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100V NPN SILICON PLANAR MEDIUM POWER TRANSISTOR IN SOT89

Features

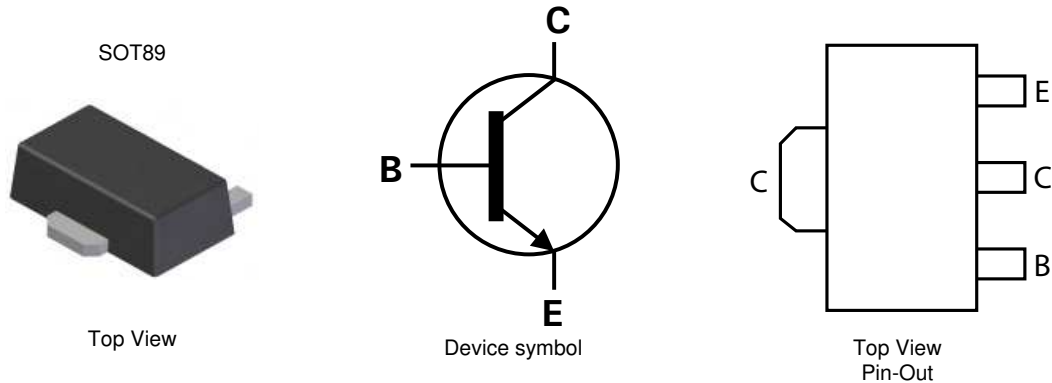
- $BV_{CEO} > 100V$
- $I_C = 1A$ high Continuous Current
- Low saturation voltage $V_{CE(sat)} < 300mV @ 250mA$
- Complementary PNP type: FCX593
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SOT89
- Case Material: Molded Plastic, "Green" Molding Compound
- Moisture Sensitivity: Level 1 per J-STD-020
- UL Flammability Rating 94V-0
- Terminals: Matte Tin Finish, Solderable per MIL-STD-202, Method 208 
- Weight: 0.052 grams (Approximate)

Application

- Load management functions
- Solenoid, relay and actuator drivers
- DC – DC modules

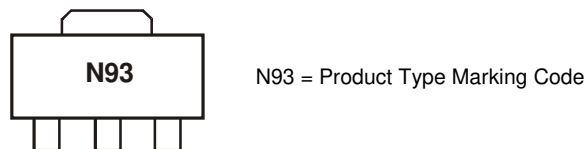


Ordering Information (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FCX493TA	N93	7	12	1000
FCX493-13R	N93	13	12	4000

- 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> 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



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

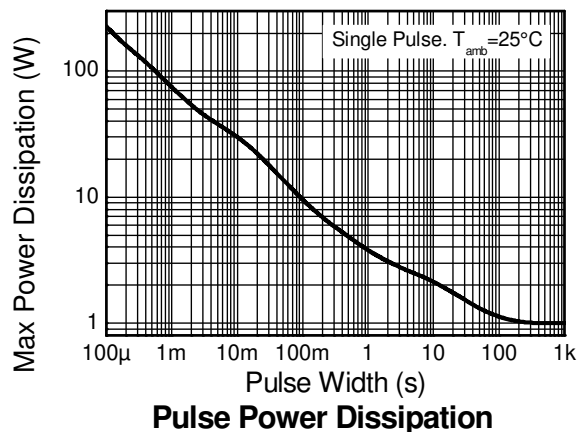
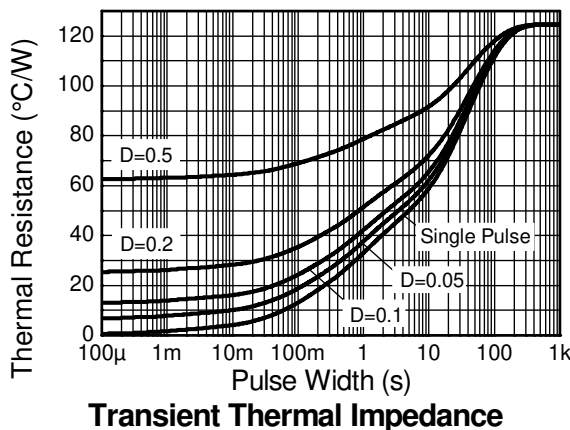
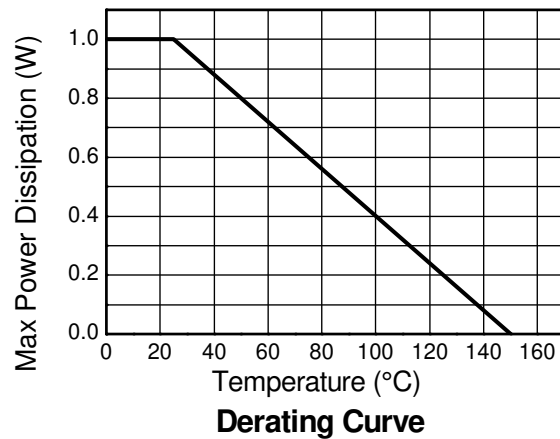
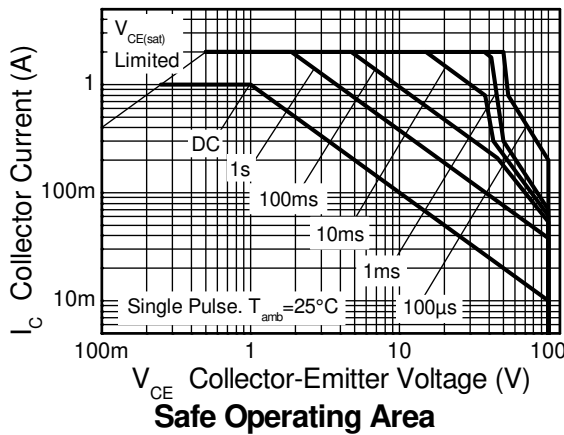
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	120	V
Collector-Emitter Voltage	V_{CEO}	100	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	1	A
Peak Pulse Current	I_{CM}	2	A
Continuous Base Current	I_B	200	mA

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

Characteristic	Symbol	Value	Unit
Collector Power Dissipation (Note 5)	P_D	1	W
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	125	$^\circ\text{C/W}$
Thermal Resistance, Junction to Leads (Note 6)	$R_{\theta JL}$	10.01	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	$^\circ\text{C}$

Notes: 5. For the device mounted on 15mm x 15mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
6. Thermal resistance from junction to solder-point (on the exposed collector pad).

Thermal Characteristics and Derating Information

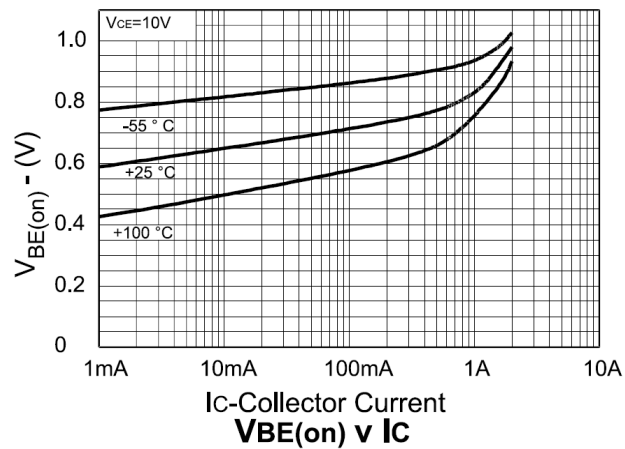
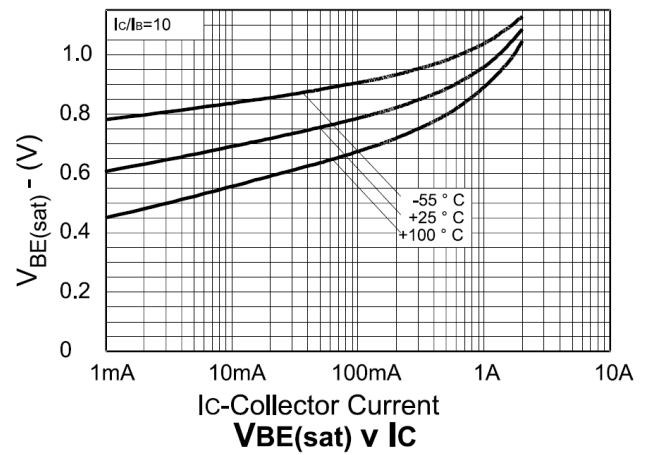
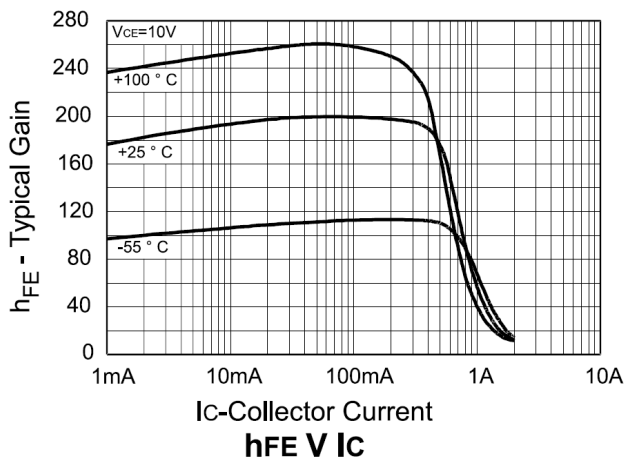
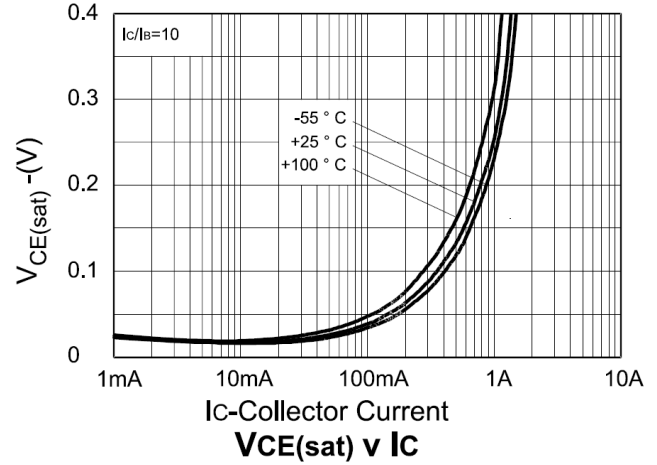
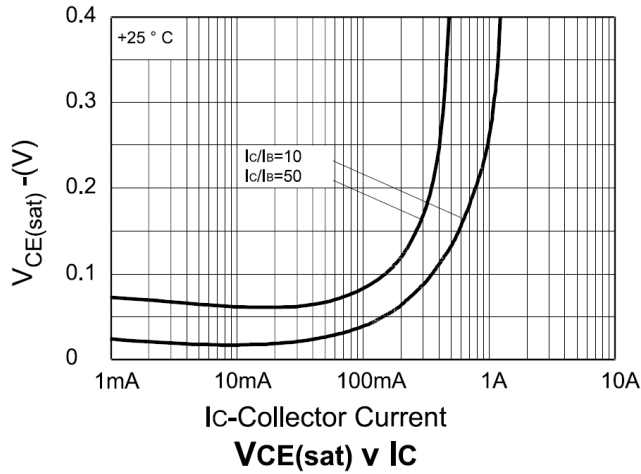


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CB0}	120	-	-	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 7)	BV _{CEO}	100	-	-	V	I _C = 1mA
Emitter-Base Breakdown Voltage	BV _{EBO}	7	-	-	V	I _E = 100μA
Collector Cutoff Current	I _{CB0}	-	-	100	nA	V _{CB} = 100V
Emitter Cutoff Current	I _{EBO}	-	-	100	nA	V _{EB} = 5V
Emitter Cutoff Current	I _{CES}	-	-	100	nA	V _{CES} = 100V
DC current transfer Static ratio (Note 7)	h _{FE}	100	-	-	-	I _C = 1mA, V _{CE} = 10V
		100	-	300		I _C = 250mA, V _{CE} = 10V
		60	-	-		I _C = 500mA, V _{CE} = 10V
		20	-	-		I _C = 1A, V _{CE} = 10V
Collector-Emitter Saturation Voltage (Note 7)	V _{CE(sat)}	-	-	0.3	V	I _C = 500mA, I _B = 50mA
		-	-	0.6		I _C = 1A, I _B = 100mA
Base-Emitter Saturation Voltage (Note 7)	V _{BE(sat)}	-	-	1.15	V	I _C = 1A, I _B = 100mA
Base-Emitter Turn-on Voltage (Note 7)	V _{BE(on)}	-	-	1.0	V	I _C = 1A, V _{CE} = 10V
Transitional Frequency	f _T	150	-	-	MHz	I _C = 50mA, V _{CE} = 10V f = 100MHz
Output capacitance	C _{obo}	-	-	10	pF	V _{CB} = 10V, f = 1MHz,

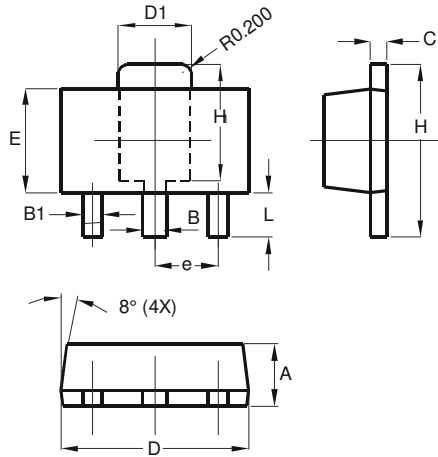
Notes: 7. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

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



Package Outline Dimensions

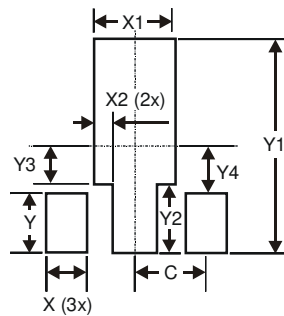
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



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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