

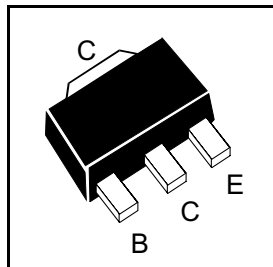
# SOT89 PNP SILICON POWER (SWITCHING) TRANSISTOR

ISSUE 1 - DECEMBER 1998

## FCX1147A

### FEATURES

- \* **2W POWER DISSIPATION**
- \* 20A Peak Pulse Current
- \* Excellent  $H_{FE}$  Characteristics up to 20 Amps
- \* Extremely Low Saturation Voltage E.g. 25mv Typ.
- \* Extremely Low Equivalent On-resistance;  
 **$R_{CE(sat)}$  53m $\Omega$  at 3A**



Complimentary Type - FCX1047A  
Partmarking Detail - 147

### ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	$V_{CBO}$	-15	V
Collector-Emitter Voltage	$V_{CEO}$	-12	V
Emitter-Base Voltage	$V_{EBO}$	-5	V
Peak Pulse Current **	$I_{CM}$	-20	A
Continuous Collector Current	$I_C$	-3	A
Base Current	$I_B$	-500	mA
Power Dissipation at $T_{amb}=25^{\circ}C$	$P_{tot}$	1 † 2 ‡	W W
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +150	$^{\circ}C$

† recommended  $P_{tot}$  calculated using FR4 measuring 15x15x0.6mm

‡ Maximum power dissipation is calculated assuming that the device is mounted on FR4 substrate measuring 40x40x0.6mm and using comparable measurement methods adopted by other suppliers.

\*\*Measured under pulsed conditions. Pulse width=300 $\mu$ s. Duty cycle  $\leq$  2%

Spice parameter data is available upon request for these devices.

Refer to the handling instructions for soldering surface mount components.

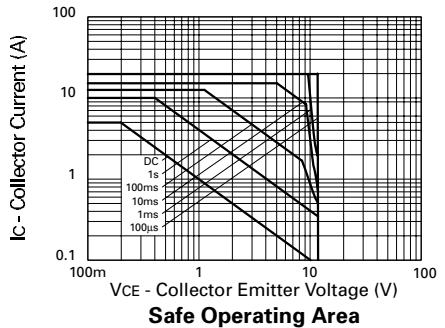
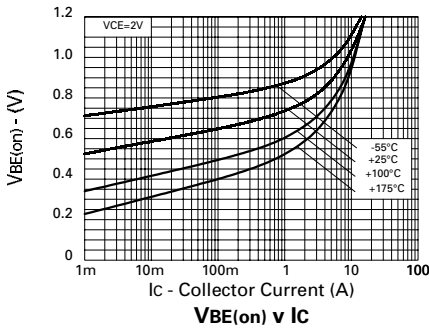
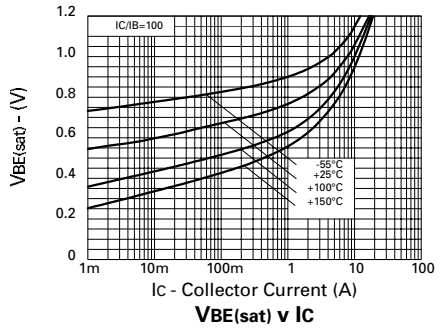
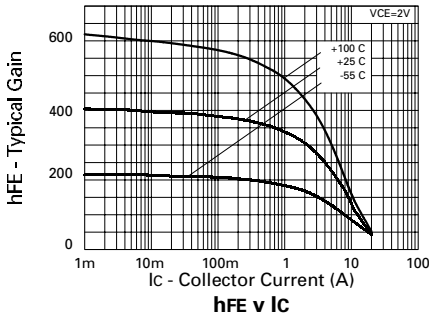
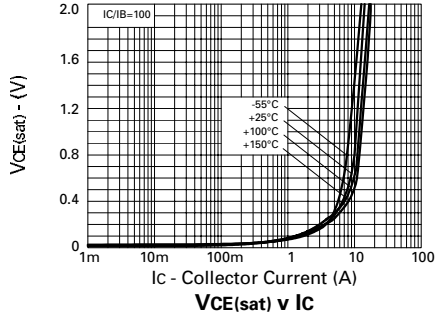
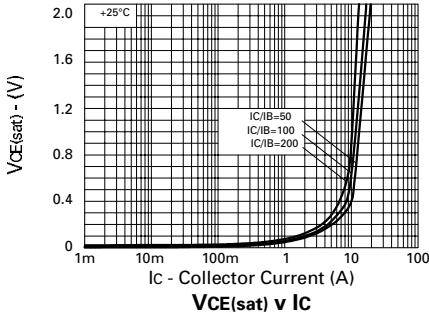
# FCX1147A

## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated).

PARAMETER	SYMBOL	VALUE			UNIT	CONDITIONS.
		MIN.	TYP.	MAX.		
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-15			V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CES}$	-12			V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-12			V	$I_C = -10\text{mA}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEV}$	-12			V	$I_C = -100\mu\text{A}, V_{EB} = +1\text{V}$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5			V	$I_E = -100\mu\text{A}$
Collector Cut-Off Current	$I_{CBO}$		-0.3	-10	nA	$V_{CB} = -12\text{V}$
Emitter Cut-Off Current	$I_{EBO}$		-0.3	-10	nA	$V_{EB} = -4\text{V}$
Collector Emitter Cut-Off Current	$I_{CES}$		-0.3	-10	nA	$V_{CES} = -10\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-25 -70 -90 -115 -160 -250	-50 -110 -130 -170 -250 -400	mV	$I_C = -0.1\text{A}, I_B = -1\text{mA}^*$ $I_C = -0.5\text{A}, I_B = -2.5\text{mA}^*$ $I_C = -1\text{A}, I_B = -6\text{mA}^*$ $I_C = -2\text{A}, I_B = -20\text{mA}^*$ $I_C = -3\text{A}, I_B = -30\text{mA}^*$ $I_C = -5\text{A}, I_B = -50\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-820	-1000	mV	$I_C = -3\text{A}, I_B = -30\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-770	-950	mV	$I_C = -3\text{A}, V_{CE} = -2\text{V}^*$
Static Forward Current Transfer Ratio	$h_{FE}$	270 250 200 200 150 90	450 400 340 300 245 145 50	850		$I_C = -10\text{mA}, V_{CE} = -2\text{V}^*$ $I_C = -0.5\text{A}, V_{CE} = -2\text{V}^*$ $I_C = -2.0\text{A}, V_{CE} = -2\text{V}^*$ $I_C = -3.0\text{A}, V_{CE} = -2\text{V}^*$ $I_C = -5.0\text{A}, V_{CE} = -2\text{V}^*$ $I_C = -10.0\text{A}, V_{CE} = -2\text{V}^*$ $I_C = -20.0\text{A}, V_{CE} = -2\text{V}^*$
Transition Frequency	$f_T$		115		MHz	$I_C = -50\text{mA}, V_{CE} = -10\text{V}$ $f = 50\text{MHz}$
Output Capacitance	$C_{cb}$		80		pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}$
Switching Times	$t_{on}$		150		ns	$I_C = -4\text{A}, I_B = -40\text{mA},$ $V_{CC} = -10\text{V}$
	$t_{off}$		220		ns	$I_C = -4\text{A}, I_B = -40\text{mA},$ $V_{CC} = -10\text{V}$

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

## TYPICAL CHARACTERISTICS





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