

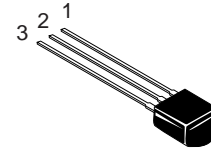
#### DESCRIPTION

QBAR® ICs provide a 3-terminal semiconductor switch that functions as:

- a solid-state normally-closed switch
- a non-inverting digital transistor
- a solid-state replacement for a normally-closed, non-isolating relay.

QBAR® ICs do not require a separate power supply lead. This makes possible:

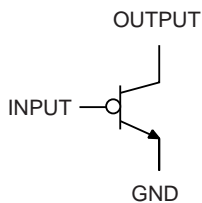
- simplified control wiring
- replacement of normally-closed D.C. relays with highly reliable solid-state devices
- improved fail-safe performance in the event of lost control power, severed or shorted control wires.



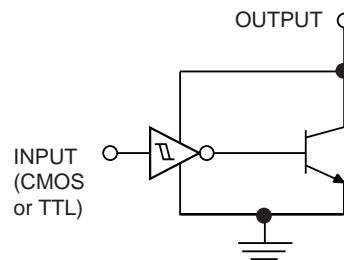
175 mA  
20 VOLTS  
TO-92 package

PIN  
1 INPUT  
2 OUTPUT  
3 GND

#### QBAR SWITCH SYMBOL



#### FUNCTIONAL SCHEMATIC

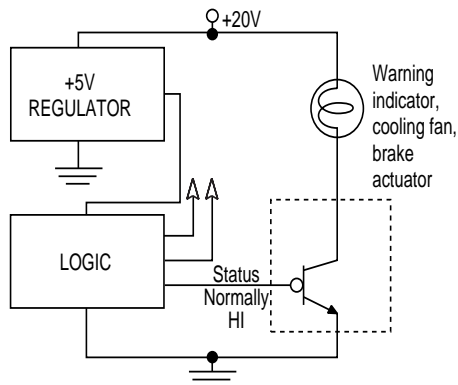


#### FUNCTION TABLE

INPUT	SWITCH STATE (OUTPUT-TO-GND)
HI	OFF
LO	ON
OPEN	ON

#### TYPICAL APPLICATIONS

##### ALARM SWITCH

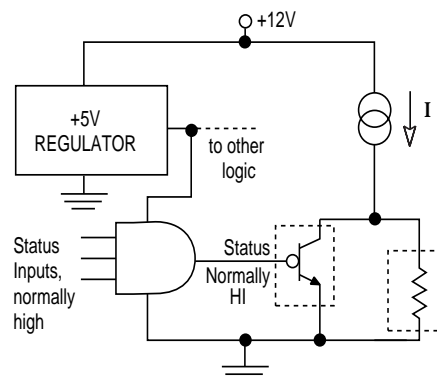


A QBAR switch activates an alarm over a large range of system failure conditions:

- system failure indicated by a LO on the status output
- status conductor cut
- status conductor shorted to ground
- loss of +5V supply

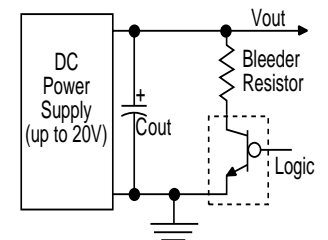
Any of these conditions will cause the QBAR switch to turn ON and power the alarm.

##### PROTECTION OF FRAGILE OR TRIGGER DEVICES



A QBAR switch protects the load from being driven by false signals when all status indicators are *not* OK. Damage to fragile loads such as laser diodes, or erroneous firing of detonators can be avoided with a QBAR switch. It shunts drive current *I* around the load when any Status Gate input goes LO, when +5V power is lost, or when the conductor from the Status Gate output to the QBAR switch input is cut or shorted to ground.

##### POWER SUPPLY EFFICIENCY BOOST



Increase your power supply efficiency by using a QBAR switch to lower the parasitic current drain through the bleeder resistor during normal supply operation.

# QB104Z

## ABSOLUTE MAXIMUM RATINGS

Voltage, output to ground . . . . . 24 V  
Voltage, input to ground . . . . . -20V to +6 V (OK to exceed +6V if Input Current is limited to 2mA)  
Ambient Operating Temperature Range . . . 0°C to 70°C (≤1cm leads to PC board)  
Storage Temperature Range . . . . . -55°C to 150°C  
Output current, continuous . . . . . 175 mA

## ELECTRICAL SPECIFICATIONS (Over full operating temperature range, unless noted)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
<u>OFF Characteristics</u>					
Output Breakdown Voltage	V input ≥ 2.4 V I output ≤ 750 μA	20			V
Output OFF Current	V input ≥ 2.4 V V output = 20 V		+300	+750	μA
Input HIGH Logic Threshold			1.7	2.4	V
Input HIGH Input Current	V input = 2.4 V	0		+60	μA
<u>ON Characteristics</u>					
Output ON Voltage	V input ≤ 0.8 V I output = 150 mA		1.3	1.8	V
Input LOW Logic Threshold		0.8	1.4		V
Input LOW Input Current	-6 V ≤ V input ≤ 0.8 V	-20		+20	μA
Input Logic Threshold Hysteresis		0.1			V
<u>SWITCHING Characteristics</u>					
Turn-on Time, Turn-off Time	V in0 = 0.8 V V in1 = 2.4 V V cc = 12 V I out = 50 mA		2	5	μs

### Notes:

1. When not connected, the Input Terminal floats LOW, putting the QBAR® switch in the ON state. Nevertheless, for minimum noise susceptibility, inputs should be connected to valid logic levels.
2. BitParts Inc.'s products are protected by U.S. patents 5,134,323; 6,259,292; 6,639,777; 6,958,623; foreign patents issued and pending.

### Ordering Information:

Order Number: QB104Z  
Marking: QB104Z  
YYWW  
Package: TO-92

See [www.bitpartsinc.com](http://www.bitpartsinc.com) or contact BitParts, Inc. for more information or packaging options.



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