



DZTA42

300V NPN HIGH VOLTAGE TRANSISTOR IN SOT223

Features

- BV_{CEO} > 300V
- I_C = 500mA High Collector Current
- 2W Power Dissipation
- Low Saturation Voltage V_{CE(sat)} < 500mV @ 20mA
- Complementary PNP Type: DZTA92
- 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
- An Automotive-Compliant Part is Available Under Separate Datasheet (DZTA42Q)

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 (3)
- Weight: 0.112 grams (Approximate)

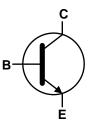
Applications

- Switch-Mode Power Supplies (SMPS)
- Video Output Stages
- Motor Driver

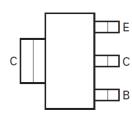
SOT223



Top View



Device Symbol



Top View Pin-Out

Ordering Information (Note 4)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity Per Reel
DZTA42-13	AEC-Q101	K3M	13	12	2,500

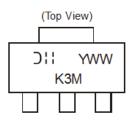
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.

- 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

Notes:

SOT223



K3M = Product Type Marking Code YWW = Date Code Marking Y = Last Digit of Year (ex: 8 = 2018) 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}	300	V
Collector-Emitter Voltage	V _{CEO}	300	V
Emitter-Base Voltage	V _{EBO}	6	V
Collector Current	Ic	500	mA
Base Current	I _B	100	mA

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

Characteristic	Symbol	Value	Unit		
Power Dissipation	(Note 5)	D-	2		
Fower Dissipation	(Note 6)	P _D	1	W	
Thermal Decistores, Junction to Ambient	(Note 5)	D	62	°C/W	
Thermal Resistance, Junction to Ambient	(Note 6)	R _{θJA}	125	*C/VV	
Thermal Resistance, Junction to Leads	$R_{\theta JL}$	19.4	°C/W		
Operating and Storage Temperature Range	T _J , T _{STG}	-65 to +150	°C		

ESD Ratings (Note 8)

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 50mm x 50mm 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. Same as note (5), except mounted on minimum recommended pad (MRP) layout.

 7. Thermal resistance from junction to solder-point (at the end of the collector lead).

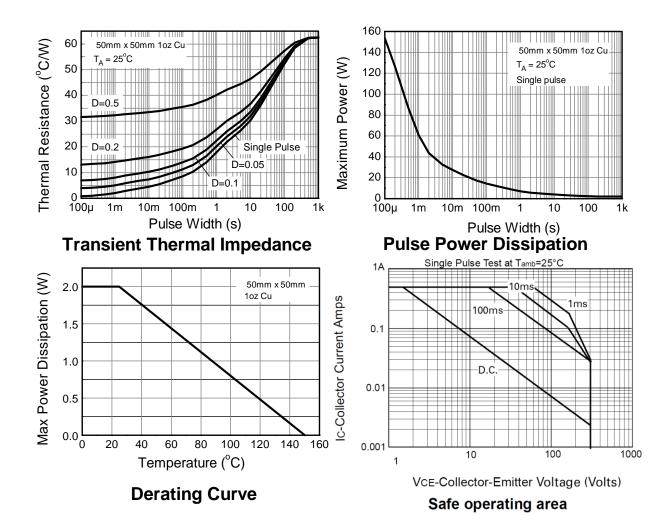
 8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

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Thermal Characteristics and Derating Information



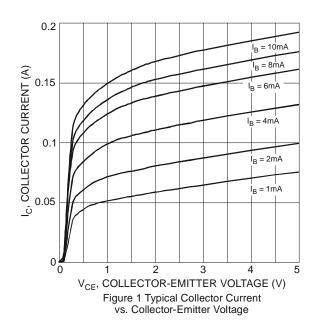


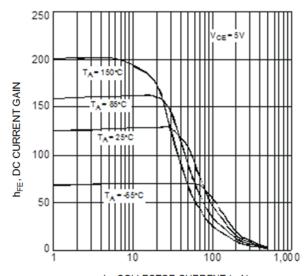
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV _{CBO}	300	_	_	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV _{CEO}	300	_	_	V	I _C = 1mA
Emitter-Base Breakdown Voltage	BV _{EBO}	6	_	_	V	I _E = 100μA
Collector-Base Cut-off Current	I _{CBO}	_	_	0.1	μΑ	V _{CB} = 200V
Emitter-Base Cut-off Current	I _{EBO}	_	_	0.1	μΑ	$V_{EB} = 6V, I_{C} = 0$
ON CHARACTERISTICS (Note 9)						
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	_	_	0.5	V	$I_C = 20mA$, $I_B = 2mA$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	_	_	0.9	V	$I_C = 20mA, I_B = 2mA$
		25	_	_		$I_{C} = 1 \text{mA}, V_{CE} = 10 \text{V}$
Static Forward Current Transfer Ratio	h _{FE}	40	_	_	_	$I_C = 10 \text{mA}, V_{CE} = 10 \text{V}$
		40	_	_		$I_C = 30 \text{mA}, V_{CE} = 10 \text{V}$
SMALL SIGNAL CHARACTERISTICS						
Transition Frequency	f _T	50	_	_	MHz	$I_C = 10$ mA, $V_{CE} = 20$ V f = 100MHz
Output Capacitance	Cobo	_	_	3	pF	V _{CB} = 20V, f = 1MHz

Note:

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





I_C, COLLECTOR CURRENT (mA)
Figure 2 Typical DC Current Gain vs. Collector Current

^{9.} Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.



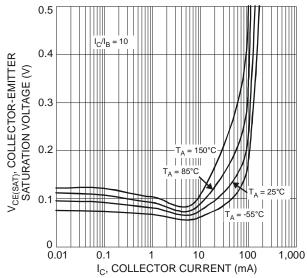


Figure 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

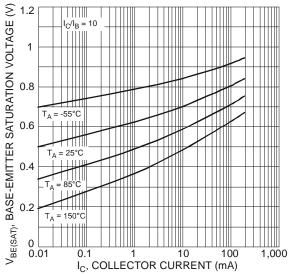


Figure 5 Typical Base-Emitter Saturation Voltage vs. Collector Current

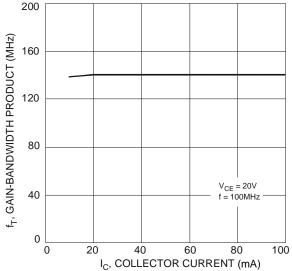


Figure 7 Typical Gain-Bandwidth Product vs. Collector Current

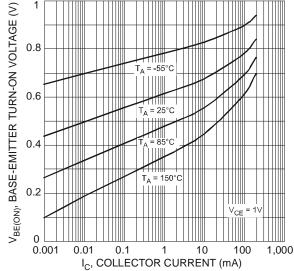


Figure 4 Typical Base-Emitter Turn-On Voltage vs. Collector Current

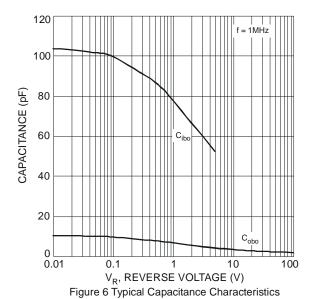


Figure 7 Timing Coin Boardwidth Bradwat vs. Callacter Comment

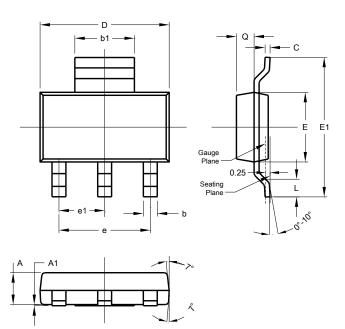
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Package Outline Dimensions

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

SOT223

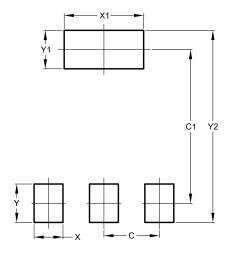


SOT223					
Dim	Min	Max	Тур		
Α	1.55	1.65	1.60		
A1	0.010	0.15	0.05		
b	0.60	0.80	0.70		
b1	2.90	3.10	3.00		
С	0.20	0.30	0.25		
D	6.45	6.55	6.50		
Е	3.45	3.55	3.50		
E1	6.90	7.10	7.00		
е	-	-	4.60		
e1	-	-	2.30		
L	0.85	1.05	0.95		
Q	0.84	0.94	0.89		
All Dimensions in mm					

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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