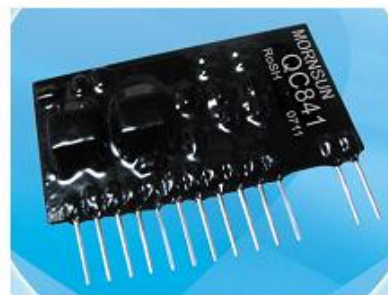


# MORNSUN

## QC841 Hybrid Integrated IGBT Driver

QC841 is a hybrid integrated IGBT driver built-in electrical isolation between power devices and control circuits with the high CMRR opto-coupler. Short circuit protection is provided by a built-in desaturation detector. A fault signal is provided if the short circuit protection is activate



### FEATURES

- Built in high CMRR opto-coupler  
(CMR:Typical:30kV/μs, Min.:15kV/μs)
- Electrical isolation voltage between input and output with opto-couplers  
(Viso=3750VRMS/min)
- Switching frequency up to 20kHz
- Single supply drive topology
- Built in short circuit protection circuit with a pin for fault output
- Soft IGBT turn-off and protection circuit time reset
- Pins are compatible with EXB841

### ABSOLUTE MAXIMUM RATINGS

Item	Test Conditions	Limit	Units
Supply Voltage*	V <sub>CC</sub> DC	25	V
Input Voltage	V <sub>I</sub> Between Pin14 and Pin15	-1~+7	V
Photo coupler input current	I <sub>in</sub> Between Pin14 and Pin15	25	mA
Output current	I <sub>g on</sub> Pulse width 2μs	+5	A
	I <sub>g off</sub> Frequency f=20kHz	-5	A
Isolation Voltage	V <sub>iso</sub> Sinewave voltage 50Hz/60Hz 1 min.	3750	V
Operation Temperature	T <sub>opr</sub>	-20~+70	°C
Storage Temperature	T <sub>stg</sub>	-40~+125	°C
Fault Output Current	I <sub>FO</sub>	20	mA
Input Voltage	V <sub>R1</sub> Pin6 input voltage	50	V

Note: Ta=25°C; unless otherwise specified.

### APPLICATION

- I General-purpose Inverter
- I AC Servo Systems
- I Uninterruptable Power Supplies(UPS)
- I Welding Machines

### RECOMMENDED MODULES

- I 600V Series IGBT(up to 600A)
- I 1200V Series IGBT(up to 400A)
- I 1700V Series IGBT(up to 200A)

### MORNSUN Science & Technology co.,Ltd.

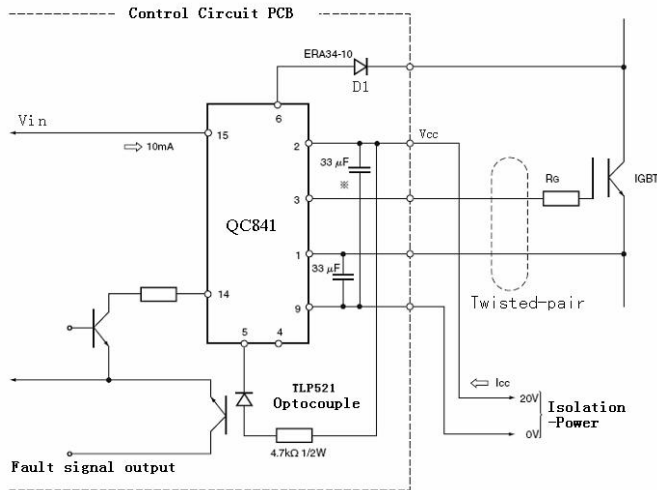
Address: 2th floor 6th building, Huangzhou Industrial District, Guangzhou, China  
Tel: 86-20-38601850  
Fax:86-20-38601272  
[Http://www.mornsun-power.com](http://www.mornsun-power.com)

### ELECTRICAL CHARACTERISTIC

Characteristics	Test Conditions	Value			Units
		Min	Typ.	Max	
Supply Voltage	V <sub>CC</sub> Recommended Range	18	20	22	V
Pull-up voltage on input side	V <sub>IN</sub> Recommended Range	4.75	5	5.25	V
Reverse bias power supply voltage	V <sub>RB</sub> Recommended Range		-5		V
"H" input current	I <sub>IH</sub> Recommended Range	15.2	16	19	mA
Switching frequency	f Recommended Range			20	kHz
Gate resistor	R <sub>G</sub> Recommended Range	2			Ω
"H" input current	I <sub>IH</sub> V <sub>IN</sub> =5V	-	16	-	mA
"H" output voltage	V <sub>OH</sub> V <sub>CC</sub> =20V	13	14	-	V
"L" output voltage	V <sub>OL</sub> V <sub>CC</sub> =20V	-	-5	-	V
"L-H" propagation	t <sub>PLH</sub> I <sub>IH</sub> =16mA	-	0.5	1	μs
"L-H" rise time	t <sub>r</sub> I <sub>IH</sub> =16mA		0.6	1	μs
"H-L" propagation	t <sub>PHL</sub> I <sub>IH</sub> =16mA		1	1.3	μs
"H-L" fall time	t <sub>f</sub> I <sub>IH</sub> =16mA		0.4	1	μs
Protection threshold voltage	V <sub>OCP</sub> V <sub>CC</sub> =20V		8.5		V
Protection reset time	t <sub>timer</sub>	1	1.4	2	ms
Fault output current	I <sub>FO</sub> Pin5 input current, R=4.7K			5	mA
Soft turn-off time	T <sub>off2</sub> Pin6: ≥15V, Pin11:open		5		μs
Controlled time detect short circuit 1	T <sub>trip1</sub> Pin6: ≥15V, Pin11:open		2.6		μs

Note: 1. Ta=25°C, V<sub>CC</sub>=15V. unless otherwise specified  
2. "H" represents high level; "L" represents low level.

## APPLICATION EXAMPLES

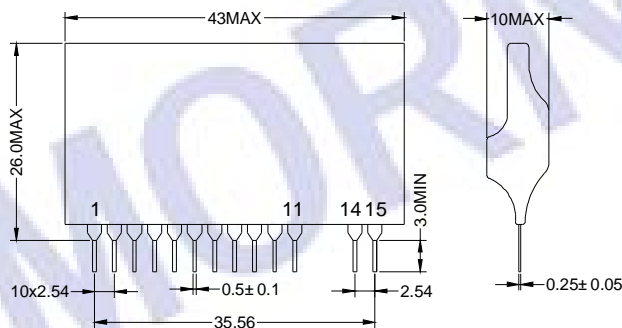


TTL compatible input interface       $f=20\text{kHz}$   
 Duty:50%       $V_{CC}=20\text{V}$   
 $V_{IN}=5\text{V}$        $R_G=3.1\Omega$   
 $D_1$  :Fast Recovery Diode( $t_{rr}\leq 0.2\mu\text{s}$ )

## APPLICATION NOTES

1. The IGBT gate-emitter drive loop wiring must be shorter than one meter.
2. The IGBT gate-emitter drive loop wiring should be twisted.
3. If large voltage spike is generated at the collector of the IGBT, increase the IGBT gate resistor.
4. Pins which not be used must not be connected with the application circuit.
5. The external blocking capacitors must be connected as close as possible to the driver's pin.
6. Peak reverse voltage of the diode D1 must be higher than the peak value of the IGBT collector voltage.

## OUTLINE DIMENSIONS (UNIT:MM)



### PIN FUNCTION:

Pin number	Description
1	Connected to smoothing capacitor for reverse bias
2	Power supply(+)
3	Drive output
5	Fault signal output
6	Fault detect
9	Gnd
14	Drive signal input(-)
15	Drive signal input(+)
4, 7, 8, 10, 11	Not connected