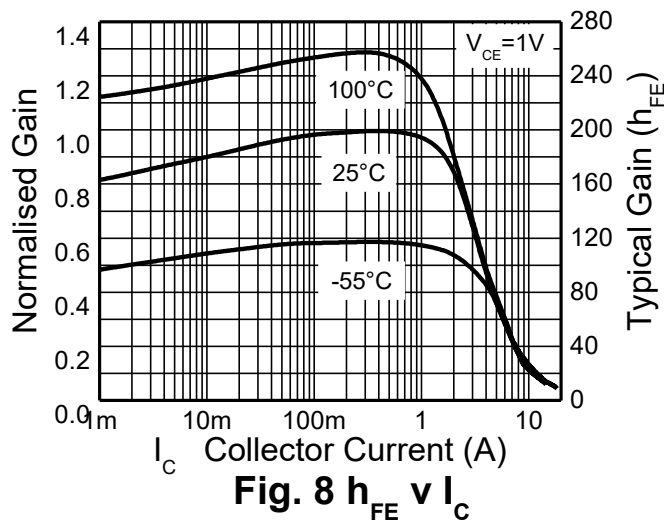
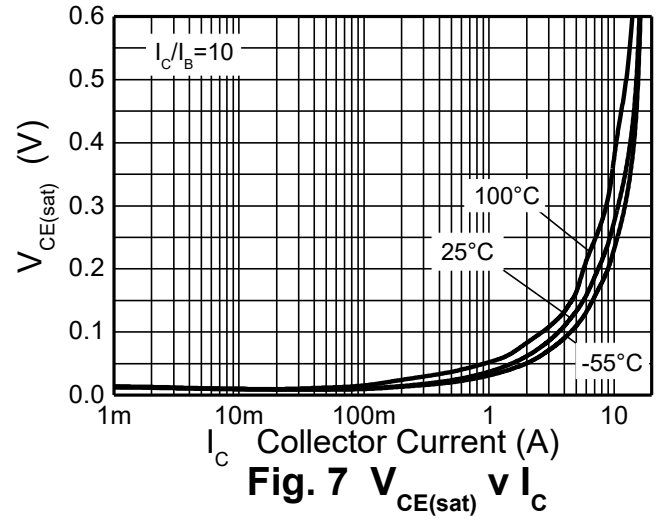
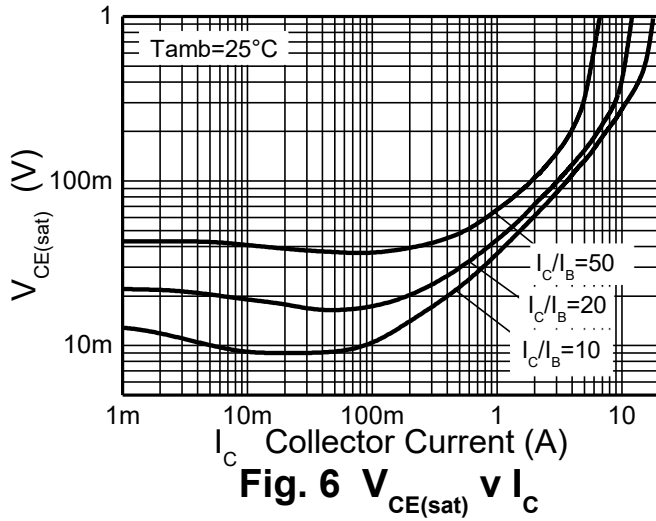


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CB0}	140	180	—	V	I _C = 100μA
Collector-Emitter Breakdown Voltage	BV _{CEV}	140	180	—	V	I _C = 1μA, -1V < V _{BE} < +0.3V
Collector-Emitter Breakdown Voltage (Note 10)	BV _{CEO}	60	80	—	V	I _C = 10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	7	8	—	V	I _E = 100μA
Collector-Base Cutoff Current	I _{CBO}	—	1	50	nA	V _{CB} = 110V
Collector-Emitter Cutoff Current	I _{CEV}	—	1	100	nA	V _{CB} = 110V, V _{BE} = -1V
Emitter-Base Cutoff Current	I _{EBO}	—	1	10	nA	V _{EB} = 6V
Static Forward Current Transfer Ratio (Note 10)	h _{FE}	100	220	—	—	I _C = 10mA, V _{CE} = 1V
		100	200	300		I _C = 2A, V _{CE} = 1V
		40	65	—		I _C = 5A, V _{CE} = 1V
		15	25	—		I _C = 10A, V _{CE} = 1V
Collector-Emitter Saturation Voltage (Note 10)	V _{CE(sat)}	—	15	30	mV	I _C = 0.1A, I _B = 5mA
		—	35	45		I _C = 1A, I _B = 100mA
		—	40	55		I _C = 1A, I _B = 50mA
		—	85	110		I _C = 2A, I _B = 50mA
		—	145	170		I _C = 5A, I _B = 250mA
		—	170	210		I _C = 6A, I _B = 300mA
Base-Emitter Saturation Voltage (Note 10)	V _{BE(sat)}	—	0.92	1.00	V	I _C = 5A, I _B = 250mA
Base-Emitter Saturation Voltage (Note 10)	V _{BE(on)}	—	0.85	0.95	V	I _C = 5A, V _{CE} = 1V
Output Capacitance	C _{obo}	—	28	—	pF	V _{CB} = 10V, f = 1MHz
Transition Frequency	f _T	—	130	—	MHz	V _{CE} = 10V, I _C = 100mA f = 50MHz
Turn-On Time	t _{on}	—	33	—	ns	V _{CC} = 10V, I _C = 1A
Turn-Off Time	t _{off}	—	668	—	ns	I _{B1} = -I _{B2} = 100mA

Note: 10. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

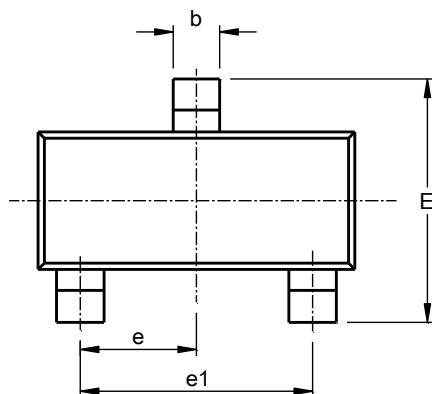
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



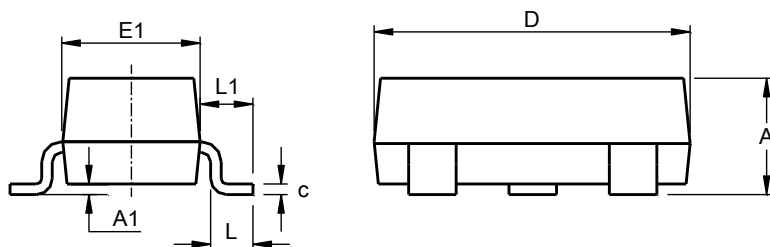
Package Outline Dimensions

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

SOT23 (Type DN)



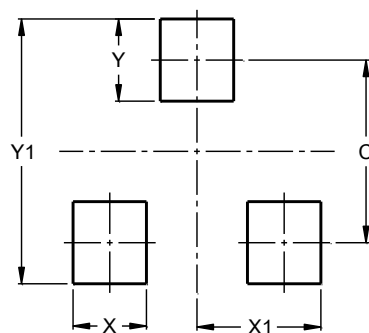
SOT23 (Type DN)			
Dim	Min	Max	Typ
A	0.89	1.12	1.00
A1	0.01	0.10	0.05
b	0.30	0.51	0.45
c	0.08	0.20	0.10
D	2.80	3.04	3.00
E	2.10	2.64	2.42
E1	1.20	1.40	1.37
e	0.95 REF		
e1	1.90 REF		
L	0.25	0.60	0.30
L1	0.45	0.62	0.54
All Dimensions in mm			



Suggested Pad Layout

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

SOT23 (Type DN)



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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