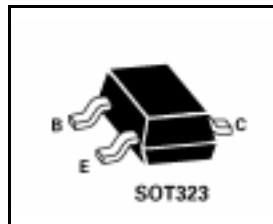


# SOT323 NPN SILICON PLANAR GENERAL PURPOSE TRANSISTOR

## ZUMT850B ZUMT850C

ISSUE 1 - DECEMBER 1998

Partmarking Detail:           ZUMT850B - T1B  
  ZUMT850C - T21



### ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	$V_{CBO}$	50	V
Collector-Emitter Voltage	$V_{CES}$	50	V
Collector-Emitter Voltage	$V_{CEO}$	45	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Continuous Collector Current	$I_C$	100	mA
Peak Pulse Current	$I_{EM}$	200	mA
Base Current	$I_{BM}$	200	mA
Power Dissipation at $T_{amb}=25^{\circ}C$	$P_{tot}$	330	mW
Operating and Storage Temperature Range	$T_j, T_{stg}$	-55 to +150	$^{\circ}C$

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector Cut-Off Current	$I_{CBO}$			15 5	nA $\mu A$	$V_{CB} = 30V$ $V_{CB} = 30V, T_{amb}=150^{\circ}C$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		90	250	mV	$I_C = 10mA, I_B = 0.5mA$
			200	600	mV	$I_C = 100mA, I_B = 5mA$
			300	600	mV	$I_C = 10mA^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		700 900		mV	$I_C = 10mA, I_B = 0.5mA$ $I_C = 100mA, I_B = 5mA$
			580	660	700 770	mV

\* Collector-Emitter Saturation Voltage at  $I_C = 10mA$  for the characteristics going through the operating point  $I_C = 11mA, V_{CE} = 1V$  at constant base current.

## **TYPICAL CHARACTERISTICS**

# ZUMT850B ZUMT850C

## ELECTRICAL CHARACTERISTICS (Continued)

PARAMETER		SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Noise Figure		N	-	1	4	dB	$V_{CB} = 5V, I_C = 200\mu A,$ $R_G = 2k\Omega, f = 1kHz,$ $\Delta f = 200Hz$
			-	1.4	3	dB	$V_{CB} = 5V, I_C = 200\mu A,$ $R_G = 2k\Omega, f = 30Hz \text{ to } 15kHz$ at -3dB points
Equivalent Noise Voltage		$e_n$	-	-	135	nV	$V_{CB} = 5V, I_C = 200\mu A,$ $R_G = 2k\Omega, f = 10Hz \text{ to } 50Hz$ at -3dB points
Dynamic Characteristics	Group B	$h_{ie}$	3.2	4.5	8.5	$k\Omega$	$V_{CE} = 5V$ $I_C = 2mA$ $f = 1kHz$
	Group C		6	8.7	15	$k\Omega$	
	Group B	$h_{re}$		2		$\times 10^{-4}$	
	Group C			3		$\times 10^{-4}$	
	Group B	$h_{fe}$	240	330	500		
	Group C		450	600	900		
	Group B	$h_{oe}$	-	30	60	$\mu s$	
	Group C		-	60	110	$\mu s$	
Static Forward Current Ratio	Group B	$h_{FE}$		150			$I_C = 0.01mA, V_{CE} = 5V$
			220	290	450		$I_C = 2mA, V_{CE} = 5V$
			-	-	-		$I_C = 100mA, V_{CE} = 5V$
	Group C	$h_{FE}$		270			$I_C = 0.01mA, V_{CE} = 5V$
			420	500	800		$I_C = 2mA, V_{CE} = 5V$
			-	-	-		$I_C = 100mA, V_{CE} = 5V$
Transition Frequency		$f_T$	-	300	-	MHz	$I_C = 10mA, V_{CE} = 5V$ $f = 100MHz$
Collector-Base Capacitance		$C_{obo}$		2.5	4.5	pF	$V_{CB} = 10V, f = 1MHz$