

# SOT89 PNP SILICON POWER (SWITCHING) TRANSISTOR

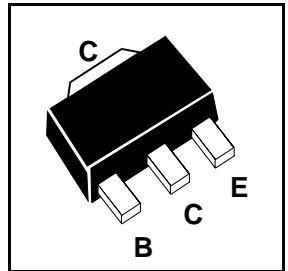
ISSUE 3 - OCTOBER 2005

FCX790A

## FEATURES

- \* 2W POWER DISSIPATION
- \* 6A Peak Pulse Current
- \* Excellent  $H_{FE}$  Characteristics
- \* Low Saturation Voltages

Partmarking Detail - 790



## ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	$V_{CBO}$	-50	V
Collector-Emitter Voltage	$V_{CEO}$	-40	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 $T_{amb}=25^{\circ}C$	$P_{tot}$	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 when soldering surface mount components.

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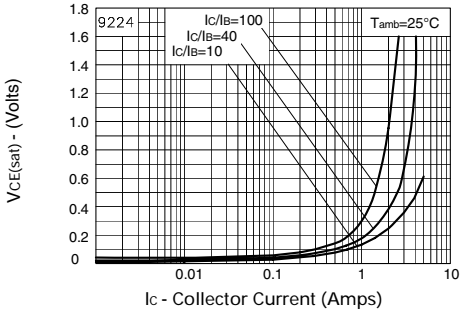
## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ )

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-50			V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-40			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	$\mu\text{A}$	$V_{CB} = -30\text{V}$
Emitter Cut-Off Current	$I_{EBO}$			-0.1	$\mu\text{A}$	$V_{EB} = -4\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			-250 -350 -450	mV mV mV	$I_C = -0.5\text{A}, I_B = -5\text{mA}^*$ $I_C = -1\text{A}, I_B = -10\text{mA}^*$ $I_C = -2\text{A}, I_B = -50\text{mA}^*$
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	$V_{BE(on)}$		-0.8		V	$I_C = -1\text{A}, V_{CE} = -2\text{V}^*$
Static Forward Current Transfer Ratio	$h_{FE}$	300 250 200 150		800		$I_C = -10\text{mA}, V_{CE} = -2\text{V}$ $I_C = -500\text{mA}, V_{CE} = -2\text{V}^*$ $I_C = -1\text{A}, V_{CE} = -2\text{V}^*$ $I_C = -2\text{A}, V_{CE} = -2\text{V}^*$
Transition Frequency	$f_T$	100			MHz	$I_C = -50\text{mA}, V_{CE} = -5\text{V}$ $f = 50\text{MHz}$
Input Capacitance	$C_{ibo}$		225		pF	$V_{EB} = -0.5\text{V}, f = 1\text{MHz}$
Output Capacitance	$C_{obo}$		24		pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}$
Switching Times	$t_{on}$ $t_{off}$		35 600		ns ns	$I_C = -500\text{mA}, I_{B1} = -50\text{mA}$ $I_{B2} = -50\text{mA}, V_{CC} = -10\text{V}$

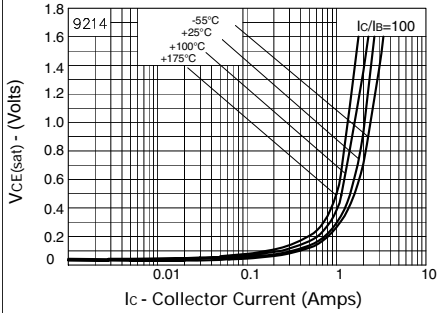
\*Measured under pulsed conditions. Pulse width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$

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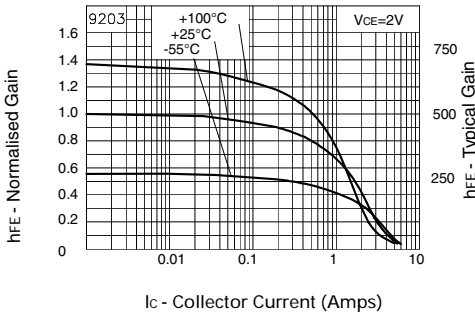
## TYPICAL CHARACTERISTICS



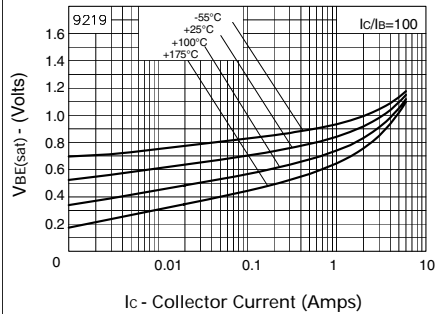
**$V_{CE(sat)}$  v  $I_C$**



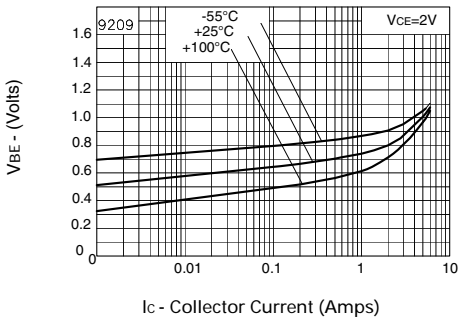
**$V_{CE(sat)}$  v  $I_C$**



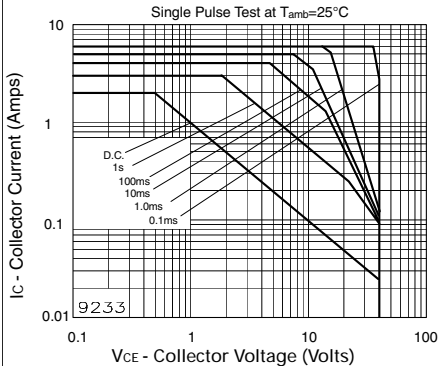
**$h_{FE}$  v  $I_C$**



**$V_{BE(sat)}$  v  $I_C$**



**$V_{BE(on)}$  v  $I_C$**



**Safe Operating Area**