BitParts INC.

QB210T
## *QBAR® NORMALLY-CLOSED SWITCH*

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
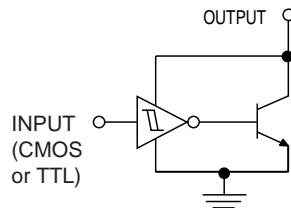- improved fail-safe performance in the event of lost control power, severed or shorted control wires.
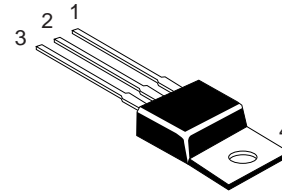
3 AMPERES
20 VOLTS
TO-220 package

PIN
1 INPUT
2 GND
3 OUTPUT
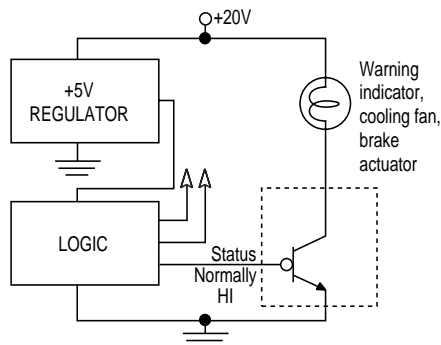4 GND

QBAR SWITCH SYMBOL
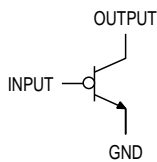
FUNCTIONAL SCHEMATIC

FUNCTION TABLE

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

TYPICAL APPLICATIONS

ALARM SWITCH

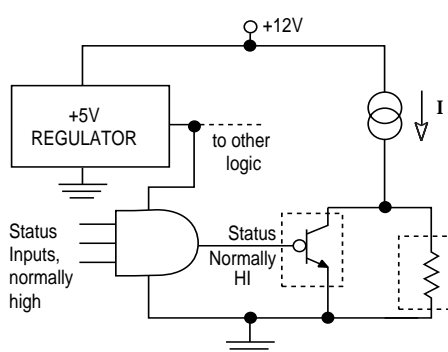PROTECTION OF FRAGILE OR TRIGGER DEVICES

POWER SUPPLY EFFICIENCY BOOST

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.

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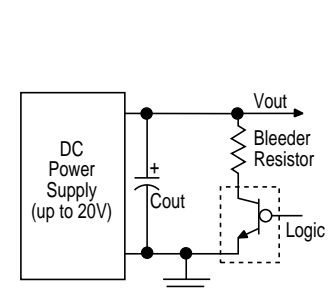
Increase your power supply efficiency by using a QBAR switch to lower the parasitic current drain through the bleeder resistor during normal supply operation.

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ABSOLUTE MAXIMUM RATINGS

Voltage, output to ground . . . . 24 V

Voltage, input to ground . . . . ±6 V   (OK to exceed +6V if Input Current is limited to 2mA)

Operating Temperature Range, T case . . . . 0°C to 70°C

Storage Temperature Range . . . . -55°C to 150°C

Output current, continuous 3A

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

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
OFF Characteristics					
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
ON Characteristics					
Output ON Voltage	V input ≤ 0.8 V I output = 1.80 A		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
SWITCHING Characteristics					
Turn-on Time, Turn-off Time	V in0 = 0.8 V V in1 = 2.4 V Vcc = 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. QBAR switches are protected by U.S. Patent # 5,134,323 and foreign patents.

Available Options:

Package	Max Current	Suffix	Order No.
SOT-23	175mA	M3	QB104M3
TO-92	175mA	Z	QB104Z
TO-220	3A	T	QB210T

Contact BitParts, Inc. for other package options.

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