



UMH13

Preliminary

NPN SILICON TRANSISTOR

DUAL NPN DIGITAL TRANSISTOR (BUILT- IN BIAS RESISTORS)

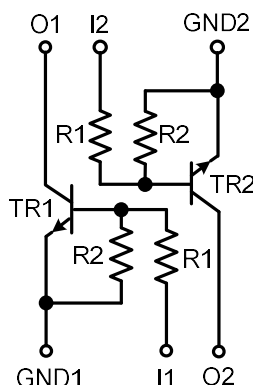
DESCRIPTION

The UTC **UMH13** is an dual transistor; it uses UTC's advanced technology to provide the customers with low collector -emitter saturation voltage, etc.

FEATURES

- * NPN silicon transistor (Built-in resistor type)
- * 100 mA output current capability
- * Built-in bias resistors
- * Simplifies circuit design
- * Reduces component count
- * Reduces pick and place costs
- * Green & Pb Free

EQUIVALENT CIRCUIT

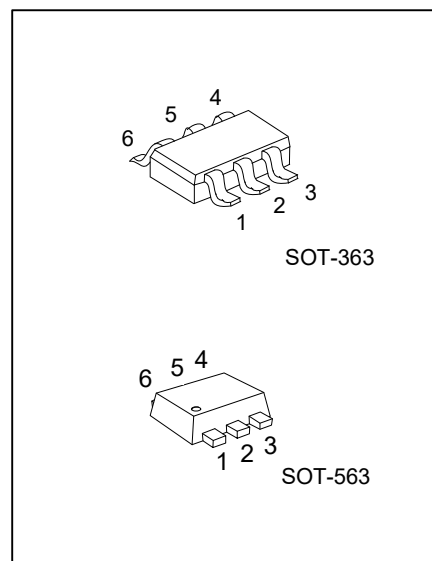


ORDERING INFORMATION

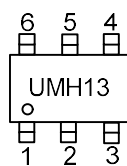
Ordering Number	Package	Pin Assignment						Packing
		1	2	3	4	5	6	
UMH13G-AL6-R	SOT-363	G1	I1	O2	G2	I2	O1	Tape Reel
UMH13G-AN6-R	SOT-563	G1	I1	O2	G2	I2	O1	Tape Reel

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

UMH13G-AL6-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) AL6: SOT-363, AN6: SOT-563
	(3)Green Package	(3) G: Halogen Free and Lead Free



■ **MARKING**



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

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Base Voltage		V_{CBO}	50	V
Collector-Emitter Voltage		V_{CEO}	50	V
Emitter-Base Voltage		V_{EBO}	5	V
Input Voltage		V_{IN}	-5 ~ +30	V
Output Current		I_{OUT}	100	mA
Power Dissipation	SOT-363	P_C	300	mW
	SOT-563		250	mW
Junction Temperature		T_J	+150	$^{\circ}\text{C}$
Ambient Temperature		T_{amb}	-55 ~ +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	SOT-363	θ_{JA}	417	$^{\circ}\text{C/W}$
	SOT-563		500	$^{\circ}\text{C/W}$

Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}$, $I_E=0\text{A}$	50			V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=2\text{mA}$, $I_B=0\text{A}$	50			V
Collector-Base Cut-Off Current	I_{CBO}	$V_{CB}=50\text{V}$, $I_E=0\text{A}$			100	nA
Collector-Emitter Cut-Off Current	I_{CEO}	$V_{CE}=30\text{V}$, $I_B=0\text{A}$			100	nA
Emitter-Base Cut-Off Current	I_{EBO}	$V_{EB}=5\text{V}$, $I_C=0\text{A}$			170	μA
DC Current Gain	h_{FE}	$V_{CE}=5\text{V}$, $I_C=10\text{mA}$	100			
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=5\text{mA}$, $I_B=0.25\text{mA}$			100	mV
Off-State Input Voltage	$V_{I(OFF)}$	$V_{CE}=5\text{V}$, $I_C=100\mu\text{A}$			0.5	V
On-State Input Voltage	$V_{I(ON)}$	$V_{CE}=0.3\text{V}$, $I_C=5\text{mA}$	1.3			V
Bias Resistor 1 (Input)	R1		3.29	4.7	6.11	K Ω
Bias Resistor Ratio	R2/R1		8	10	12	
Transition Frequency	f_T	$V_{CE}=5\text{V}$, $I_E=10\text{mA}$, $f=100\text{MHz}$ (Note)		230		MHz

Note: Transition frequency of the device.

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.