NPN SMALL SIGNAL SURFACE MOUNT TRANSISTOR IN SOT323

Features

- Low saturation voltage
- 500mW power dissipation
- I_C = 1A high Continuous Current
- Ideally suited for space / weight critical applicatons
- **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**

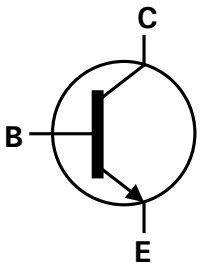
Mechanical Data

- Case: SOT323
- 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: 0.006 grams (Approximate)

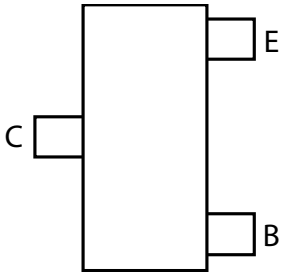
SOT323



Top View



Device Symbol



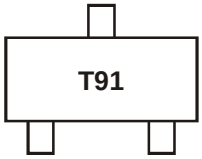
Top View
Pin Out

Ordering Information (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZUMT491TA	T91	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



T91 = 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}	80	V
Collector-Emitter Voltage	V_{CEO}	60	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	1	A
Peak Pulse Current	I_{CM}	2	A
Base Current	I_B	200	mA

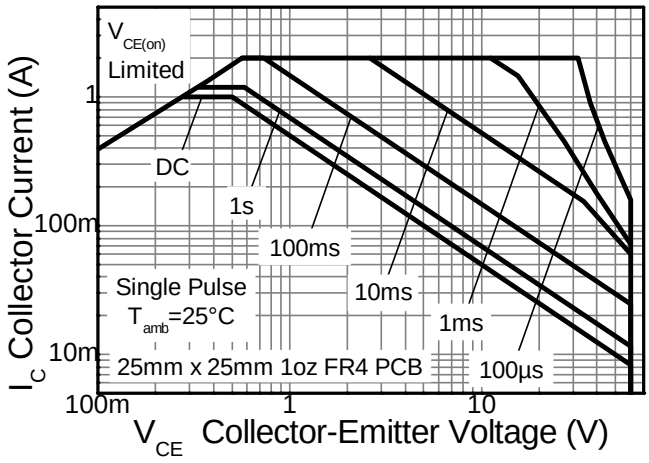
Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	500	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	250	°C/W
Thermal Resistance, Junction to Leads (Note 6)	$R_{\theta JL}$	350	°C/W
Operating and Storage Temperature Range	T_J,T_{STG}	-55 to +150	°C

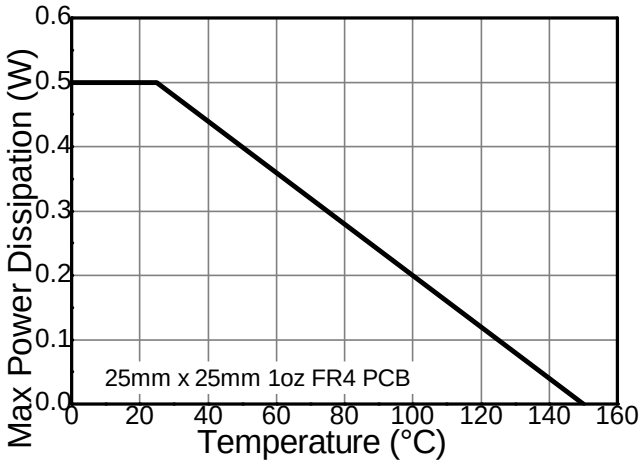
Notes: 5. For a device surface mounted on 25mm X 25mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions; device measured when operating in steady state condition.
6. Thermal resistance from junction to solder-point (at the end of the leads).

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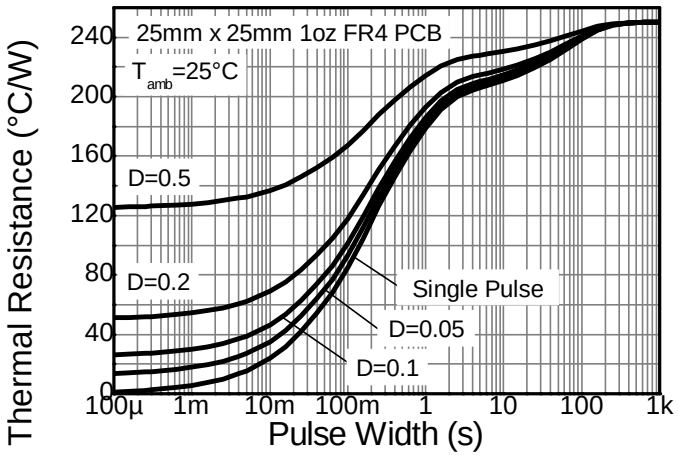
Thermal Characteristics and Derating Information



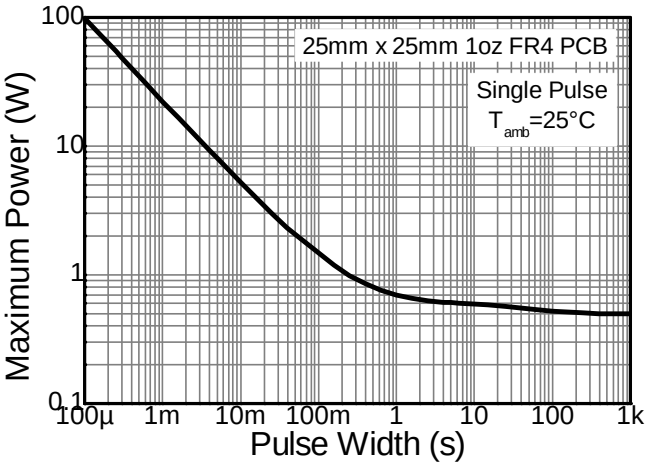
Safe Operating Area



Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation

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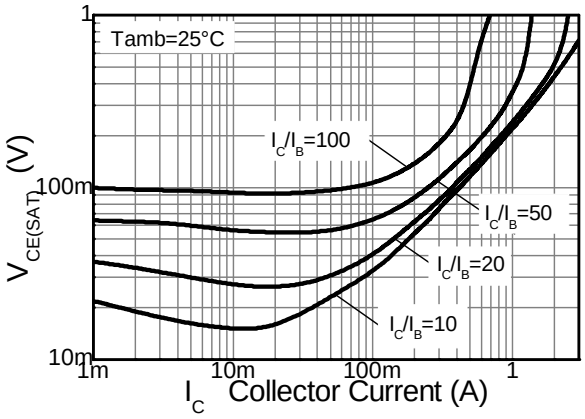
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS					
Collector-Base Breakdown Voltage	BV_{CBO}	80	—	V	I_C = 100μA, I_E = 0
Collector-Emitter Breakdown Voltage (Note 7)	BV_{CEO}	60	—	V	I_C = 10mA, I_B = 0
Emitter-Base Breakdown Voltage	BV_{EBO}	7	—	V	I_E = 100μA, I_C = 0
Collector Cutoff Current	I_{CBO}	—	100	nA	V_{CB} = 60V
Collector Cutoff Current	I_{CES}	—	100	nA	V_{CE} = 60V
Emitter Cutoff Current	I_{EBO}	—	100	nA	V_{EB} = 5V
ON CHARACTERISTICS (Note 7)					
DC Current Gain	h_{FE}	100 100 80	— 300 —	—	I_C = 1mA, V_{CE} = 5.0V I_C = 500.0mA, V_{CE} = 5.0V I_C = 1.0A, V_{CE} = 5.0V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	250 500	mV	I_C = 500mA, I_B = 50mA I_C = 1.0A, I_B = 100mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	1100	mV	I_C = 1.0A, I_B = 100mA
Base-Emitter Turn On Voltage	$V_{BE(on)}$	—	1000	mV	I_C = 1.0A, V_{CE} = 5.0V

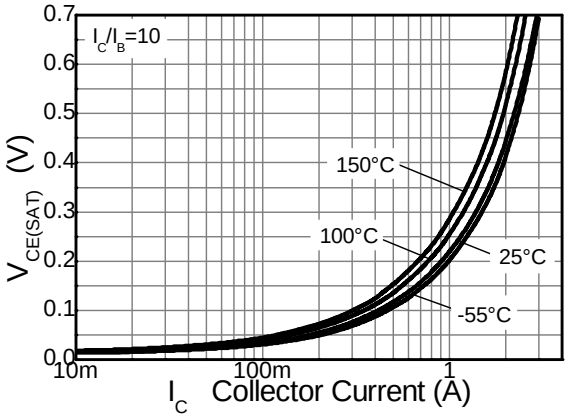
Notes: 7. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

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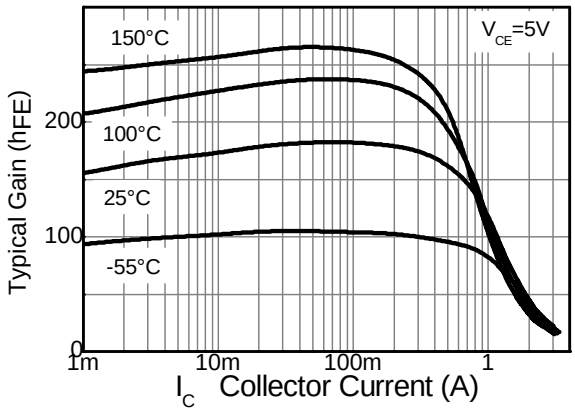
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



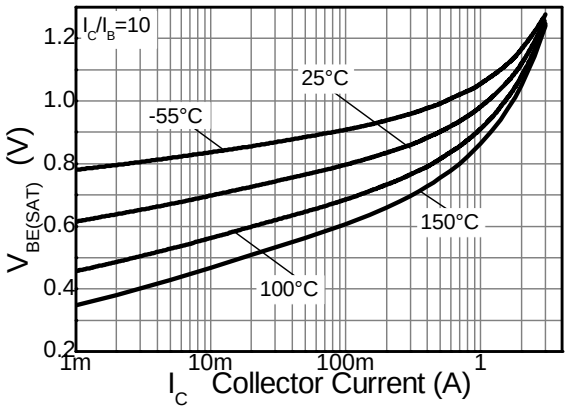
$V_{CE(SAT)}$ v I_C



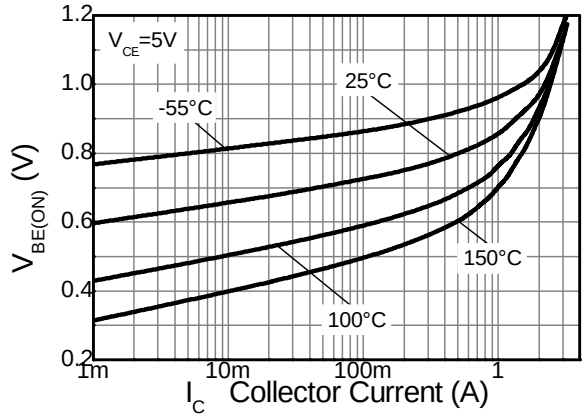
$V_{CE(SAT)}$ v I_C



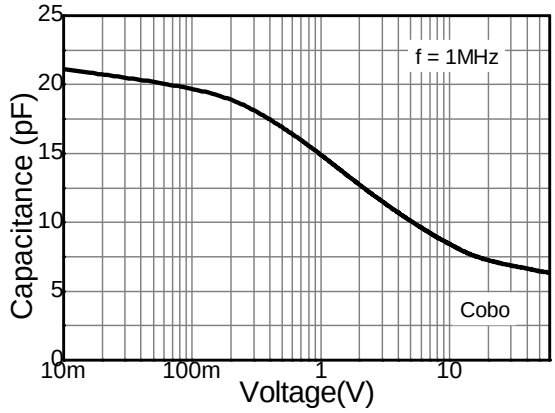
h_{FE} v I_C



$V_{BE(SAT)}$ v I_C



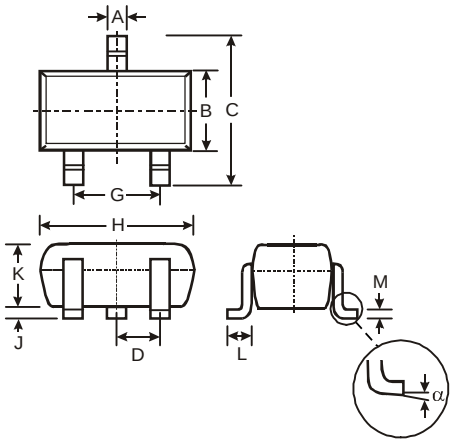
$V_{BE(ON)}$ v I_C



Capacitance v Voltage

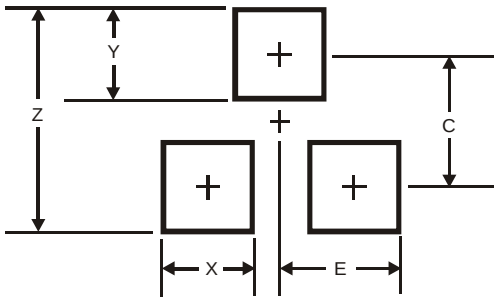
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Package Outline Dimensions



SOT323			
Dim	**Min**	**Max**	**Typ**
A	0.25	0.40	0.30
B	1.15	1.35	1.30
C	2.00	2.20	2.10
D	-	-	0.65
G	1.20	1.40	1.30
H	1.80	2.20	2.15
J	0.0	0.10	0.05
K	0.90	1.00	1.00
L	0.25	0.40	0.30
M	0.10	0.18	0.11
α	0°	8°	-
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.8
X	0.7
Y	0.9
C	1.9
E	1.0

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