



UMN31

Preliminary

NPN SILICON TRANSISTOR

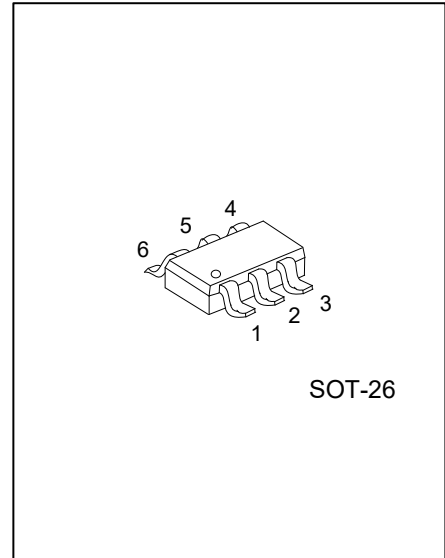
DUAL NPN DIGITAL TRANSISTOR (BUILT- IN BIAS RESISTORS)

DESCRIPTION

The UTC **UMN31** is an dual transistor; it uses UTC's advanced technology to provide the customers with low collector -emitter saturation voltage, etc.

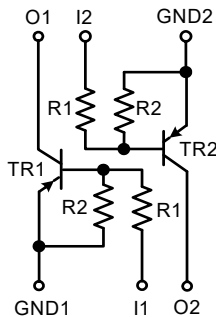
FEATURES

- * 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



SOT-26

EQUIVALENT CIRCUIT



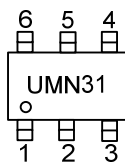
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing
Lead Free	Halogen Free		1	2	3	4	5	6	
UMN31L-AL6-R	UMN31G-AL6-R	SOT-26	G1	I1	O2	G2	I2	O1	Tape Reel

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

UMN31G-AL6-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) AG6: SOT-26
	(3)Green Package	(3) G: Halogen Free and Lead Free, L: 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 ~ +10	V
Output Current	I_{OUT}	500	mA
Power Dissipation	P_C	420	mW
Junction Temperature	T_J	+150	$^{\circ}\text{C}$
Ambient Temperature	T_A	-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	θ_{JA}	298	$^{\circ}\text{C/W}$

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	$V_{(BR)CEO}$	$I_C=10\text{mA}$, $I_B=0\text{A}$	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}	$V_{CE}=50\text{V}$, $I_B=0\text{A}$			0.5	μA
Emitter-Base Cut-Off Current	I_{EBO}	$V_{EB}=5\text{V}$, $I_C=0\text{A}$			0.72	mA
DC Current Gain	h_{FE}	$V_{CE}=5\text{V}$, $I_C=50\text{mA}$	82			
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=50\text{mA}$, $I_B=2.5\text{mA}$			100	mV
Off-State Input Voltage	$V_{I(OFF)}$	$V_{CE}=5\text{V}$, $I_C=100\mu\text{A}$			0.8	V
On-State Input Voltage	$V_{I(ON)}$	$V_{CE}=0.3\text{V}$, $I_C=20\text{mA}$	3			V
Bias Resistor 1 (Input)	R1		0.7	1	1.3	K Ω
Bias Resistor Ratio	R2/R1		8	10	12	
Collector Capacitance	C_C	$V_{CB}=10\text{V}$, $I_E=0\text{A}$, $f=1\text{MHz}$		5		pF
Transition Frequency	f_T	$V_{CE}=10\text{V}$, $I_E=50\text{mA}$, $f=100\text{MHz}$ (Note)		200		MHz

Note: Transition frequency of the device.

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