

Features

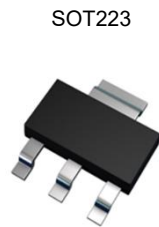
- $BV_{CEO} > -150V$
- $I_C = -600mA$ High Collector Current
- Ideal for Medium Power Switching or Amplification Applications
- Complementary NPN Type: [DZT5551](#)
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](#) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

Mechanical Data

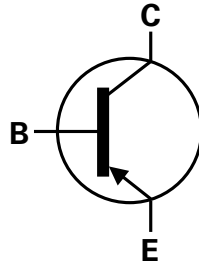
- Package: SOT223
- Package Material: Molded Plastic. "Green" Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.112 grams (Approximate)

Applications

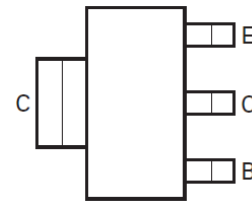
- Amplifiers
- Power supplies



Top View



Device Symbol

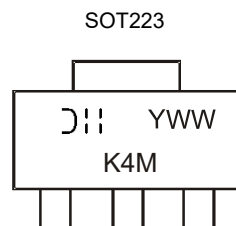

 Top View
Pinout

Ordering Information (Note 4)

Orderable Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
DZT5401-13	SOT223	K4M	13	12	2,500	Reel

- 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. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



K4M = Product Type Marking Code
 311 = Manufacturer's Code Marking
 YWW = Date Code Marking
 Y = Last Digit of Year (ex: 6 = 2026)
 WW = Week Code (01 to 52)

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	-160	V
Collector-Emitter Voltage	V _{CEO}	-150	V
Emitter-Base Voltage	V _{EBO}	-6	V
Collector Current	I _C	-600	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation @T _A = +25°C	P _D	1	W
		2	
Thermal Resistance, Junction to Ambient @T _A = +25°C	R _{θJA}	125	°C/W
		62.5	
Operating and Storage Temperature Range	T _J , T _{STG}	-65 to +150	°C

Notes: 5. For a device mounted with the collector lead on minimum recommended pad (MRP) layout 1oz copper that is on a single-sided 1.6mm FR-4 PCB; device is measured under still air conditions whilst operating in a steady state.
6. Device mounted on 50mm × 50mm × 1.6mm FR-4 PCB with high coverage of single-sided 1oz. copper, in still air condition.

Thermal Characteristics and Derating Information

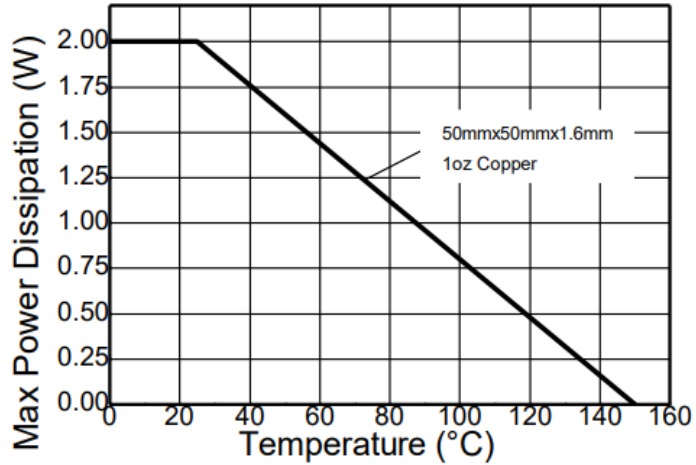


Figure 1. Derating Curve

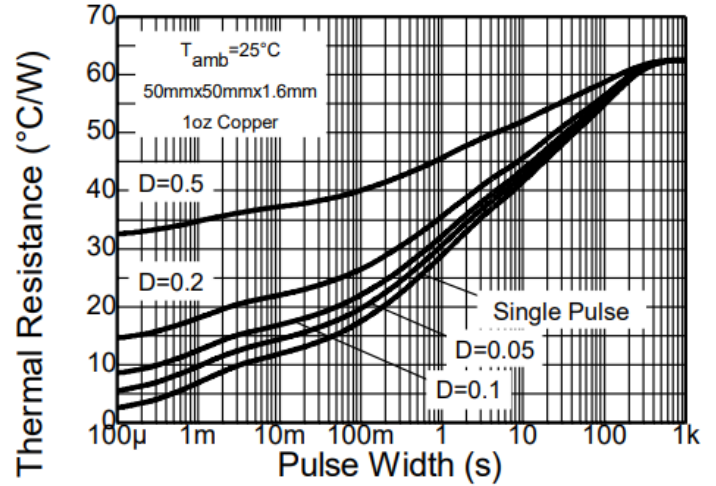


Figure 2. Transient Thermal Impedance

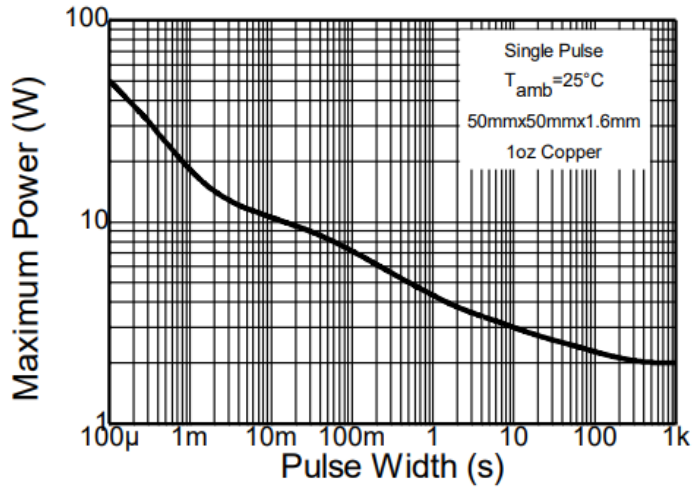


Figure 3. Pulse Power Dissipation

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	-160	—	—	V	$I_C = -100\mu\text{A}$, $I_E = 0$
Collector-Emitter Breakdown Voltage (Note 7)	BV_{CEO}	-150	—	—	V	$I_C = -1\text{mA}$, $I_B = 0$
Emitter-Base Breakdown Voltage	BV_{EBO}	-6	—	—	V	$I_E = -10\mu\text{A}$, $I_C = 0$
Collector-Base Cutoff Current	I_{CBO}	—	—	-50	nA μA	$V_{CB} = -120\text{V}$, $I_E = 0$ $V_{CB} = -120\text{V}$, $I_E = 0$, $T_A = +150^\circ\text{C}$
Emitter-Base Cutoff Current	I_{EBO}	—	—	-50	nA	$V_{EB} = -3\text{V}$, $I_C = 0$
ON CHARACTERISTICS (Note 7)						
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	-0.2 -0.5	V	$I_C = -10\text{mA}$, $I_B = -1\text{mA}$ $I_C = -50\text{mA}$, $I_B = -5\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	-1.0	V	$I_C = -10\text{mA}$, $I_B = -1\text{mA}$ $I_C = -50\text{mA}$, $I_B = -5\text{mA}$
Static Forward Current Transfer Ratio	h_{FE}	50 60 50	—	— 240 —	—	$I_C = -1\text{mA}$, $V_{CE} = -5\text{V}$ $I_C = -10\text{mA}$, $V_{CE} = -5\text{V}$ $I_C = -50\text{mA}$, $V_{CE} = -5\text{V}$
SMALL-SIGNAL CHARACTERISTICS						
Transition Frequency	f_T	100	—	300	MHz	$V_{CE} = -10\text{V}$, $I_C = -10\text{mA}$, $f = 100\text{MHz}$
Output Capacitance	C_{obo}	—	—	6	pF	$V_{CB} = -10\text{V}$, $f = 1\text{MHz}$, $I_E = 0$
Small-Signal Current Gain	h_{FE}	40	—	260	—	$V_{CE} = -10\text{V}$, $I_C = -1.0\text{mA}$, $f = 1.0\text{kHz}$
Noise Figure	NF	—	—	8	dB	$V_{CE} = -5.0\text{V}$, $I_C = -200\mu\text{A}$, $R_S = 10\Omega$, $f = 1.0\text{kHz}$

Note: 7. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

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

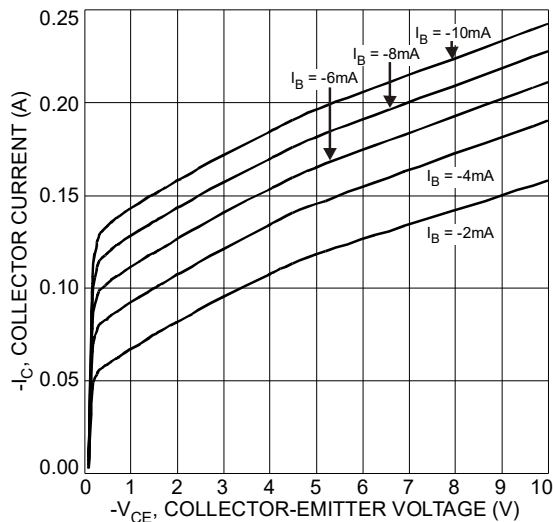


Figure 4. Typical Collector Current vs. Collector-Emitter Voltage

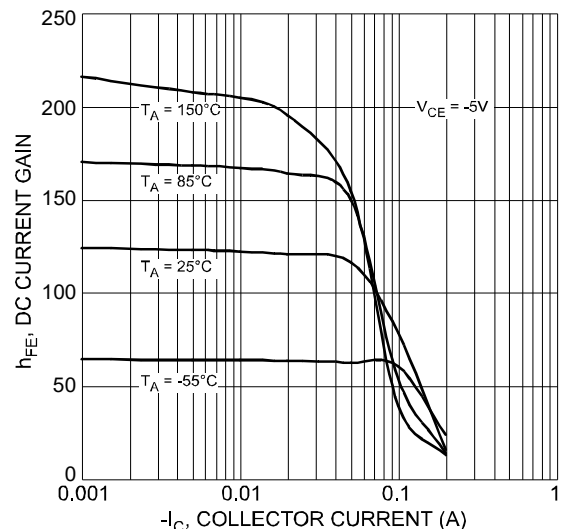


Figure 5. Typical DC Current Gain vs. Collector Current

Typical Electrical Characteristics (continued)

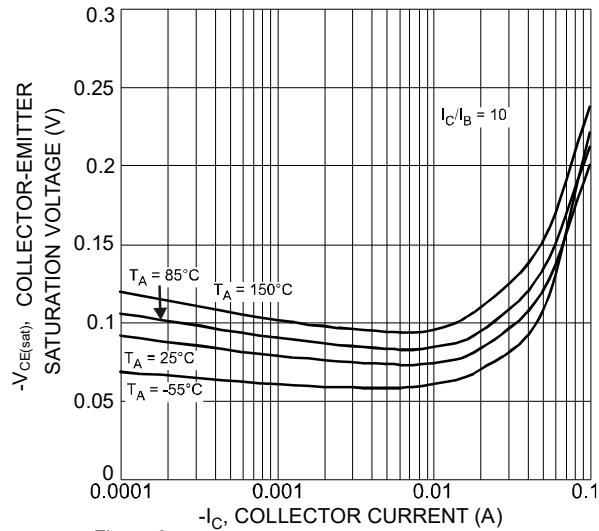


Figure 6. Typical Collector-Emitter Saturation Voltage vs. Collector Current

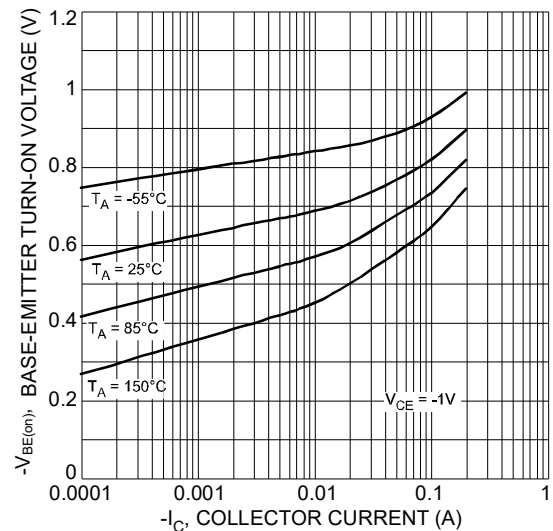


Figure 7. Typical Base-Emitter Turn-On Voltage vs. Collector Current

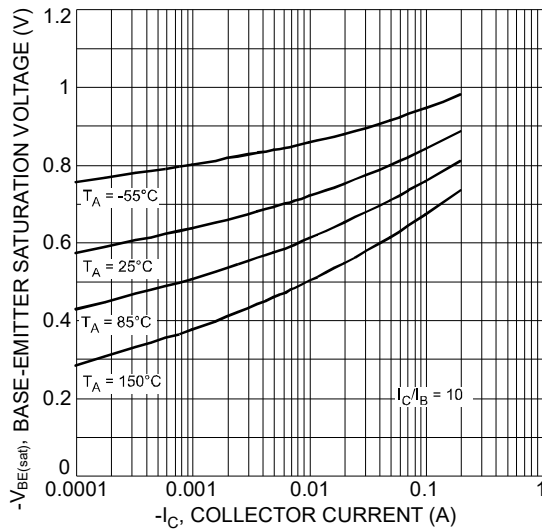


Figure 8. Typical Base-Emitter Saturation Voltage vs. Collector Current

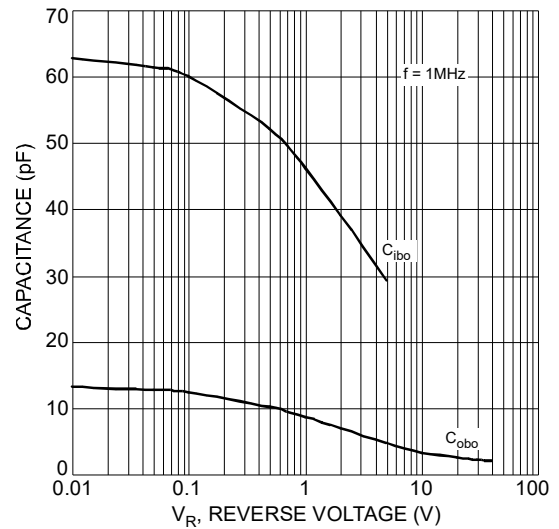


Figure 9. Typical Capacitance Characteristics

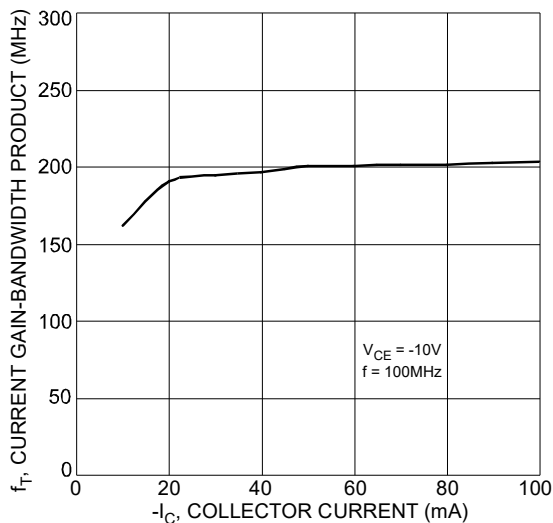
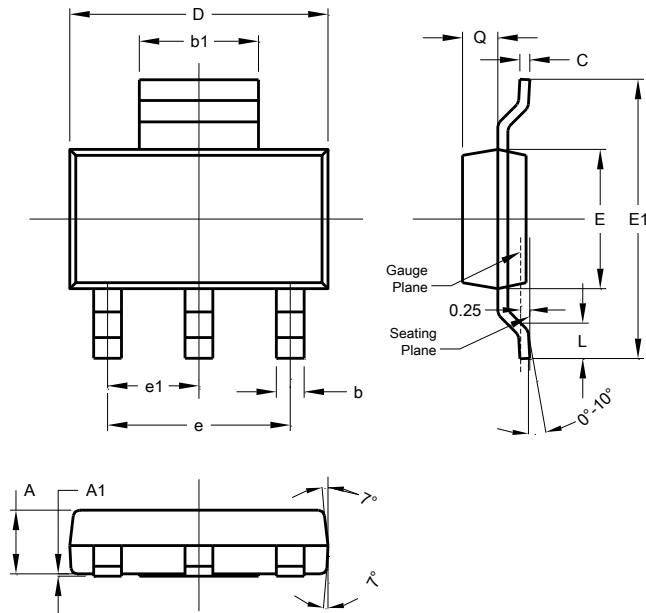


Figure 10. Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions

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

SOT223

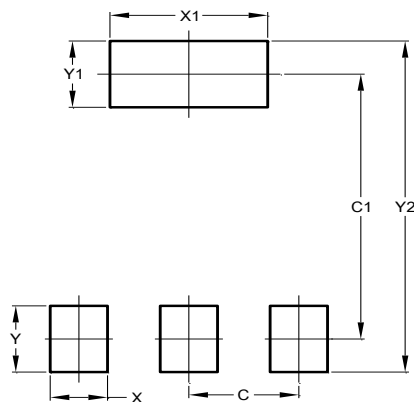


SOT223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	-	-	4.60
e1	-	-	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
All Dimensions in mm			

Suggested Pad Layout

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

SOT223



Dimensions	Value (in mm)
C	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00

Note: 8. For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device terminals and PCB tracking.

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