

600V IGBT/MOSFET Driver modules with integrated DC/DC converter
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PSDM-60
(Data transfer via transformer)



PSDM-6T
(Data transfer via optocoupler)



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

Applications

- Inverters
- Converters
- Motor drives

Web Links

- RoHS: <http://www.schurter.com/rohs>

Standards

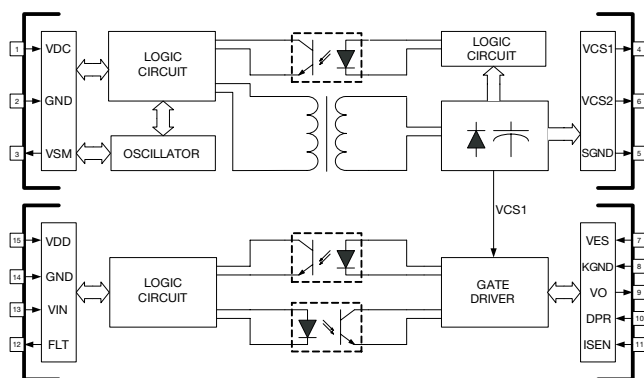
- EN 61248-5
- EN 61558-1

Technical Data

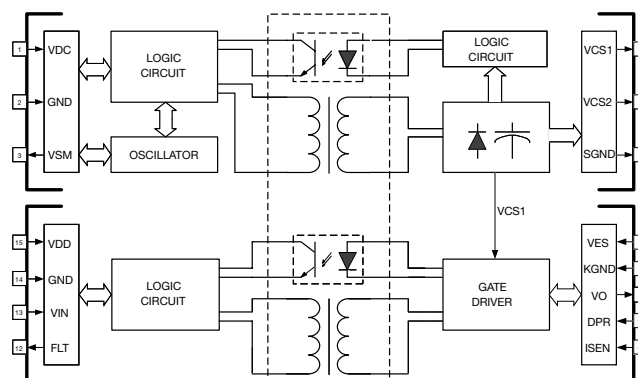
Input voltage	10–15 VDC
Output voltage 1	15 VDC
Output voltage 2	–4 VDC
Output current	120 mA
Isolation voltage	3500 V
Switching frequency DC/DC converter	Up to 500 kHz
Switching frequency driver stage	Up to 100 kHz

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-60 (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 _{ripple-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		

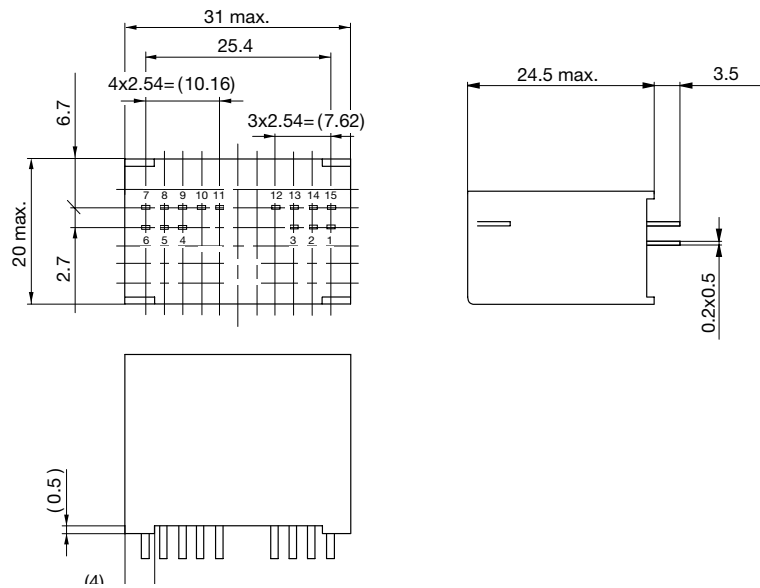
(VDC = 12V, TA = 25°C)

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	f _{INsw}	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}
Active 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

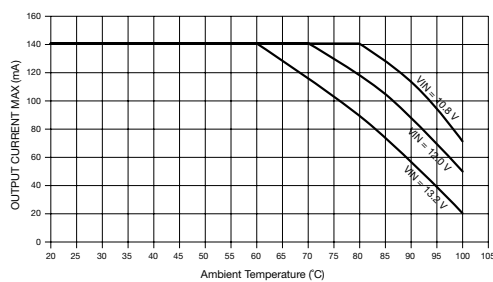
(VDC = 12V, TA = 25°C)

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.