



DZT5401

150V PNP SMALL SIGNAL TRANSISTOR IN SOT223

Features

- BV_{CEO} > -150V
- I_C = -600mA high Collector Current
- Ideal for Medium Power Switching or Amplification Applications
- Complementary PNP Type: DZT5551
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)

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 <a>®
- Weight: 0.112 grams (Approximate)

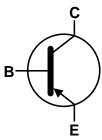
Applications

- Amplifiers
- Power Supplies

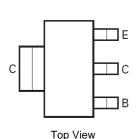
SOT223



Top View



Device Symbol



Pin-Out

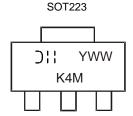
Ordering Information (Note 4)

Ī	Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
	DZT5401-13	Standard	K4M	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/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 https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information



K4M = Product Type Marking Code

O!! = Manufacturer's Code Marking

YWW = Date Code Marking

Y = Last Digit of Year (ex: 7 = 2017)

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	Ic	-600	mA

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

Characteristic	Symbol	Value	Unit	
Power Dissipation @T _A = +25°C (I		P_{D}	1	W
Thermal Resistance, Junction to Ambient @T _A = +25°C (Note 5)		$R_{\theta JA}$	125	°C/W
Operating and Storage Temperature Range	$T_{J_i}T_{STG}$	-65 to +150	°C	

ESD Ratings (Note 6)

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	С

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. Refer to JEDEC specification JESD22-A114 and JESD22-A115.



Thermal Characteristics and Derating Information

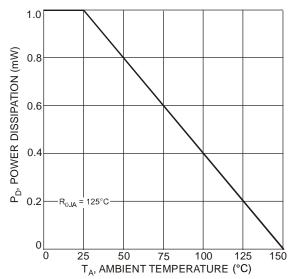


Fig. 1 Max Power Dissipation vs. Ambient Temperature

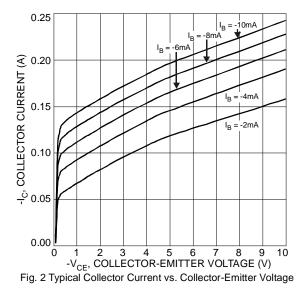


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV _{CBO}	-160	1	1	>	$I_C = -100\mu A, I_E = 0$
Collector-Emitter Breakdown Voltage (Note 7)	BV _{CEO}	-150	1	1	٧	$I_C = -1mA$, $I_B = 0$
Emitter-Base Breakdown Voltage	BV _{EBO}	-6	1	1	>	$I_E = -10\mu A, I_C = 0$
Collector-Base Cut-off Current	I _{CBO}		-	-50	nΑ μΑ	$V_{CB} = -120V, I_{E} = 0$ $V_{CB} = -120V, I_{E} = 0, T_{A} = +150^{\circ}C$
Emitter-Base Cut-off Current	I _{EBO}	_	_	-50	nA	$V_{EB} = -3V, I_C = 0$
ON CHARACTERISTICS (Note 7)						
Collector-Emitter Saturation Voltage	V _{CE(SAT)}			-0.2 -0.5	٧	$I_{C} = -10\text{mA}, I_{B} = -1\text{mA}$ $I_{C} = -50\text{mA}, I_{B} = -5\text{mA}$
Base-Emitter Saturation Voltage	V _{BE(SAT)}	_	_	-1.0	V	$I_C = -10mA, I_B = -1mA$ $I_C = -50mA, I_B = -5mA$
Static Forward Current Transfer Ratio	h _{FE}	50 60 50		— 240 —	_	I_{C} = -1mA, V_{CE} = -5V I_{C} = -10mA, V_{CE} = -5V I_{C} = -50mA, V_{CE} = -5V
SMALL SIGNAL CHARACTERISTICS	SMALL SIGNAL CHARACTERISTICS					
Transition Frequency	f _T	100	_	300	MHz	$V_{CE} = -10V, I_{C} = -10mA,$ f = 100MHz
Output Capacitance	Cobo	_	_	6	pF	V _{CB} = -10V, f = 1MHz, I _E = 0
Small Signal Current Gain	h _{FE}	40	_	260	_	V _{CE} = -10V, I _C = -1.0mA, f = 1.0kHz
Noise Figure	NF	_	_	8	dB	V_{CE} = -5.0V, I_{C} = -200 μ A, R_{S} = 10 Ω , f = 1.0kHz

Note:

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



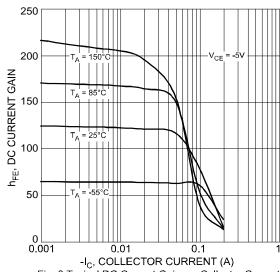


Fig. 3 Typical DC Current Gain vs. Collector Current

^{7.} Measured under pulsed conditions. Pulse width \leq 300µs. Duty cycle \leq 2%.



Typical Electrical Characteristics (Cont.)

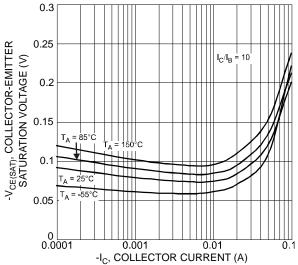


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

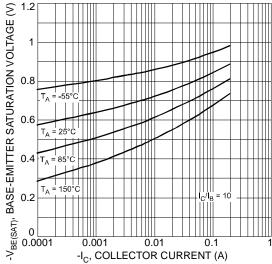


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

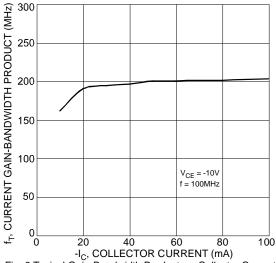


Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

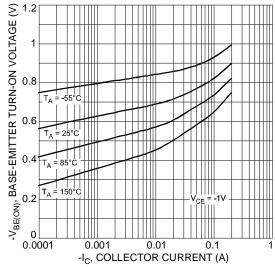


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

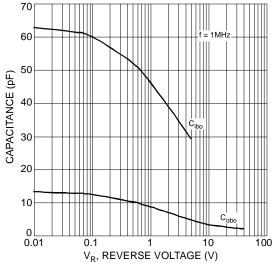


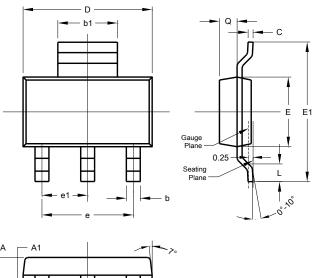
Fig. 7 Typical Capacitance Characteristics



Package Outline Dimensions

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

SOT223

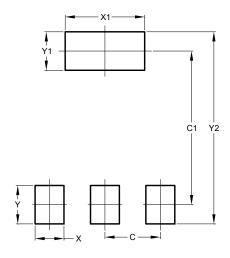


SOT223						
Dim	Min	Max	Тур			
Α	1.55	1.65	1.60			
A1	0.010	0.15	0.05			
b	0.60	0.80	0.70			
b1	2.90	3.10	3.00			
С	0.20	0.30	0.25			
D	6.45	6.55	6.50			
Е	3.45	3.55	3.50			
E1	6.90	7.10	7.00			
е	-	-	4.60			
e1	-	-	2.30			
L	0.85	1.05	0.95			
Q	0.84	0.94	0.89			
All Dimensions in mm						

Suggested Pad Layout

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

SOT223



Dimensions	Value (in mm)			
С	2.30			
C1	6.40			
Х	1.20			
X1	3.30			
Υ	1.60			
Y1	1.60			
Y2	8 00			

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. Note:



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