

Features

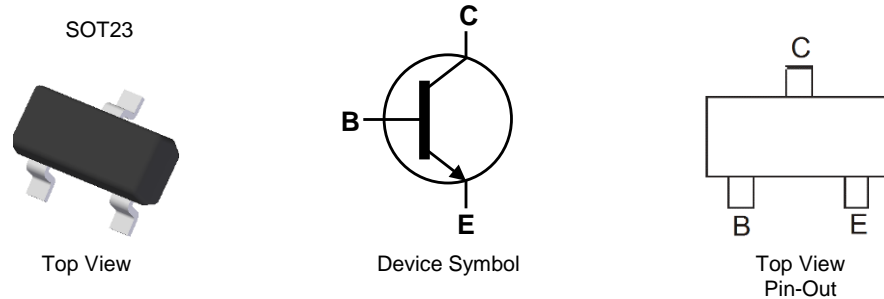
- $BV_{CE0} > 100V$
- $I_C = 2.5A$ Collector Current
- Low Saturation Voltage $V_{CE(sat)} < 95mV @ 1A$
- Complementary PNP Part: ZXTP25100DFH
- Epitaxial Planar Die Construction
- High Gain
- $R_{CE(sat)} = 80m\Omega$
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](https://www.diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

Mechanical Data

- Package: SOT23
- Package 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 (3)
- Weight: 0.008 grams (Approximate)

Applications

- DC-DC converters
- DC fans
- Motor controls
- Lamps, relays and solenoid driving

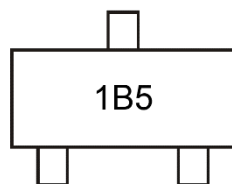


Ordering Information (Note 4)

Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
ZXTN25100DFHTA	SOT23	1B5	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



1B5 = Product Type Marking Code

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

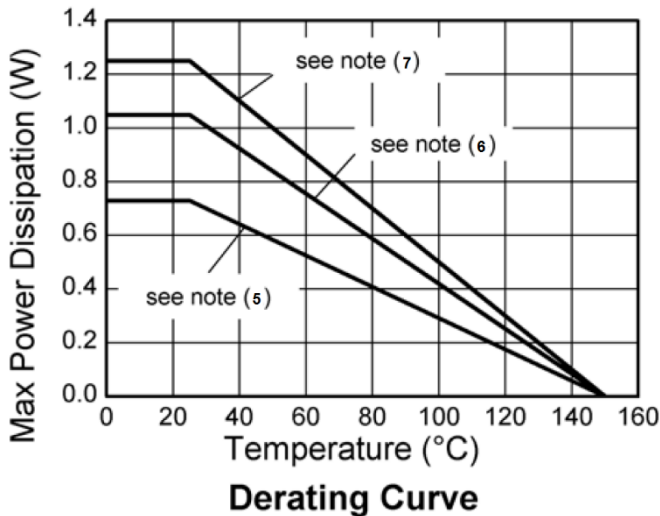
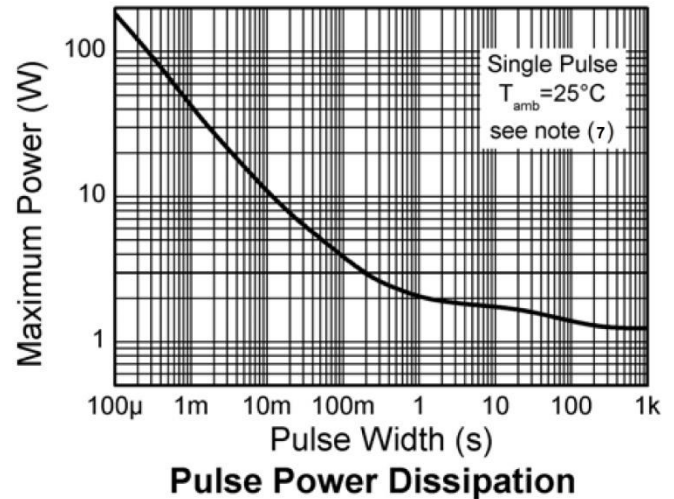
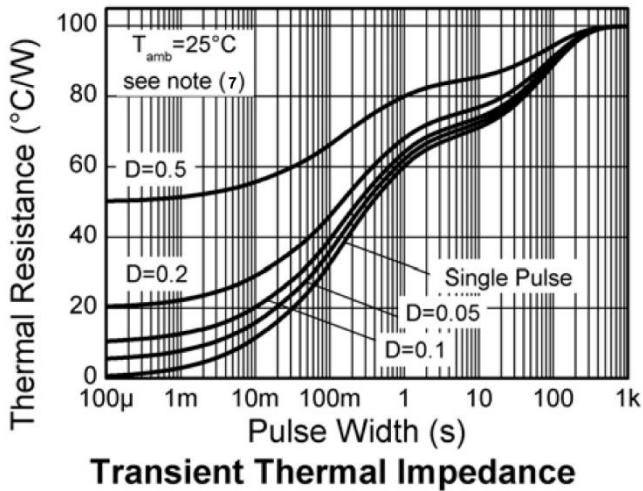
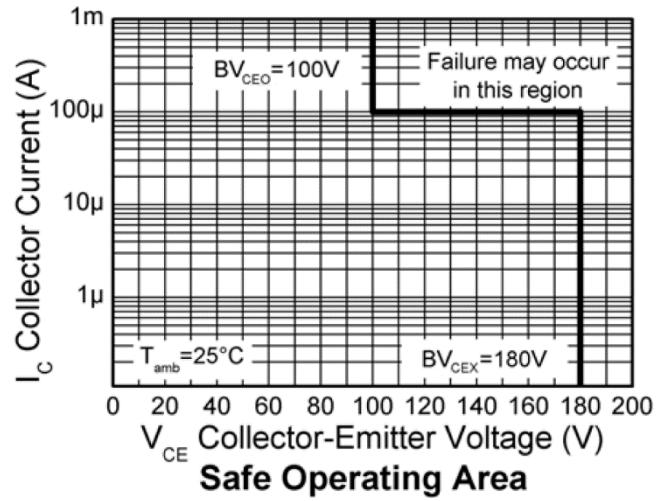
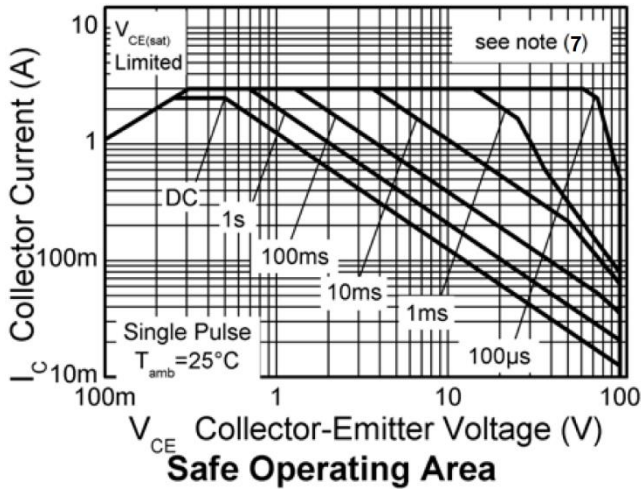
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CB0}	180	V
Collector-Emitter Voltage	V _{CEO}	100	V
Emitter-Base Voltage	V _{EB0}	7	V
Collector-Emitter Voltage (Forward Blocking)	V _{CEX}	180	V
Emitter-Collector Voltage (Reverse Blocking)	V _{ECO}	6	V
Base Current	I _B	0.5	A
Continuous Collector Current	I _C	2.5	A
Peak Collector Current	I _{CM}	3	A

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

Characteristic	Symbol	Value	Unit
Power Dissipation Linear Derating Factor	P _D	0.73	W mW/°C
		5.84	
		1.05	
		8.4	
		1.25	
Thermal Resistance, Junction to Ambient	R _{θJA}	9.6	°C/W
		1.81	
		14.5	
		171	
Thermal Resistance, Junction to Case	R _{θJC}	119	°C/W
		100	
		69	
		13	
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

- Notes:
5. For the device mounted on 15mm x 15mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
 6. For the device mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions.
 7. For the device mounted on 50mm x 50mm x 1.6mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions.
 8. Same as Note 7, except measured at t < 5 seconds.
 9. For the device mounted on minimum recommended pad layout FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

Thermal Characteristics

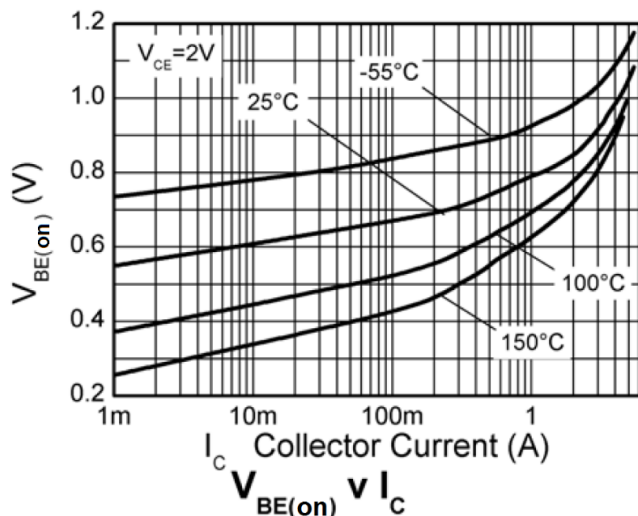
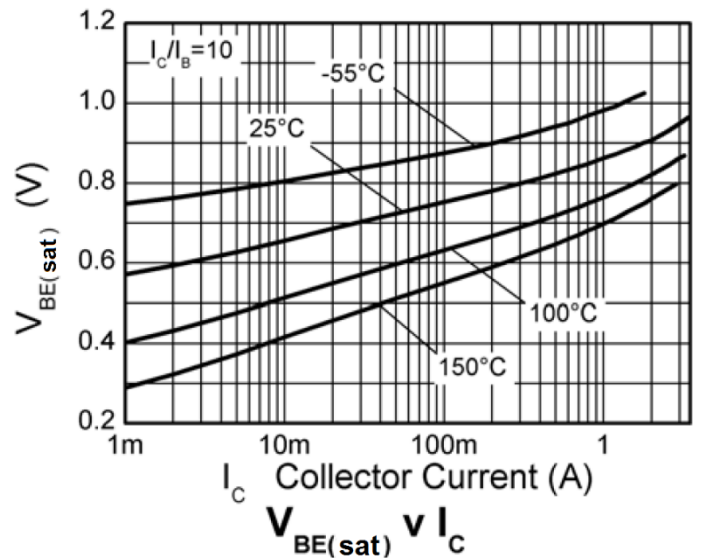
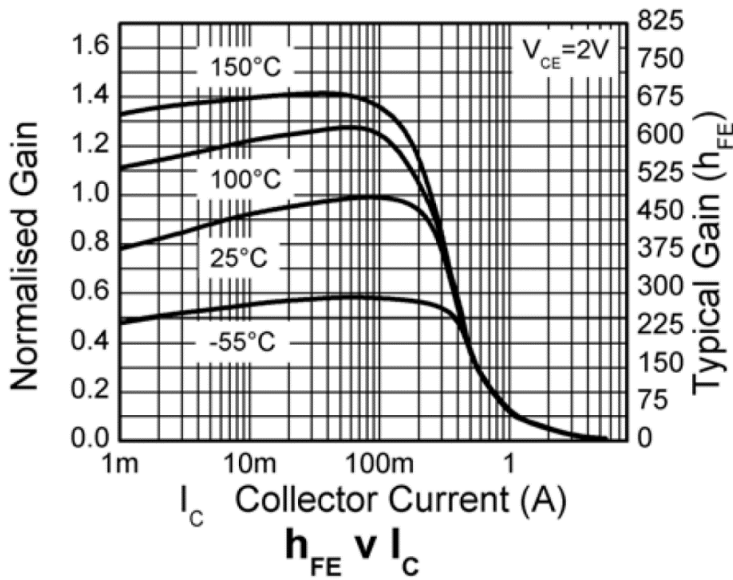
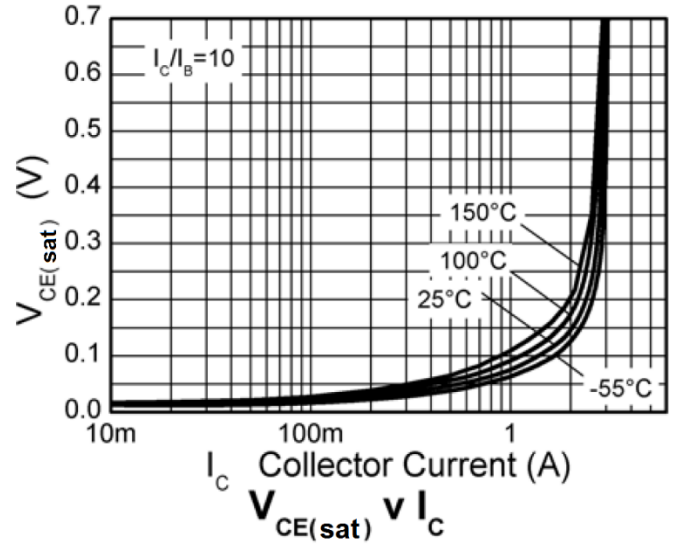
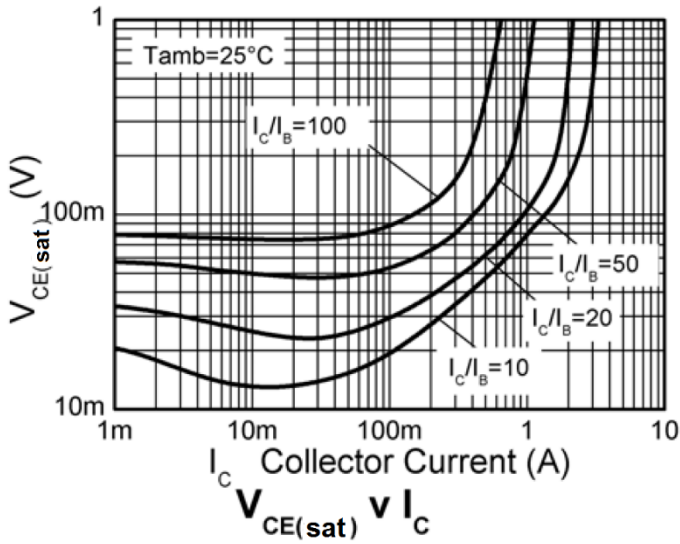


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV _{CB0}	180	220	—	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 10)	BV _{CEO}	100	130	—	V	I _C = 10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	7.0	8.3	—	V	I _E = 100μA
Emitter-Collector Breakdown Voltage	BV _{ECO}	6.0	8.7	—	V	I _E = 100μA
Emitter-Collector Breakdown Voltage	BV _{ECX}	6.0	8.2	—	V	I _E = 100μA, R _{BC} ≤ 1kΩ or -0.25V < V _{BC} < 0.25V
Collector-Emitter Breakdown Voltage	BV _{CEX}	180	220	—	V	I _C = 100μA, R _{BE} ≤ 1kΩ or -1V < V _{BE} < 0.25V
Collector Cutoff Current	I _{CB0}	—	1	50	nA	V _{CB} = 180V
		—	—	0.5	μA	V _{CB} = 180V, T _{amb} = +100°C
Emitter Cutoff Current	I _{EBO}	—	1	50	nA	V _{EB} = 5.6V
Collector-Emitter Cutoff Current	I _{CEX}	—	—	100	nA	V _{CE} = 144V, R _{BE} ≤ 1kΩ or -1V < V _{BE} < 0.25V
ON CHARACTERISTICS (Note 10)						
DC Current Gain	h _{FE}	300	450	900	—	I _C = 10mA, V _{CE} = 2V
		120	170	—		I _C = 0.5A, V _{CE} = 2V
		40	60	—		I _C = 1A, V _{CE} = 2V
		—	20	—		I _C = 2.5A, V _{CE} = 2V
Collector-Emitter Saturation Voltage	V _{CE(sat)}	—	120	170	mV	I _C = 0.5A, I _B = 10mA
		—	80	95		I _C = 1A, I _B = 100mA
		—	215	330		I _C = 2.5A, I _B = 250mA
Base-Emitter Saturation Voltage	V _{BE(sat)}	—	910	1000	mV	I _C = 2.5A, I _B = 250mA
Base-Emitter Turn-On Voltage	V _{BE(on)}	—	860	950	mV	I _C = 2.5A, V _{CE} = 2V
SMALL SIGNAL CHARACTERISTICS						
Output Capacitance (Note 10)	C _{obo}	—	8.7	15	pF	V _{CB} = 10V, f = 1MHz
Transition Frequency	f _T	—	175	—	MHz	V _{CE} = 10V, I _C = 100mA f = 100MHz
SWITCHING CHARACTERISTICS						
Delay Time	t _d	—	16.4	—	ns	V _{CC} = 10V, I _C = 500mA I _{B1} = -I _{B2} = 50mA
Rise Time	t _r	—	115	—	ns	
Storage Time	t _s	—	763	—	ns	
Fall Time	t _f	—	158	—	ns	

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

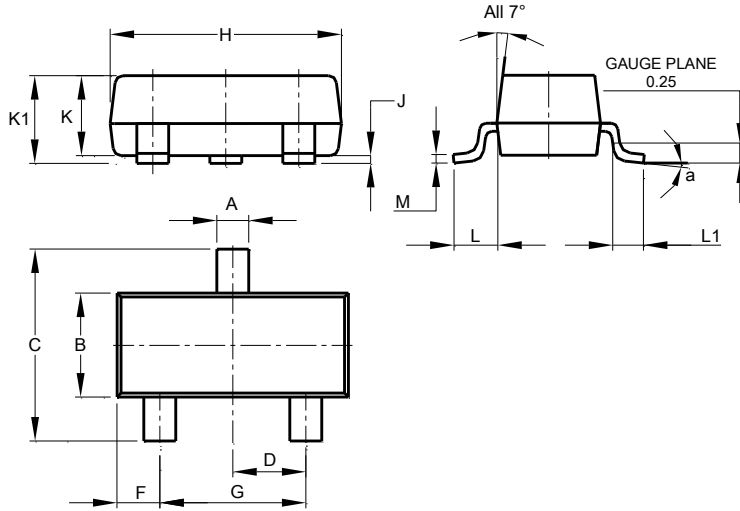
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



Package Outline Dimensions

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

SOT23

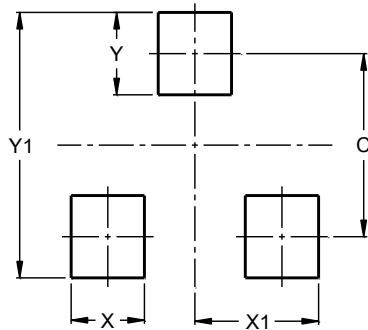


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

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

SOT23



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

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