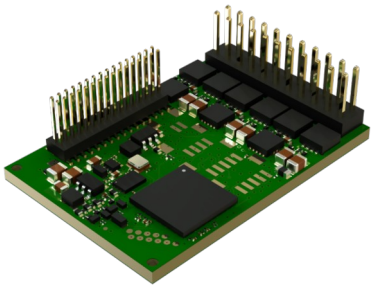
Servo amplifier

mcDS-m3-25cXX-SM



Picture similar

1. Technical data

Power stage						
Name	**Symbol**	**Description**	**min.**	**Value**	**max.**	**Unit**
U_p Ma, Mb, Mc	U_p	Power supply voltage	10	-	60	V
	I_{out_MAX}	Max. output current	-	-	25	A
	U_{out}	Output voltage	-	-	97	% U_p
	F_{PWM}	PWM frequency	-	40	-	kHz
	η_p	Efficiency	-	typ. 98	-	%
• I_{out_CONT} applies to max. 40°C ambient temperatur.						

Electronic supply						
Name	**Symbol**	**Description**	**min.**	**Value**	**max.**	**Unit**
U_e	U_e	Electronic supply voltage	10	24	30	V
	$U_{e_WO_DOUT}$	Electronic supply voltage for devices without DOUT's	10	24	60	V
	I_e	Electronic supply current @ Ue=24V	-	typ. 70	-	mA
• I_e applies to unconnected DOUT's and unconnected HALL/Encoder.						

Inc.-Encoder and Hall						
Name	**Symbol**	**Description**	**min.**	**Value**	**max.**	**Unit**
INC-A, INC-B, INC-INX, H1, H2, H3	$U_{INC_HALL_LOW}$	Input voltage: low-state	0	-	1.2	V
	$U_{INC_HALL_HIGH}$	Input voltage: high-state	3.5	-	5.0	V
	R_{INC_HALL}	Input resistance	-	1	-	kΩ
	F_{INC}	Input frequency inc. encoder	-	-	500	kHz
	F_{HALL}	Input frequency hall sensors	-	-	10	kHz
	VDD_{INC}	5V Output supply voltage for inc. encoder	4.9	5.1	5.3	V
	VDD_{HALL}	5V Output supply voltage for hall sensors	4.9	5.1	5.3	V
	I_{VDD_INC} I_{VDD_HALL}	Summarized output supply current for inc. encoder and hall sensors	-	-	190	mA
• Internal 1 kΩ Pull-U_p-Resistors to VDD_{INC} on Encoder inputs. • Internal 1 kΩ Pull-U_p-Resistors to VDD_{HALL} on Hall inputs. • Reference potential is VSS_{INC} and VSS_{HALL}.						

Digital inputs						
Name	**Symbol**	**Description**	**min.**	**Value**	**max.**	**Unit**
DIN0, DIN1, DIN2, DIN3, STO-A, STO-B	U_{DIN_LOW}	Input voltage: low-state	0	-	5	V
	U_{DIN_HIGH}	Input voltage: high-state	9	-	30	V
	R_{DIN}	Input resistance	-	24.1	-	kΩ
• Reference potential is GND.						

Digital outputs						
Name	**Symbol**	**Description**	**min.**	**Value**	**max.**	**Unit**
DOUT0-BR, DOUT1	U_{DOUT_HIGH}	Output voltage: high-state	0	-	U_e	
	I_{DOUT_HIGH}	Output current: high-state	-	-	700	mA
• Reference potential is GND. • DOUT0-BR has a free-wheeling diode to GND • DOUT0-BR load: resistive, inductive • DOUT1 load: resistive • The outputs switch to U_e.						

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Analog inputs						
Name	**Symbol**	**Description**	**min.**	**Value**	**max.**	**Unit**
MT, AIN	U_{MT}	Input voltage	0	-	2.047	V
	U_{AIN}	Input voltage	0	-	10.24	V
	R_{MT}	Input resistance	-	1.5	-	kΩ
	R_{AIN}	Input resistance	-	15	-	kΩ

- MT: Temp. sensor KTY84-130, PT1000.
- MT, AIN Tolerance = 3%
- Reference potential for MT is VSS_{MT}.
- Reference potential for AIN is VSS.

Magnetchip-Encoder		
Name	**Description**	**Value**
MCHIP-ENC	Resolution	15 Bit
	Magnet	neodymium alloy (N35) Ø 6 mm x 2.5 mm
	Air gap between magnet and sensor	typ. 1 mm
	Radial positioning accuracy	0.5 mm

- A typical magnet is a cylinder made of a neodymium alloy (N35) with a diameter of 6 mm and a height of 2.5 mm, inserted into an aluminum shaft. The typical air gap between the magnet and the sensor is between 1 mm and 2 mm. To ensure good measurement linearity, the sensor must be positioned with a radial accuracy of typically 0.5 mm.

CAN Interface		
Name	**Description**	**Value**
CAN-Hi, CAN-Lo	Protocol	CANopen DS301
	Device profile	DS402 and miControl
	CAN specification	2.0.B
	Max. baudrate	1 Mbit/s
	Galvanically isolated	no

Environment		
Name	**Description**	**Value**
ENV	Protection class	IP00
	Ambient temperature - operating	-40 .. 105 °C
	Ambient temperature - storage	-40 .. 70 °C
	Pollution degree	1
	Humidity	5 .. 90 % (non-condensing)

Mechanical		
Name	**Description**	**Value**
MECH	Dimensions LxBxH	35 x 24 x 10.7 mm
	Weight	6.5 g

Additional technical data are available in mcManual.

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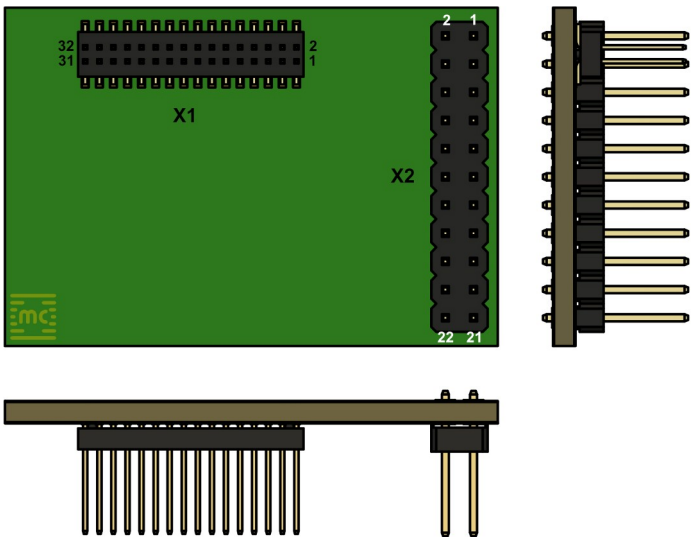
1. Scheme



2. Terminal assignment

X1	I/O's and CAN	
1	VDD_{3V3}	3.3V output voltage analog signals, module output
2	INC-INX	Inc. encoder, index channel
3	INC-B	Inc. encoder, B channel
4	CAN-Hi	CAN interface for external connections
5	INC-A	Inc. encoder, A channel
6	CAN-Lo	CAN interface for external connections
7	VSS	Ground for VDD_{5V} and VDD_{3V3}
8	H3	Hall input 3
9	VSS	Ground for VDD_{5V} and VDD_{3V3}
10	H2	Hall input 2
11	VSS	Ground for VDD_{5V} and VDD_{3V3}
12	H1	Hall input 1
13	I2C1-SCL	I2C Interface 1
14	res.	Reserved
15	I2C1-SDA	I2C Interface 1
16	AIN	Analog input
17	VDD_{5V}	5V output voltage for sensor power supply
18	res.	Reserved
19	VDD_{5V}	5V output voltage for sensor power supply
20	DIN0	Digital input 0
21	MT	External motor temperature input (KTY84-130, PT1000)
22	DIN1	Digital input 1
23	I2C1-/INT	I2C Interface 1 interrupt
24	DIN2	Digital input 2
25	res.	Reserved
26	DIN3	Digital input 3
27	res.	Reserved
28	res.	Reserved
29	res.	Reserved
30	DOUT0	Digital output 0
31	res.	Reserved
32	DOUT1	Digital output 1

X2	Supply and Motor	
1	res.	Reserved
2	U_e	Electronic supply voltage
3	Ma	Motor phase A
4	Ma	Motor phase A
5	Ma	Motor phase A
6	Ma	Motor phase A
7	U_p	Power supply voltage
8	U_p	Power supply voltage
9	U_p	Power supply voltage
10	U_p	Power supply voltage
11	Mb	Motor phase B
12	Mb	Motor phase B
13	Mb	Motor phase B
14	Mb	Motor phase B
15	GND	Ground
16	GND	Ground
17	GND	Ground
18	GND	Ground
19	Mc	Motor phase C
20	Mc	Motor phase C
21	Mc	Motor phase C
22	Mc	Motor phase C

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