Super323™ SOT323 NPN SILICON POWER (SWITCHING) TRANSISTOR

ISSUE 1 - SEPTEMBER 1998

ZUMT617

FEATURES

* **500mW POWER DISSIPATION**
* **I_C CONT 1.5A**
* 5A Peak Pulse Current
* Excellent H_{FE} Characteristics Up To 5A (pulsed)
* Extremely Low Equivalent On Resistance; **$R_{CE(sat)}$**



APPLICATIONS

* DC-DC converter boost functions
* Motor drive functions

DEVICE TYPE	COMPLEMENT	PARTMARKING	**$R_{CE(sat)}$**
ZUMT617	ZUMT717	T61	**135mΩ at 1.5A**

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	15	V
Collector-Emitter Voltage	V_{CEO}	15	V
Emitter-Base Voltage	V_{EBO}	5	V
Peak Pulse Current**	I_{CM}	5	A
Continuous Collector Current	**I_C**	**1.5**	A
Base Current	I_B	200	mA
Power Dissipation at T_{amb}=25°C*	**P_{tot}**	**385 † 500 ‡**	**mW**
Operating and Storage Temperature Range	T_j:T_{stg}	-55 to +150	°C

† Recommended P_{tot} calculated using FR4 measuring 10 x 8 x 0.6mm (still air).

‡ Maximum power dissipation is calculated assuming that the device is mounted on FR4 size 25x25x0.6mm and using comparable measurement methods adopted by other suppliers.

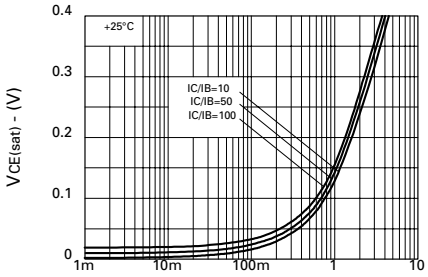
ZUMT617

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

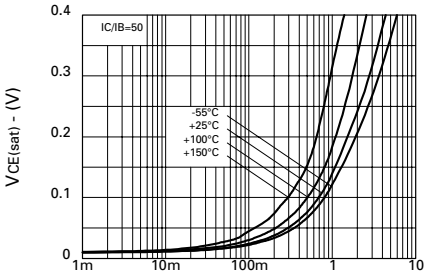
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	15			V	I_C= 100μA
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	15			V	I_C= 10mA*
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5			V	I_E= 100μA
Collector Cut-Off Current	I_{CBO}			10	nA	V_{CB}= 10V
Emitter Cut-Off Current	I_{EBO}			10	nA	V_{EB}= 4V
Collector Emitter Cut-Off Current	I_{CES}			10	nA	V_{CES}= 10V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		16.5 40 75 150 205	20 55 100 200 245	mV mV mV mV mV	I_C= 100mA, I_B=10mA* I_C= 250mA, I_B= 10mA* I_C= 500mA, I_B=10mA* I_C= 1A, I_B=10mA* I_C= 1.5A, I_B=20mA*
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		930	1100	mV	I_C= 1.5A, I_B=20mA*
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		865	1100	mV	I_C= 1.5A, V_{CE}= 2V*
Static Forward Current Transfer Ratio	h_{FE}	200 300 250 200 75 30	420 450 390 300 150 75			I_C= 10mA, V_{CE}= 2V* I_C= 100mA, V_{CE}= 2V* I_C= 500mA, V_{CE}=2V* I_C= 1A, V_{CE}=2 V* I_C= 3A, V_{CE}=2V* I_C=5A, V_{CE}= 2V*
Transition Frequency	f_T		180		MHz	I_C= 50mA, V_{CE}= 10V f= 100MHz
Output Capacitance	C_{obo}		15		pF	V_{CB}= 10V, f=1MHz
Turn-On Time	$t_{(on)}$		50		ns	V_{CC}= 10V, I_C= 1A I_{B1}=I_{B2}=100mA
Turn-Off Time	$t_{(off)}$		250		ns	

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

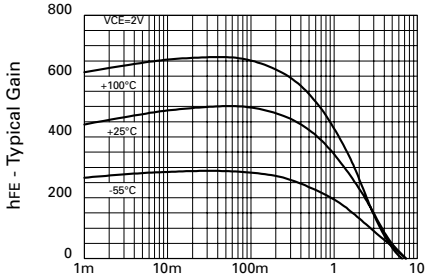
TYPICAL CHARACTERISTICS



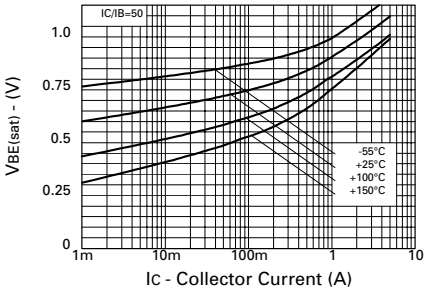
VCE(sat) v IC



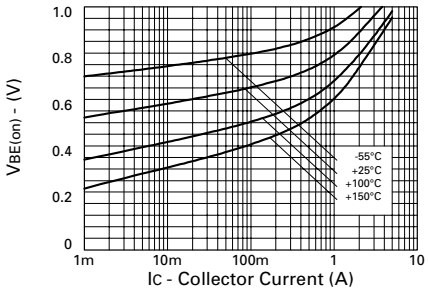
VCE(sat) v IC



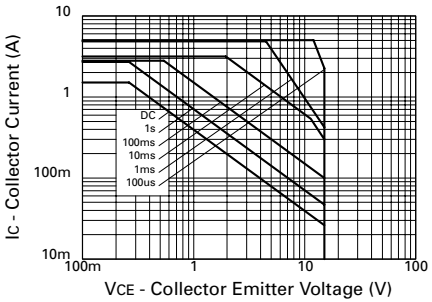
hFE v IC



VBE(sat) v IC



VBE(on) v IC



Safe Operating Area