



## NP1510

Preliminary

DUAL TRANSISTOR

### SILICON NPN EPITAXIAL TYPE (PCT PROCESS) SILICON PNP EPITAXIAL TYPE

#### DESCRIPTION

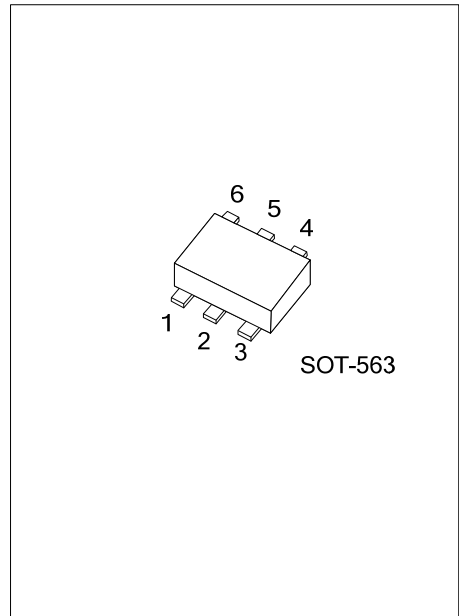
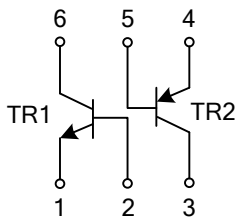
The UTC **NP1510** is a dual transistor, including a NPN transistor and a PNP transistor. It uses UTC's advanced technology to provide customers with high DC current gain, etc.

The UTC **NP1510** is suitable for audio frequency general purpose amplifier applications.

#### FEATURES

\* High DC current gain

#### EQUIVALENT CIRCUITS



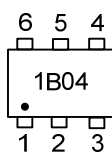
#### ORDERING INFORMATION

Ordering Number	Package	Pin Assignment						Packing
		1	2	3	4	5	6	
NP1510G-xx-AN6-R	SOT-563	E1	B1	C2	E2	B2	C1	Tape Reel

Note: Pin Assignment: C: Collector B: Base E: Emitter

NP1510G-xx-AN6-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) AN6: SOT-563
	(3)Rank	(3) xx: refer to Classification of $h_{FE}$
	(4)Green Package	(4) G: Halogen Free and Lead Free

#### MARKING



■ ABSOLUTE MAXIMUM RATINGS ( $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Base Voltage	TR1	$V_{\text{CBO}}$	60	V
	TR2		-50	V
Collector-Emitter Voltage	TR1	$V_{\text{CEO}}$	50	V
	TR2		-50	V
Emitter-Base Voltage	TR1	$V_{\text{EBO}}$	5	V
	TR2		-5	V
Collector Current	TR1	$I_{\text{C}}$	150	mA
	TR2		-150	mA
Base Current	TR1	$I_{\text{B}}$	30	mA
	TR2		-30	mA
Collector Power Dissipation (Note 2)		$P_{\text{D}}$	100	mW
Junction Temperature		$T_{\text{J}}$	150	$^{\circ}\text{C}$
Storage Temperature		$T_{\text{STG}}$	-40 ~ +150	$^{\circ}\text{C}$

Notes: 1. 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.

2. Total rating.

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>TR1 (NPN)</b>						
Collector Cut-Off Current	$I_{\text{CBO}}$	$V_{\text{CB}}=60\text{V}, I_{\text{E}}=0$			0.1	$\mu\text{A}$
Emitter Cut-Off Current	$I_{\text{EBO}}$	$V_{\text{EB}}=5\text{V}, I_{\text{C}}=0$			0.1	$\mu\text{A}$
Collector-Emitter Saturation Voltage	$V_{\text{CE(SAT)}}$	$I_{\text{C}}=100\text{mA}, I_{\text{B}}=10\text{mA}$		0.1	0.25	V
DC Current Transfer Ratio	$h_{\text{FE (Note 1)}}$	$V_{\text{CE}}=6\text{V}, I_{\text{C}}=2\text{mA}$	120		400	
Transition Frequency	$f_{\text{T}}$	$V_{\text{CE}}=10\text{V}, I_{\text{C}}=1\text{mA}$	80			MHz
Output Capacitance	$C_{\text{ob}}$	$V_{\text{CB}}=10\text{V}, I_{\text{E}}=0\text{A}, f=1\text{MHz}$		2		pF
<b>TR2 (PNP)</b>						
Collector Cut-Off Current	$I_{\text{CBO}}$	$V_{\text{CB}}=-50\text{V}, I_{\text{E}}=0$			-0.1	$\mu\text{A}$
Emitter Cut-Off Current	$I_{\text{EBO}}$	$V_{\text{EB}}=-5\text{V}, I_{\text{C}}=0$			-0.1	$\mu\text{A}$
Collector-Emitter Saturation Voltage	$V_{\text{CE(SAT)}}$	$I_{\text{C}}=-100\text{mA}, I_{\text{B}}=-10\text{mA}$		-0.1	-0.3	V
DC Current Transfer Ratio	$h_{\text{FE (Note 1)}}$	$V_{\text{CE}}=-6\text{V}, I_{\text{C}}=-2\text{mA}$	120		400	
Transition Frequency	$f_{\text{T}}$	$V_{\text{CE}}=-10\text{V}, I_{\text{C}}=-1\text{mA}$	80			MHz
Output Capacitance	$C_{\text{ob}}$	$V_{\text{CB}}=-10\text{V}, I_{\text{E}}=0\text{A}, f=1\text{MHz}$		4		pF

■ CLASSIFICATION OF  $h_{\text{FE}}$

RANK	Y	GR
RANGE	120 ~ 240	200 ~ 400

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