

Description

This Bipolar Junction Transistor (BJT) is designed to meet the stringent requirement of Automotive Applications.

Features

- $BV_{CEO} > -100V$
- Maximum Continuous Collector Current $I_C = -1A$
- $V_{CE(SAT)} < -220mV @ -1A$
- $R_{CE(SAT)} = 150m\Omega$
- 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**
- **PPAP Capable (Note 4)**

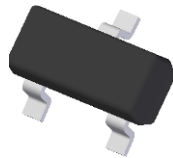
Mechanical Data

- Case: SOT23
- 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: 0.008 grams (Approximate)

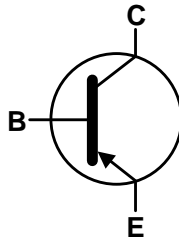
Applications

- MOSFET and IGBT Gate Driving
- DC – DC Converters
- Motor Drive
- High Side Driver

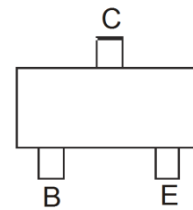
SOT23



Top View



Device Symbol



Top View
Pin-Out

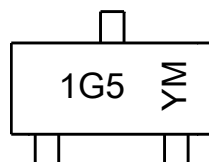
Ordering Information (Note 5)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
ZXTP25100CFHQTA	Automotive	1G5	7	8	3,000

- 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to <https://www.diodes.com/quality/>.
 5. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information

SOT23



1G5 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year ex: F = 2018
 M = Month ex: 9 = September

Date Code Key

Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Code	F	G	H	I	J	K	L	M	N	O	P	Q

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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

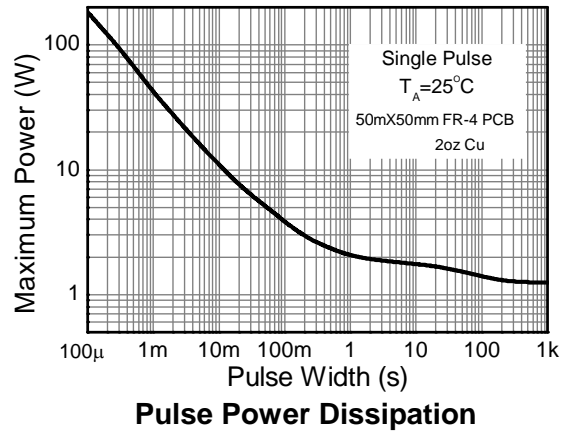
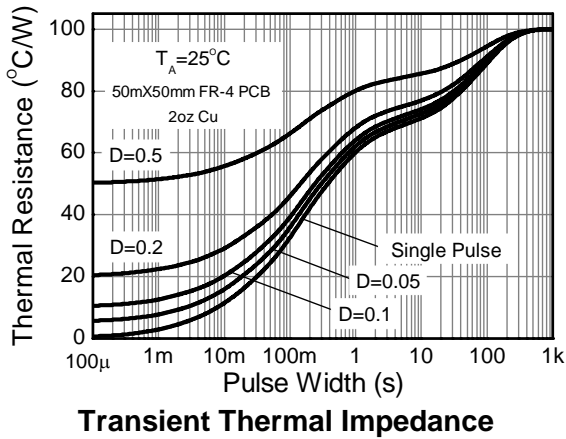
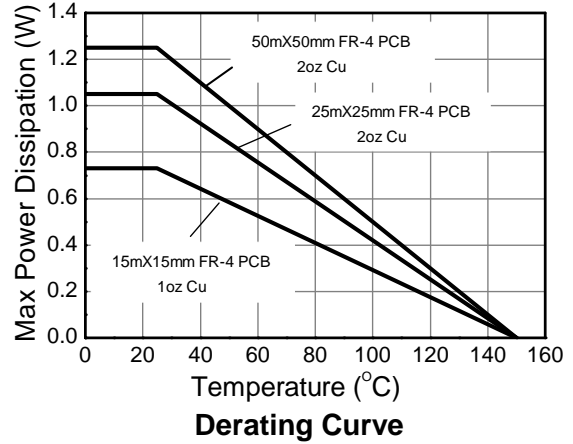
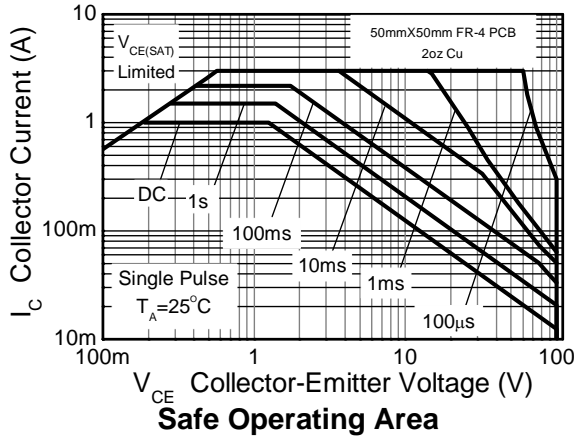
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	-115	V
Collector-Emitter Voltage	V _{CEO}	-100	V
Emitter-Collector voltage (Reverse Blocking)	V _{ECO}	-7	V
Emitter-Base Voltage	V _{EBO}	-7	V
Continuous Collector Current	I _C	-1	A
Base Current	I _B	-500	mA
Peak Pulse Current	I _{CM}	-3	A

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

Characteristic	Symbol	Value	Unit
Collector Power Dissipation	P _D	(Note 6)	0.73
		(Note 7)	1.05
		(Note 8)	1.25
		(Note 9)	1.81
Thermal Resistance, Junction to Ambient	R _{θJA}	(Note 6)	171
		(Note 7)	119
		(Note 8)	100
		(Note 9)	69
Thermal Resistance, Junction to Leads	R _{θJL}	75.25	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

- Notes:
6. For the device mounted on 15mm X 15mm X 1.6mm FR-4 PCB with high coverage of single sided 1oz copper in still air condition.
 7. Mounted on 25mm X 25mm X 1.6mm FR-4 PCB with high coverage of single sided 2oz copper in still air condition.
 8. Mounted on 25mm X 25mm X 1.6mm FR-4 PCB with high coverage of single sided 2oz copper in still air condition.
 9. As Note 7 above, measured at t < 5 secs.
 10. Thermal resistance from junction to solder-point (at the end of the collector lead).

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

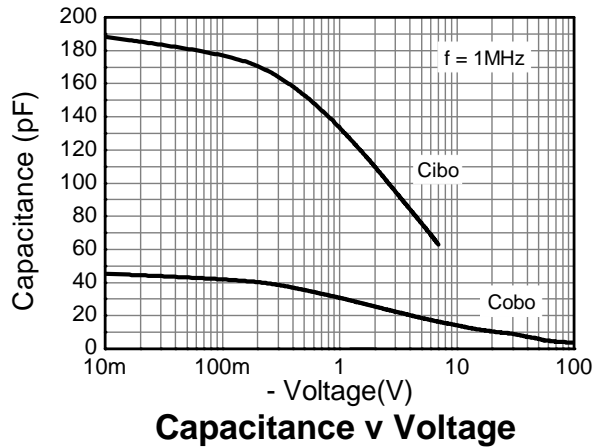
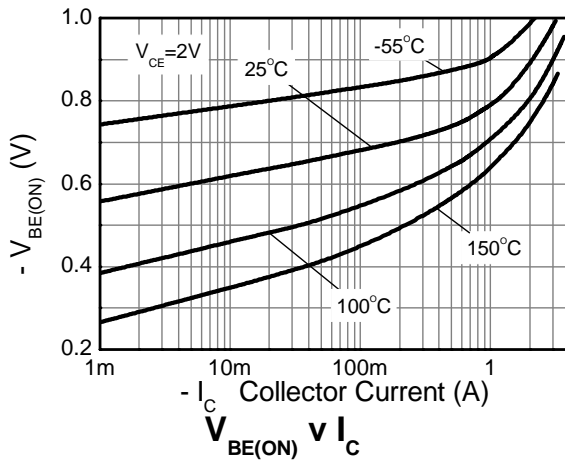
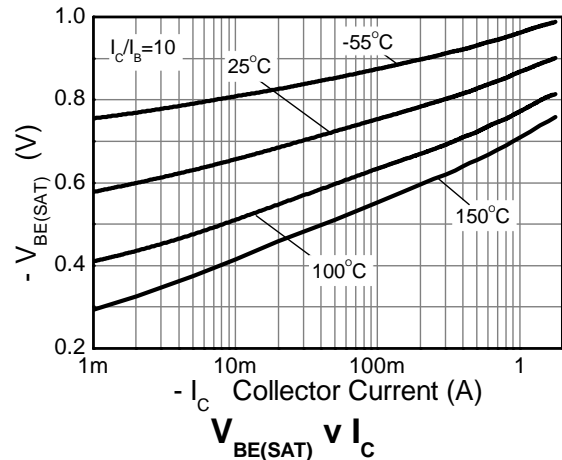
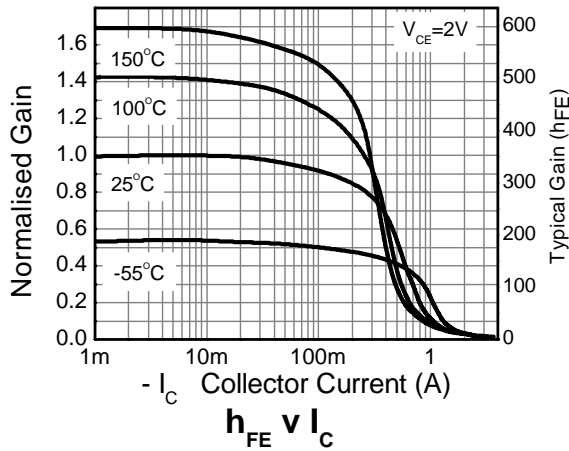
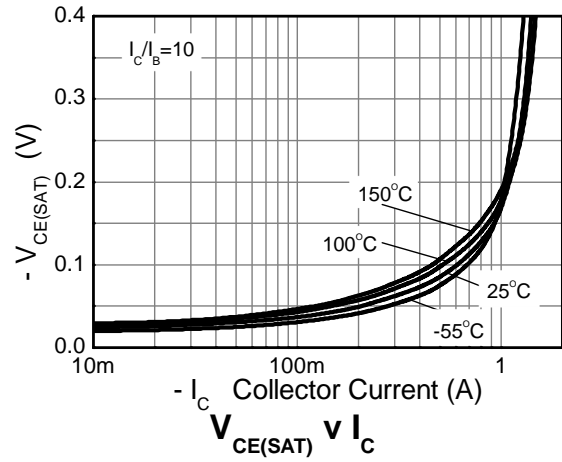
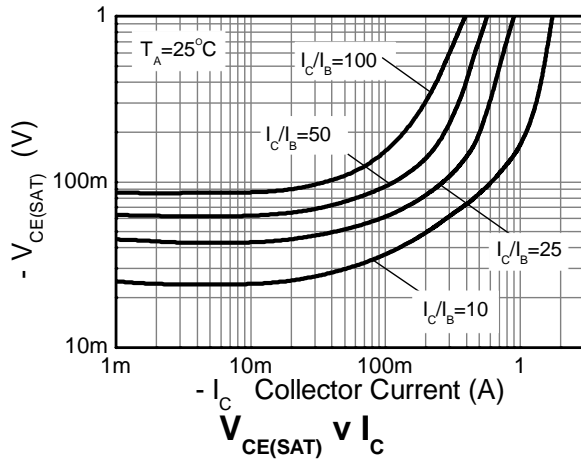


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	-115	-180	-	V	I _C = -100μA
Collector-Emitter Breakdown Voltage (Note 11)	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 _A = +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 11)	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 11)	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 11)	V _{BE(SAT)}	-	-849	-950	mV	I _C = -1A, I _B = -100mA
Base-Emitter Saturation Voltage (Note 11)	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: 11. Measured under pulsed conditions. Pulse width ≤ 300 μs. Duty cycle ≤ 2%.

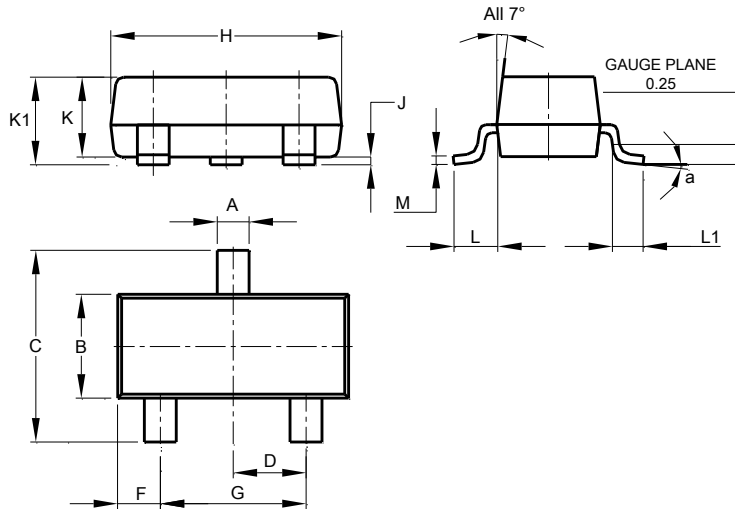
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



Package Outline Dimensions

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

SOT23

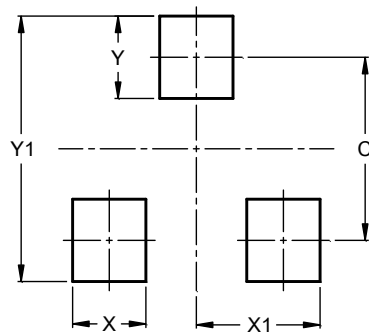


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

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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