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
- High Peak Current
- **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 (ZXTP25100CFHQ)**

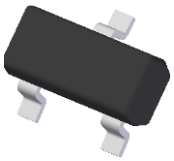
Mechanical Data

- Package: SOT23
- Package Material: Molded Plastic. UL Flammability Rating 94V-0
- 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)

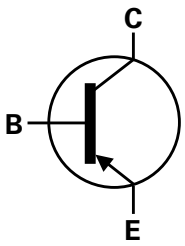
Applications

- MOSFET and IGBT gate driving
- DC-DC converters
- Motor drivers
- High-side drivers

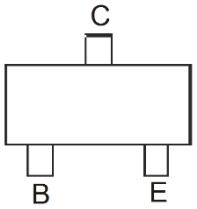
SOT23



Top View



Device Symbol



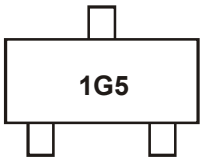
Top View
Pinout

Ordering Information (Note 4)

Orderable Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
ZXTP25100CFHTA	SOT23	1G5	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



1G5 = Product Type Marking Code

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 × 15mm × 1.6mm FR4 PCB with high coverage of single-sided 1oz copper in still air condition.
6. Mounted on 25mm × 25mm × 1.6mm FR4 PCB with high coverage of single-sided 2oz copper in still air condition.
7. Mounted on 25mm × 25mm × 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).

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

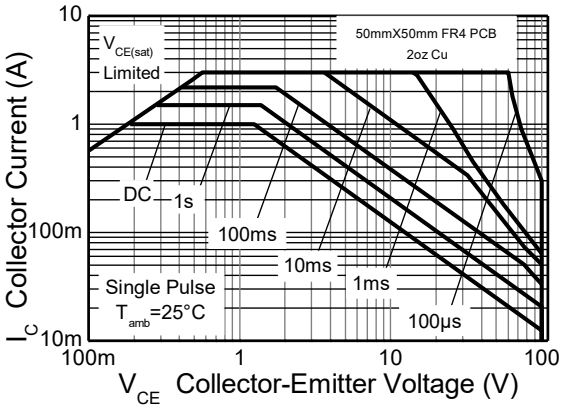


Figure 1. Safe Operating Area

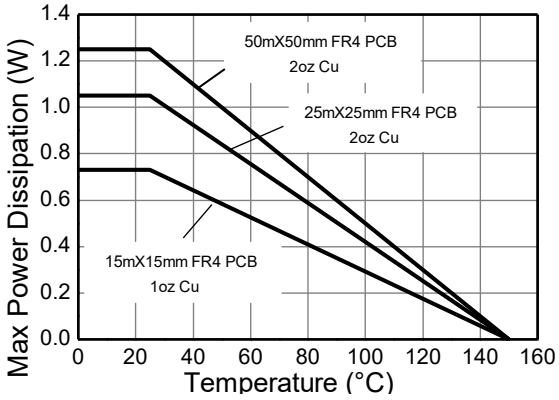


Figure 2. Derating Curve

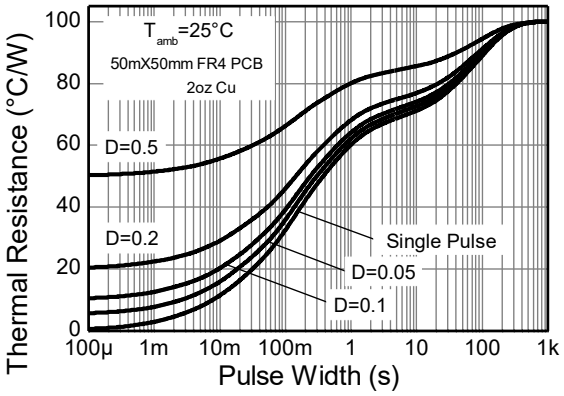


Figure 3. Transient Thermal Impedance

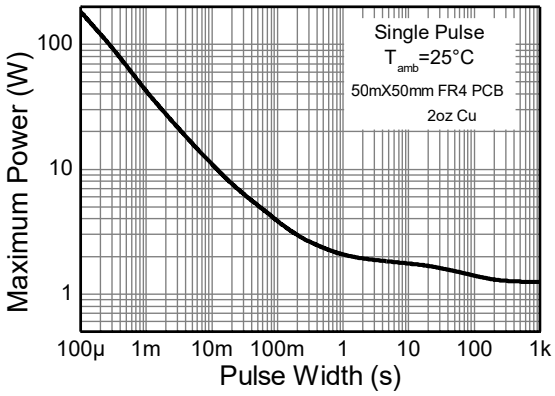


Figure 4. Pulse Power Dissipation

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 Turn-On 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	

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

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

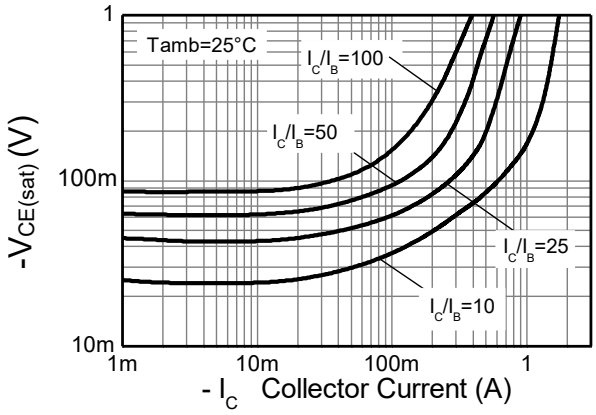


Figure 5. $V_{CE(sat)}$ vs. I_C

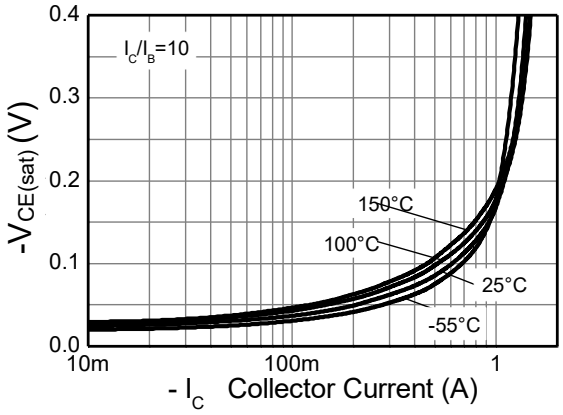


Figure 6. $V_{CE(sat)}$ vs. I_C

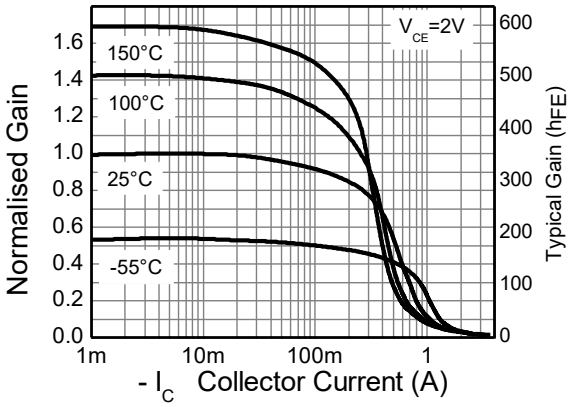


Figure 7. h_{FE} vs. I_C

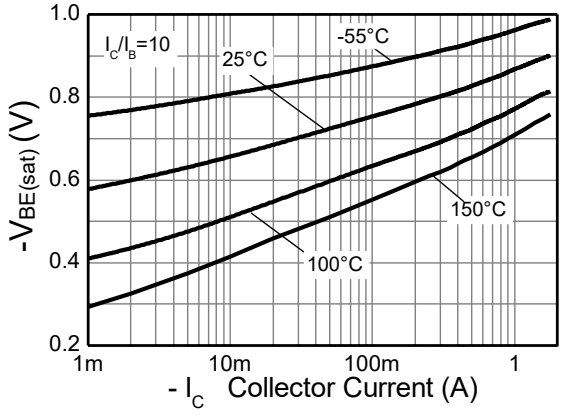


Figure 8. $V_{BE(sat)}$ vs. I_C

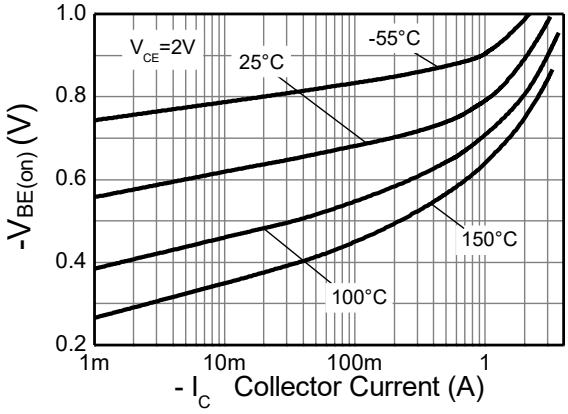


Figure 9. $V_{BE(on)}$ vs. I_C

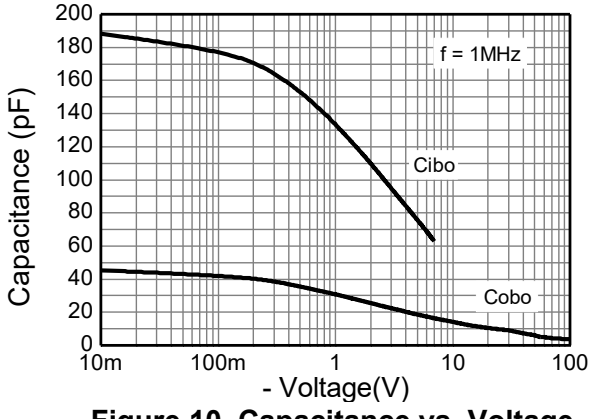
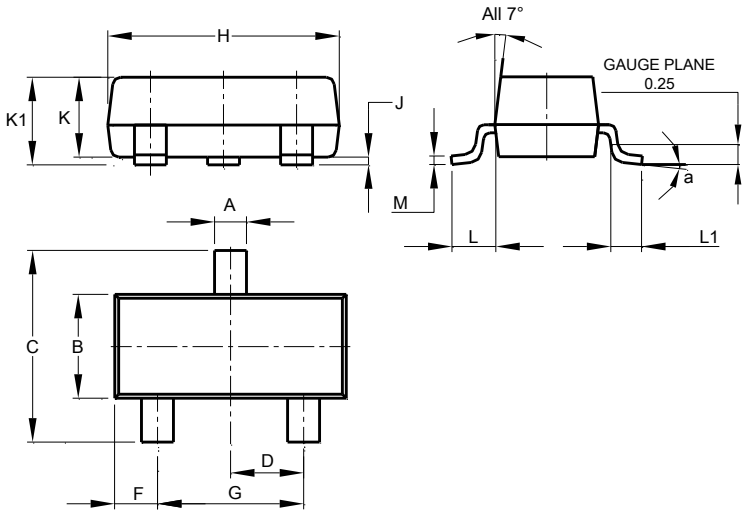


Figure 10. Capacitance vs. Voltage

Package Outline Dimensions

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

SOT23

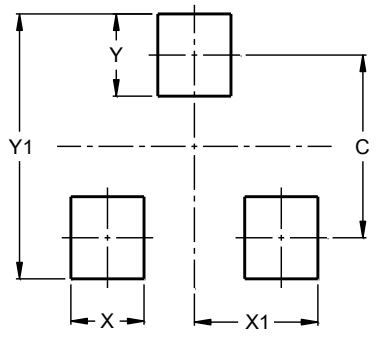


SOT23			
Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

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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