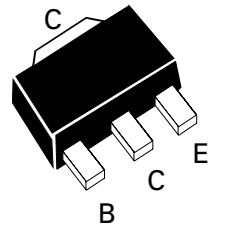
SOT89 NPN SILICON PLANAR
MEDIUM POWER HIGH VOLTAGE TRANSISTOR

FCX658A

ISSUE 1 – NOVEMBER 2000

FEATURES

* 400 Volt V_{CEO}
* 0.5 Amp continuous current
* P_{tot}=1 Watt
* Optimised h_{fe} characterised upto 200mA



SOT89

APPLICATIONS

* Telephone dialler circuits
* Hook switches for modems
* Predrivers within HID lamp ballasts
* (SLIC) Subscriber Line Interface Cards

Partmarking Detail - 65A

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	400	V
Collector-Emitter Voltage	V_{CEO}	400	V
Emitter-Base Voltage	V_{EBO}	5	V
Peak Pulse Current	I_{CM}	1	A
Continuous Collector Current	I_C	500	mA
Power Dissipation at T_{amb}=25°C derate above 25°C	P_{tot}	1 5.7	W mW/ °C
Operating and Storage Temperature Range	T_j:T_{stg}	-55 to +150	°C

ZETEX

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ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated).

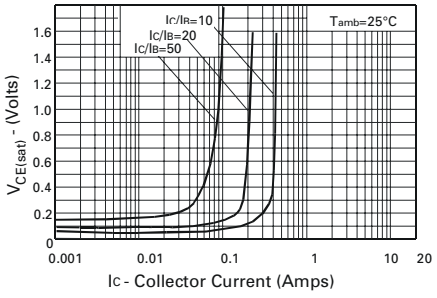
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	400	480		V	I_C=100μA
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	400	465		V	I_C=10mA*
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	7.8		V	I_E=100μA
Collector Cut-Off Current	I_{CBO}			100	nA	V_{CB}=320V
Collector Cut-Off Current	I_{CES}			100	nA	V_{CE}=320V
Emitter Cut-Off Current	I_{EBO}			100	nA	V_{EB}=4V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			0.165 0.125 0.2	V V V	I_C=20mA, I_B=1mA I_C=50mA, I_B=5mA* I_C=100mA, I_B=10mA*
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		0.75	0.85	V	I_C=100mA, I_B=10mA*
Base-Emitter Turn On Voltage	$V_{BE(on)}$		0.70	0.85	V	IC=100mA, V_{CE}=5V*
Static Forward Current Transfer Ratio	h_{FE}	85 100 55 35	150 170 130 90			I_C=1mA, V_{CE}=5V* I_C=10mA, V_{CE}=10V* I_C=100mA, V_{CE}=5V* I_C=200mA, V_{CE}=10V*
Transition Frequency	f_T	50			MHz	I_C=20mA, V_{CE}=20V f=20MHz
Output Capacitance	C_{obo}			10	pF	V_{CB}=20V, f=1MHz
Switching times	t_{on} t_{off}		130 3300		ns ns	I_C=100mA, V_C=100V I_{B1}=10mA, I_{B2}=-20mA

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

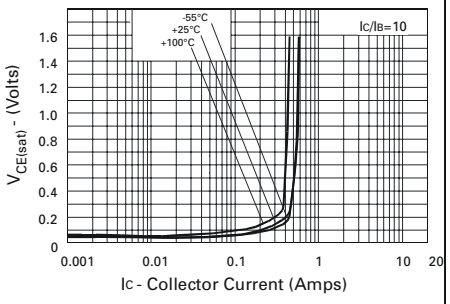
NB

For high voltage applications the appropriate industry sector PCB guidelines should be considered with regard to voltage spacing between conductors.

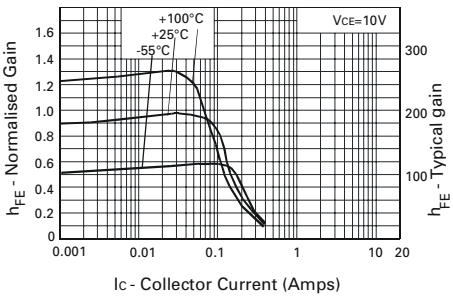
TYPICAL CHARACTERISTICS



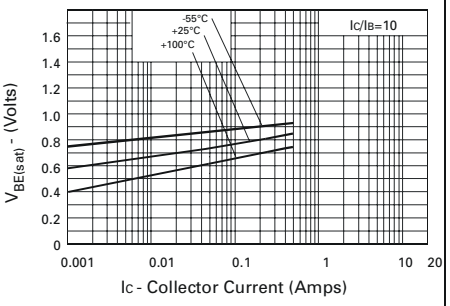
VCE(sat) v IC



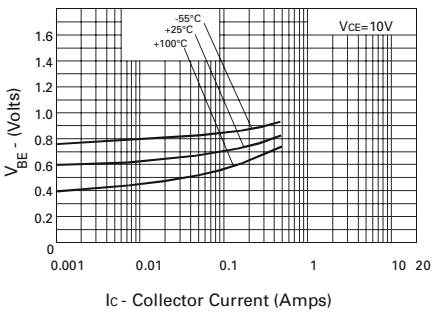
VCE(sat) v IC



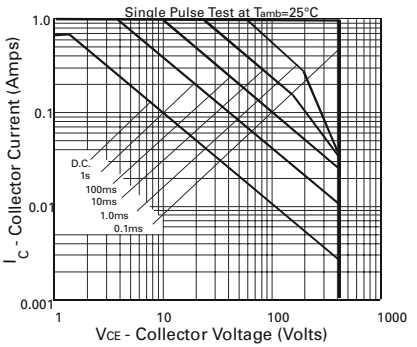
hFE v IC



VBE(sat) v IC



VBE(on) v IC



Safe Operating Area

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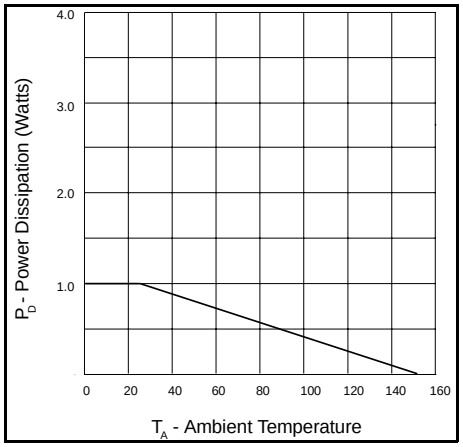
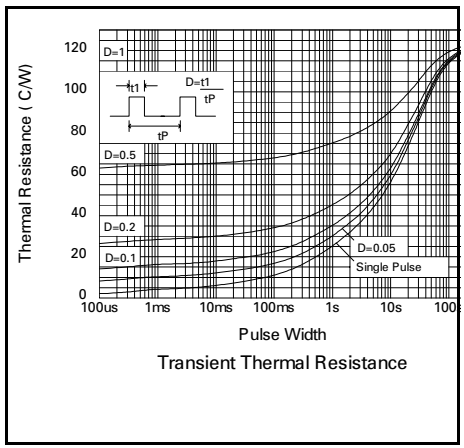
THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	MAX.	UNIT
Thermal Resistance:Junction to Ambient$_1$ Junction to Case	$R_{th(j\text{-}amb)1}$ $R_{th(j\text{-}case)}$	125 10	°C/W °C/W



SOT89 (1W) Derating



Transient thermal resistance for a Zetex 1W SOT89 device mounted on a 15 mm x 15 mm ceramic substrate

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