

Features

- $BV_{CEO} = -30V$
- $I_C = -1A$ Continuous Current
- Low Saturation Voltage $V_{CE(sat)} < -0.35V$ @ $-1A$
- **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 [contact us](#) or your local Diodes representative.**

<https://www.diodes.com/quality/product-definitions/>

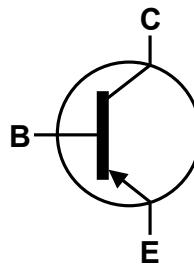
Mechanical Data

- 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 (E3)
- Weight: 0.05 grams (Approximate)

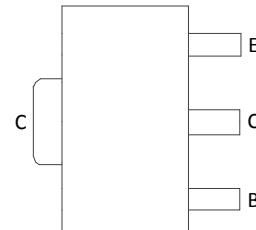
SOT89



Top View



Device Symbol



Top View
Pin Out

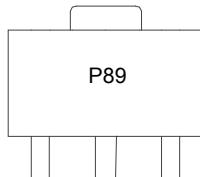
Ordering Information (Note 4)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity Per Reel
FCX589TA	Standard	P89	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



P89 = Product Type Marking Code

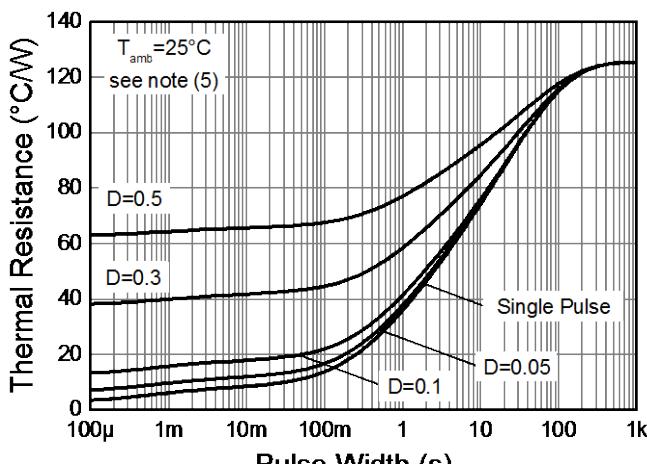
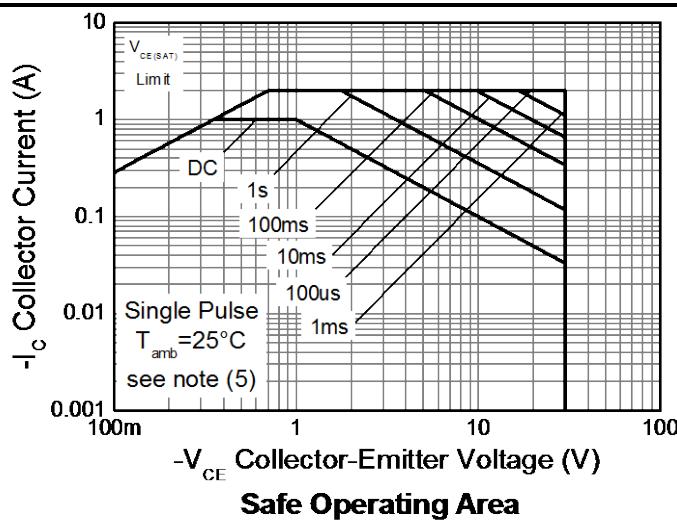
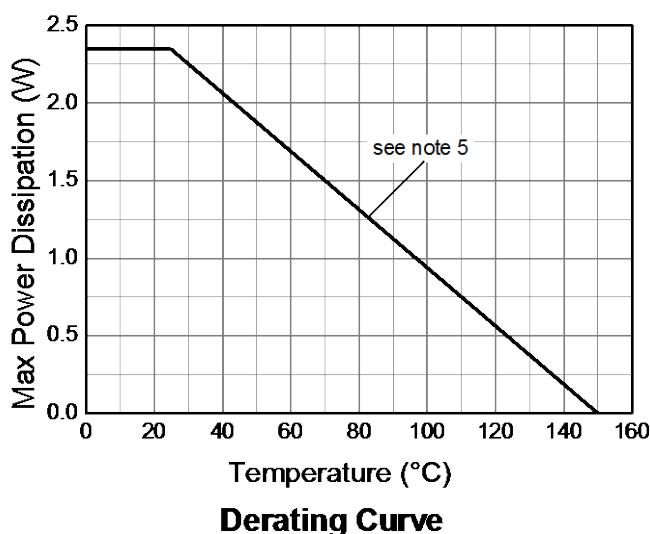
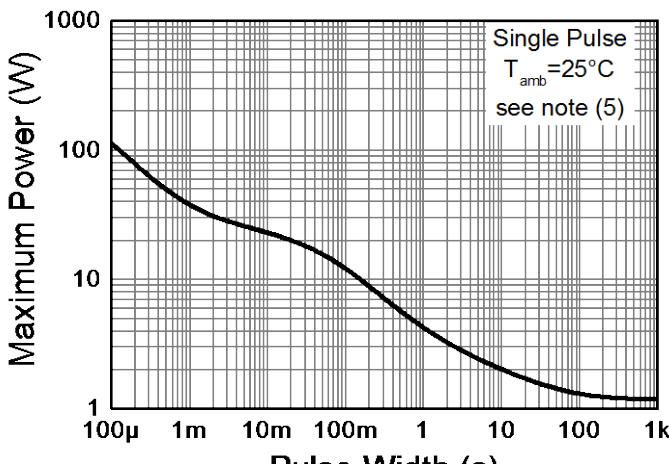
Absolute Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-50	V
Collector-Emitter Voltage	V_{CEO}	-30	V
Emitter-Base Voltage	V_{EBO}	-5	V
Continuous Collector Current	I_C	-1	A
Peak Pulse Current	I_{CM}	-2	A
Base Current	I_B	-200	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P_D	2.3	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

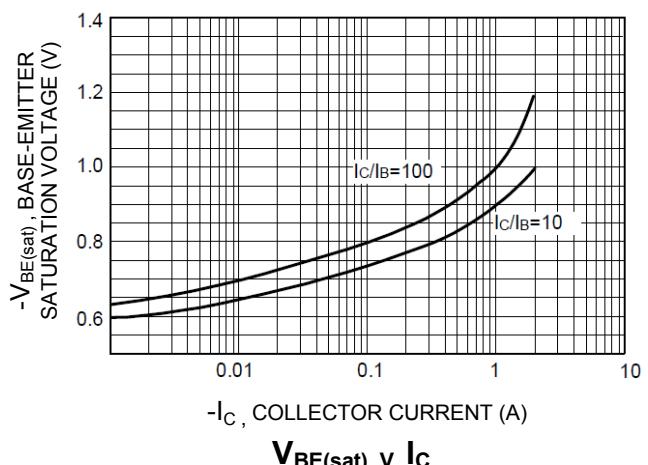
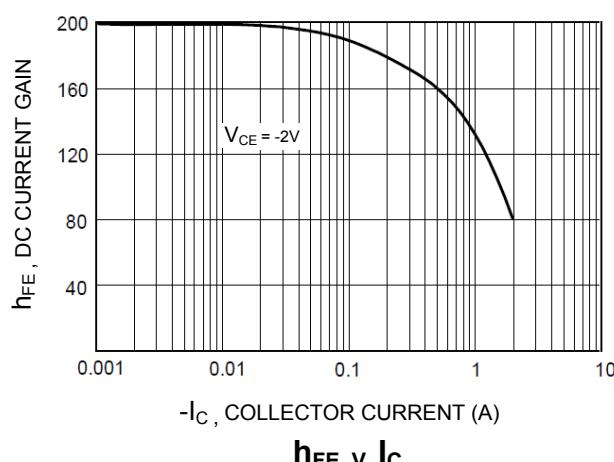
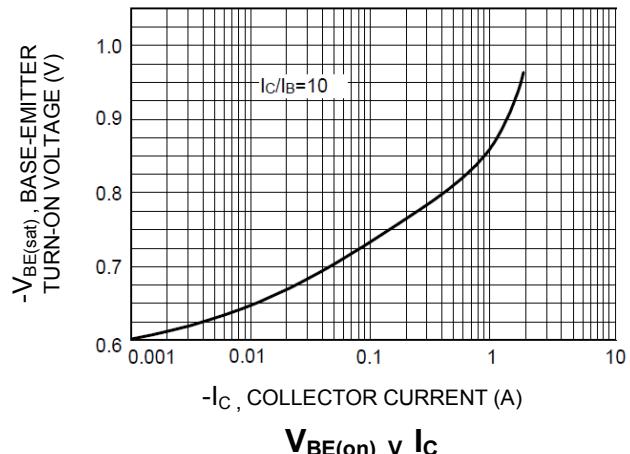
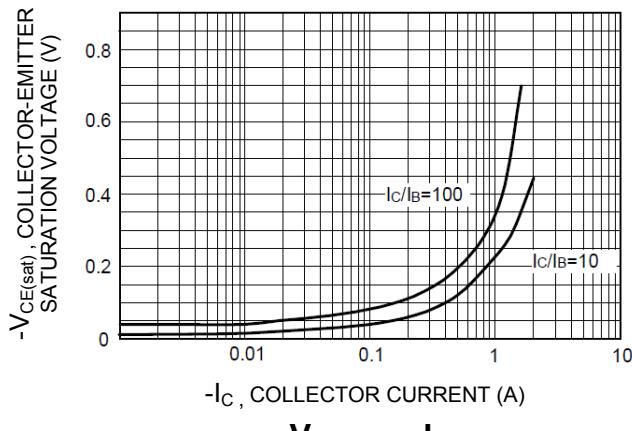
Notes: 5. For a device surface mounted on 25mm x 25mm x 0.6mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions; device measured when operating in steady state condition.

Thermal Characteristics and Derating Information

Transient Thermal Impedance

Pulse Power Dissipation

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-50	—	—	V	$I_C = -100\mu\text{A}$
Collector- Emitter Breakdown Voltage (Note 6)	BV_{CEO}	-30	—	—	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	—	—	V	$I_E = -100\mu\text{A}$
Collector Cut-Off Current	I_{CBO}	—	—	-100	nA	$V_{\text{CB}} = -30\text{V}$
Emitter Cut-Off Current	I_{EBO}	—	—	-100	nA	$V_{\text{EB}} = -4\text{V}$
Collector Emitter Cut-Off Current	I_{CES}	—	—	-100	nA	$V_{\text{CES}} = -30\text{V}$
Collector-Emitter Saturation Voltage (Note 6)	$V_{\text{CE(sat)}}$	—	—	-0.35 -0.65	V	$I_C = -1\text{A}, I_B = -100\text{mA}$ $I_C = -2\text{A}, I_B = -200\text{mA}$
Base-Emitter Saturation Voltage (Note 6)	$V_{\text{BE(sat)}}$	—	—	-1.2	V	$I_C = -1\text{A}, I_B = -100\text{mA}$
Base-Emitter Turn-On Voltage (Note 6)	$V_{\text{BE(on)}}$	—	—	-1.1	V	$I_C = -1\text{A}, V_{\text{CE}} = -2\text{V}$
DC Current Gain (Note 6)	h_{FE}	100 100 80 40	—	300	—	$I_C = -1\text{mA}, V_{\text{CE}} = -2\text{V}$ $I_C = -0.5\text{A}, V_{\text{CE}} = -2\text{V}$ $I_C = -1\text{A}, V_{\text{CE}} = -2\text{V}$ $I_C = -2\text{A}, V_{\text{CE}} = -2\text{V}$
Transistor frequency	f_T	100	—	—	MHz	$I_C = -100\text{mA}, V_{\text{CE}} = -5\text{V}$ $f = 100\text{MHz}$
Output Capacitance	C_{obo}	—	—	15	pF	$V_{\text{CB}} = -10\text{V}, f = 1\text{MHz}$

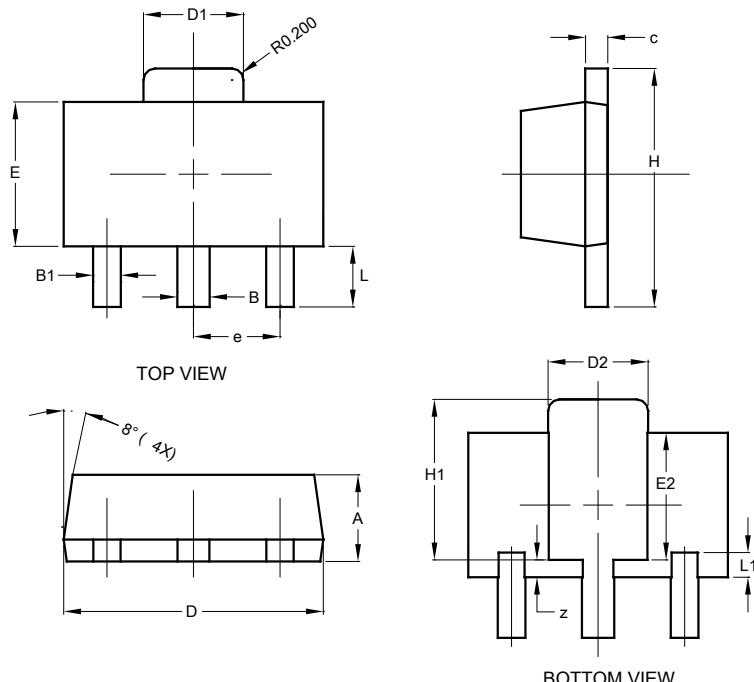
Note: 6. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

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


Package Outline Dimensions

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

SOT89

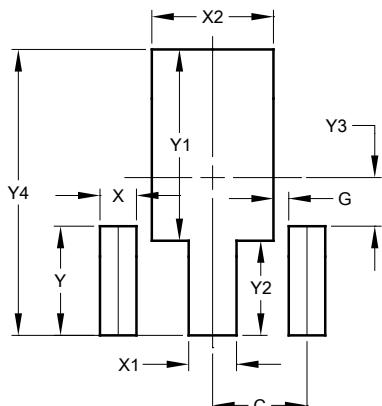


SOT89			
Dim	Min	Max	Typ
A	1.40	1.60	1.50
B	0.50	0.62	0.56
B1	0.42	0.54	0.48
c	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.62	1.83	1.733
D2	1.61	1.81	1.71
E	2.40	2.60	2.50
E2	2.05	2.35	2.20
e	-	-	1.50
H	3.95	4.25	4.10
H1	2.63	2.93	2.78
L	0.90	1.20	1.05
L1	0.327	0.527	0.427
z	0.20	0.40	0.30
All Dimensions in mm			

Suggested Pad Layout

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

SOT89



Dimensions	Value (in mm)
C	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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