



## UN1596

Preliminary

**NPN SILICON TRANSISTOR**

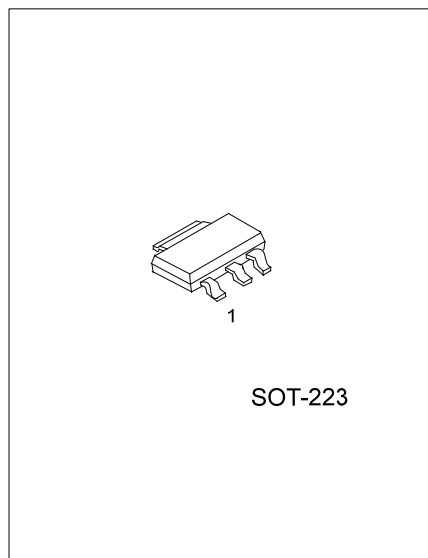
### NPN SILICON PLANAR MEDIUM POWER HIGH GAIN TRANSISTOR

#### DESCRIPTION

The UTC **UN1596** are series of NPN silicon planar transistor, which has gain of 500 at  $I_C=100mA$ . It can be used in such applications: battery powered circuit and darlington replacement.

#### FEATURES

- \* Gain :500 @  $I_C=100mA$
- \* Low saturation voltage



#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UN1596L-AA3-R	UN1596G-AA3-R	SOT-223	B	C	E	Tape Reel

<p>UN1596L-AA3-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Lead Free</p>	<p>(1) R: Tape Reel, T: Tube</p> <p>(2) AA3: SOT-223</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Base Voltage	$V_{CBO}$	180	V
Collector-Emitter Voltage	$V_{CEO}$	180	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Collector Current	$I_C$	0.5	A
Peak Pulse Current	$I_{CM}$	1	A
Collector Power dissipation	$T_A=25^\circ\text{C}$ $P_C$	2	W
Junction Temperature	$T_J$	+150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55 ~ +150	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	$BV_{CBO}$	$I_C=100\mu\text{A}$	180			V
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C=10\text{mA}$	180			V
Emitter-Base Breakdown Voltage	$BV_{EBO}$	$I_E=100\mu\text{A}$	5			V
Base-Emitter Turn-On Voltage	$V_{BE(ON)}$	$I_C=200\text{mA}$ , $V_{CE}=5\text{V}$			0.9	V
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=140\text{V}$			100	nA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=4\text{V}$			100	nA

**ON CHARACTERISTICS**

Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=50\text{mA}$ , $I_B=0.5\text{mA}$		0.2		V
		$I_C=100\text{mA}$ , $I_B=2\text{mA}$		0.2		
		$I_C=250\text{mA}$ , $I_B=5\text{mA}$		0.25		
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C=20\text{mA}$ , $I_B=5\text{mA}$			0.9	V
DC Current Transfer Ratio	$h_{FE}$	$I_C=100\text{mA}$ , $V_{CE}=5\text{V}$	500			
		$I_C=200\text{mA}$ , $V_{CE}=5\text{V}$	150			

**SMALL-SIGNAL CHARACTERISTICS**

Transition Frequency	$f_T$	$I_C=50\text{mA}$ , $V_{CE}=5\text{V}$ , $f=50\text{MHz}$	70			MHz
Input Capacitance	$C_i$	$V_{EB}=0.5\text{V}$ , $f=1\text{MHz}$			200	pF
Output Capacitance	$C_o$	$V_{CB}=10\text{V}$ , $f=1\text{MHz}$			6	pF
Switching Times	$t_{ON}$	$I_C=100\text{mA}$ , $I_{B1}=10\text{mA}$		80		ns
	$t_{OFF}$	$I_{B2}=10\text{mA}$ , $V_{CC}=50\text{V}$		4400		

Note: Pulse width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$

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