

SOT89 NPN SILICON POWER (SWITCHING) TRANSISTOR

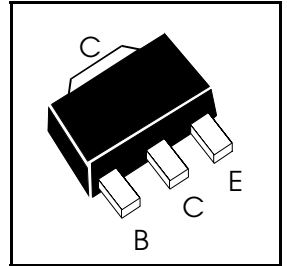
ISSUE 1 - MARCH 1999

FCX690B

FEATURES

- * **2W POWER DISSIPATION**
- * 6A Peak Pulse Current
- * Gain of 400 @ $I_C=1\text{Amp}$
- * Very Low Saturation Voltage

Complimentary Type - FCX790A
Partmarking Detail - 690



ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	45	V
Collector-Emitter Voltage	V_{CEO}	45	V
Emitter-Base Voltage	V_{EBO}	5	V
Peak Pulse Current **	I_{CM}	6	A
Continuous Collector Current	I_C	2	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	$^\circ\text{C}$

† 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 μs . Duty cycle $\leq 2\%$

Spice parameter data is available upon request for these devices

Refer to the handling instructions for soldering surface mount components.

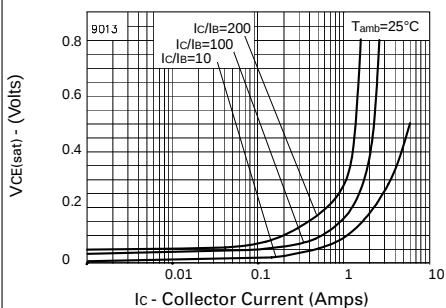
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ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$)

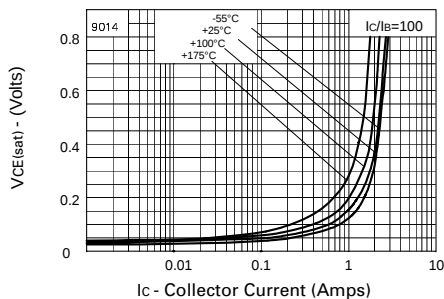
PARAMETER	SYMBOL	Min	Typ	Max	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	45			V	$I_C=100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	45			V	$I_C=10\text{mA}^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5			V	$I_E=100\mu\text{A}$
Collector Cut-Off Current	I_{CBO}			0.1	μA	$V_{CB}=35\text{V}$
Emitter Cut-Off Current	I_{EBO}			0.1	μA	$V_{EB}=4\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			80 300	mV mV	$I_C=0.1\text{A}, I_B=0.5\text{mA}^*$ $I_C=1\text{A}, I_B=5\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			0.9	V	$I_C=1\text{A}, I_B=10\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$			0.85	V	$I_C=1\text{A}, V_{CE}=2\text{V}^*$
Static Forward Current Transfer Ratio	h_{FE}	500 400 150				$I_C=100\text{mA}, V_{CE}=2\text{V}^*$ $I_C=1\text{A}, V_{CE}=2\text{V}^*$ $I_C=2\text{A}, V_{CE}=2\text{V}^*$
Transition Frequency	f_T	150			MHz	$I_C=50\text{mA}, V_{CE}=5\text{V}$ $f=50\text{MHz}$
Input Capacitance	C_{ibo}		200		pF	$V_{EB}=0.5\text{V}, f=1\text{MHz}$
Output Capacitance	C_{obo}		16		pF	$V_{CB}=10\text{V}, f=1\text{MHz}$
Switching Times	t_{on} t_{off}		33 1300		ns ns	$I_C=500\text{mA}, I_{B1}=I_{B2}=50\text{mA}$ $V_{CC}=10\text{V}$

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

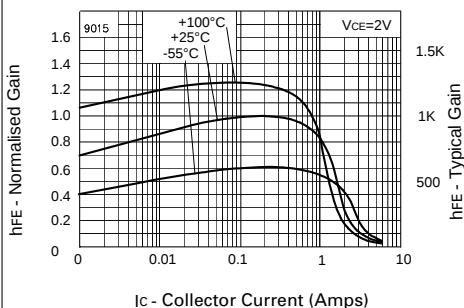
TYPICAL CHARACTERISTICS



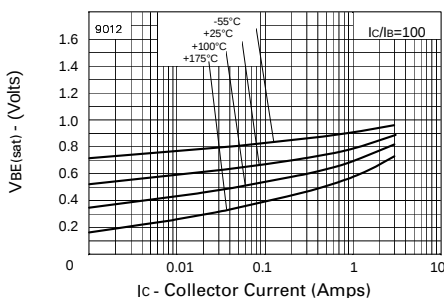
$V_{CE(sat)}$ v I_C



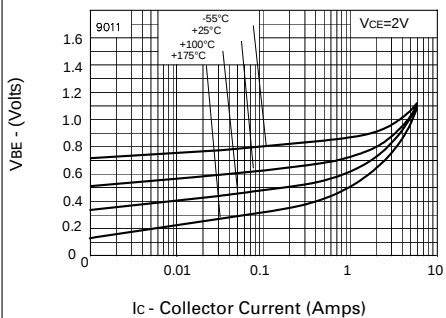
$V_{CE(sat)}$ v I_C



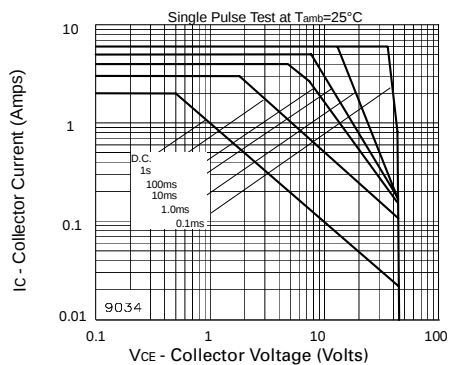
hFE v I_C



$V_{BE(sat)}$ v I_C



$V_{BE(on)}$ v I_C



Safe Operating Area