

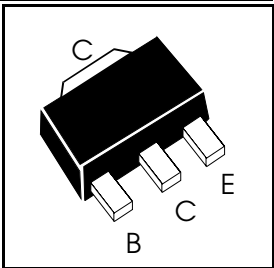
**SOT89 NPN SILICON POWER
(SWITCHING) TRANSISTOR**

ISSUE 5 - SEPTEMBER 1999

FEATURES

- * **2W POWER DISSIPATION**
- * 6A PEAK PULSE CURRENT
- * EXCELLENT h_{FE} CHARACTERISTICS UP TO 6 Amps
- * EXTREMELY LOW SATURATION VOLTAGE e.g. 13mV typ.
- * EXTREMELY LOW EQUIVALENT ON-RESISTANCE;
- * $R_{CE(sat)}$ **87m Ω at 2.75A**

COMPLIMENTARY TYPE - FCX720
PARTMARKING DETAIL - 619



ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	50	V
Collector-Emitter Voltage	V_{CEO}	50	V
Emitter-Base Voltage	V_{EBO}	5	V
Peak Pulse Current	I_{CM}	6	A
Continuous Collector Current	I_C	2.75	A
Base Current	I_B	500	mA
Power Dissipation at $T_{amb}=25^{\circ}C$	P_{tot}	1† 2‡	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 μ 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.

FCX619

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	50	190		V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	50	65		V	$I_C = 10\text{mA}^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	8.3		V	$I_E = 100\mu\text{A}$
Collector Cut-Off Current	I_{CBO}			100	nA	$V_{CB} = 40\text{V}$
Emitter Cut-Off Current	I_{EBO}			100	nA	$V_{EB} = 4\text{V}$
Collector Emitter Cut-Off Current	I_{CES}			100	nA	$V_{CES} = 40\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$		13 150 190 240	25 220 260 320	mV mV mV mV	$I_C = 0.1\text{A}, I_B = 10\text{mA}^*$ $I_C = 1\text{A}, I_B = 10\text{mA}^*$ $I_C = 2\text{A}, I_B = 50\text{mA}^*$ $I_C = 2.75\text{A}, I_B = 100\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$		0.97	1.1	V	$I_C = 2.75\text{A}, I_B = 100\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(ON)}$		0.89	1.0	V	$I_C = 2.75\text{A}, V_{CE} = 2\text{V}^*$
Static Forward Current Transfer Ratio	h_{FE}	200 300 200 100	400 450 400 200 30			$I_C = 10\text{mA}, V_{CE} = 2\text{V}^*$ $I_C = 200\text{mA}, V_{CE} = 2\text{V}^*$ $I_C = 1\text{A}, V_{CE} = 2\text{V}^*$ $I_C = 2\text{A}, V_{CE} = 2\text{V}^*$ $I_C = 6\text{A}, V_{CE} = 2\text{V}^*$
Transition Frequency	f_T	100	165		MHz	$I_C = 50\text{mA}, V_{CE} = 10\text{V}$ $f = 100\text{MHz}$
Output Capacitance	C_{OBO}		12	20	pF	$V_{CB} = 10\text{V}, f = 1\text{MHz}$
Turn-On Time	$t_{(ON)}$		170		ns	$V_{CC} = 10\text{V}, I_C = 1\text{A}$
Turn-Off Time	$t_{(OFF)}$		750		ns	$I_{B1} = -I_{B2} = 10\text{mA}$

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

Spice parameter data is available upon request for this device

TYPICAL CHARACTERISTICS

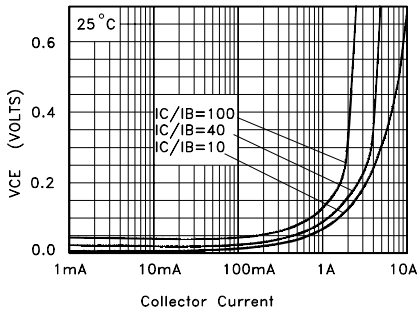


FIG. 1 $V_{CE(SAT)}$ vs I_C

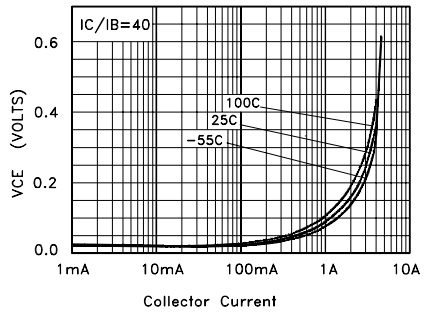


FIG. 2 $V_{CE(SAT)}$ vs I_C

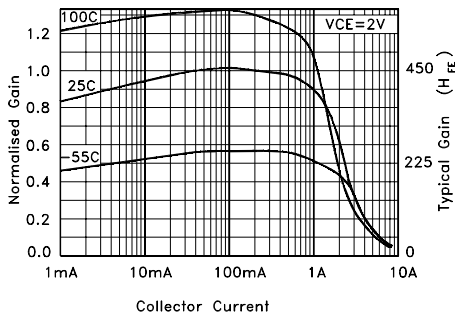


FIG. 3 H_{FE} vs I_C

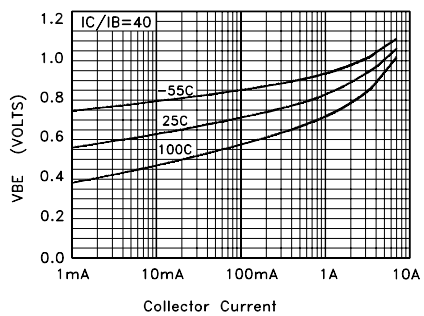


FIG. 4 $V_{BE(SAT)}$ vs I_C

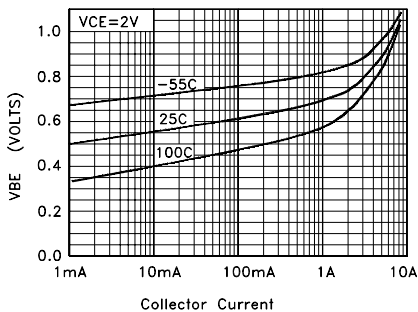


FIG. 5 $V_{BE(ON)}$ vs I_C