


**Features**

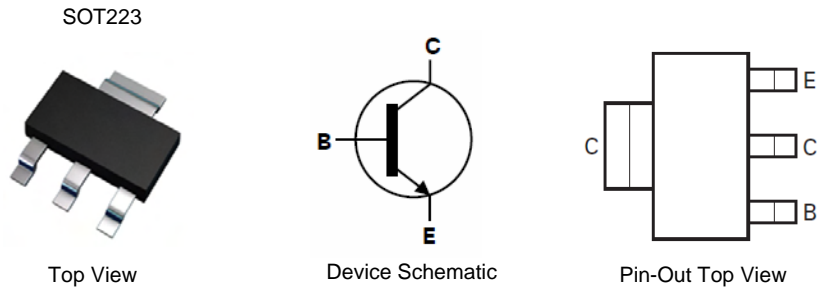
- $BV_{CEO} > 160V$
- $BV_{EBO} > 6V$
- $I_C = 600mA$  Continuous Collector Current
- Low Saturation Voltage (150mV max @10mA)
- $h_{FE}$  specified up to 50mA for a high gain hold up
- Complementary PNP Type: DZT5401
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

**Mechanical Data**

- Case: SOT223
- 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: 0.112 grams (approximate)

**Applications**

- High Voltage Amplification Applications
- High Voltage Switching

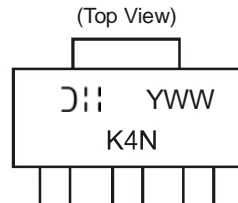


**Ordering Information** (Note 4)

Part Number	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DZT5551-13	K4N	13	12	2,500

- 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**



K4N = Product type marking code  
 DII = Manufacturer's code marking  
 YWW = Date code marking  
 Y = Last digit of year ex: 7 = 2007  
 WW = Week code 01 - 52

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	180	V
Collector-Emitter Voltage	$V_{CEO}$	160	V
Emitter-Base Voltage	$V_{EBO}$	6	V
Continuous Collector Current	$I_C$	600	mA
Peak Collector Current	$I_{CM}$	1	A

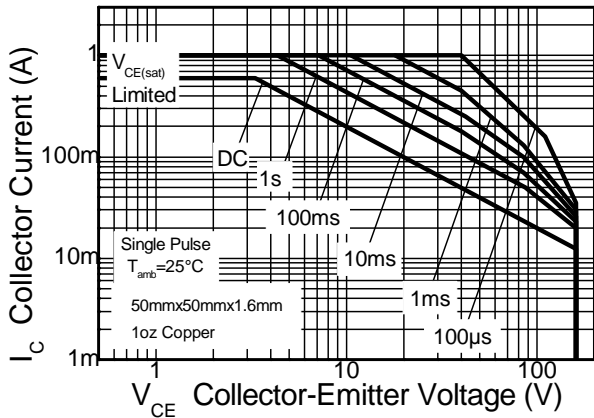
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**Thermal Characteristics**

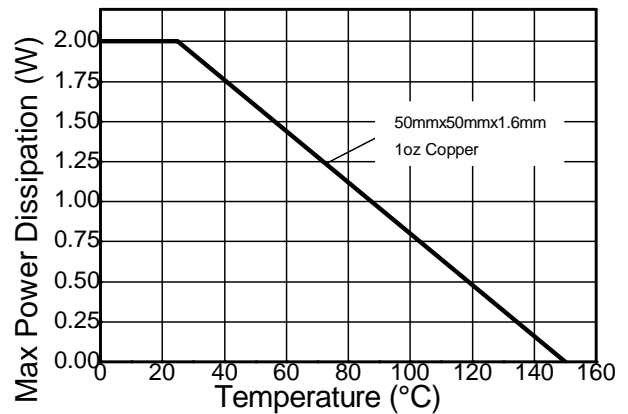
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	$P_D$	2	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
Thermal Resistance, Junction to Leads (Note 6)	$R_{\theta JL}$	34.05	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

Notes: 5. Device mounted on 50mm X 50mm X 1.6mm FR-4 PCB with high coverage of single sided 1 oz. copper, in still air condition  
6. Thermal resistance from junction to solder-point (at the end of the collector lead).

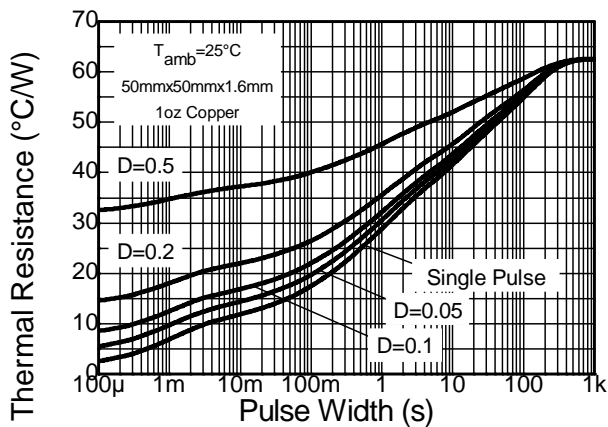
**Thermal Characteristics and Derating Information**



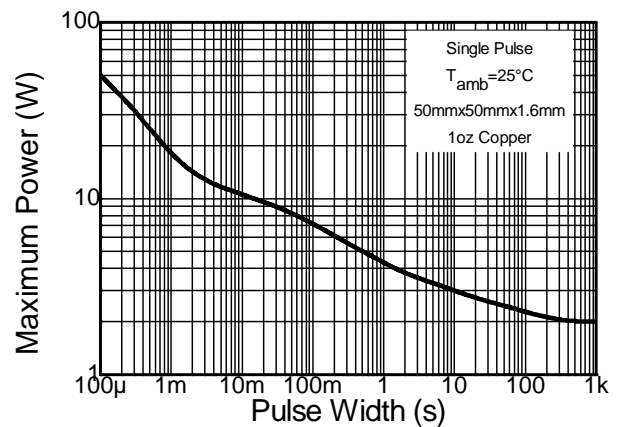
**Safe Operating Area**



**Derating Curve**



**Transient Thermal Impedance**



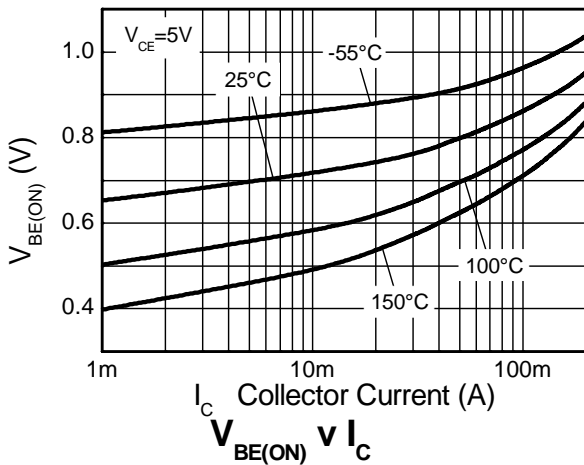
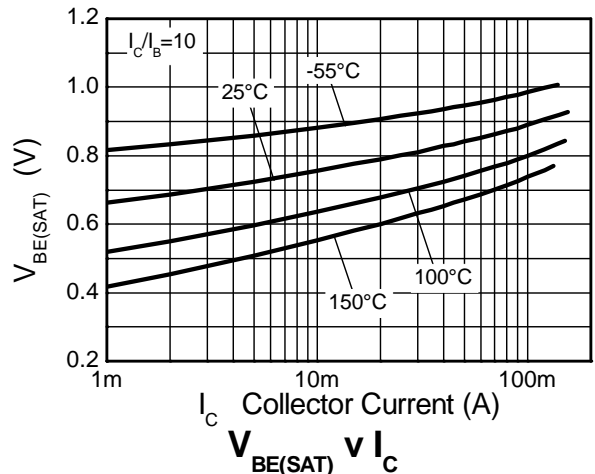
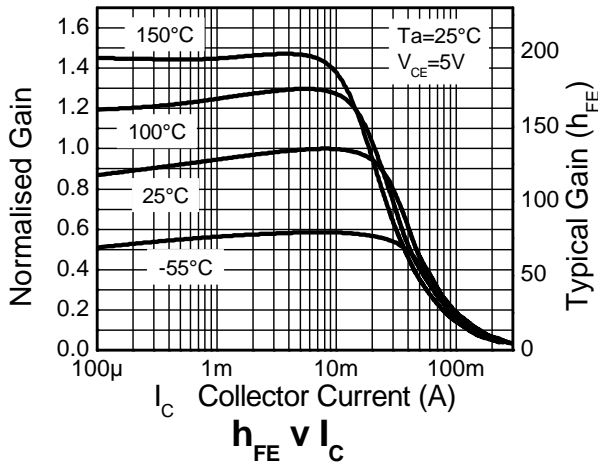
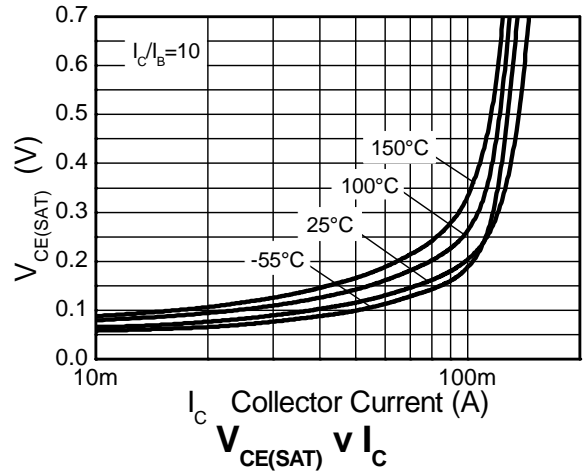
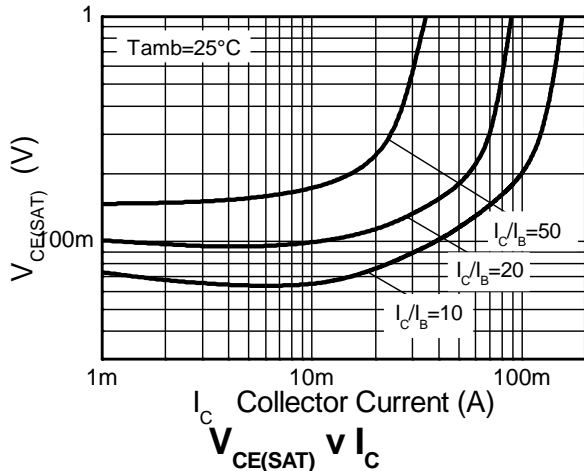
**Pulse Power Dissipation**

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	180	270	—	V	I <sub>C</sub> = 100μA, I <sub>E</sub> = 0
Collector-Emitter Breakdown Voltage (Note 7)	BV <sub>CEO</sub>	160	200	—	V	I <sub>C</sub> = 1mA, I <sub>B</sub> = 0
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	6.0	7.85	—	V	I <sub>E</sub> = 100μA, I <sub>C</sub> = 0
Collector Cutoff Current	I <sub>CBO</sub>	—	<1	50	nA	V <sub>CB</sub> = 120V, I <sub>E</sub> = 0
Emitter Cutoff Current	I <sub>EBO</sub>	—	<1	50	nA	V <sub>CB</sub> = 120V, I <sub>E</sub> = 0, T <sub>A</sub> = +100°C
						V <sub>EB</sub> = 4V, I <sub>C</sub> = 0
<b>ON CHARACTERISTICS (Note 7)</b>						
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	—	65 115	150 200	mV	I <sub>C</sub> = 10mA, I <sub>B</sub> = 1mA I <sub>C</sub> = 50mA, I <sub>B</sub> = 5mA
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	—	760 840	1000 1200	mV	I <sub>C</sub> = 10mA, I <sub>B</sub> = 1mA I <sub>C</sub> = 50mA, I <sub>B</sub> = 5mA
DC Current Gain	h <sub>FE</sub>	80 80 30	130 145 65	— 250 —	—	I <sub>C</sub> = 1mA, V <sub>CE</sub> = 5V I <sub>C</sub> = 10mA, V <sub>CE</sub> = 5V I <sub>C</sub> = 50mA, V <sub>CE</sub> = 5V
<b>SMALL SIGNAL CHARACTERISTICS</b>						
Transition Frequency	f <sub>T</sub>	100	130	300	MHz	V <sub>CE</sub> = 10V, I <sub>C</sub> = 10mA, f = 100MHz
Small Signal Current Gain	h <sub>fe</sub>	50	—	260	—	V <sub>CE</sub> = 10V, I <sub>C</sub> = 10mA, f = 1kHz
Output Capacitance	C <sub>obo</sub>	—	—	6	pF	V <sub>CB</sub> = 10V, f = 1MHz
Noise Figure	NF	—	—	8	dB	V <sub>CE</sub> = 5.0V, I <sub>C</sub> = 200μA, R <sub>S</sub> = 1.0kΩ, f = 1.0kHz
Delay Time	t <sub>(d)</sub>	—	95	—	ns	V <sub>CC</sub> = 10V, I <sub>C</sub> = 10mA, I <sub>B1</sub> = -I <sub>B2</sub> = 1mA
Rise Time	t <sub>(r)</sub>	—	64	—	ns	
Storage Time	t <sub>(s)</sub>	—	1256	—	ns	
Delay Time	t <sub>(f)</sub>	—	140	—	ns	

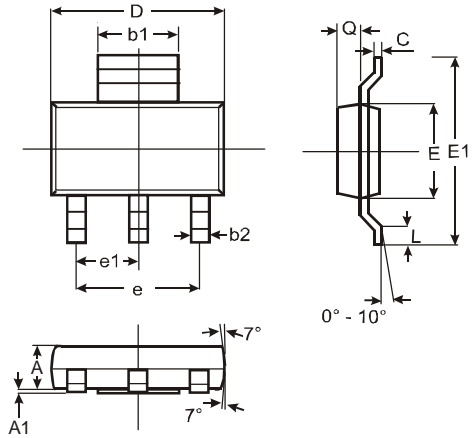
Notes: 7. Pulse Test: Pulse width ≤ 300μs. Duty cycle ≤ 2.0%.

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



**Package Outline Dimensions**

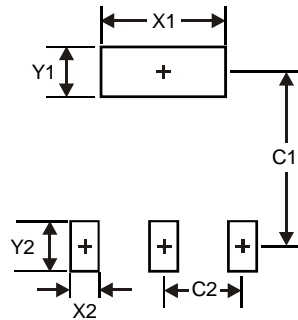
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



SOT223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b1	2.90	3.10	3.00
b2	0.60	0.80	0.70
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	—	—	4.60
e1	—	—	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
All Dimensions in mm			

**Suggested Pad Layout**

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
X1	3.3
X2	1.2
Y1	1.6
Y2	1.6
C1	6.4
C2	2.3

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