

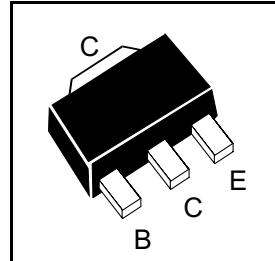
**SOT89 NPN SILICON POWER  
(SWITCHING) TRANSISTOR**  
ISSUE 1 - NOVEMBER 1998

**FCX688B**

**FEATURES**

- \* **2W POWER DISSIPATION**
- \* 10A Peak Pulse Current
- \* Excellent  $H_{FE}$  Characteristics up to 10 Amps
- \* Extremely Low Saturation Voltage

Complimentary Type - FCX789A  
Partmarking Detail - 688



**ABSOLUTE MAXIMUM RATINGS.**

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	$V_{CBO}$	12	V
Collector-Emitter Voltage	$V_{CEO}$	12	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Peak Pulse Current **	$I_{CM}$	10	A
Continuous Collector Current	$I_C$	3	A
Power Dissipation at $T_{amb}=25^\circ\text{C}$	$P_{tot}$	1 † 2 ‡	W W
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +150	°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=300μs. Duty cycle ≤ 2%

Spice parameter data is available upon request for these devices

Refer to the handling instructions for soldering surface mount components.

# FCX688B

## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^\circ C$ )

PARAMETER	SYMBOL	Min	Typ	Max	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	12			V	$I_C=100\mu A$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	12			V	$I_C=10mA^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5			V	$I_E=100\mu A$
Collector Cut-Off Current	$I_{CBO}$			0.1	$\mu A$	$V_{CB}=9V$
Emitter Cut-Off Current	$I_{EBO}$			0.1	$\mu A$	$V_{EB}=4V$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			40 60 180 350 400	mV	$I_C=0.1A, I_B=1mA^*$ $I_C=0.1A, I_B=0.5mA^*$ $I_C=1A, I_B=10mA^*$ $I_C=3A, I_B=10mA^*$ $I_C=4A, I_B=50mA^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			1.1	V	$I_C=3A, I_B=20mA^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$			1.0	V	$I_C=3A, V_{CE}=2V^*$
Static Forward Current Transfer Ratio	$h_{FE}$	500 400 100				$I_C=100mA, V_{CE}=2V^*$ $I_C=3A, V_{CE}=2V^*$ $I_C=10A, V_{CE}=2V^*$
Transition Frequency	$f_T$	150			MHz	$I_C=50mA, V_{CE}=5V$ $f=50MHz$
Input Capacitance	$C_{ibo}$		200		pF	$V_{EB}=0.5V, f=1MHz$
Output Capacitance	$C_{obo}$		40		pF	$V_{CB}=10V, f=1MHz$
Switching Times	$t_{on}$ $t_{off}$		40 500		ns ns	$I_C=500mA, I_B=I_{B2}=50mA$ $V_{CC}=10V$

\*Measured under pulsed conditions. Pulse width=300μs. Duty cycle ≤2%

# FCX688B

## TYPICAL CHARACTERISTICS

