



## UD22K

Preliminary

DUAL TRANSISTOR

### DIGITAL TRANSISTOR (BUILT-IN RESISTORS)

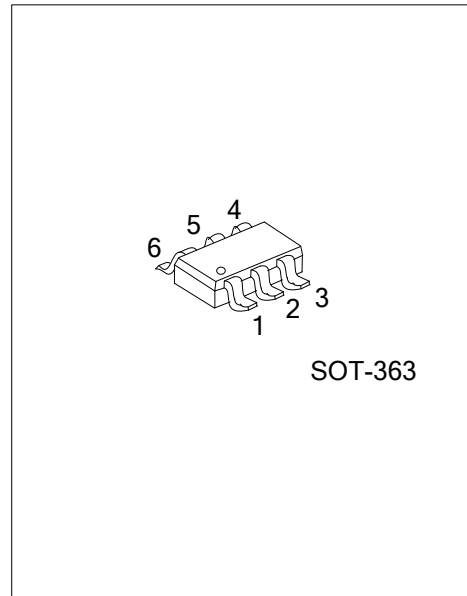
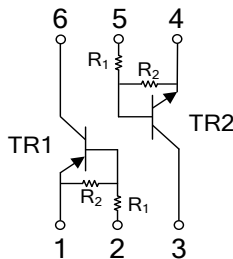
#### DESCRIPTION

The UTC UD22K is a dual transistor, including an NPN transistor and a PNP transistor.

#### FEATURES

- \* Built-in bias resistors that implies easy ON/OFF applications.
- \* The bias resistors are thin-film resistors with complete isolation to allow positive input.

#### EQUIVALENT CIRCUITS



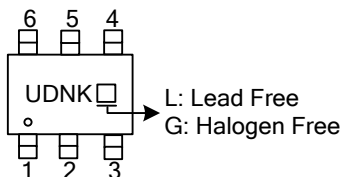
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing
Lead Free	Halogen Free		1	2	3	4	5	6	
UD22KL-AL6-R	UD22KG-AL6-R	SOT-363	G1	I1	O2	G2	I2	O1	Tape Reel

Note: Pin Assignment: G: GND I: IN O: OUT

<p>UD22KG-AL6-R</p> <p>(1)Packing Type (2)Package Type (3)Green Package</p>	<p>(1) R: Tape Reel (2) AL6: SOT-363 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



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

PARAMETER	SYMBOL	LIMITS		UNIT
		TR1	TR2	
Collector-Emitter Voltage	$V_{CEO}$	-50	50	V
Collector-Base Voltage	$V_{CBO}$	-30 ~ + 5	-5 ~ + 30	V
Emitter-Base Voltage	$V_{EBO}$	-100	100	mA
Collector Current - Continuous	$I_C$	-100	100	mA
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.

■ **THERMAL DATA**

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	$\theta_{JA}$	415	$^\circ\text{C/W}$

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

**TR1**

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Input Voltage	$V_{IN(OFF)}$	$V_{CC}=-5V, I_{OUT}=-100\mu\text{A}$			-0.5	V
	$V_{IN(ON)}$	$V_{OUT}=-0.3V, I_{OUT}=-5\text{mA}$	-1.3			V
Output Voltage	$V_{OUT(ON)}$	$I_{OUT}/I_{IN}=-5\text{mA}/-0.25\text{mA}$		-0.1	-0.3	V
Input Current	$I_{IN}$	$V_{IN}=-5V$			-1.8	mA
Output Current	$I_{O(OFF)}$	$V_{CC}=-50V, V_{IN}=0V$			-0.5	$\mu\text{A}$
<b>ON CHARACTERISTICS</b>						
DC Current Gain	$h_{FE}$	$V_{OUT}=5V, I_{OUT}=10\text{mA}$	80			
<b>SMALL SIGNAL CHARACTERISTICS</b>						
Transition Frequency	$f_T$	$V_{CE}=-10V, I_E=-5\text{mA}, f=100\text{MHz}$ (Note 1)		250		MHz
Input Resistance	$R_1$		3.29	4.7	6.11	K $\Omega$
Resistance Ratio	$R_2/R_1$		8	10	12	

**TR2**

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Input Voltage	$V_{IN(OFF)}$	$I_C=100\mu\text{A}, I_B=0$			0.5	V
	$V_{IN(ON)}$	$I_C=10\mu\text{A}, I_E=0$	1.3			V
Output Voltage	$V_{OUT(ON)}$	$I_E=10\mu\text{A}, I_C=0$		0.1	0.3	V
Input Current	$I_{IN}$	$V_{IN}=5V$			1.8	mA
Output Current	$I_{O(OFF)}$	$V_{CC}=50V, V_{IN}=0V$			0.5	$\mu\text{A}$
<b>ON CHARACTERISTICS</b>						
DC Current Gain	$h_{FE}$	$V_{OUT}=5V, I_{OUT}=10\text{mA}$	80			
<b>SMALL SIGNAL CHARACTERISTICS</b>						
Transition Frequency	$f_T$	$V_{CE}=-10V, I_E=-5\text{mA}, f=100\text{MHz}$ (Note 1)		250		MHz
Input Resistance	$R_1$		3.29	4.7	6.11	K $\Omega$
Resistance Ratio	$R_2/R_1$		8	10	12	

Note: Transition frequency of the device.

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