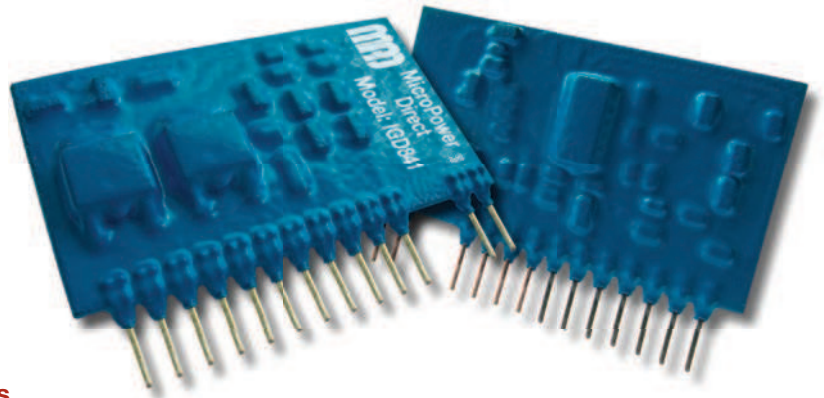


IGD841

Hybrid Integrated Isolated N-Channel IGBT Driver



Key Features:

- Internal OptoCoupler
- 30 kV/ μ S CMR
- Viso = 3,750V
- One Supply Drive Topology
- Compact SIP Package
- Short Circuit Protected
- Fault Signal Output
- Switching Freq. to 20 kHz
- Compatible With EXB841

Recommended For:

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



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Electrical Specifications

Absolute Maximum Ratings, $T_A = 25^\circ\text{C}$ unless otherwise noted.

Parameter	Conditions	Min.	Typ.	Max.	Units
Supply Voltage	V _{CC} DC			25	VDC
Input Voltage	V _{IN} See Note 3			50	VDC
Input Current	I _{IN} See Note 4			25	mA
Output Current	I _{GON} I _{GOFF} Pulse Width 2 μ S, Frequency \leq 20 kHz			+5.0 -5.0	A
Isolation Voltage	V _{ISO} Sine Wave Voltage 50 Hz/ 60 Hz, 1 Min			3,750	VAC
Junction Temperature	T _J			150	$^\circ\text{C}$
Operating Temperature	T _{OP}	-20		+70	$^\circ\text{C}$
Storage Temperature	T _{ST}	-40		+125	$^\circ\text{C}$
Fault Output Current	I _{FO} See Note 5			20	mA

Electrical Characteristics, $T_A = 25^\circ\text{C}$, V_{CC} = 15 VDC unless otherwise noted.

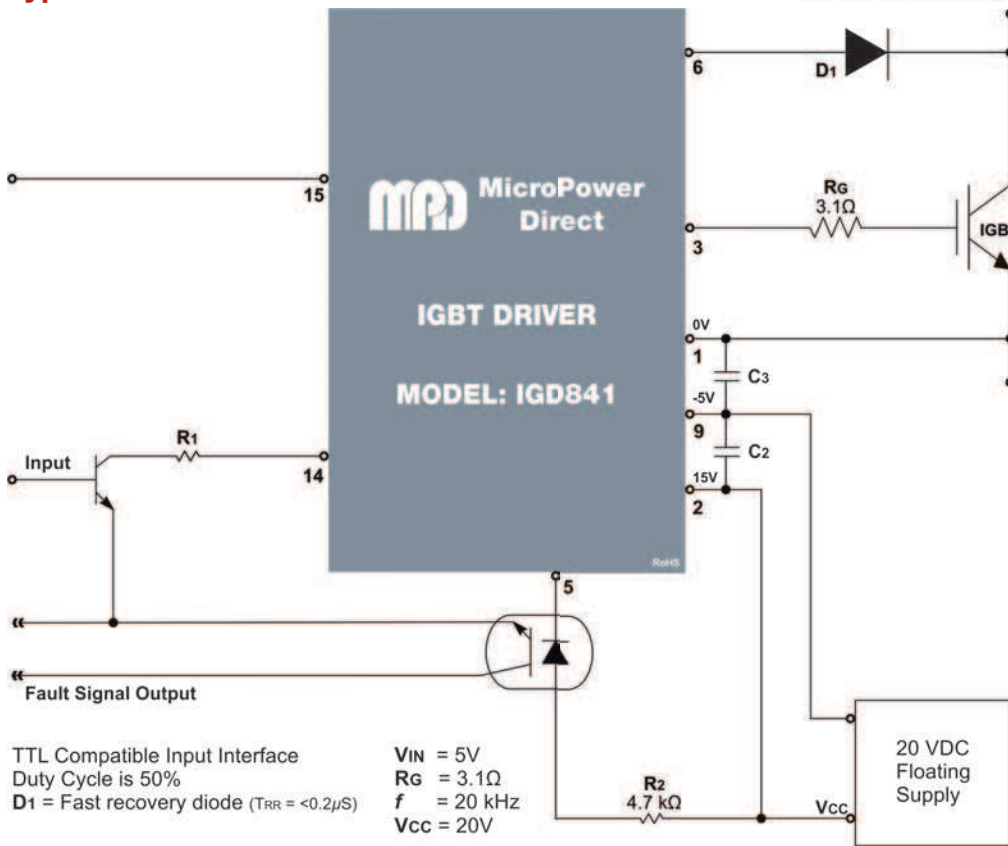
Parameter	Conditions	Min.	Typ.	Max.	Units
Supply Voltage	V _{CC} Recommended Range	14	15		VDC
Reverse Bias Supply Voltage	V _{RB} Recommended Range		-5		VDC
Switching Frequency	f Recommended Range	0		20	kHz
Gate Resistor	R _G	2			Ω
Input CMR		15	30		kV/ μ S
"H" Input Current	I _{IH} Recommended Range	10	16	20	mA
"H" Output Voltage	V _{OH} V _{CC} = 20V		14		VDC
"L" Output Voltage	V _{OL} V _{CC} = 20V		-5		VDC
"L-H" Propagation	T _{PLH} I _{IH} = 16 mA		0.5	1.0	μ S
"L-H" Rise Time	T _R I _{IH} = 16 mA		0.6	1.0	μ S
"H-L" Propagation	T _{PHL} I _{IH} = 16 mA		1.0	1.3	μ S
"H-L" Fall Time	T _F I _{IH} = 16 mA		0.4	1.0	μ S
Protection Threshold Voltage	V _{OC} V _{CC} = 20V		8.5		VDC
Protection Reset Time	T _{TIMER}	1.0	1.4	2.0	mS
Fault Output Current	I _{FO} See Note 6			5.0	mA
Controlled Time Detect	T _{TRIP1} Short Circuit 1, See Note 7		2.6		μ S
Soft Turn-Off Time	T _{OFF2} See Note 8		5.0		μ S
SC Detect Voltage	V _{SC} Collector Voltage of Module	15			VDC

Notes:

1. Exceeding Absolute Maximum Ratings may damage the module. These are not continuous operating ratings.
2. "H" = high level signal. "L" = low level signal.
3. The voltage applied to pin 15.
4. The current measured between pins 15 and 14.
5. The current at pin 5.
6. The current at pin 5. R₂ = 4.7 k Ω .
7. Pin 6 \geq 15 VDC.
8. Pin 6 \geq 15 VDC.

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Typical Connection



Connection Notes:

To minimize the potential for problems (and/or failures) caused by induced noise, EMI interference and/or oscillation, the connection of the gate driver must be done with great care. Some recommendations would include:

1. The input signal voltage (pin 14) cannot exceed 5.25V. The internal dissipation caused by the resultant increase in input current could damage the input optocoupler. A current limiting resistor (R1) is used to help prevent this. The resistor value is calculated by the formula:

$$R_1 = \frac{V_{in} - 1.7V}{16 \text{ mA}} - 150\Omega$$

2. The gate wiring of the IGBT gate-emitter drive loop must be shorter than 1 meter.
3. Twisted pair wiring is recommended for the gate-emitter drive loop to minimize mutual induction.
4. Pins 4, 7, 8, 10 and 11 (not shown in the connection diagram) of the IGD841 are only used for testing. They should not be used as a connection in any application circuit.
5. If a large voltage spike is generated at the IGBT collector, the value of the gate resistor (Rg) should be increased.
6. Smoothing capacitors C2 and C3 should be mounted as close to the driver as possible.
7. An internal circuit sets up a -5V off-gate voltage at pin 9 to protect against faults in the off state. Do not apply an external voltage to pin 1.
8. The peak reverse voltage rating of D1 must be higher than the peak value of the IGBT collector voltage.
9. The traces (or wires) between the power source (Vcc) and the driver circuit should be as short as possible.

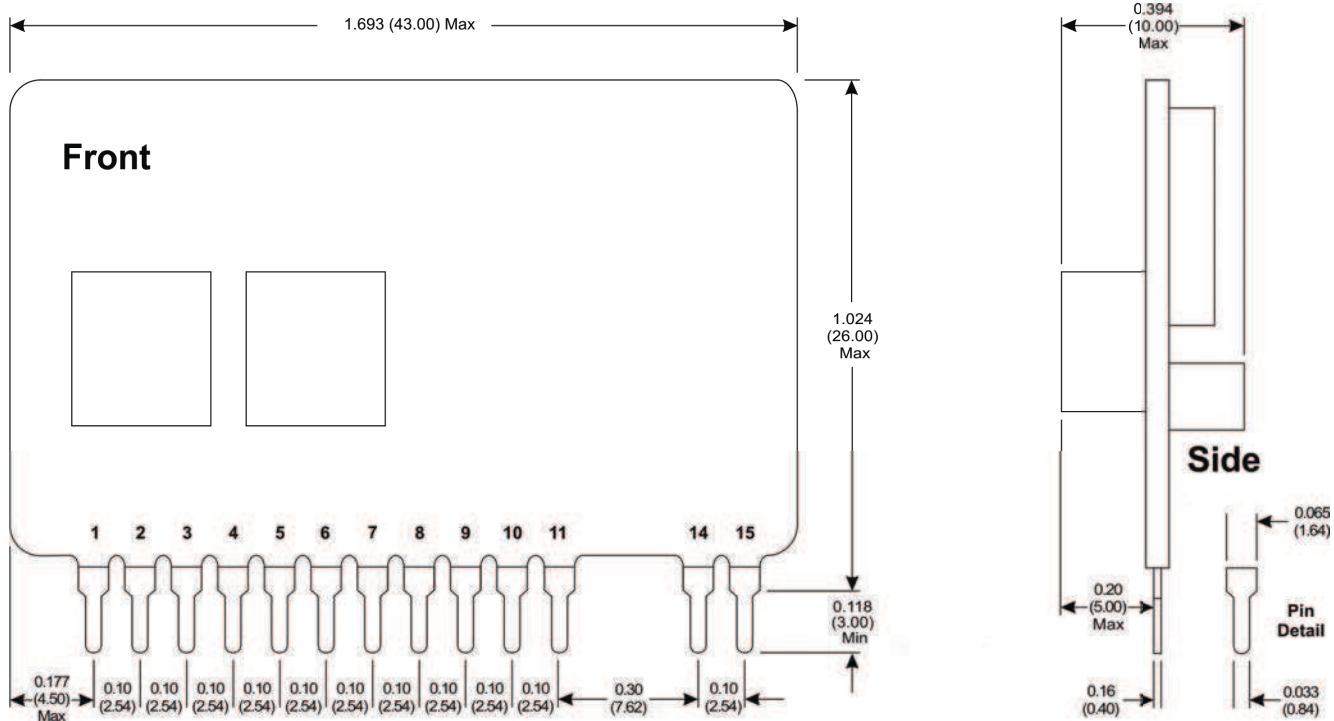
TTL Compatible Input Interface
Duty Cycle is 50%
D1 = Fast recovery diode ($T_{RR} < 0.2\mu S$)

$V_{IN} = 5V$
 $R_G = 3.1\Omega$
 $f = 20 \text{ kHz}$
 $V_{CC} = 20V$

Pin Connections

Pin	Function	Pin	Function	Pin	Function
1	Smoothing Capacitor	5	Fault Signal Output	14	Drive Signal Input (-)
2	Power Supply (+)	6	Fault Detect	15	Drive Signal Input (+)
3	Drive Output	9	Gnd	4,7,8,10,11	No Connection

Mechanical Dimensions



Notes:

- All dimensions are typical in inches (mm)
- Tolerance x.xx = ±0.01 (±0.25)



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