



UMD13

Preliminary

DUAL TRANSISTOR

DUAL DIGITAL TRANSISTOR (BUILT-IN BIAS RESISTORS)

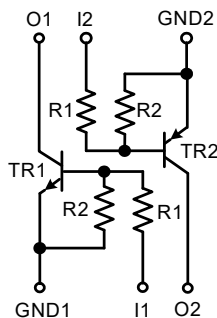
DESCRIPTION

The UTC **UMD13** is an dual transistor; it uses UTC's advanced technology to provide the customers with low collector -emitter saturation voltage, etc.

FEATURES

- * NPN/PNP silicon transistor(Built-in resistor type)
- * Low collector-emitter saturation voltage
- * With built-in bias resistors
- * Simplify circuit design
- * Green & Pb Free

EQUIVALENT CIRCUIT



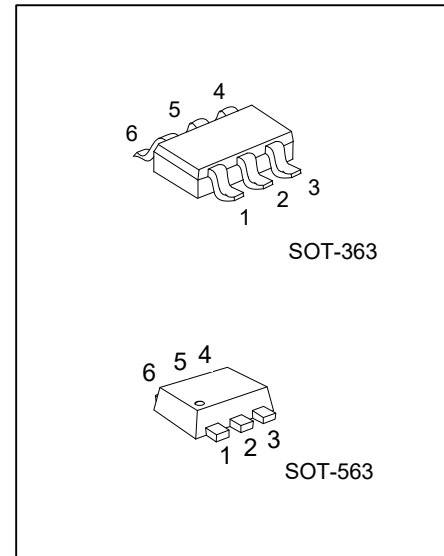
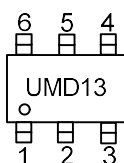
ORDERING INFORMATION

Ordering Number	Package	Pin Assignment						Packing
		1	2	3	4	5	6	
UMD13G-AL6-R	SOT-363	G1	I1	O2	G2	I2	O1	Tape Reel
UMD13G-AN6-R	SOT-563	G1	I1	O2	G2	I2	O1	Tape Reel

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

UMD13G-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°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS		UNIT
		TR1 (NPN)	TR2 (PNP)	
Collector-Base Voltage	V _{CBO}	50	-50	V
Collector-Emitter Voltage	V _{CEO}	50	-50	V
Emitter-Base Voltage	V _{EBO}	5	-5	V
Input Voltage	V _{IN}	-5 ~ +30	-30 ~ +5	V
Output Current	I _{OUT}	100	-100	mA
Power Dissipation	SOT-363	300		mW
	SOT-563	250		mW
Junction Temperature	T _J	+150		°C
Ambient Temperature	T _A	-55 ~ +150		°C
Storage Temperature	T _{STG}	-55 ~ +150		°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	417	°C/W
	SOT-563	500	°C/W

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

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

TR1 (NPN)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	V _{(BR)CBO}	I _C =100μA, I _E =0A	50			V
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	I _C =2mA, I _B =0A	50			V
Collector-Base Cut-Off Current	I _{CBO}	V _{CB} =50V, I _E =0A			100	nA
Collector-Emitter Cut-Off Current	I _{CEO}	V _{CE} =30V, I _B =0A			1	μA
Emitter-Base Cut-Off Current	I _{EBO}	V _{EB} =5V, I _C =0A			170	μA
DC Current Gain	h _{FE}	V _{CE} =5V, I _C =10mA	100			
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	I _C =5mA, I _B =0.25mA			100	mV
Off-State Input Voltage	V _{I(OFF)}	V _{CE} =5V, I _C =100μA			0.8	V
On-State Input Voltage	V _{I(ON)}	V _{CE} =0.3V, I _C =5mA	3			V
Bias Resistor 1 (Input)	R1		3.3	4.7	6.1	KΩ
Bias Resistor Ratio	R2/R1		8	10	12	
Collector Capacitance	C _C	V _{CB} =10V, I _E =0A, f=1MHz			2.5	pF
Transition Frequency	f _T	V _{CE} =5V, I _C =10mA, f=100MHz		230		MHz

Note: Transition frequency of the device.

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

TR2 (PNP)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	V _{(BR)CBO}	I _C =-100μA, I _E =0A	-50			V
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	I _C =-2mA, I _B =0A	-50			V
Collector-Base Cut-Off Current	I _{CBO}	V _{CB} =-50V, I _E =0A			-100	nA
Collector-Emitter Cut-Off Current	I _{CEO}	V _{CE} =-30V, I _B =0A			-1	μA
Emitter-Base Cut-Off Current	I _{EBO}	V _{EB} =-5V, I _C =0A			-170	μA
DC Current Gain	h _{FE}	V _{CE} =-5V, I _C =-10mA	100			
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	I _C =-5mA, I _B =-0.25mA			-100	mV
Off-State Input Voltage	V _{I(OFF)}	V _{CE} =-5V, I _C =-100μA			-0.8	V
On-State Input Voltage	V _{I(ON)}	V _{CE} =-0.3V, I _C =-5mA	-3			V
Bias Resistor 1 (Input)	R1		3.3	4.7	6.1	kΩ
Bias Resistor Ratio	R2/R1		8	10	12	
Collector Capacitance	C _C	V _{CB} =-10V, I _E =0A, f=1MHz			2.5	pF
Transition Frequency	f _T	V _{CE} =-5V, I _C =-10mA, f=100MHz		180		MHz

Note: Transition frequency of the device.

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