

100V NPN LOW SATURATION MEDIUM POWER TRANSISTOR IN SOT89

Features

- $BV_{CEO} > 100V$
- $I_C = 4.5A$ high Continuous Current
- $I_{CM} = 10A$ Peak Pulse Current
- $R_{CE(sat)} = 31m\Omega$ for a low equivalent On-Resistance
- Low saturation voltage $V_{CE(sat)} < 60mV$ @ $I_C = 1A$
- h_{FE} specified up to 10A for high current gain hold up
- **Lead-Free Finish; RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

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 @3
- Weight: 0.05 grams (Approximate)

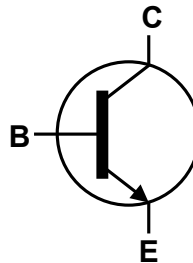
Applications

- Motor driving
- Line switching
- High side switches
- Subscriber line interface cards (SLIC)

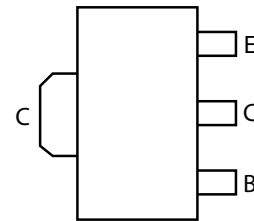
SOT89



Top View



Device Symbol



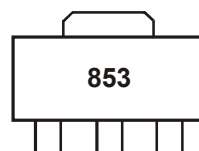
Top View
Pin Out

Ordering Information (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTN2011ZTA	853	7	12	1,000

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
 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



853 = Product Type Marking Code

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	200	V
Collector-Emitter Voltage	V _{CEO}	100	V
Emitter-Base Voltage	V _{EBO}	7	V
Continuous Collector Current	I _C	4.5	A
Peak Pulse Current	I _{CM}	10	A

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

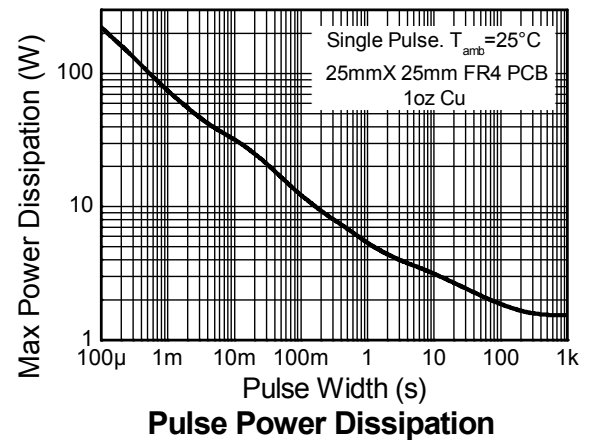
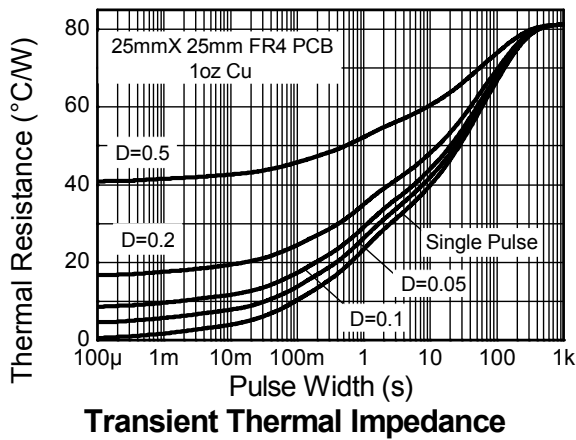
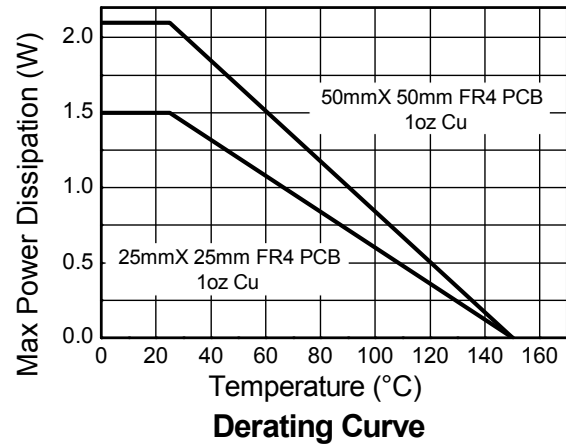
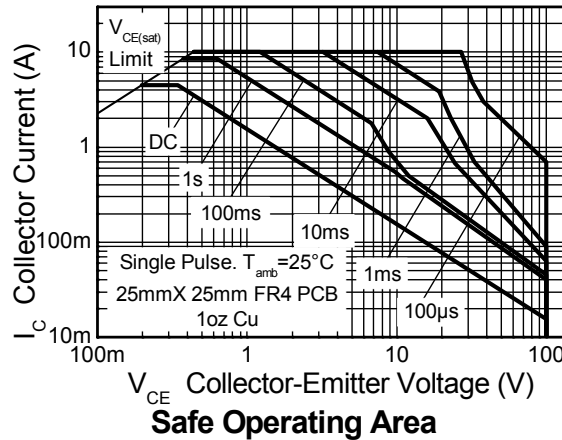
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	1.5	W
Linear derating factor		12	mW/°C
Power Dissipation (Note 6)	P _D	2.1	W
Linear derating factor		16.8	mW/°C
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	83	°C/W
Thermal Resistance, Junction to Ambient (Note 6)	R _{θJA}	60	°C/W
Thermal Resistance, Junction to Ambient (Note 7)	R _{θJL}	3.23	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 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	C

- Notes:
- 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.
 - Same as note (5), except the device is mounted on 50mm X 50mm single sided 1oz weight copper.
 - Thermal resistance from junction to solder-point (at the end of the collector lead).
 - Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating Information

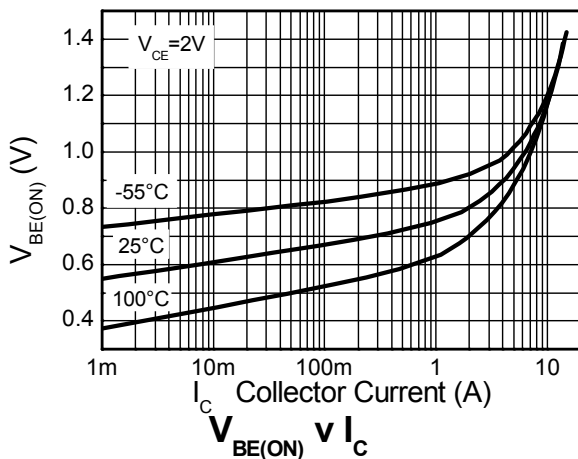
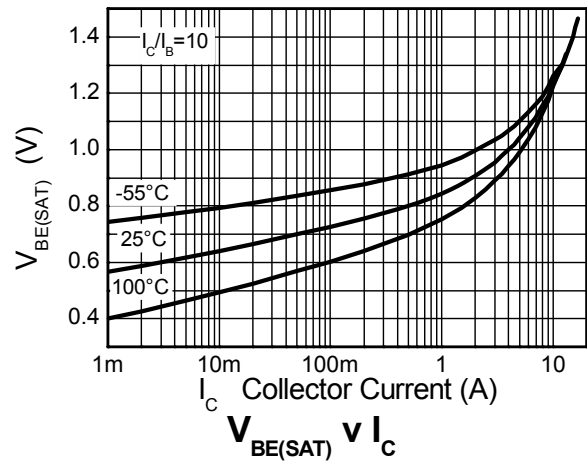
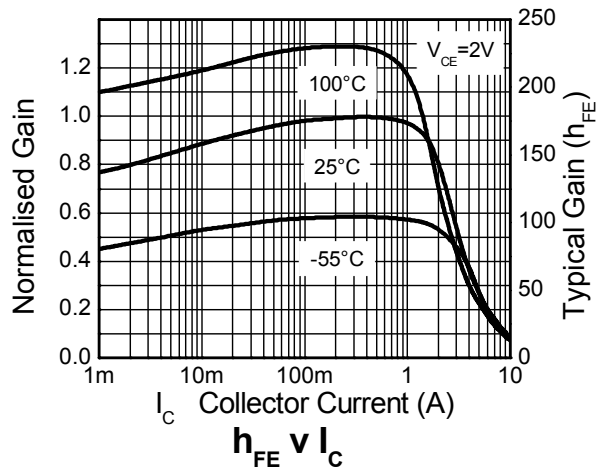
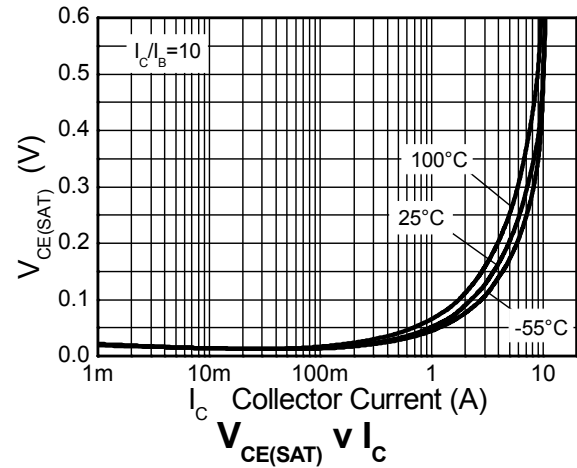
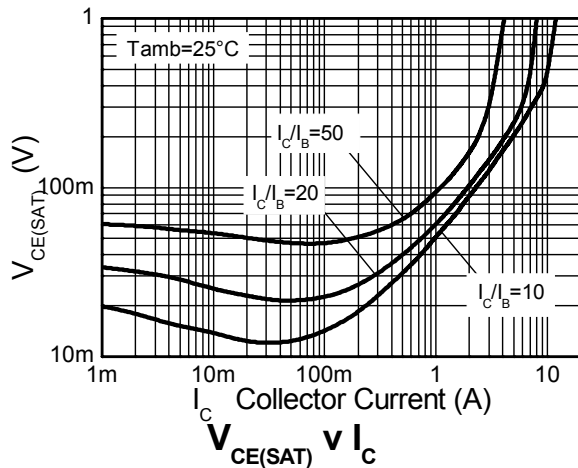


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	200	235	-	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Notes 9)	BV _{CER}	200	235	-	V	I _C = 1μA, R _B ≤ 1kΩ
Collector-Emitter Breakdown Voltage (Notes 9)	BV _{CEO}	100	115	-	V	I _C = 1mA
Emitter-Base Breakdown Voltage	BV _{EBO}	7	8.1	-	V	I _E = 100μA
Collector Cutoff Current	I _{CBO}	-	<1	50	nA	V _{CB} = 150V
		-	-	500	nA	V _{CB} = 150V, T _A = +100°C
Collector Cutoff Current	I _{CER}	-	<1	100	nA	V _{CB} = 150V
	R ≤ 1kΩ	-	-	500	nA	V _{CB} = 150V, T _A = +100°C
Emitter Cutoff Current	I _{EBO}	-	<1	10	nA	V _{EB} = 6V
DC Current Transfer Static Ratio (Notes 9)	h _{FE}	100	230	-	-	I _C = 10mA, V _{CE} = 2V
		100	200	300		I _C = 2A, V _{CE} = 2V
		30	60	-		I _C = 5A, V _{CE} = 2V
		10	20	-		I _C = 10A, V _{CE} = 2V
Collector-Emitter Saturation Voltage (Notes 9)	V _{CE(sat)}	-	20	30	mV	I _C = 100mA, I _B = 5mA
		-	45	60		I _C = 1A, I _B = 100mA
		-	85	115		I _C = 2A, I _B = 100mA
		-	155	195		I _C = 5A, I _B = 500mA
Base-Emitter Saturation Voltage (Notes 9)	V _{BE(sat)}	-	1000	1100	mV	I _C = 5A, I _B = 500mA
Base-Emitter Turn-on Voltage (Notes 9)	V _{BE(on)}	-	900	1000	mV	I _C = 5A, V _{CE} = 2V
Transitional Frequency	f _T	-	130	-	MHz	I _C = 100mA, V _{CE} = 10V, f = 50MHz
Output Capacitance	C _{obo}	-	26	-	pF	V _{CB} = 10V, f = 1MHz,
Switching Time	t _{on}	-	41	-	ns	V _{CC} = 10V, I _C = 1A, I _{B1} = I _{B2} = 100mA
	t _{off}		1010			

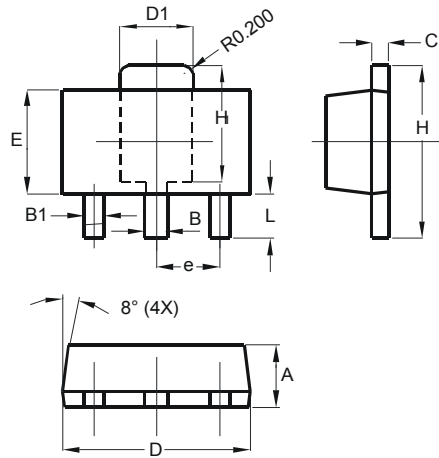
Notes: 8. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

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



Package Outline Dimensions

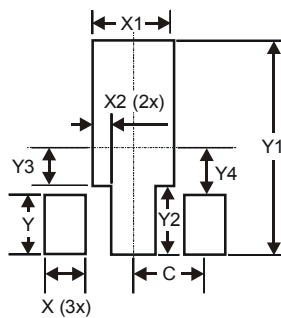
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



SOT89		
Dim	Min	Max
A	1.40	1.60
B	0.44	0.62
B1	0.35	0.54
C	0.35	0.44
D	4.40	4.60
D1	1.62	1.83
E	2.29	2.60
e	1.50 Typ	
H	3.94	4.25
H1	2.63	2.93
L	0.89	1.20
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)
X	0.900
X1	1.733
X2	0.416
Y	1.300
Y1	4.600
Y2	1.475
Y3	0.950
Y4	1.125
C	1.500

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