

Features

- $BV_{CEO} = -25V$
- $I_C = -3A$ Continuous Current
- $I_{CM} = -10A$ Peak Pulse Current
- Low Saturation Voltage $V_{CE(sat)} < -80mV @ -0.1A$
- $R_{sat} = 67m\Omega$ for a Low Equivalent On-Resistance
- **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/>

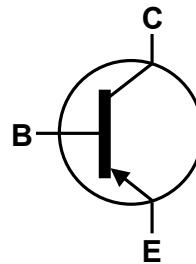
Mechanical Data

- 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 (3)
- Weight: 0.05 grams (Approximate)

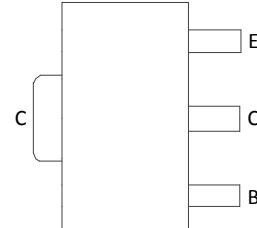
SOT89



Top View



Device Symbol



Top View
Pin Out

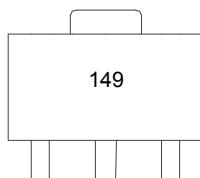
Ordering Information (Note 4)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity Per Reel
FCX1149ATA	Standard	149	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



149 = 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}	-30	V
Collector-Emitter Voltage	V_{CEO}	-25	V
Emitter-Base Voltage	V_{EBO}	-5	V
Continuous Collector Current	I_C	-3	A
Peak Pulse Collector Current (single pulse)	I_{CM}	-10	A
Base Current	I_B	-500	A

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	1	W
Power Dissipation (Note 6)	P_D	2	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

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}	-30	—	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage	BV_{CES}	-25	—	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 7)	BV_{CEO}	-25	—	—	V	$I_C = -10\text{mA}$
Collector-Emitter Breakdown Voltage	BV_{CEV}	-25	—	—	V	$I_C = -100\mu\text{A}, V_{BE} = +1\text{V}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	—	—	V	$I_E = -100\mu\text{A}$
Collector Cutoff Current	I_{CBO}	—	-0.3	-100	nA	$V_{CB} = -24\text{V}$
Emitter Cutoff Current	I_{EBO}	—	-0.3	-100	nA	$V_{EB} = -4\text{V}$
Collector Emitter Cutoff Current	I_{CES}	—	-0.3	-100	nA	$V_{CES} = -20\text{V}$
Collector-Emitter Saturation Voltage (Note 7)	$V_{CE(\text{sat})}$	—	-45 -100 -140 -200 -230	-80 -170 -240 -300 -350	mV	$I_C = -0.1\text{A}, I_B = -1\text{mA}$ $I_C = -0.5\text{A}, I_B = -3\text{mA}$ $I_C = -1\text{A}, I_B = -7\text{mA}$ $I_C = -3\text{A}, I_B = -100\text{mA}$ $I_C = -4\text{A}, I_B = -140\text{mA}$
Base-Emitter Saturation Voltage (Note 7)	$V_{BE(\text{sat})}$	—	-930	-1050	mV	$I_C = -3\text{A}, I_B = -100\text{mA}$
Base-Emitter Turn-On Voltage (Note 7)	$V_{BE(\text{on})}$	—	-840	-1000	mV	$I_C = -3\text{A}, V_{CE} = -2\text{V}$
DC Current Gain (Note 7)	h_{FE}	270 250 150 115 —	450 400 260 190 50	— 800 — — —	—	$I_C = -10\text{mA}, V_{CE} = -2\text{V}$ $I_C = -0.5\text{A}, V_{CE} = -2\text{V}$ $I_C = -3\text{A}, V_{CE} = -2\text{V}$ $I_C = -5\text{A}, V_{CE} = -2\text{V}$ $I_C = -10\text{A}, V_{CE} = -2\text{V}$
Transitional frequency	f_T	—	135	—	MHz	$I_C = -50\text{mA}, V_{CE} = -10\text{V}$ $f = 50\text{MHz}$
Output Capacitance	C_{obo}	—	50	—	pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}$
Switching Time	t_{on} t_{off}	—	150 270	—	ns	$I_C = -4\text{A}, V_{CC} = -10\text{V},$ $I_{B1} = -I_{B2} = -40\text{mA}$

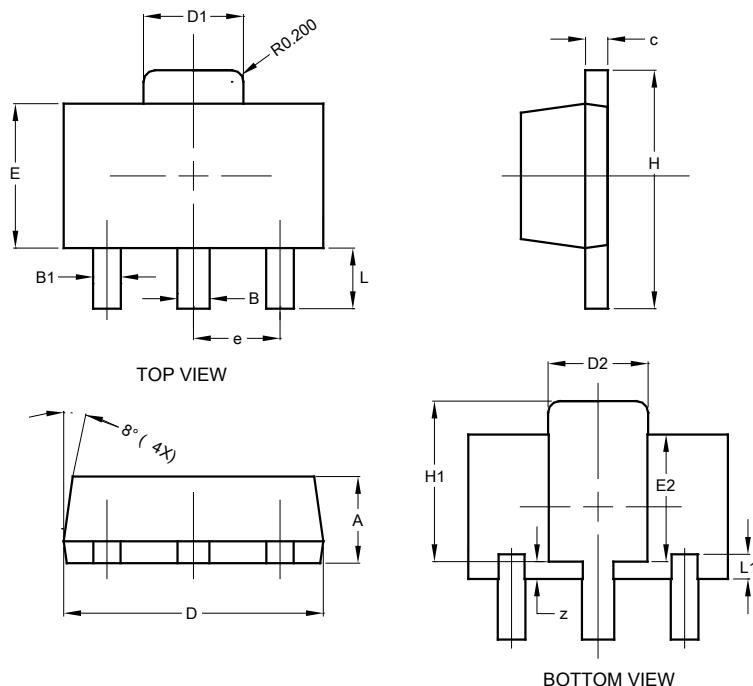
Notes:

- For a device surface mounted on 15mm x 15mm x 0.6mm 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 40mm x 40mm x 0.6mm single sided 1oz weight copper.
- Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

Package Outline Dimensions

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

SOT89



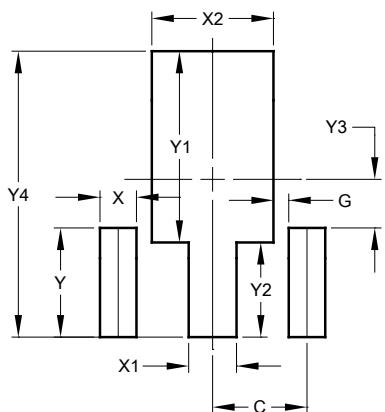
SOT89			
Dim	Min	Max	Typ
A	1.40	1.60	1.50
B	0.50	0.62	0.56
B1	0.42	0.54	0.48
c	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.62	1.83	1.733
D2	1.61	1.81	1.71
E	2.40	2.60	2.50
E2	2.05	2.35	2.20
e	-	-	1.50
H	3.95	4.25	4.10
H1	2.63	2.93	2.78
L	0.90	1.20	1.05
L1	0.327	0.527	0.427
z	0.20	0.40	0.30

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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