


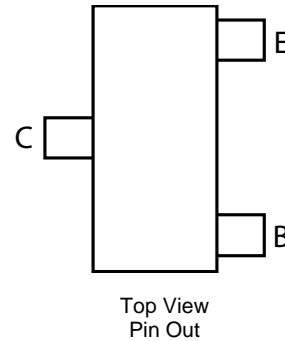
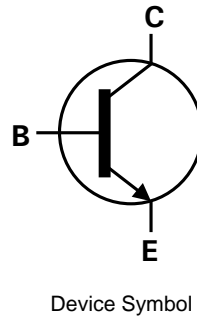
**NPN SMALL SIGNAL SURFACE MOUNT TRANSISTOR IN SOT323**

**Features**

- Low saturation voltage
- 500mW power dissipation
- $I_C = 1A$  high Continuous Current
- Ideally suited for space / weight critical applications
- **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 
- Weight: 0.006 grams (Approximate)

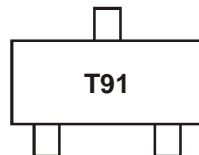


**Ordering Information** (Note 4)

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

### Maximum Ratings (@T<sub>A</sub> = +25°C, unless otherwise specified.)

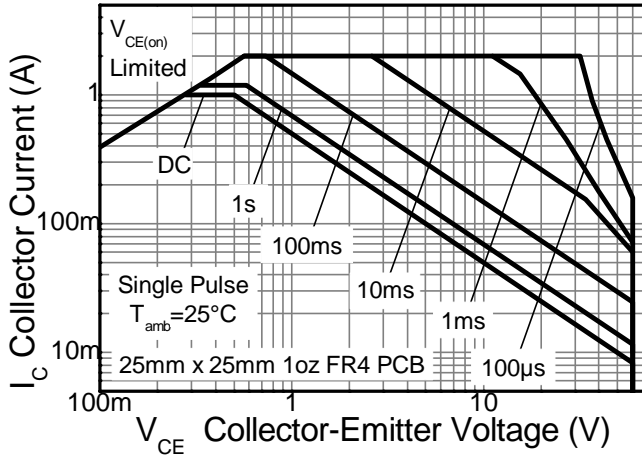
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CB0</sub>	80	V
Collector-Emitter Voltage	V <sub>CEO</sub>	60	V
Emitter-Base Voltage	V <sub>EBO</sub>	7	V
Continuous Collector Current	I <sub>C</sub>	1	A
Peak Pulse Current	I <sub>CM</sub>	2	A
Base Current	I <sub>B</sub>	200	mA

### Thermal Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

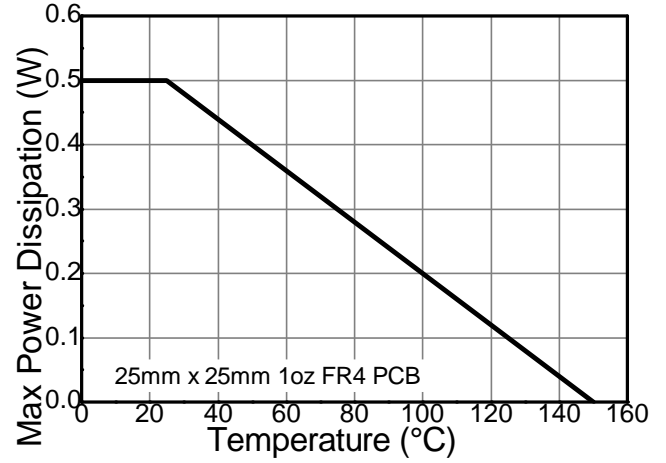
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P <sub>D</sub>	500	mW
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	250	°C/W
Thermal Resistance, Junction to Leads (Note 6)	R <sub>θJL</sub>	350	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-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).

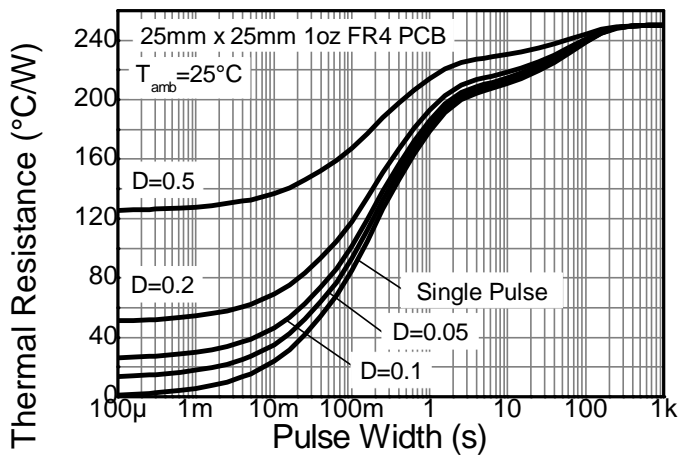
**Thermal Characteristics and Derating Information**



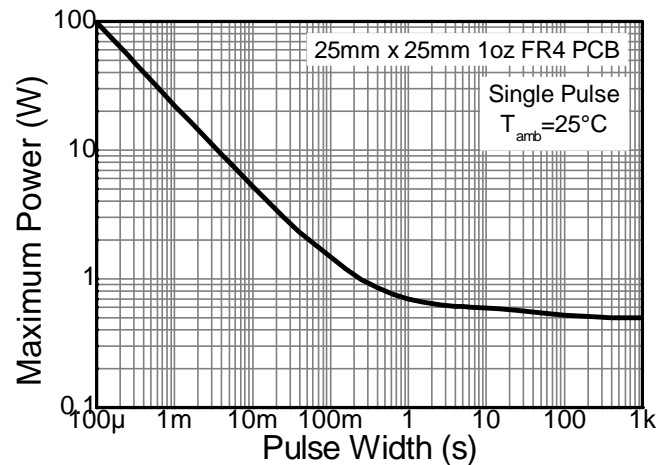
**Safe Operating Area**



**Derating Curve**



**Transient Thermal Impedance**



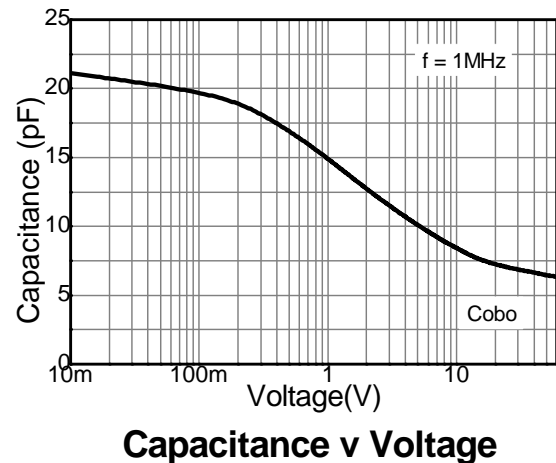
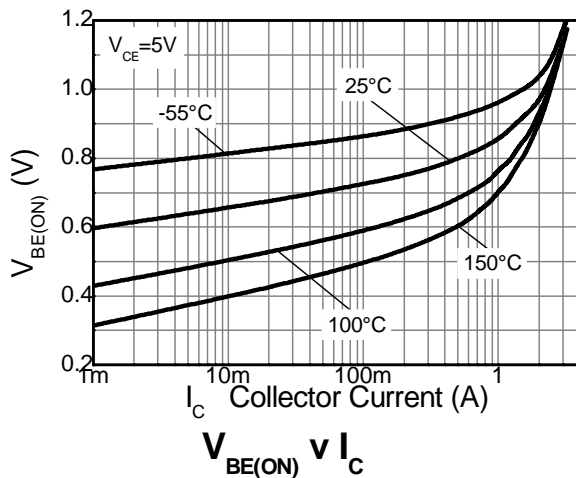
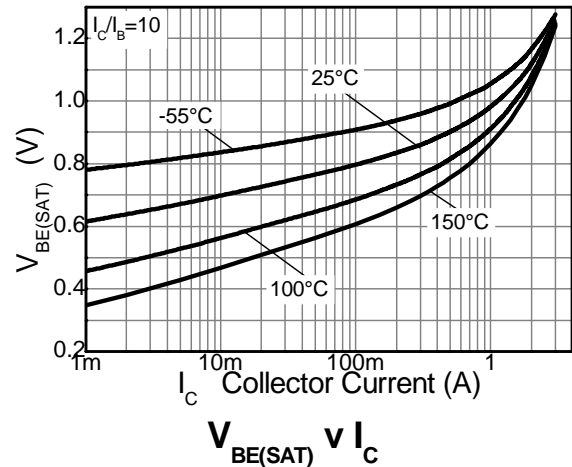
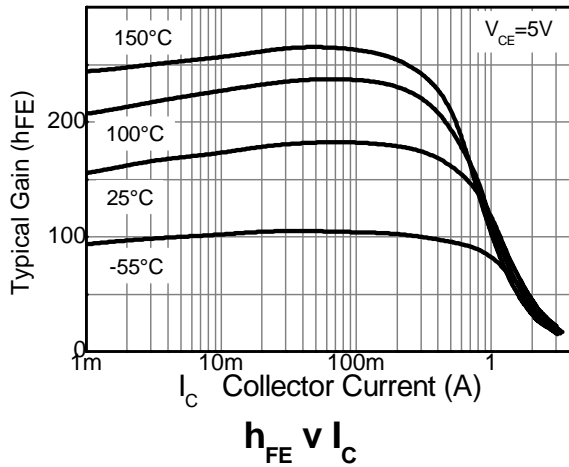
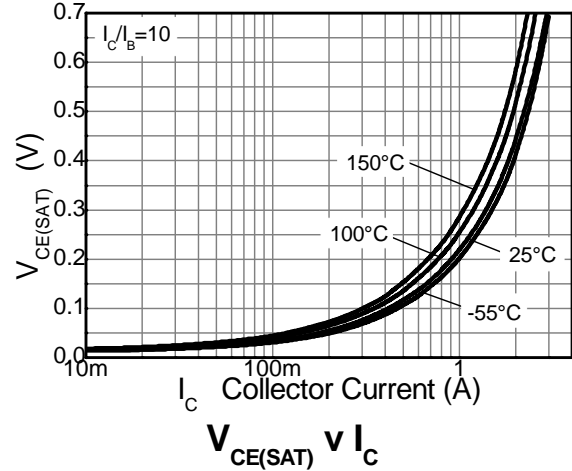
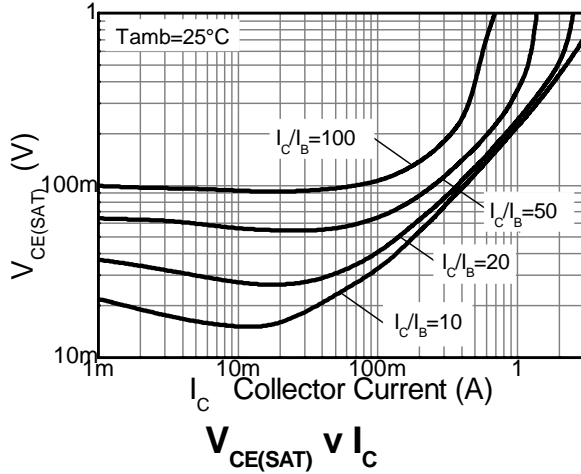
**Pulse Power Dissipation**

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

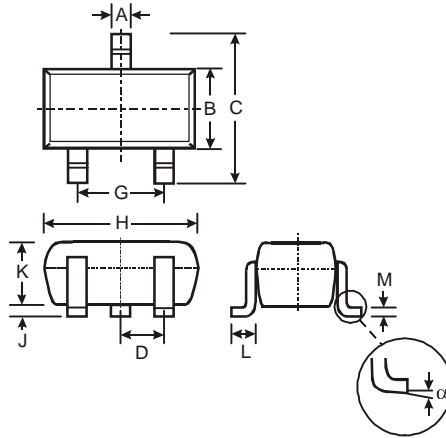
Characteristic	Symbol	Min	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>					
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	80	—	V	I <sub>C</sub> = 100μA, I <sub>E</sub> = 0
Collector-Emitter Breakdown Voltage (Note 7)	BV <sub>CEO</sub>	60	—	V	I <sub>C</sub> = 10mA, I <sub>B</sub> = 0
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	7	—	V	I <sub>E</sub> = 100μA, I <sub>C</sub> = 0
Collector Cutoff Current	I <sub>CBO</sub>	—	100	nA	V <sub>CB</sub> = 60V
Collector Cutoff Current	I <sub>CES</sub>	—	100	nA	V <sub>CE</sub> = 60V
Emitter Cutoff Current	I <sub>EBO</sub>	—	100	nA	V <sub>EB</sub> = 5V
<b>ON CHARACTERISTICS</b> (Note 7)					
DC Current Gain	h <sub>FE</sub>	100 100 80	— 300 —	—	I <sub>C</sub> = 1mA, V <sub>CE</sub> = 5.0V I <sub>C</sub> = 500.0mA, V <sub>CE</sub> = 5.0V I <sub>C</sub> = 1.0A, V <sub>CE</sub> = 5.0V
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	—	250 500	mV	I <sub>C</sub> = 500mA, I <sub>B</sub> = 50mA I <sub>C</sub> = 1.0A, I <sub>B</sub> = 100mA
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	—	1100	mV	I <sub>C</sub> = 1.0A, I <sub>B</sub> = 100mA
Base-Emitter Turn On Voltage	V <sub>BE(on)</sub>	—	1000	mV	I <sub>C</sub> = 1.0A, V <sub>CE</sub> = 5.0V

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

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

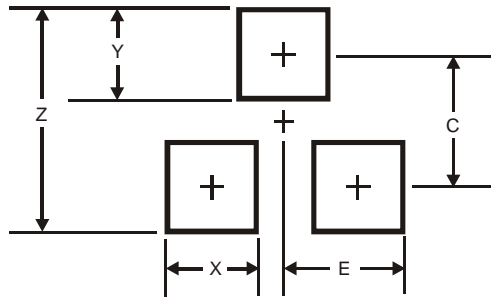


## Package Outline Dimensions



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
$\alpha$	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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