SHEN ZHEN LONG JING MICRO- ELECTRONICS CO.， LTD

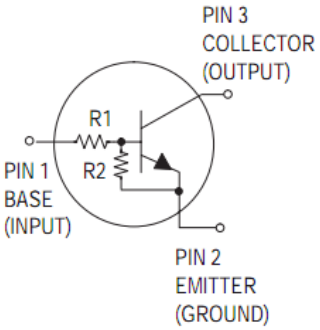
SOT-23 Bias Resistor Transistors

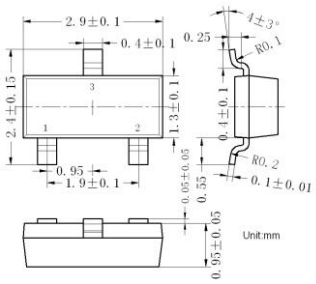
MMUN2232LT1 TRANSISTOR (NPN)

NPN Silicon Surface Mount Transistor with Monolithic Bias Resistor Network

This new series of digital transistors is designed to replace a single device and its external resistor bias network. The BRT (Bias Resistor Transistor) contains a single transistor with a monolithic bias network consisting of two resistors; a series base resistor and a base-emitter resistor. The BRT eliminates these individual components by integrating them into a single device. The use of a BRT can reduce both system cost and board space. The device is housed in the SOT-23 package which is designed for low power surface mount applications.

- Simplifies Circuit Design
- Reduces Board Space
- Reduces Component Count
- The SOT-23 package can be soldered using wave or reflow. The modified gull-winged leads absorb thermal stress during soldering eliminating the possibility of damage to the die.
- Available in 8 mm embossed tape and reel. Use the Device Number to order the 7 inch/3000 unit reel. Replace “T1” with “T3” in the Device Number to order the13 inch/10,000 unit reel.





1 BASE

2. EMITTER

3. COLLECTOR

MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	50	V
V_{CEO}	Collector-Emitter Voltage	50	V
I_C	Collector Current	100	mA
P_D	Total Power Dissipation @TA=25℃ Derate above 25℃	200 1.6	mW mW/℃

THERMAL CHARACTERISTICS

Thermal Resistance — Junction-to-Ambient (surface mounted)	$R_{\theta JA}$	625	°C/W
Operating and Storage Temperature Range	T_J, T_{stg}	−65 to +150	°C
Maximum Temperature for Soldering Purposes, Time in Solder Bath	T_L	260 10	°C Sec

DEVICE MARKING AND RESISTOR VALUES

Device	Marking	R1(K)	R2(K)
MMUN2211LT1	A8J	4.7	4.7

1. Device mounted on a FR-4 glass epoxy printed circuit board using the minimum recommended footprint.
2. New devices. Updated curves to follow in subsequent data sheets.

Thermal Clad is a trademark of the Bergquist Company

Preferred devices are Motorola recommended choices for future use and best overall value.

(Replaces MMUN2211T1/D)

ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=10uA ,I_E=0	50			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=2mA ,I_B=0	50			V
Collector-Base cut-off current	I_{CBO}	V_{CB}=50V,I_E=0			100	nA
Collector-Emitter cut-off current	I_{CEO}	V_{CE}=50V,I_B=0			500	nA
Emitter- Base cut-off current	I_{EBO}	V_{EB}=6V,I_C=0			1.5	mA
DC current gain	h_{FE}	V_{CE}=10V,I_C=5mA	15	30		
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=10 mA, I_B=1mA			0.25	V
Output voltage(on)	V_{OL}	V_{Cc}=5V,V_B=2.5V,R_L=1.0KΩ			0.2	V
Output voltage(off)	V_{OH}	V_{Cc}=5V,V_B=0.5V,R_L=1.0KΩ	4.9			V

ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

Characteristic	Symbol	Min	Typ	Max	Unit
Input resistor	R1	3.3	4.7	6.1	KΩ
Resistor ratio	R1/R2	0.8	1.0	1.2	

3. Pulse Test: Pulse Width < 300 μs, Duty Cycle < 2.0%.