ZXTP19100CFF

100V PNP MEDIUM POWER TRANSISTOR IN SOT23F

Features

- BV_{CEO} > -100V
- BV_{ECO} > -7V
- I_C = -2A Continuous Collector Current
- Saturation Voltage $V_{CE(SAT)}$ < -120mV @ -1A
- h_{FE} Characterised Up to -2A
- $R_{CE(SAT)}$ = 95mΩ
- 1.5W Power Dissipation
- Complementary NPN Type: ZXTN19100CFF
- **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: SOT23F
- Case 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 (e3)
- Weight: 0.012 grams (Approximate)

Description

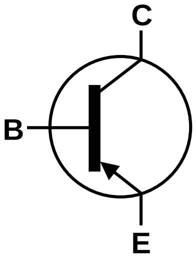
This low saturation 100V PNP transistor offers extremely low on-state losses, making it ideal for use in DC-DC circuits and various driving and power management functions. The SOT23F package is pin compatible with the industry standard SOT23 footprint, but offers lower profile and higher dissipation for applications where power density is of utmost importance.

Applications

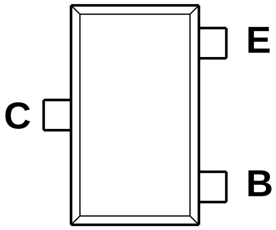
- Boost Converters
- MOSFET and IGBT Gate Drivers
- Lamp and Relay Driver
- Motor Drive
- Siren Driver

SOT23F

Top View



Device Symbol



Top View
Pin Configuration

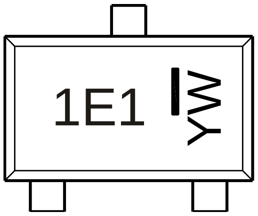
Ordering Information (Note 4)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
ZXTP19100CFFTA	AEC-Q101	1E1	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/quality/lead_free.html 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/products/packages.html.

Marking Information

SOT23F



1E1 = Product Type Marking Code
YW = Date Code Marking
Y = Year : 0~9
W = Week : A~Z : 1~26
a~z : 27~52
z represents 52 & 53 week

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-110	V
Collector-Emitter Voltage (Forward blocking)	V_{CEX}	-110	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	-2	A
Peak Pulse Current	I_{CM}	-3	A
Base Current	I_B	-1	A

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

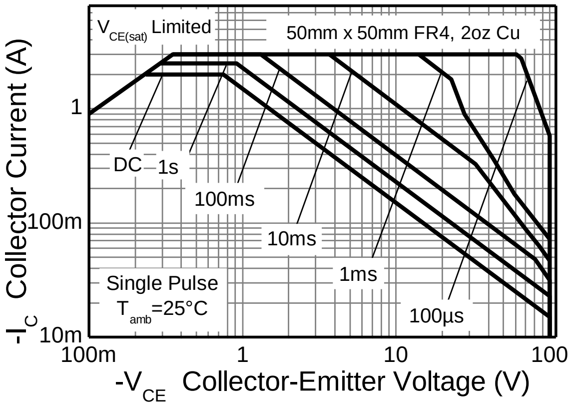
Characteristic		Symbol	Value	Unit
Power Dissipation Linear Derating Factor	(Note 5)	P_D	0.84 6.72	W mW/°C
	(Note 6)		1.34 10.72	
	(Note 7)		1.50 12.0	
	(Note 8)		2.0 16.0	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	149	°C/W
	(Note 6)		93	
	(Note 7)		83	
	(Note 8)		60	
Thermal Resistance, Junction to Lead	(Note 9)	$R_{\theta JL}$	43.8	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 10)

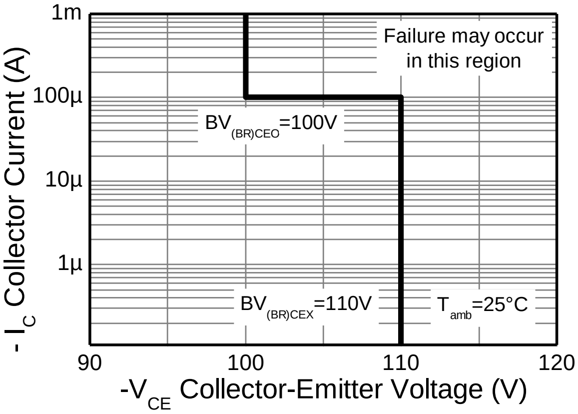
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge – Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge – Machine Model	ESD MM	400	V	C

Notes: 5. For a device mounted with the exposed collector pad on 15mm x 15mm 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
6. Same as Note 5, except the device is mounted on 25mm x 25mm 2oz copper.
7. Same as Note 5, except the device is mounted on 50mm x 50mm 2oz copper.
8. Same as Note 7, whilst measured at t < 5 seconds.
9.Thermal resistance from junction to solder-point (at the end of the collector lead).
10. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

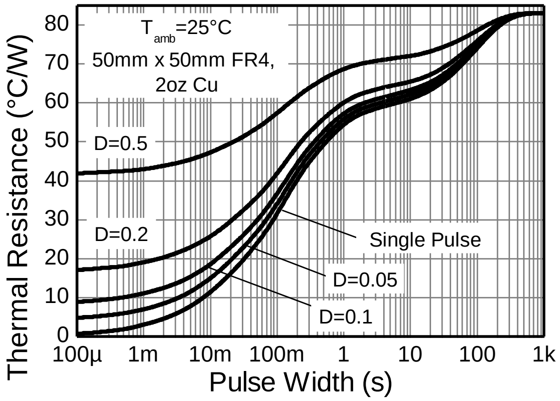
Thermal Characteristics and Derating Information



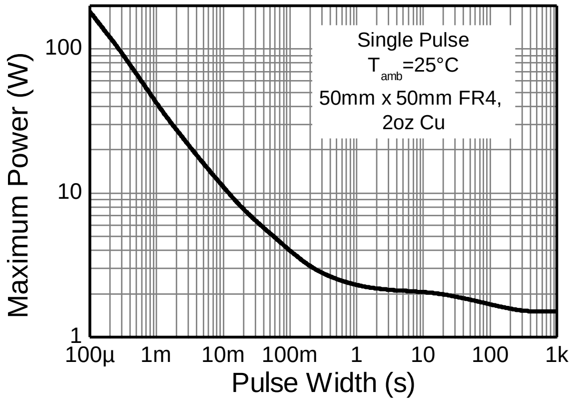
Safe Operating Area



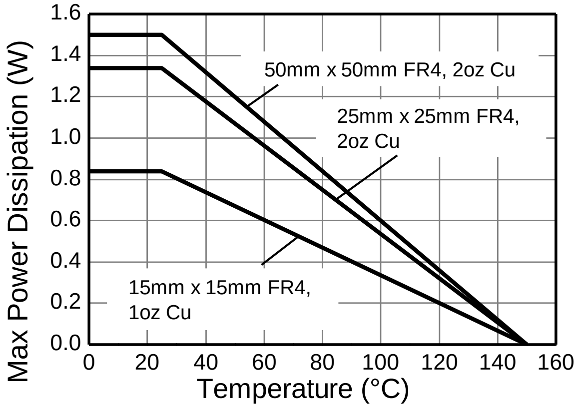
Safe Operating Area



Transient Thermal Impedance



Pulse Power Dissipation



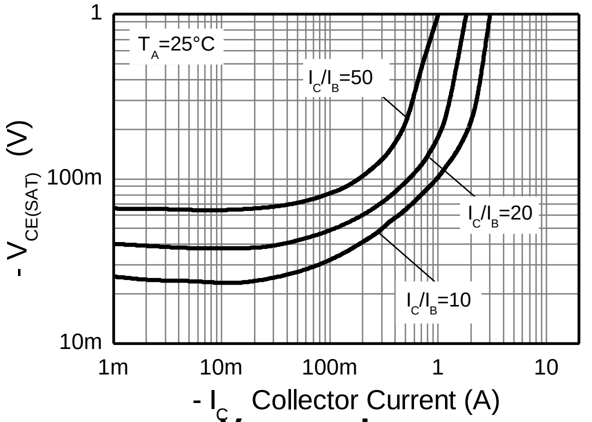
Derating Curve

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

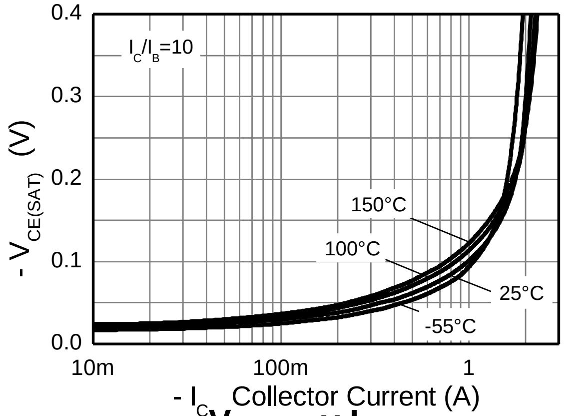
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	-110	-135	—	V	I_C = -100µA
Collector-Emitter Breakdown Voltage (Base Open)	BV_{CEX}	-110	-135	—	V	I_C = -100µA, R_{BC} < 1kΩ or 0.25V > V_{BC} > -0.25V
Collector-Emitter Breakdown Voltage (Base Open) (Note 11)	BV_{CEO}	-100	-135	—	V	I_C = -10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-8.3	—	V	I_E = -100µA
Emitter-Collector Breakdown Voltage	BV_{ECX}	-7	-8.7	—	V	I_E = -100µA, R_{BC} < 1kΩ or 0.25V > V_{BC} > -0.25V
Emitter-Collector Breakdown Voltage (Base Open)	BV_{ECO}	-7	-8.7	—	V	I_E = -100µA
Collector-Base Cutoff Current	I_{CBO}	—	<-1 —	-50 -0.5	nA µA	V_{CB} = -110V V_{CB} = -110V, T_A = +100°C
Emitter-Base Cutoff Current	I_{EBO}	—	<-1	-50	nA	V_{EB} = -5.6V
ON CHARACTERISTICS (Note 10)						
Static Forward Current Transfer Ratio	h_{FE}	200 70 20	330 135 30	500 — —	—	I_C = -100mA, V_{CE} = -2V I_C = -1A, V_{CE} = -2V I_C = -2A, V_{CE} = -2V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	-100 -95 -175 -215	-130 -120 -225 -275	mV	I_C = -0.5A, I_B = -20mA I_C = -1A, I_B = -100mA I_C = -1A, I_B = -50mA I_C = -2A, I_B = -200mA
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	-870	-950	mV	I_C = -2A, I_B = -200mA
Base-Emitter On Voltage	$V_{BE(ON)}$	—	-810	-900	mV	I_C = -2A, V_{CE} = -2V
SMALL SIGNAL CHARACTERISTICS						
Transition Frequency	f_T	—	142	—	MHz	I_C = -100mA, V_{CE} = -10V, f = 50MHz
Input Capacitance	C_{IBO}	—	291	400	pF	V_{EB} = -0.5V, f = 1MHz
Output Capacitance	C_{OBO}	—	23.5	—	pF	V_{CB} = -1V, f = 1MHz
Delay Time	t_D	—	24.7	—	ns	V_{CC} = -10V, I_C = -0.5A, I_{B1} = $-I_{B2}$ = -50mA
Rise Time	t_R	—	22.4	—	ns	
Storage Time	t_S	—	660	—	ns	
Fall Time	t_F	—	107	—	ns	

Note: 11. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.

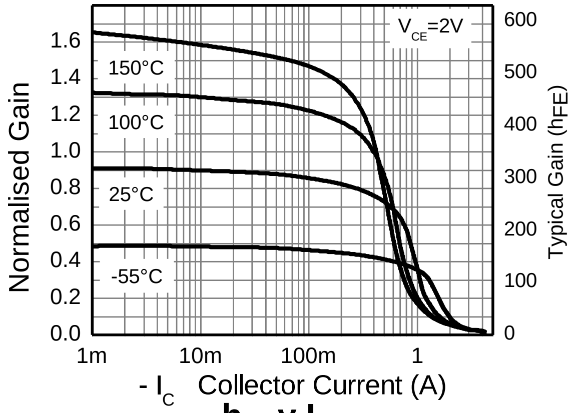
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



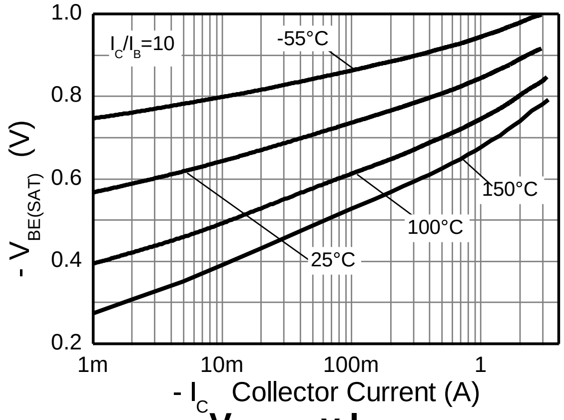
$V_{CE(SAT)}$ v I_C



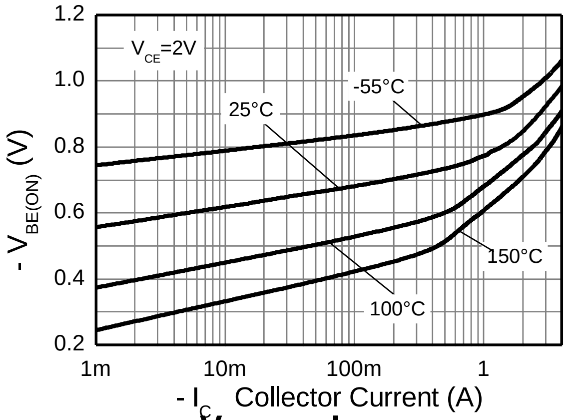
$V_{CE(SAT)}$ v I_C



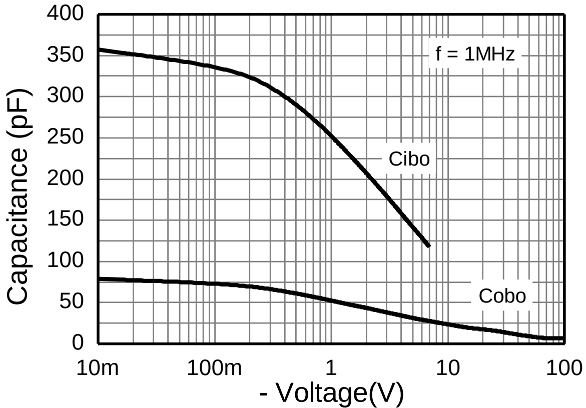
h_{FE} v I_C



$V_{BE(SAT)}$ v I_C



$V_{BE(ON)}$ v I_C

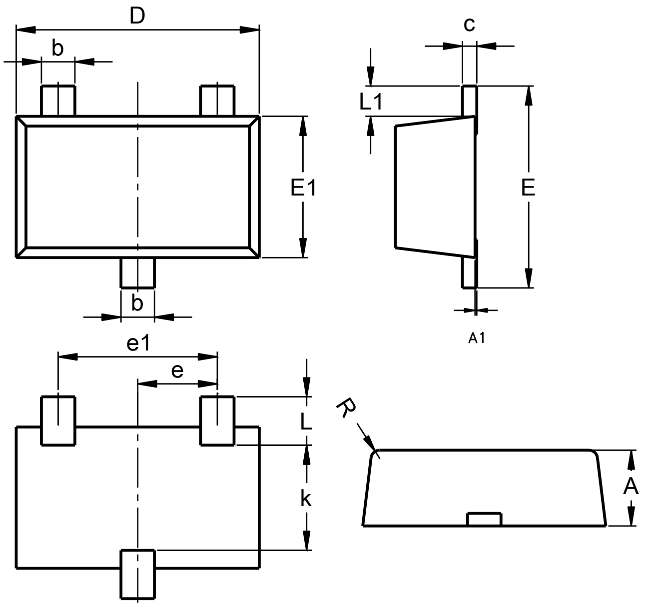


Capacitance v Voltage

Package Outline Dimensions

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

SOT23F

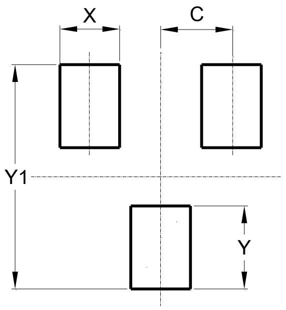


SOT23F			
Dim	**Min**	**Max**	**Typ**
A	0.80	1.00	0.90
b	0.35	0.50	0.44
c	0.10	0.20	0.16
D	2.80	3.00	2.90
e	0.95 REF		
e1	0.190 REF		
E	2.30	2.50	2.40
E1	1.50	1.70	1.65
k	1.20	–	–
L	0.30	0.65	0.50
L1	0.30	0.50	0.40
R	0.05	0.15	–
All Dimensions in mm			

Suggested Pad Layout

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

SOT23F



Dimensions	Value (in mm)
C	0.95
X	0.80
Y	1.110
Y1	3.000

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