ZXTP25100CFH

100V PNP MEDIUM POWER TRANSISTOR IN SOT23

Features

- BV_{CEO} > -100V
- Maximum Continuous Collector Current I_C = -1A
- $V_{CE(sat)}$ < -220mV @ -1A
- $R_{CE(sat)}$ = 150mΩ
- 7V reverse blocking voltage
- High peak current
- Complementary part number ZXTN25100CFH
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

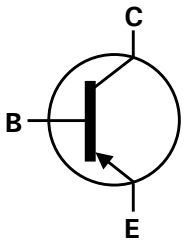
- Case: SOT23
- UL Flammability Rating 94V-0
- Case material: molded Plastic.
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish; Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.008 grams (Approximate)

Applications

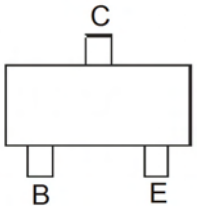
- MOSFET and IGBT gat driving
- DC – DC converters
- Motor drive
- High side driver

SOT23

Top View



Device Symbol



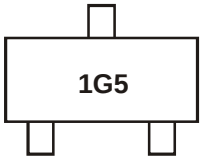
Top View
Pin-Out

Ordering Information (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTP25100CFHTA	1G5	7	8	3,000

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. See http://www.diodes.com 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

Marking Information



1G5 = Product Type Marking Code

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-115	V
Collector-Emitter Voltage	V_{CEO}	-100	V
Emitter-collector voltage (reverse blocking)	V_{ECO}	-7	V
Emitter-Base Voltage	V_{EBO}	-7	V
Continuous Collector Current (Note 5)	I_C	-1	A
Base Current	I_B	-500	mA
Peak Pulse Current	I_{CM}	-3	A

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

Characteristic		Symbol	Value	Unit
Collector Power Dissipation	(Note 5)	P_D	0.73	W
	(Note 6)		1.05	
	(Note 7)		1.25	
	(Note 8)		1.81	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	171	°C/W
	(Note 6)		119	
	(Note 7)		100	
	(Note 8)		69	
Thermal Resistance, Junction to Leads	(Note 9)	$R_{\theta JL}$	75.25	°C/W
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 condition;
6. Mounted on 25mm X 25mm X 1.6mm FR4 PCB with high coverage of single sided 2oz copper in still air condition
7. Mounted on 25mm X 25mm X 1.6mm FR4 PCB with high coverage of single sided 2oz copper in still air condition
8. As Note 7 above, measured at t < 5 secs.
9. Thermal resistance from junction to solder-point (at the end of the collector lead).

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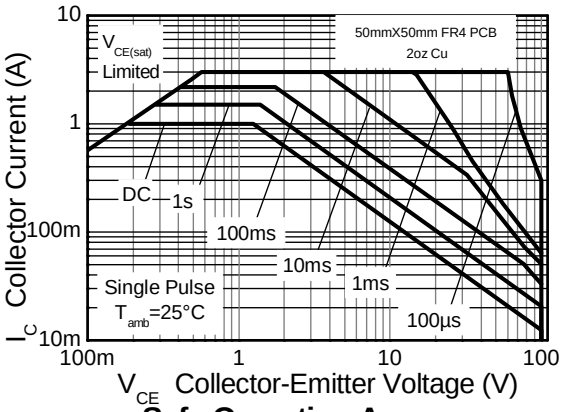
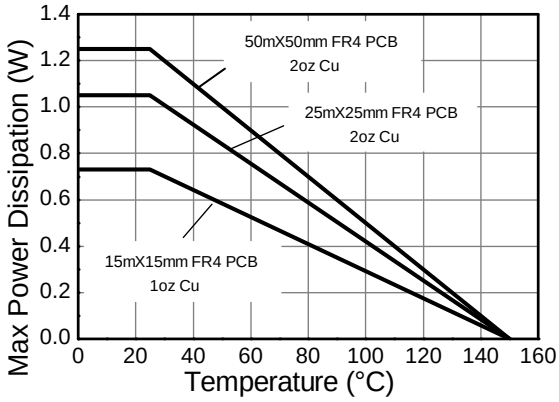
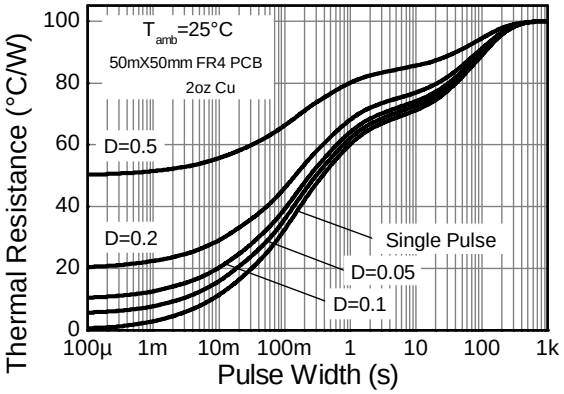
Thermal Characteristics @T_A = 25°C unless otherwise specified



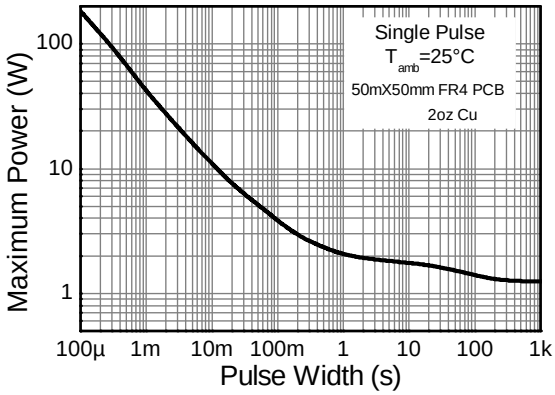
Safe Operating Area



Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-115	-180	-	V	I_C = -100µA
Collector-Emitter Breakdown Voltage (Note 10)	BV_{CEO}	-100	-140	-	V	I_C = -10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-8.4	-	V	I_E = -100µA
Emitter-Base Breakdown Voltage	BV_{ECX}	-7	-8.3	-	V	I_E = -100µA, R_{BC} < 1kΩ or -0.25 < V_{BC} < 0.25V
Emitter-Base Breakdown Voltage	BV_{ECO}	-7	-8.8	-	V	I_E = -100µA
Collector-Base Cutoff Current	I_{CBO}	-	< -1	-50	nA	V_{CB} = -115V
		-	-	-0.5	µA	V_{CB} = -115V, T_{amb} = 100°C
Collector-Emitter Cutoff Current	I_{CEX}	-	-	-100	nA	V_{CE} = -90V, R_{BE} < 1kΩ or -0.25V < V_{BE} < 1V
Emitter-Base Cutoff Current	I_{EBO}	-	< -1	-50	nA	V_{EB} = -5.6V
Static Forward Current Transfer Ratio (Note 10)	h_{FE}	200	350	500	-	I_C = -10mA, V_{CE} = -2V
		180	320	-		I_C = -100mA, V_{CE} = -2V
		110	190	-		I_C = -500mA, V_{CE} = -2V
		20	35	-		I_C = -1A, V_{CE} = -2V
Collector-Emitter Saturation Voltage (Note 10)	$V_{CE(sat)}$	-	-140	-210	mV	I_C = - 100mA, I_B = -1mA
		-	-80	-110		I_C = - 500mA, I_B = -50mA
		-	-180	-310		I_C = - 500mA, I_B = -20mA
		-	-150	-220		I_C = - 1A, I_B = -100mA
Base-Emitter Saturation Voltage (Note 10)	$V_{BE(sat)}$	-	-849	-950	mV	I_C = -1A, I_B = -100mA
Base-Emitter Saturation Voltage (Note 10)	$V_{BE(on)}$	-	-790	-900	mV	I_C = -1A, V_{CE} = -2V
Output Capacitance	C_{obo}	-	14.1	20	pF	V_{CB} = -10V, f = 1MHz
Transition Frequency	f_T	-	180	-	MHz	V_{CE} = -15V, I_C = -20mA, f = 100MHz
Delay Time	$t_{(d)}$	-	15.8	-	ns	V_{CC} = -10V, I_C = -500mA, I_{B1} = I_{B2} = -50mA
Rise Time	$t_{(r)}$	-	41	-	ns	
Storage Time	$t_{(s)}$	-	411	-	ns	
Fall Time	$t_{(f)}$	-	89	-	ns	

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

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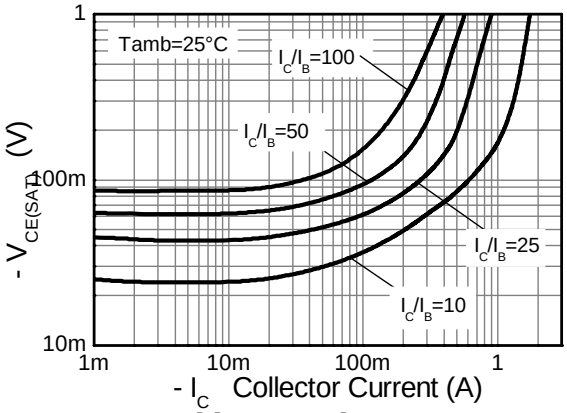
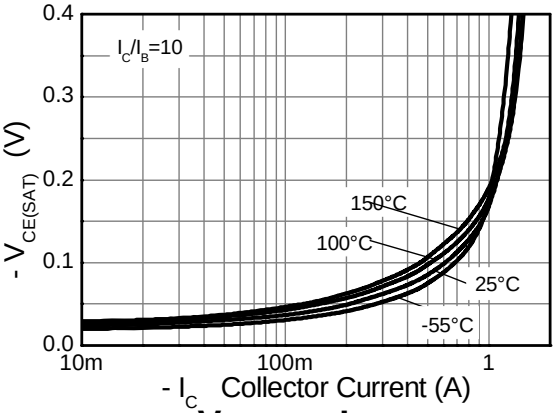
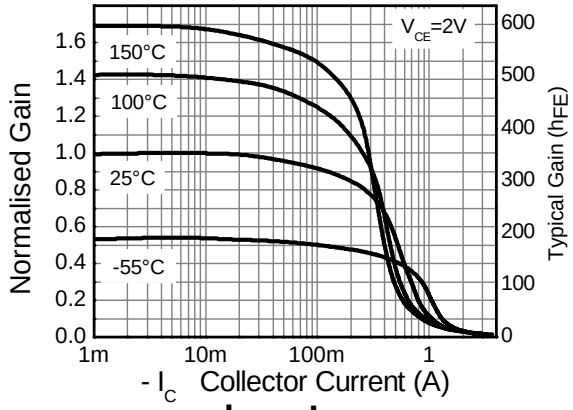
Typical Electrical Characteristics @T_A = 25°C unless otherwise specified



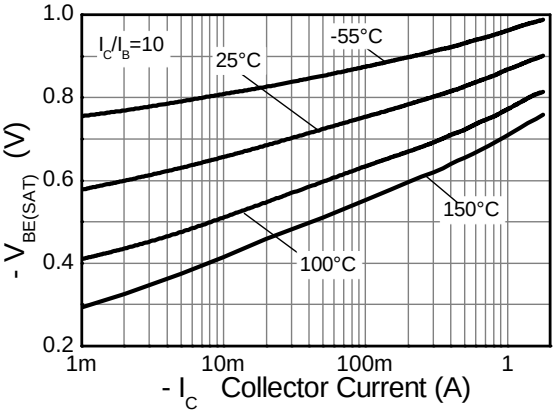
$V_{CE(SAT)}$ v I_C



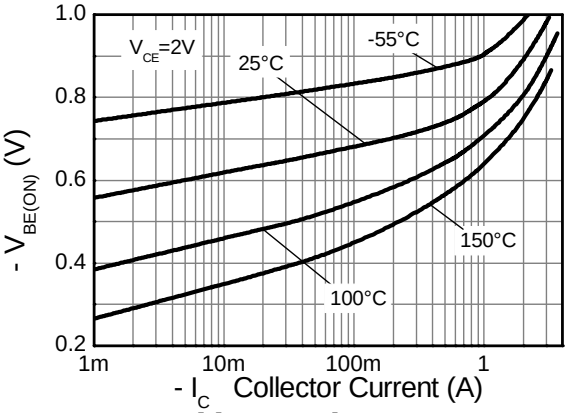
$V_{CE(SAT)}$ v I_C



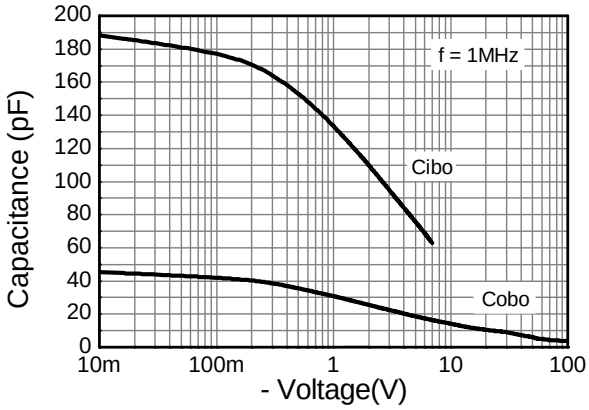
h_{FE} v I_C



$V_{BE(SAT)}$ v I_C



$V_{BE(ON)}$ v I_C



Capacitance v Voltage

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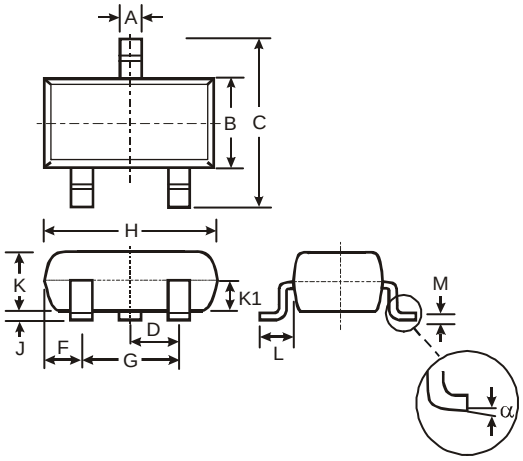
Package Outline Dimensions

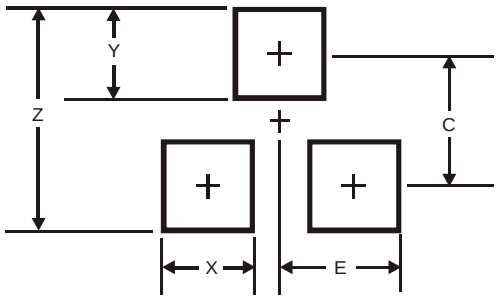
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



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	0.903	1.10	1.00
K1	-	-	0.400
L	0.45	0.61	0.55
M	0.085	0.18	0.11
α	0°	8°	-
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)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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