FCX491A

40V NPN SILICON PLANAR MEDIUM POWER TRANSISTOR IN SOT89

Features

- $V_{(BR)CEO}$ > 40V
- High current capability I_C = 1A
- Low saturation voltage $V_{CE(sat)}$ < 500mV @ 1A
- Complementary PNP type: FCX591A
- "Lead Free", RoHS Compliant (Note 1)

Mechanical Data

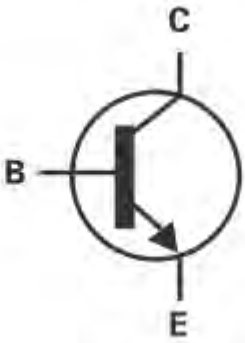
- Case: SOT89
- Moisture Sensitivity: Level 1 per J-STD-020
- UL Flammability Rating 94V-0
- Terminals: Matte Tin Finish
- Weight: 0.052 grams (Approximate)

Application

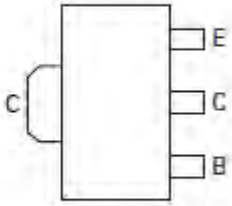
- Power MOSFET gate driving
- Low loss power switching

SOT89

Top View



Device symbol



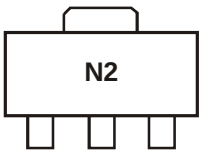
Pin-out Top

Ordering Information (Note 2)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FCX491ATA	N2	7	12mm	1000
FCX491A-7 (Note 3)	N2	7	12mm	1000

Notes: 1. No purposefully added lead.
2. For packaging details, go to our website at http://www.diodes.com.
3. Halogen and Antimony Free. "Green" devices, Diodes Inc's "Green" Policy can be found on our website at http://www.diodes.com

Marking Information



N2 = Product Type Marking Code

Maximum Ratings @T_A = 25°C unless otherwise specified

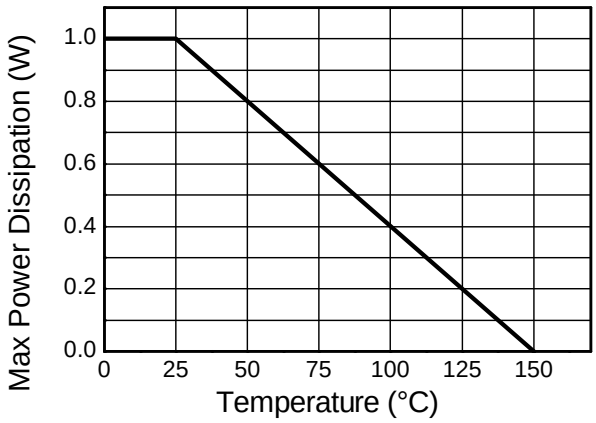
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	40	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	5	V
Continuous Collector Current	I_C	1	A
Peak Pulse Current	I_{CM}	2	A

Thermal Characteristics

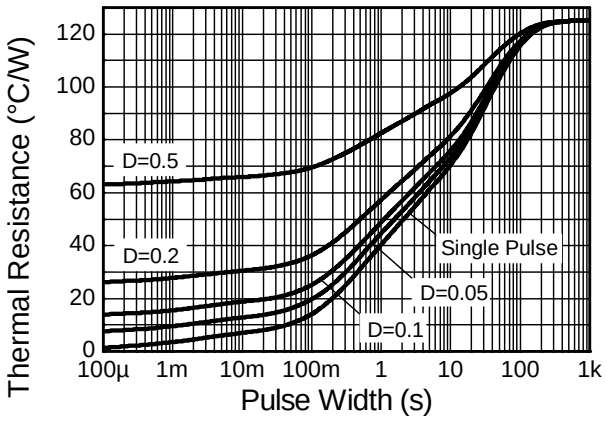
Characteristic	Symbol	Value	Unit
Collector Power Dissipation	P_D	1	W
Thermal Resistance, Junction to Ambient Air (Note 4) @ T_A = 25°C	$R_{\theta JA}$	125	°C/W
Operating and Storage Temperature Range	T_J,T_{STG}	-65 to +150	°C

Notes: 4. 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.

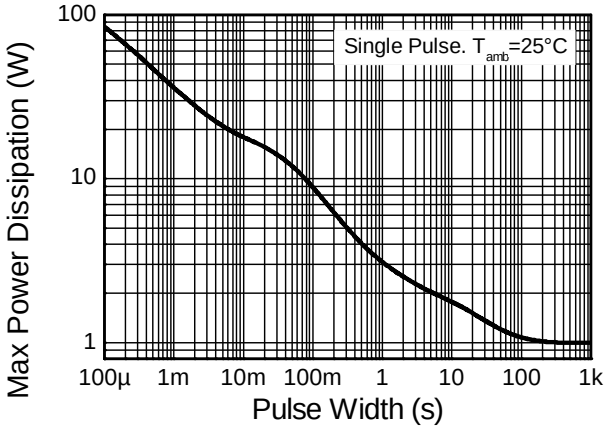
Thermal Characteristics



Derating Curve



Transient Thermal Impedance



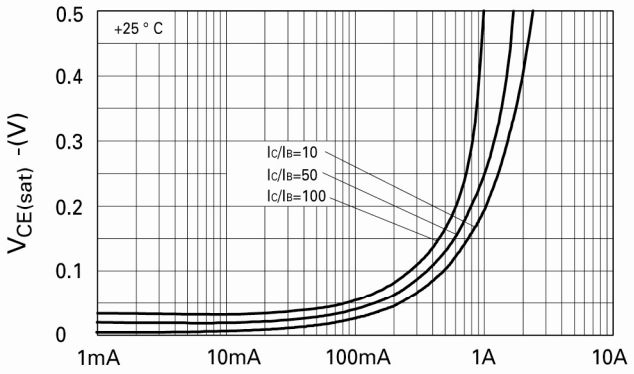
Pulse Power Dissipation

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	40	-	-	V	I_C = 100µA
Collector-Emitter Breakdown Voltage (Note 5)	BV_{CEO}	40	-	-	V	I_C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	5	-	-	V	I_E = 100µA
Collector Cutoff Current	I_{CBO}	-	-	100	nA	V_{CB} = 30V
Emitter Cutoff Current	I_{EBO}	-	-	100	nA	V_{EB} = 4V
Emitter Cutoff Current	I_{CES}	-	-	100	nA	V_{CE} = 30V
DC current transfer Static ratio (Note 5)	h_{FE}	300 300 200 35	- - - -	- 900 - -	-	I_C = 1mA, V_{CE} = 5V I_C = 500mA, V_{CE} = 5V I_C = 1A, V_{CE} = 5V I_C = 2A, V_{CE} = 5V
Collector-Emitter Saturation Voltage (Note 5)	$V_{CE(sat)}$	- -	- -	0.3 0.5	V	I_C = 500mA, I_B = 50mA I_C = 1A, I_B = 100mA
Base-Emitter Saturation Voltage (Note 5)	$V_{BE(sat)}$	-	-	1.1	V	I_C = 1A, I_B = 100mA
Base-Emitter Turn-on Voltage (Note 5)	$V_{BE(on)}$	-	-	1.0	V	I_C = 1A, V_{CE} = 5V
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,

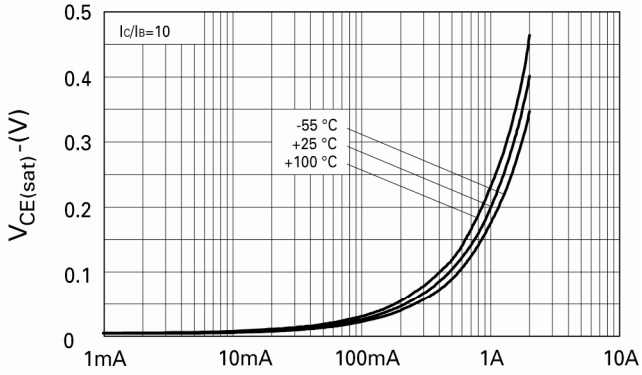
Notes: 5. Measured under pulsed conditions. Pulse width = 300µs. Duty cycle ≤2%.

Typical Characteristics



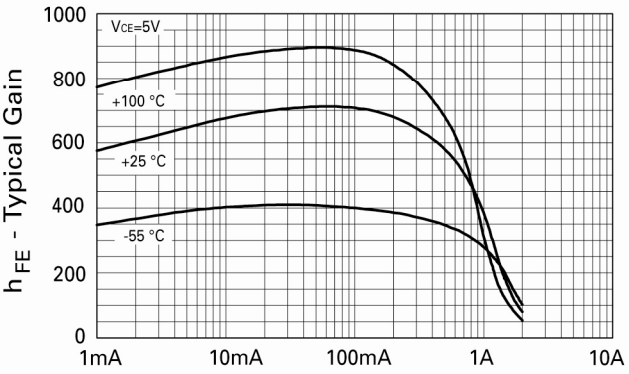
IC-Collector Current

VCE(sat) v IC



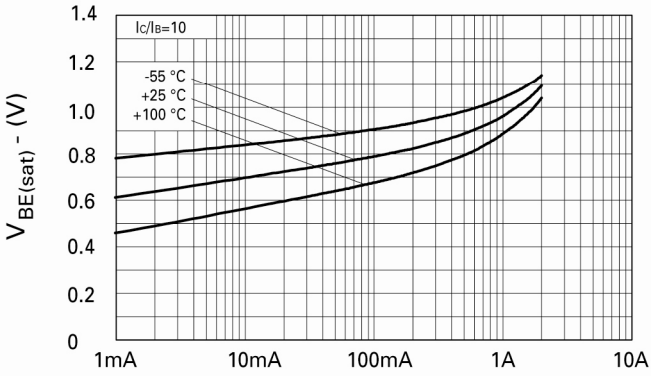
IC-Collector Current

VCE(sat) v IC



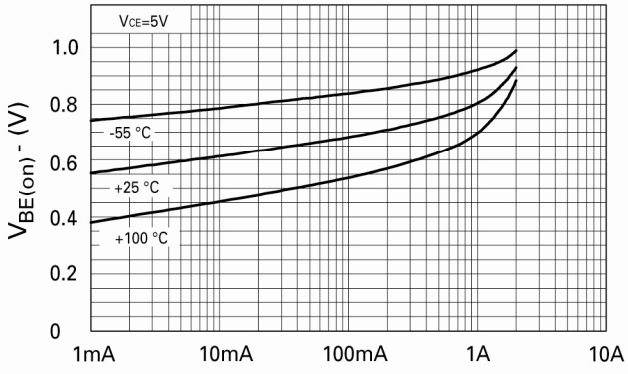
IC-Collector Current

hFE V IC



IC-Collector Current

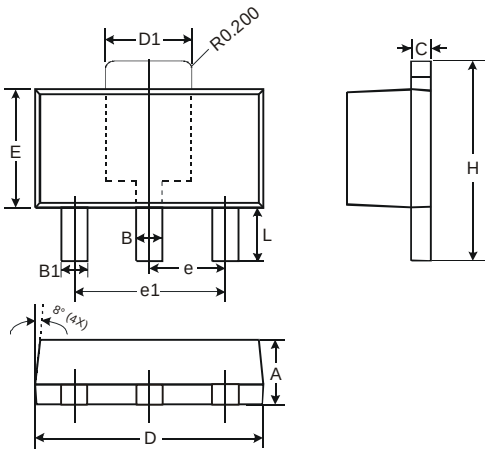
VBE(sat) v IC



IC-Collector Current

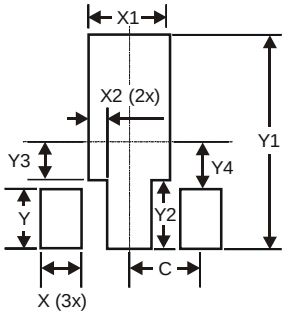
VBE(on) v IC

Package Outline Dimensions



SOT89		
Dim	**Min**	Max
A	1.40	1.60
B	0.44	0.62
B1	0.35	0.54
C	0.35	0.43
D	4.40	4.60
D1	1.52	1.83
E	2.29	2.60
e	1.50 Typ	
e1	3.00 Typ	
H	3.94	4.25
L	0.89	1.20
All Dimensions in mm		

Suggested Pad Layout



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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