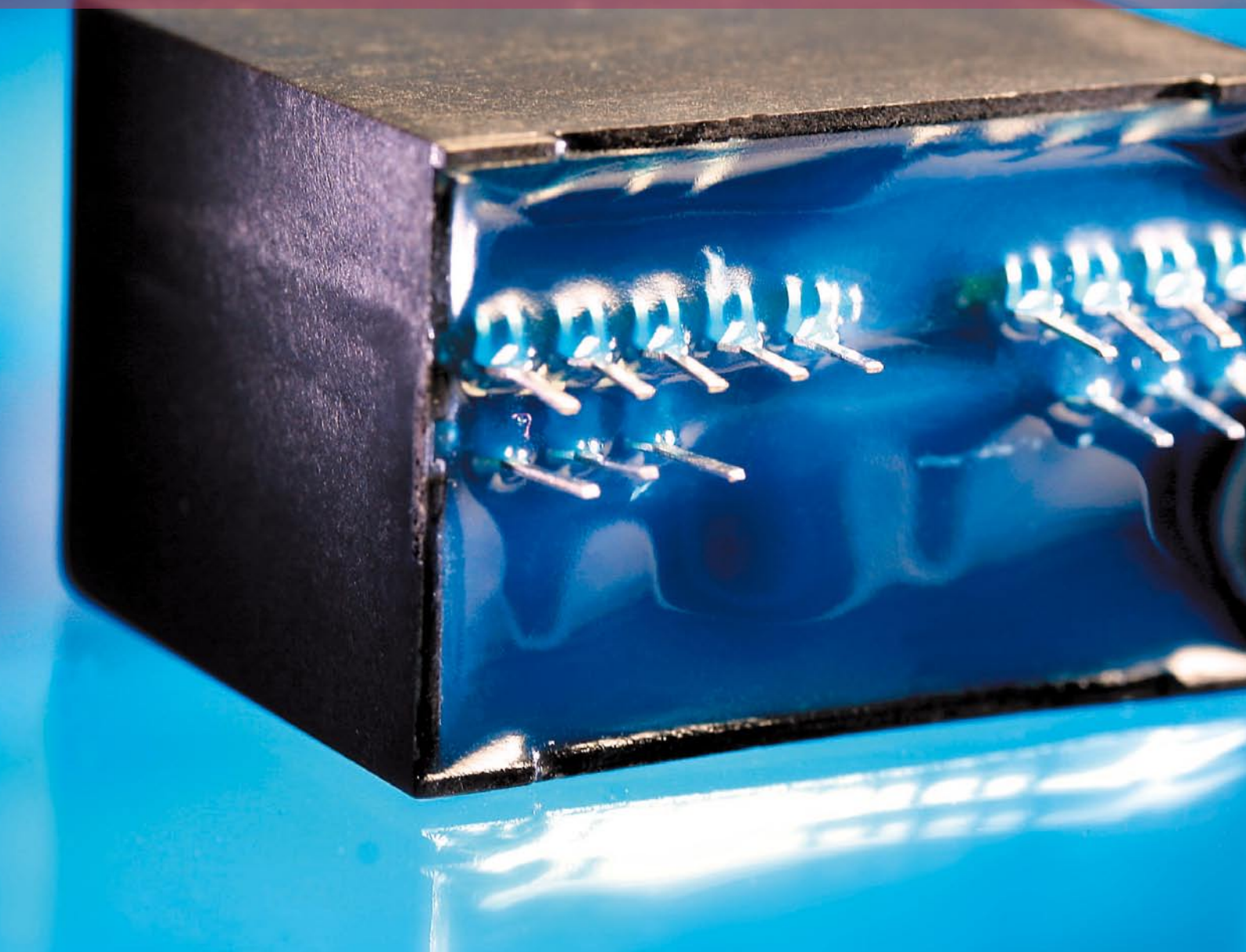
Product Group Catalog
EMC Products

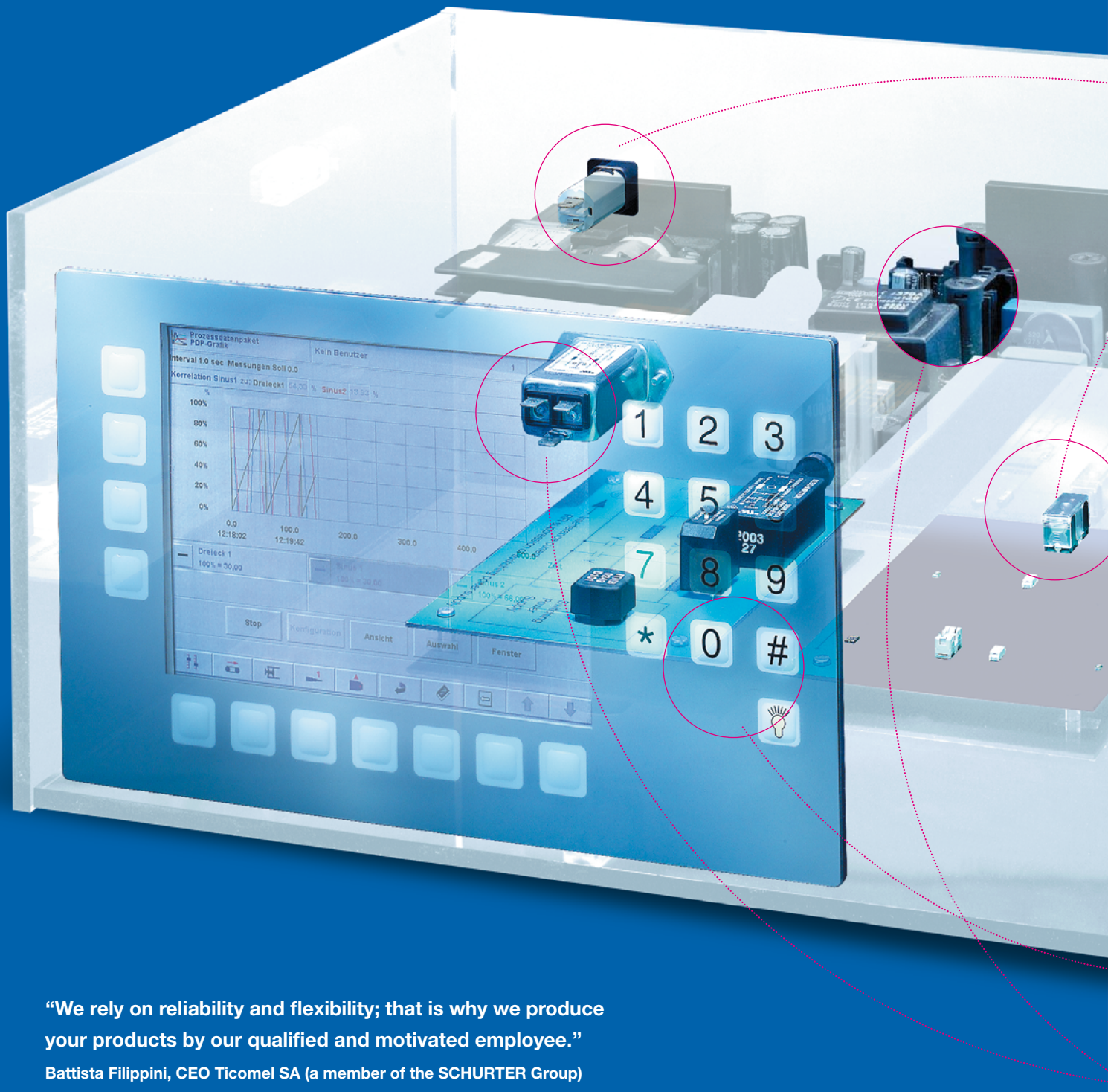
www.schurter.com/emc

SCHURTER
ELECTRONIC COMPONENTS

Power Stage Driver Modules



summary

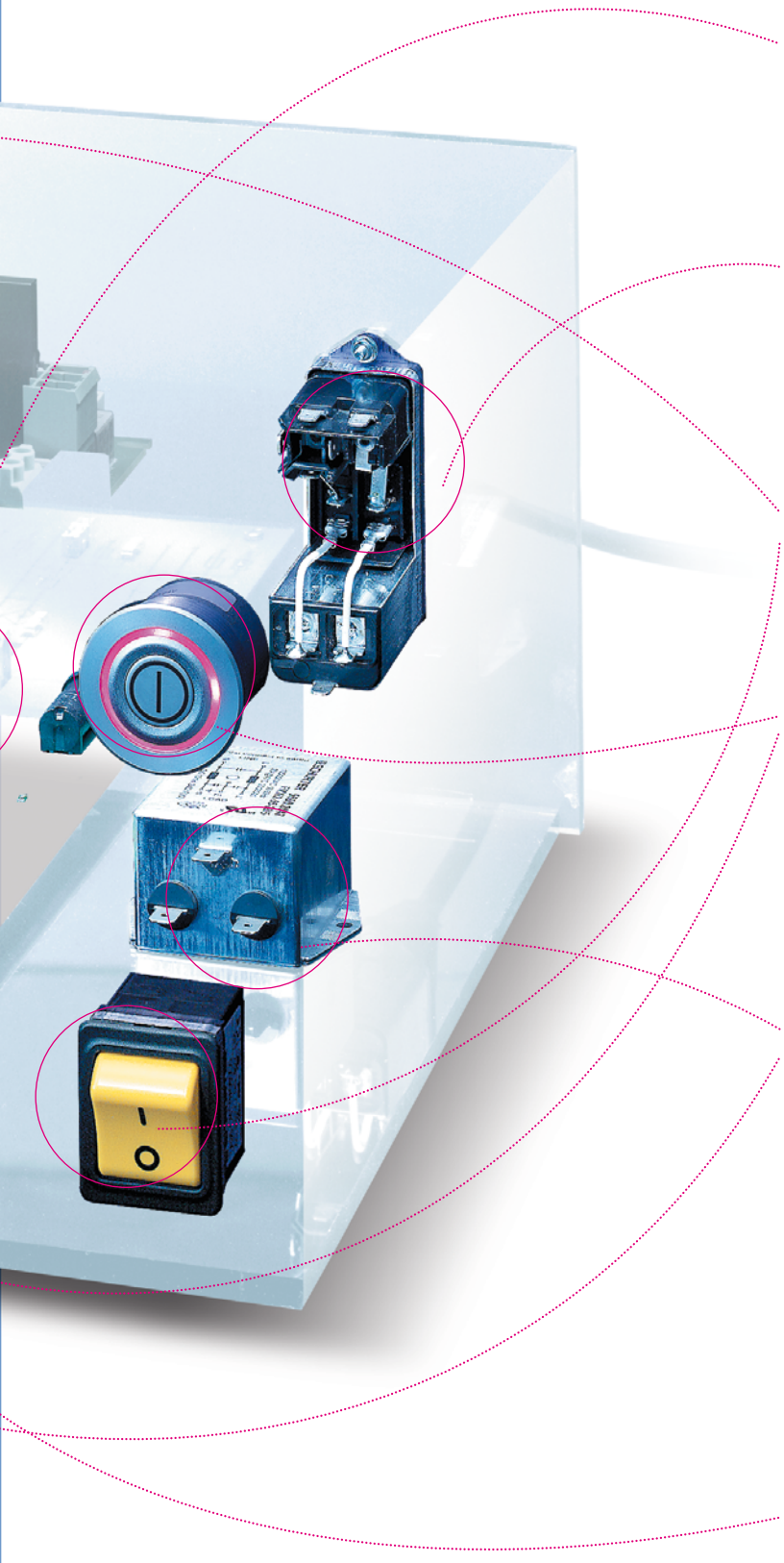


“We rely on reliability and flexibility; that is why we produce your products by our qualified and motivated employee.”

Battista Filippini, CEO Ticomel SA (a member of the SCHURTER Group)

> the Schurter Range at the Glance

SCHURTER is a progressive innovator and manufacturer of fuses, connectors, circuit breakers, input systems, EMC products and manufacturing services for the electronics industry. We focus on components that ensure safe supply of power and make the interface between human and machine easier.



fuses
non resettable fuses
telecom fuses
resettable fuses
fuseholders
fuseholders blocks & clips

connectors
power entry modules without line filter
power entry modules with line filter
appliance couplers
cord connectors (rewireable)
distribution units
cord sets

circuit breakers
thermal (t- and ta-line)
thermal-magnetic (tm- and as-line)
undervoltage protection
power entry modules with CBE

input systems
printmount switches
frontpanel switches
public transport switch
metal line switches
sensor switches
membrane keypads
sensor keypad
metal line keypads
touch panel / touch screen
housing systems and front panels

EMC products
power entry modules with line filter
1-phase line filters
3-phase line filters
chokes
pulse transformers
power stage driver modules

other products
voltage selector
test jacks & probes
indicators
data & signal, audio, dc/ din connectors

EMS
Electronic Manufacturing Services

Description	Mounting	Terminal	Material	Web Reference or Type
DC/DC Converter for IGBT- or MOSFET Driver Modules	PCB mounted from top	Solder	Thermoplastic	**PSDM-6 XXX**
600V IGBT/MOSFET Driver modules with integrated DC/DC converter	PCB mounted from top	Solder	Thermoplastic	**PSDM-6O / PSDM-6T XXX**

General Product Information see Power Stage Driver Modules page XXX

PSDM, the safe Driving

The PSDM (Power Stage Driver Module) has been developed for driving in a safe, reliable and easy way power IGBT or MOSFET transistors

The modules have internal circuitry to switch off and therefore to protect the power transistor in cases of fault at the output power stage, like short or reduced voltage driver. The PSDM has an isolated DC/DC converter with 2.4W output power implemented in a plastic case to supply the drive circuit. The data is transferred by a pulse transformer.

Power Stage Driver Module

IGBT Driver Modules

The IGBT driver modules PSDM-0DO2-5040 and PSDM-0DT2-5020 were developed to drive IGBT or MOSFET power transistors in an easy, safe and reliable way.

The modules have an internal turnoff circuit that protects the output power stage in the event of a short circuit. Commanding data is transfered by an optocoupler or a transformer.

Detailed information can be looked up here:

www.schurter.com/pg86

DC/DC Converter for IGBT- or MOSFET Driver Modules
600V IGBT/MOSFET Driver modules with integrated DC/DC converter

PSDM-6O
(Data transfer via transformer)

PSDM-6T
(Data transfer via optocoupler)

RoHS COMPLIANT 2002/95/EC

Pb

Description
- Driver module for safe driving of IGBT or MOSFET power transistors
- DC/DC coverter included in module
- Diagnostic output VSM permits monitoring of converter output
- Galvanic isolation up to 3500 VAC
- Overcurrent and short circuit protection

Standards
- EN 61248-5
- EN 61558-1

Applications
- Inverters
- Converters
- Motor drives

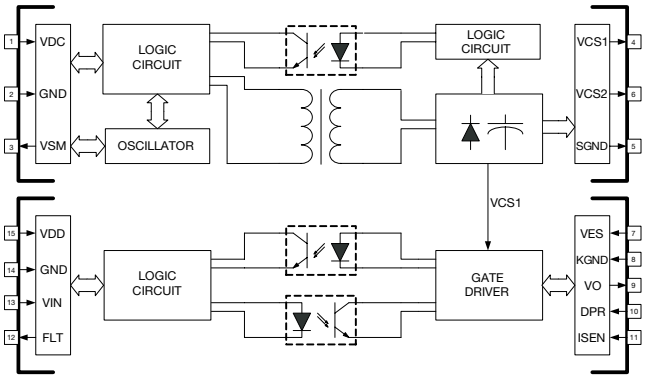
Web Links
- RoHS: http://www.schurter.com/rohs

Technical Data

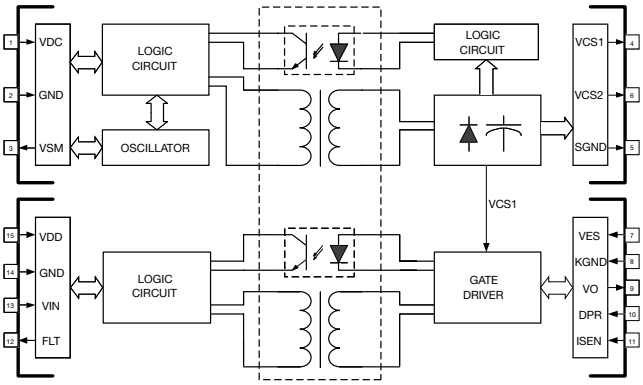
Input voltage	10–15 VDC
Output voltage 1	15 VDC
Output voltage 2	–4 VDC
Output current	120 mA
Isolation voltage	3500 V
Switching frequency DC/DC converter	Up to 500 kHz
Switching frequency driver stage	Up to 100 kHz

Connection method	THT
Weight	25 g
Material (casing)	Plastic, black, UL 94V-0
Sealing compound	UL 94V-0
Ambient temperature	–5 °C bis 85 °C

Block Diagram



PSDM-6O (Optocoupler Version)



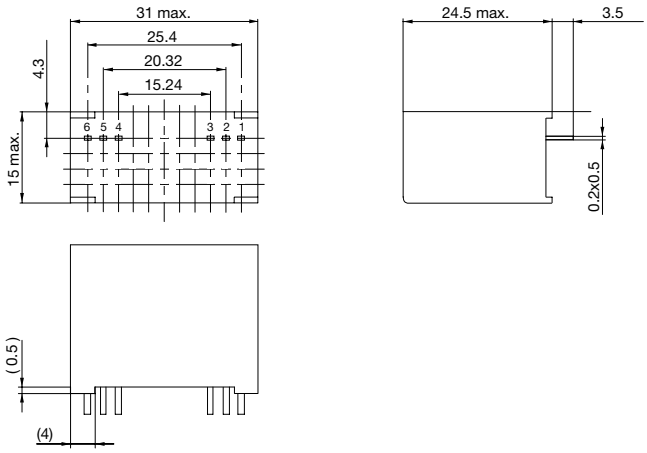
PSDM-6T (Transformer Version)

Elektrical Characteristics

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Rated voltage	V_{DC}	to GND	10.8		13.2	V
Rated current	I_{DC}				320	mA
Output power	P_O			2.6		W
Output voltage 1	V_{CS1}	to SGND		15		V
Output voltage 2	V_{CS2}	zu SGND		–4		V
Output current 1 and 2	I_O				140	mA
Ripple voltage	$V_{rippk-pk}$	V_{DC} = 15 V, I_O = 120 mA			240	mV
Efficiency	η			0.75		%
Switching frequency	f_{SW}	V_{DC} = 15 V, I^O = 120 mA		500		kHz
Isolation capacity	C_{ISO}			12	15	pF
Isolation resistance	R_{ISO}		10			MΩ
Turn-on threshold	V_{tr}			14.8		V_{DC}
Hysteresis on-off	V_h			1.1		V_{DC}
Diagnostic output	V_{SM}		0		VDC	V_{DC}
Isolation voltage	V_{ISO}	50Hz/1s input to outputs			3500	V_{AC}
Short circuit protection		VCS1 to VCS2 VCS1 to SGND VCS2 to SGND	Limited 1 sec. maximum			

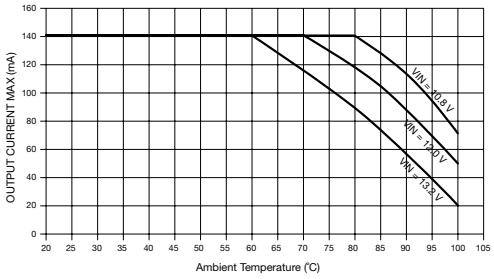
(VDC = 12V, TA = 25°C)

Mechanical Dimensions



Distances between pins: 2,54 mm

Derating



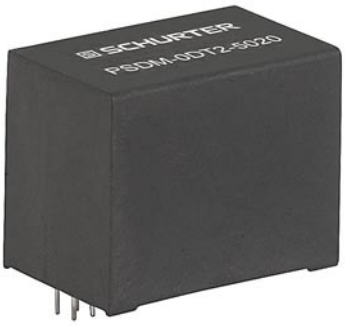
Versions

Description	Order number
DC/DC Converter	PSDM-0DN1-5040

Packing unit 18 pcs.

600V IGBT/MOSFET Driver modules with integrated DC/DC converter
600V IGBT/MOSFET Driver modules with integrated DC/DC converter

PSDM-6O
(Data transfer via transformer)



PSDM-6T
(Data transfer via optocoupler)

RoHS COMPLIANT 2002/95/EC

Pb

Description
- Driver module for safe driving of IGBT or MOSFET power transistors
- DC/DC coverter included in module
- Diagnostic output VSM permits monitoring of converter output
- Galvanic isolation up to 3500 VAC
- Overcurrent and short circuit protection

Standards
- EN 61248-5
- EN 61558-1

Applications
- Inverters
- Converters
- Motor drives

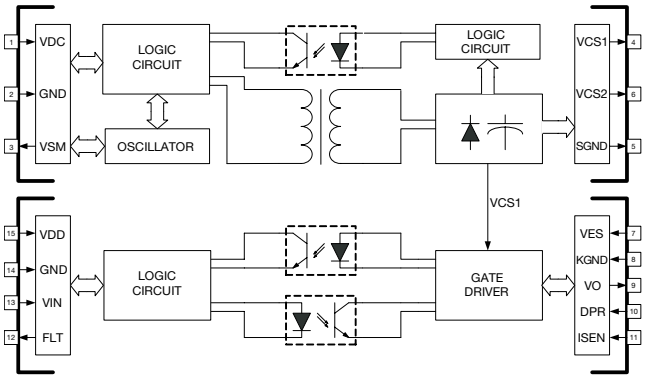
Web Links
- RoHS: http://www.schurter.com/rohs

Technical Data

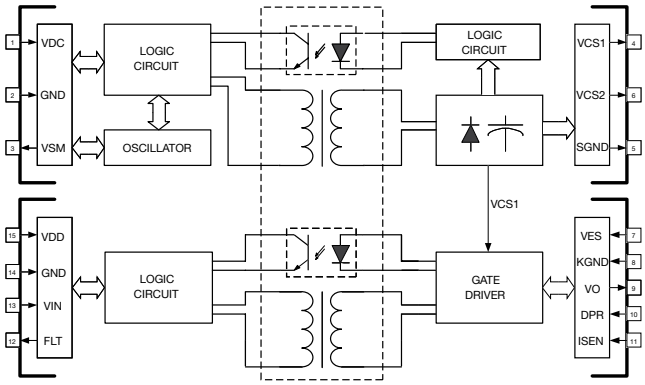
Input voltage	10–15 VDC
Output voltage 1	15 VDC
Output voltage 2	–4 VDC
Output current	120 mA
Isolation voltage	3500 V
Switching frequency DC/DC converter	Up to 500 kHz
Switching frequency driver stage	Up to 100 kHz

Connection method	THT
Weight	25 g
Material (casing)	Plastic, black, UL 94V-0
Sealing compound	UL 94V-0
Ambient temperature	–5 °C bis 85 °C

Block Diagram



PSDM-6O (Optocoupler Version)



PSDM-6T (Transformer Version)

Pin-No.	Symbol	I/O	Description
1	V_{DC}	Input	Input voltage DC/DC converter
2	GND	Input	GND
3	V_{SM}	Output	Diagnostic output
4	V_{CS1}	Output	Output voltage DC/DC converter +15V
5	SGND	Output	Output DC/DC converter GN
6	V_{CS2}	Output	Output voltage DC/DC converter –4V
7	VES	Input	External input voltage
8	KGND	Input	Isolated ground (connected to SGND)
9	V_O	Input	Gate terminal
10	D_{PR}	Input	Saturation protection
11	I_{SEN}	Input	Fault current
12	FLT	Output	Active fault output of driver module
13	V_{IN}	Input	Input 0-5V, PWM
14	GND	Input	Ground
15	V_{DD}	Input	+5V Input voltage of logic interface

Electrical Characteristics of the DC/DC Converter

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Nominal power supply	V_{DC}	zu GND	10		15	V
Supply current	I_{DC}				320	mA
Output power	P_O			2.4		W
Output voltage 1	V_{CS1}	zu SGND		15		V
Output voltage 2	V_{CS2}	zu SGND		–4		V
Output current 1 and 2	I_O				140	mA
Ripple voltage	$V_{rippk-pk}$	V_{DC} = 15V, I_O = 120 mA			240	mV
Efficiency	η			0.75		%
Switching frequency	f_{SW}	V_{DC} = 15V, I_O = 120 mA		500		kHz
Isolation capacitance	C_{ISO}			12	15	pF
Isolation resistance	R_{ISO}		10			MΩ
Turn-on threshold	V_{tr}			14.8		V_{DC}
Hysterisis on-off	V_h			1.1		V_{DC}
Diagnostic output	V_{SM}		0		VDC	V_{DC}
Isolation voltage	V_{ISO}	50Hz/1s input to outputs			3500	V_{AC}
Short circuit protection		VCS1 to VCS2 VCS1 to SGND VCS2 to SGND	Limited 1 sec. maximum			

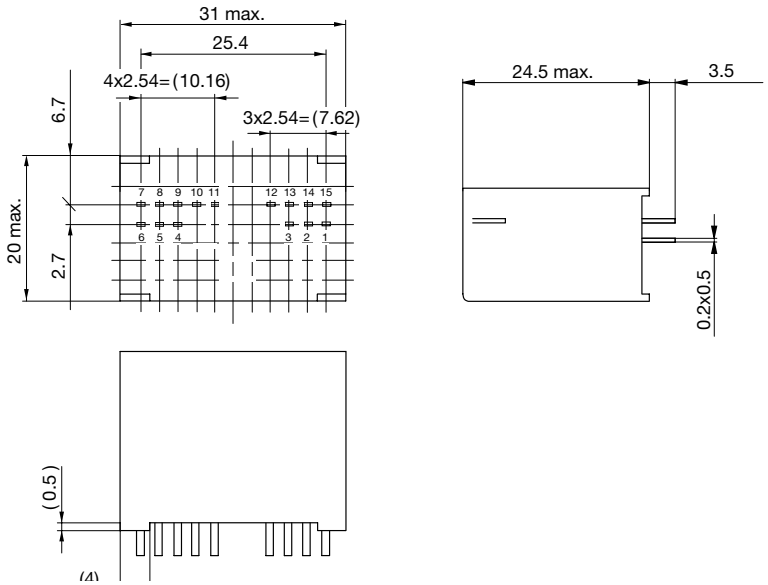
(VDC = 12V, TA = 25°C)

Electrical Characteristics IGBT Driver

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Nominal power supply	V_{DD}	zu GND	4.5	5.0	5.5	V
	V_{CS1}	zu KGND		15		V
	V_{ES}	zu KGND		–4		V
Supply current	I_{DD}				25	mA
Peak supply current	I_{DDP}	t = 1 ms,Tastverhältnis = 50%			50	mA
Gate driver output						
Source current	I_O				1	A
Sink current	I_O				2	A
Logic input voltage	$V_{IN\ (HIGH)}$	4.5	5	5.5	V	
	$V_{IN\ (LOW)}$		0	0.2	0.5	V
Delay time input	t_{pLH}	V_{IN} = 5V, V_{DD} = 5V,			300	ns
to output	t_{pHL}	V_{CS1} = 15V, V_{CS2} = –4V			330	ns
Switching frequency DC	fI_{Nsw}	V_{CS1} = 15V, V_{CS2} = –4V			100	kHz
		V_{CS1} = 15V, V_{CS2} = GNDV			50	kHz
Duty cycle			0		100	%
DC input voltage	HV_{DC}				600	V
Isolation voltage	V_{ISO}	50Hz/1s input to outputs			3500	V_{AC}
Active fault voltage	V_{FLT}			5	80	V_{DC}
Avctive fault current	I_{FLT}			10	50	mA
Undervoltage lockout start	V_{ISOC}		11.3	12	12.6	V
Undervoltage lockout disable	V_{ISOC}		10.4	11	11.7	V
Overcurrent threshold voltage	V_{ISOC}	V_{PIN11} > 7V	50	65	80	mV
Short circuit voltage threshold	V_{ISOC}	V_{PIN11} > 7V	100	130	160	mV
Desaturation protection	D_{PRth}	V_{PIN10} > 100 mV	6.0	6.5	7.0	V

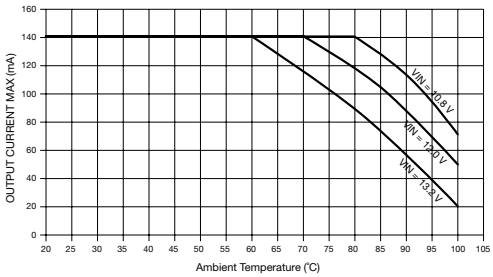
(VDC = 12V, TA = 25°C)

Mechanical Dimensions



Distances between pins: 2,54 mm

Derating



Versions

Description	Order number
Data transfer via optocoupler	PSDM-0DO2-5040
Data Transfer via transformer	PSDM-0DT2-5020

Packing unit 18 pcs.

general product-information

Product standard equipment standard

The product standard only contains minimum requirements. Attention is drawn to the fact that appliance specifications might contain requirements additional to or deviating from those specified in the relevant product standards.

Comments on definitions used

Please be aware that the specifications nominal value used in the German part of the Schurter catalogue and the data sheets, is synonymous with rated value.
The difference between these two values is a pure matter of definition. In order to avoid any unnecessary complications we will continue to use the specifications nominal value.

CE marking CE acc. to EU-directives

CE marking is the only marking which indicates that a product conforms to the relevant EU-directive.
This means that the CE-mark is no quality or standard conformity mark but only an administration mark.
SCHURTER products are covered by the low voltage directives 72/23/EEC and 93/68/EEC. Those are valid for equipment and appliances with rated voltage values between AC 50 V to AC 1000 V as well as DC 75 V to DC 1500 V.
The CE marking of SCHURTER parts will be found on the label of the smallest packing unit. On request we will submitt a CE conformity statement for each component. CE conformity statements and approvals can also be retrieved from the internet under www.schurter.com.

Conformity to component standards, national approvals

National testing institutions are testing according to national and international standards or other generally recognized rules of technology. Their certification/approval-marks confirm the observance of the safety requirements which electric appliances must fulfil.

National approvals

(Recognition)	UL	Underwriters Laboratories (USA)
(Listing)	UL	Underwriters Laboratories (USA, Canada)
(Recognition)	UL	Underwriters Laboratories (USA, Canada)
(Listing)	UL	Underwriters Laboratories (USA, Canada)
	CSA	Canadian Standard Association, Component Acceptance Service
	CSA	Canadian Standard Association
	SEV	Schweizerischer Elektrotechnischer Verein
(Mark)	VDE	Verband Deutscher Elektrotechniker
(Certificate of conformity with factory surveillance)		
	BSI	British Standard Institute
	SEMKO	Svenska Elektriska Materielkontrollanstalten
	NEMKO	Norges Elektriske Materiellkontroll
	DEMKO	Danmarks Elektriske Materielkontrol
	FIMKO	Finnish Electrical Inspectorate
	ÖVE	Österreichischer Verband für Elektrotechnik
	KEMA	Keuring van Elektrotechnische Materialien
	IMQ	Instituto italiano del marchio di qualità
(Mark)	European Norms Electrical Certification	
	CCC	China Compulsory Certification

In addition to the combined UL/CSA approvals, most of the SCHURTER components are also approved by one of the European Certification Bodies like VDE (Germany), Electrosuisse (Switzerland) or SEMKO (Sweden). The safety testing of all these European Certification Bodies are based on the commen European Safety Standards. With the harmonisation effort in Europe, the different National European Certification Bodies have lost their importance and SCHURTER has decided to maintain only one European approval (e.g. VDE, SEV or SEMKO) in future. The others will not be renewed once they have expired.

Because UL and CSA are not members of the CENELEC, the standards of UL and CSA are not harmonised yet with the European Standards. However, UL and CSA are trying to harmonize their standards with each other. Where possible, SCHURTER will apply for the combined cULus or cURus approval.

Further to development in Asia, SCHURTER has obtained national approvals from China, Japan and Korea.

IP degrees of protection provided by enclosures (IP code)

Standards IEC 60529; EN 60529

Scope
These standards apply to the classification of degrees of protection provided by enclosures for electrical equipment with a rated voltage not exceeding 72.5 kV.

Object
The object of these standards is to give:

a) Definitions for degrees of protection provided by enclosures of electrical equipment as regards:
1. Protection of persons against access to hazardous parts inside the enclosure
2. Protection of the equipment inside the enclosure against ingress of solid foreign objects
3. Protection of the equipment inside the enclosure against harmful effects due to the ingress of water.

b) Designations for these degrees of protection.
c) Requirements for each designation.
d) Tests to be performed to verify that the enclosure meets the requirements of these standards.

Designations

The degree of protection provided by an enclosure is indicated by the IP Code.

Elements of the IP Code and their meanings

A brief description of the IP Code elements is given in the following table.

IP xy	Meaning for the protection of equipment	Meaning for the protection of persons
	Against ingress of solid foreign objectif	**Against access to hazardous parts with**
x = 0	(non-protected)	(non-protected)
x = 1	50 mm diameter	back of hand
x = 2	12.5 mm diameter	finger
x = 3	2.5 mm diameter	tool
x = 4	1.0 mm diameter	wire
x = 5	dust-protected	wire
x = 6	dust-tight	wire
	Against ingress of water with harmful effects	
y = 0	(non protected)	
y = 1	vertically dripping	
y = 2	dripping (15° tilted)	
y = 3	spraying	
y = 4	splashing	
y = 5	jetting	
y = 6	powerful jetting	
y = 7	temporary immersion	
y = 8	continuous immersion	

Protection against electric shock

1. Protection against direct and indirect contact General terms

The protection against electric shock on electric equipment as well as their components are divided into the following parts:

- Protection against direct contact with live parts concerns all measures for the protection of human beings and animals against hazards which result from direct contact with live parts of electric equipment and their components.
- Protection against indirect contact is the protection of human beings and animals against hazards which result from contact of live parts 1 of electric equipment as well as components thereof, which have become live due to an insulation failure.

[1)] Accessible, conductive part, which is not conductive normally but which may be conductive due to a failure.

2. Protection against direct contact with live parts e.g. of a fuseholder

The data sheets of the relevant components inform about the taken measures.

3. Protection against indirect contact

Measures for the protection against indirect contact on electrical equipment are defined according to IEC 61140 by the 4 protection classes 0, I, II, III. Each protection class includes two protection measures. Even if one of these measures should fail, no electric shocks will occur.

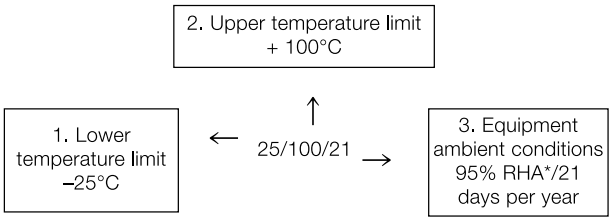
Protection class	Main protective measures
0	1. Basic insulation between live parts and accessible conductive parts. 2. Earth-free location, non-conducting environment.
I 	1. Basic insulation between live parts and accessible conductive parts. 2. Means are provided for the connection of accessible conductive parts of the equipment to the protective (earthing) conductor in the fixed wiring of the installation in such a way that accessible conductive parts cannot become live in the event of a failure of the basic insulation.
II 	1. Basic insulation between live parts and accessible conductive parts. 2. Additional insulation. Basic and supplementary insulation are summarised under the term "double insulation". Under certain circumstances also a "reinforced insulation» (single insulation system) may guarantee an equivalent protection against electric shock as a "double-insulation" does. No terminal for a protective conductor is allowable. A possibly existing protective conductor must not be connected and has to be insulated like any live part.
III 	1. Functional insulation. 2. Supply at safety extra-low voltage SELV (the circuit is isolated from the mains supply by such means as a safety isolating transformer). The protection against electric shock is in this case completely based on the supplying by SELV-circuits (U ≤ 42 V). Higher voltages are not generated in the equipment. No terminal for a protective conductor is allowable.

general product-information

Application Classes (IEC 60068-1)

The aim of this standard is to create a basis for classification of telecommunication engineering electrical components according to application classes which correspond to their climatic and mechanical suitability.

Example:



* relative humidity

MTBF

The high reliability of the filters can be excelled from MTBF (Meantime between failures). These values are according MIL-HB-217-F class G_B at an amient temperatur 40§C at rated voltage and current.

Power stage driver module

DC/DC Converter Module

The PSDM-0DN1-5040 module is a DC/DC power supply converter designed to provide a galvanic isolated, regulated and monitored power to IGBT and MOSFET drivers. The module requires an input voltage of $12V_{DC}$ ± 10% and has dual outputs of 15V and 4V with a maximum supply current of 140 mA. This DC/DC module has a unique diagnostic output permitting the user to monitor the converter output voltage and thus to avoid damage to the power stages resulting from under voltages.

IGBT Driver Modules

The IGBT driver modules PSDM-0DO2-5040 and PSDM-0DT2-5020 were developed to drive IGBT or MOSFET power transistors in an easy, safe and reliable way. The modules have an internal turnoff circuit that protects the output power stage in the event of a short circuit. The PSDM has an isolated DC/DC converter with a 2.4W output power for the drive circuit supply. (see PSDM-0DN1-5040). Data is transfered by an optocoupler or a transformer.

Connection Description

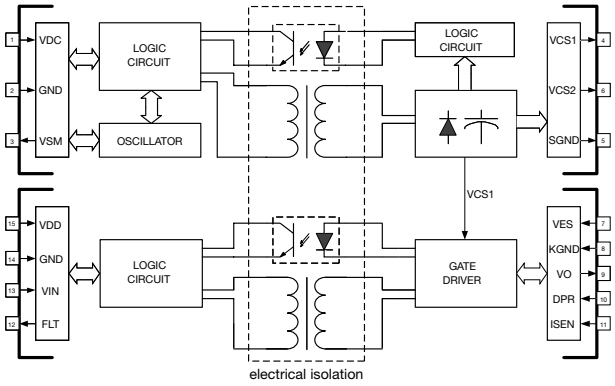


fig. 1: PSDM

PIN1: V_{DC}
A stabilised voltage supply between 10V and 15V with respect to GND.

PIN2: GND
GND is connected to the frame of the electronic power supply.

PIN3: V_{SM}
This output refelects the output voltage of the DC/DC converter. When more current is needed at the output stage, the voltage across V_{SM} decreases. When V_{SM} reaches the value of the DC/DC converter power supply, then the DC/DC converter has reached the maximum transfer current.

PIN4: V_{CS1}
VCS1 is the isolated positive output power supply for the driver logic.

PIN5: SGND
SGND is the electrically isolated output ground from the DC/DC converter.

PIN6: VC_{S2}
VCS2 is the isolated negative output power supply for the driver logic.

PIN7: V_{ES}
VES is the external power supply for the driver logic. V_{ES} is connected to V_{CS2} to turn off the MOSFET/IGBT connected to the module.

PIN8: KGND
KGND is the isolated Kelvin ground that is connected to SGND.

PIN9: V_O
Output V_O is the signal output for the IGBT gate drive. In order to permit the switching speed to be set independently during turn-on and turn-off, two gate resistors and a diode must be used
(for example, R_{g1} = 22 Ω and R_{g2} = 100 Ω).

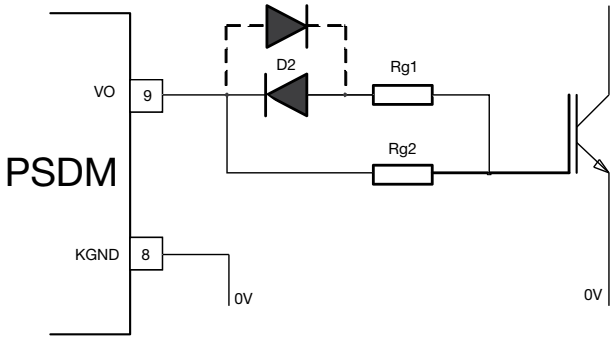


fig. 2: Gate Driver

PIN10: D_{PR}
This connection is used to monitor the voltage drop across the turned-on current transistor, so as to provide protection against short circuits and overloading on the IGBT. This involves monitoring the collector voltage and turning off the power transistor if this voltage rises above a certain threshold value. The best method of detecting an excess threshold value is through the use of an external fast or super-fast high voltage diode D1 (for example 1N4937) and an internal comparitor. The PSDM has power transistor supervision, which monitors the collector voltage on the IGBT. Under normal operating conditions when the IGBT is turned on and saturated, the voltage across DPR is kept low. When the IGBT is no longer saturated or turned off, the internal current source (270 µA) will trip out the comparitor. The comparitor threshold value is typically 6.5 V (D_{PRth}). Resistor RRV is required to protect the PSDM from reverse voltage transients and should not be larger than 1kΩ. The fault event is transferred to the output pin FLT by an internal optocoupler.

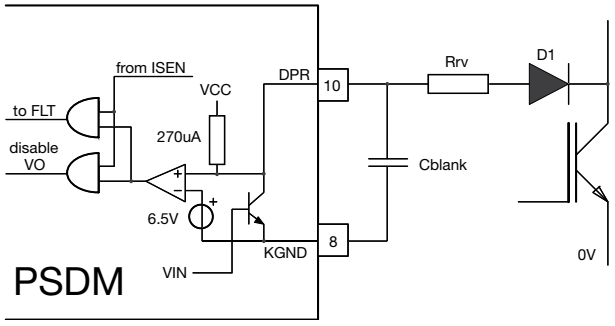


fig. 3: Power Transistor Supervision D_{pr}

PIN11: I_{SEN}
Input I_{SEN} is required to check the supply current across Risen, serving thus as a protection against short circuits and overvoltages on the IGBT. An RC filter is used across pins 8 and 11 to attenuate any high frerquency noise. If an overcurrent (V_{ISOC} > 65 mV) takes place across R_{ISEN}, IGBT will be turned off by an internal circuit. The signal fault is reset when another impulse appears at the signal input V_{IN}. In the event of a short circuit across the output (V_{ISSC} > 130 mV), inductance will be very small. Measured across resistor Risen, the short circuit signal is transfered by an internal optocoupler to the output pin FLT. If a short circuit is detected, the IGBT remains turned off until the next impulse (V_{in}).

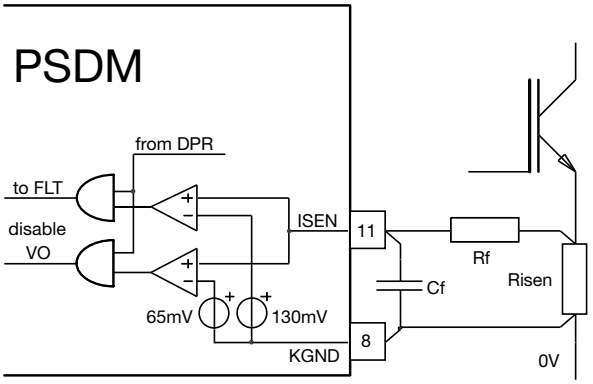


fig. 4: Fault Current Detection I_{sen}

PIN12: FLT
The PSDM has an active fault output. This fault output is internally interfaced to an optocoupler. In a turned-on state, the current range of the optocoupler is between 10 to 20 mA, possessing a high impedance in the turned-off state. The integrated circuit is shown below.

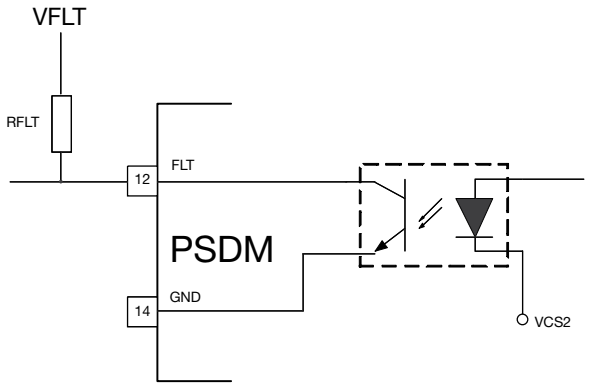


fig. 5: Fault Output

The FLT pin is only enabled when it is used together with a D_{PR} or I_{SEN} signal. Voltage V_{FLT} can be taken from 5V to 15V with a resistor. The supply current permitted is 10mA. In the event of a fault, output FLT is switched to GND.

PIN13: V_{IN}
This input has a SchmittTrigger characteristic. HIGH level turns the power transistor on, LOW turns it off.

PIN15: V_{DD}
A stabilised voltage supply between 4.5V and 5.5V with respect to GND.

Application Example: Power Supply 0-15V (fig. 6)

With this circuitry example, an output voltage of 0-15V is generated at $V_{0.}$ The two functions fault current detection (ISEN) and power transistor supervision (D_{PR}) are inactively switched for this application. With this, SGND is connected to I_{SEN}, D_{PR}, V_{ES} and KGND. If necessary, a seprate resistor can be connected between V_0 and IGBT in order to optimize the turning on and off of the semi-conductor.

Power stage driver module

Application Example: Power Supply -4-15V (fig. 7)

With this circuitry example, an output voltage of -4-15V is generated at V_0. The two functions fault current detection (I_{SEN}) and power transistor supervision (D_{PR}) are inactively switched for this application. With this, SGND is connected to I_{SEN}, D_{PR}, V_{ES} and KGND. If necessary, a seprate resistor can be connected between V0 and IGBT in order to optimize the turning on and off of the semi-conductor.

Application Example: Power Transistor Supervision (fig. 8)

In this example, power transistor supervision is presented for the IGBTs. For this, output V_{CS2} (-4V) is connected to V_{ES}. Supervision is actively switched with the connection of V_{CS1} to I_{SEN}. In addition, a high voltage diode is connected in series to a resistor between D_{PR} and the IGBT collector. The capacitor is switched from D_{PR} to SGND.

Application Example: Fault Current Detection (fig.9)

With this example, a fault current detection circuitry is presented for the IGBTs. For this, output V_{CS2} (-4V) is connected to V_{ES}. A resistor R_{ISEN} is connected between I_{SEN} and KGND. An RC filter is used to attenuate high frequency noise. A capacitor is needed between D_{PR} and KGND.

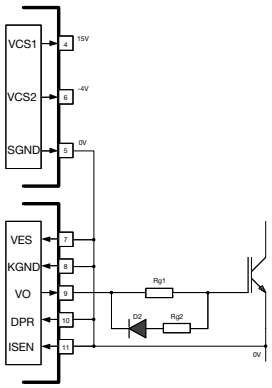


fig. 6: Power Supply 0-15V

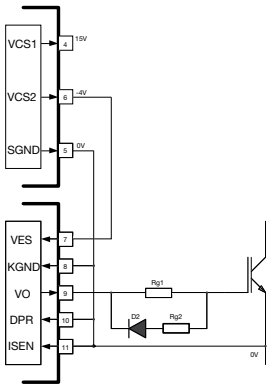


fig. 7: Power Supply -4-15V

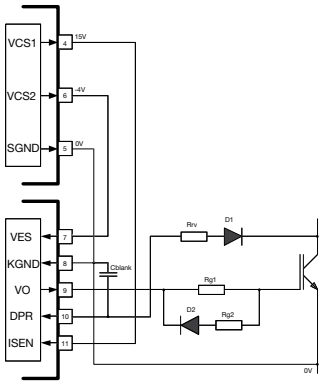


fig. 8: Power Transistor Supervision

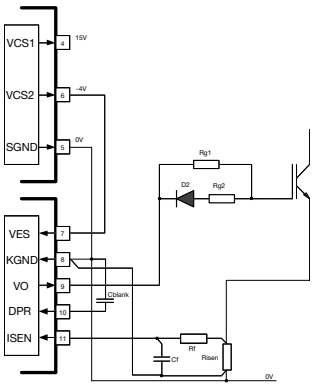


fig. 9: Fault Current Detection

Automatic Undervoltage Turn-off

The PSDM module is equipped with undervoltage protection for the gate drive of the IGBT/MOSFET. Should the gate voltage be too low, the IGBT can quickly overheat; to avoid this, the undervoltage protection is arranged such that when the voltage drops below 10V, the gate voltage on the PSDM is turned off.

Layout and Wiring (fig. 10)

The driver module should be placed as close as possible to the power transistor so that the wiring is kept short. Long wiring connections should be avoided; it is recommended to twist the wires here.

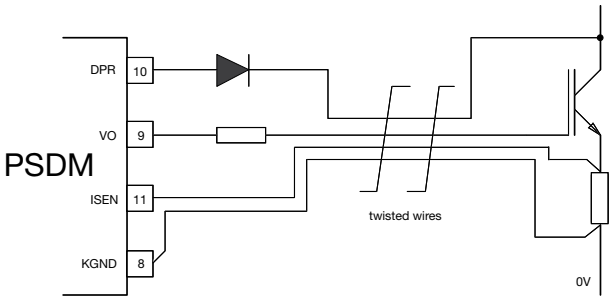


fig. 10: Wiring

type index

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Order Number from	to	Web Reference or Type	page
PSDM-0D29-0001	PSDM-0DN1-5040	**PSDM-6**	XXX

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