



30V NPN LOW SATURATION MEDIUM POWER TRANSISTOR IN SOT89

Features

- BV_{CEO} > 55V
- I_C = 6.0A High Continuous Current
- Low Saturation Voltage V_{CE(sat)} < 40mV @ 500mA
- $R_{sat} = 28m\Omega$ for a Low Equivalent On-Resistance
- P_D = 2.1W Power Dissipation
- 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-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please <u>contact us</u> or your local Diodes representative. https://www.diodes.com/quality/product-definitions/

Mechanical Data

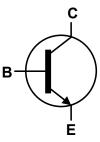
- Case: SOT89
- Case Material: Molded Plastic. "Green" Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208
- Weight: 0.05 grams (Approximate)

Application

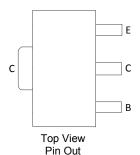
- Emergency lighting circuits
- Motor driving (including DC fans)
- Solenoid, relay and actuator drivers
- DC modules
- Backlight inverters



Top View



Device Symbol



Ordering Information (Note 4)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity Per Reel
ZXTN19055DZTA	Standard	S75	7	12	1,000

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



S75 = Product Type Marking Code



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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	150	V
Collector-Emitter voltage (forward blocking voltage)	V _{CEX}	150	V
Collector-Emitter Voltage	V _{CEO}	55	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	Ic	6	Α
Peak Pulse Collector Current (single pulse)	I _{CM}	10	Α

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5) Linear Derating Factor	P_{D}	1.5 12	W mW/°C
Power Dissipation (Note 6) Linear Derating Factor	P _D	2.1 16.8	W mW/°C
Thermal Resistance, Junction to Ambient (Note 5)	R _{0JA}	83	°C/W
Thermal Resistance, Junction to Ambient (Note 6)	R _{0JA}	59	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

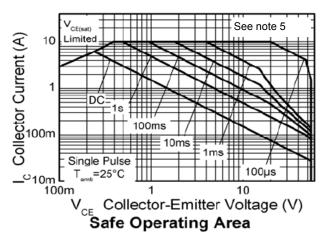
Notes:

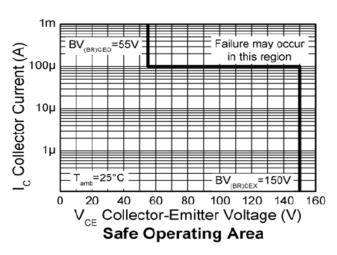
^{5.} For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions; device measured when operating in steady state condition.

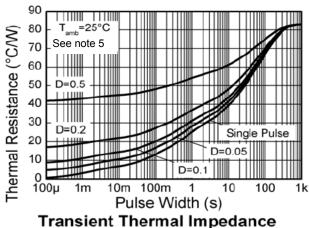
6. Same as note (5), except the device is mounted on 50mm x 1.6mm single sided 1oz weight copper.

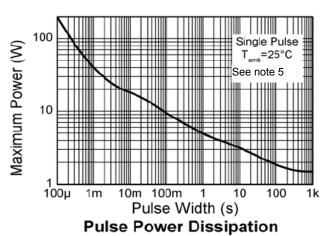


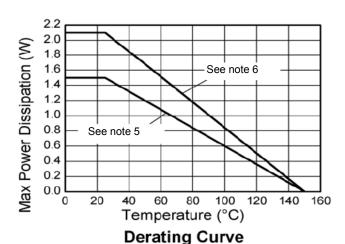
Thermal Characteristics and Derating Information











ZXTN19055DZ

Document number: DS33680 Rev. 2 - 2



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

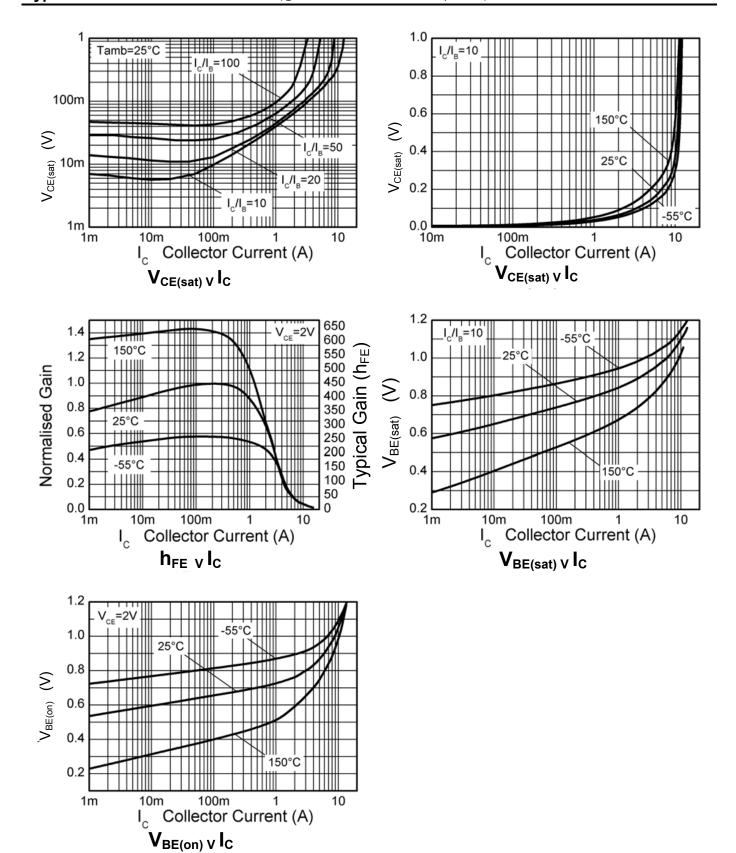
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	150	200	_	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (forward blocking)	BV _{CEX}	150	200	_	V	I_C = 100μA, RBE < 1k Ω or -1V < V _{BE} < +0.25V
Collector- Emitter Breakdown Voltage (Note 7)	BV _{CEO}	55	75	_	V	I _C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	7	8.1	_	V	I _E = 100μA
Collector-Base Cut-Off Current	I _{CBO}	_	1 —	50 20	nΑ μΑ	V _{CB} = 120V V _{CB} = 120V, T _{amb} = 100°C
Collector-Emitter Cut-Off Current	I _{CEX}	_	1	100	nA	V_{CE} = 120V; R_{BE} < 1kΩ or -1V < V_{BE} < 0.25V
Emitter-Base Cut-Off Current	I _{EBO}	_	1	50	nA	V _{EB} = 5.6V
Collector-Emitter Saturation Voltage (Note 7)	V _{CE} (sat)	_	25 45 40 200 110 140 170	40 70 60 350 140 200 250	mV	I_C = 0.5A, I_B = 50mA I_C = 1A, I_B = 50mA I_C = 1A, I_B = 100mA I_C = 2A, I_B = 20mA I_C = 2A, I_B = 40mA I_C = 4A, I_B = 200mA I_C = 6A, I_B = 600mA
Base-Emitter Saturation Voltage (Note 7)	$V_{BE(sat)}$	_	800 1000	900 1150	mV	I _C = 2A, I _B = 20mA I _C = 6A, I _B = 600mA
Base-Emitter Turn-On Voltage (Note 7)	V _{BE(on)}	_	760 900	900 1050	mV	I _C = 2A, V _{CE} = 2V I _C = 6A, V _{CE} = 2V
DC Current Gain (Note 7)	h _{FE}	250 250 180 30 —	400 400 300 50 20	700 — — — —	_	$I_{C} = 10mA, V_{CE} = 2V$ $I_{C} = 1A, V_{CE} = 2V$ $I_{C} = 2A, V_{CE} = 2V$ $I_{C} = 6A, V_{CE} = 2V$ $I_{C} = 10A, V_{CE} = 2V$
Transitional Frequency	f _T	140	200	_	MHz	I _C = 100mA, V _{CE} =10 V f = 50MHz
Output Capacitance (Note 7)	C _{obo}	_	21.2	30	pF	V _{CB} =10 V, f = 1MHz
Delay time	t _d		13.8			101
Rise time	t _r	21.9		21.9	ns	$V_{CC} = 10V$,
Storage time	t _s 546				$I_C = 1A$, $I_{B1} = -I_{B2} = 100 \text{mA}$	
Fall time	t _f		106			101 102 10011111

Note:

7. Measured under pulsed conditions. Pulse width \leq 300 μ s. Duty cycle \leq 2%.



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

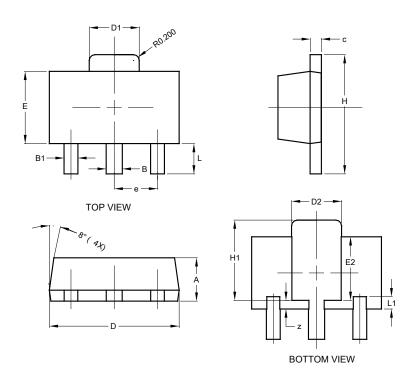




Package Outline Dimensions

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

SOT89

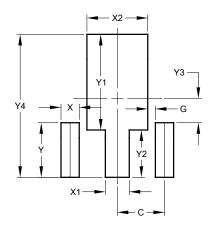


SOT89					
Dim	Min	Max	Тур		
Α	1.40	1.60	1.50		
В	0.50	0.62	0.56		
B1	0.42	0.54	0.48		
С	0.35	0.43	0.38		
D	4.40	4.60	4.50		
D1	1.62	1.83	1.733		
D2	1.61	1.81	1.71		
Е	2.40	2.60	2.50		
E2	2.05	2.35	2.20		
е	-	-	1.50		
Н	3.95	4.25	4.10		
H1	2.63	2.93	2.78		
L	0.90	1.20	1.05		
L1	0.327	0.527	0.427		
Z	0.20	0.40	0.30		
All Dimensions in mm					

Suggested Pad Layout

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

SOT89



Dimensions	Value		
Dillielisions	(in mm)		
С	1.500		
G	0.244		
X	0.580		
X1	0.760		
X2	1.933		
Y	1.730		
Y1	3.030		
Y2	1.500		
Y3	0.770		
Y4	4.530		



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