

## 150 DDB 110 M12 W □ □

$V_{In,nom} = 72\text{ V}, 110\text{ V}$      $V_{O,nom} = 12\text{ V}$      $I_{O,nom} = 12.5\text{ A}$

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>INPUT</b>						
$V_{In}$	Operating input voltage range	continuously	50.4		137.5	$V_{DC}$
$V_{In}$		Dynamic $t \leq 0.1\text{ s}$ $t \leq 1.0\text{ s}$	43.2 137.5		50.4 154	$V_{DC}$ $V_{DC}$
$V_{In\ min}$	Converter ON	$0\text{ A} \leq I_o \leq 12.5\text{ A}$	43.0		50.0	$V_{DC}$
$V_{In\ min}$	Converter OFF	$0\text{ A} \leq I_o \leq 12.5\text{ A}$	40.0	42.0	43.0	$V_{DC}$
$V_{In\ max}$	Converter OFF	$0\text{ A} \leq I_o \leq 12.5\text{ A}$	154.5		160	$V_{DC}$
$V_{Enable}$	Enable Function *) Reference potential: $-V_{In}$	converter ON: EN = High (V at Pin 7) converter OFF: EN = Low (V at Pin 7)	43.2 0		154.0 3	$V_{DC}$ $V_{DC}$
	Stand by current	$43.2\text{ V} \leq V_{In} \leq 154.0\text{ V}$ , Enable = Low			3.0	mA
$I_{In}$	Input current: no load at the output Nominal load Nominal load Nominal load @ $V_{In\ min}$	$V_{In} = 154\text{ V}$ , $I_o = 0\text{ A}$ $V_{In} = 110\text{ V}$ , $I_o = 12.5\text{ A}$ $V_{In} = 72\text{ V}$ , $I_o = 12.5\text{ A}$ $V_{In} = 43.2\text{ V}$ , $I_o = 12.5\text{ A}$		25 1.5 2.3 3.8	40   4.5	mA A A A
	Inrush current	$V_{In} = 154\text{ V}$			10	A <sup>2</sup> s
$I_{In\ max}$	Max. input current	$V_{In} = 50.4\text{ V} \dots 154\text{ V}$ , $I_o = 12.5\text{ A}$ $\Delta t \leq 250\text{ ms}$			8	A
	Input fuse	Internal: yes		10 AF		
$C_{In}$	Input capacity			30	50	$\mu\text{F}$
	Max. allowed external line inductance				50	$\mu\text{H}$
	Input reverse protection	yes, MOSFET in minus $V_{In}$ line		- 154.0		$V_{DC}$
	Input transient protection	Varistor + Transil diode		S20K115, 1.5KE150CA		

<b>OUTPUT: Power Stage</b>		$43.2\text{ V} \leq V_{In} \leq 154.0\text{ V}$				
$P_o$	Output power	$T_A = -40^\circ\text{C} \dots +70^\circ\text{C}$		150		W
$V_{O\ nom}$	Output voltage: factory adjust		11.9	12.0	12.2	$V_{DC}$
$\Delta V_o$	Output voltage regulation TL 431 @ $\Delta T$ , t (aging)	$0\text{ A} \leq I_o \leq 12.5\text{ A}$ $T_A = -40^\circ\text{C} \dots +70^\circ\text{C}$ $T_A = +70^\circ\text{C} \dots +85^\circ\text{C}$	$\leq 2.5\%$ von $V_{A\ nenn}$ $\leq 3.0\%$ von $V_{A\ nenn}$			
$\Delta V_{A\ dyn}$	Load regulation dynamic	Load: 20 - 80 - 20 % x $I_{O\ nom}$		100	300	mV
$t_{dyn}$	Response time	Load: 20 - 80 - 20 % x $I_{O\ nom}$		1	3	ms
$V_{O\ rms}$	Ripple voltage	Nominal load BW 300 kHz		100	250	mV <sub>rms</sub>
$V_{O\ ss}$	Spikes	Nominal load BW 20 MHz			350	mV <sub>pp</sub>
$t_{On}$	Switch ON time $V_o$	$50.4\text{ V} \leq V_{In} \leq 137.5\text{ V}$ $0\text{ A} \leq I_o \leq 12.5\text{ A}$ Resistive load	20		200	ms
$t_s$	Hold up time @ $P_o = 100\text{ W}$ Recovery time: $t \leq 5\text{ s}$ , @ $0.5\text{ A} \leq I_o \leq 6.25\text{ A}$ (minimum load)	$0\text{ A} \leq I_o \leq 12.5\text{ A}$ class S2 @ EN 50155	10			ms
	Overvoltage switch OFF $V_{O,max}$ Op amp: electronically monitored	$0\text{ A} \leq I_o \leq 12.5\text{ A}$		converter OFF: $V_o \leq 16.0\text{ V}$		V
$I_o$	Output current	$T_A = -40^\circ\text{C} \dots +70^\circ\text{C}$ no derating,	12.5			A
	Threshold value current limitation	$T_A = -40^\circ\text{C} \dots +85^\circ\text{C}$	12.6		13.0	A
	Short circuit current VI - characteristic	Short circuit current betw. $+V_o / -V_o$			14.0	A
$C_A$	Internal capacity			12		mF
	Max. allowed external capacity				100	mF

<b>SIGNALING</b>				
PF	Power Fail Open Collector Transistor $U_{CEmax} \leq 70\text{ V}$ , $I_{CEmax} \leq -20\text{ mA}$ Reference: $-U_A$	Transistor ON: PF = Low, $V_o < V_{O\ min}$ Transistor OFF: PF = High, $V_o \geq V_{O\ min}$	$V_o < 0.95 \times V_{O\ nom} \pm 3\%$ $V_o \geq 0.95 \times V_{O\ nom} \pm 3\%$	$V_{DC}$ $V_{DC}$
	Displayed signals	Signal defined for $V_o \geq 0.6 \times V_{O\ nom}$ input: $43.2\text{ V} \leq V_{In} \leq 154.0\text{ V}$ output: $11.5\text{ V} \leq V_o \leq 12.4\text{ V}$	LED yellow LED yellow	

<b>COMMON DATA</b>						
f	Switching frequency	$V_{In} = 110\text{ V}$ , $I_o = 12.5\text{ A}$		67.5		kHz
$\eta$	Efficiency	$P_A \geq 0.7 \times P_{A\ nenn}$	89	93		%
	MTBF (SN 29500)	$V_{In} = 110\text{ V}$ , $I_o = 12.5\text{ A}$ , $T_A = +40^\circ\text{C}$		500 000		h
	No load- & short circuit proofed	continuously		yes		

\*ENABLE (EN) High:  $0 \leq I_{EN} \leq 1\text{ mA}$   
(EN) Low:  $0 \leq I_{EN} \leq 5\text{ mA}$

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>SAFETY / DIMENSIONS</b>						
	Clearance - and creepage distances for PD2, OV2 *) PCB FR4, V0, T <sub>G</sub> = + 140°C (+150°C on request), IPC 6012E class 3	input   output input   housing output   housing	2.0 2.0 2.0			mm mm mm
	Isolation voltage Unit test: rampe function 2s - 3s - 2s Type test: 1 Minute	input   output input   housing output   housing			2'100 1'500 750	V <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub>
	Isolation resistance	input   output	30			MΩ
	Connector	input , output: 11 Pins necessary counter connector	MSTBT 2,5/11-STF-5,08 MSTB 2,5/11-STF-5,08			
	Protection degree, - class	SE M4 Al – Metal housing	I, IP 30			
	Dimensions	B x H x T incl. Mounting plate	170 x 165 x 52,5			mm
	Mounting	Wall mounting with screws	6 x M4			
	Weight			1100		g

### AMBIENT CONDITIONS

T <sub>A</sub>	Operating temperature range	EN 50155 class Tx 10 min. (Option: continuous)	- 40 + 70		+ 70 + 85	°C °C
T <sub>Store</sub>	Storage temperature range		- 40		+ 85	°C
	Cooling		Free convection			
	Humidity	EN 50155, IEC 60571	75% averaged per year, 95% 30 days			
	Vibration / Shock	IEC 61373, IEC 68-2-27 Kat. I: 3 Shocks each Axis	50 m / s <sup>2</sup> , 30 ms			

### EMC

	Emission	Line referenced and radiated	EN 50121 - 3 - 2: 2006			
	Immunity	ESD EN 61000 - 4 - 2	6 kV / 8 kV Performance criteria - B -			
		High frequency HF-Field **) EN 61000 - 4 - 3	20 V / m 80 MHz ... 1 GHz Performance criteria - A -			
		Burst EN 61000 - 4 - 4	Level 3 asym., sym. Performance criteria - A -			
		Surge EN 61000 - 4 - 5	2 kV asym. / 1 kV sym. R <sub>i</sub> = 42 Ω, Performance criteria - A -			
		HF – current injection EN 61000 - 4 - 6	10 V <sub>eff</sub> , R <sub>i</sub> = 150 Ω Performance criteria - A -			

### STANDARDS

	referenced standards:	EN 50155: 2008	EN 60529	EN 50124 - 1: 2006	EN 50121 - 3 - 2: 2006	IEC 60571
		SN 29500	EN 50121 - 1	EN 50125 - 1	EN 60068 - 2 - 6, 2...27	EN 61000 - 4 - 2...6
		IEC 571	IEC 61373: 1999	EN 60721 - 3 - 5	EN 61373 : 1999	

Technical data valid for: - 40° C ≤ T<sub>A</sub> ≤ + 70° C, 50.4 V ≤ V<sub>in</sub> ≤ 137.5 V, if not otherwise specified.

\*) coordination acc. DIN EN 61010-1 Basisisol. \*\*) HF Feld: 80MHz – 1GHz 20V/m, 1400 MHz – 2100MHz 10V/m 2100MHz – 2500MHz 5V/m

### Pinning

Pin		recommended wiring size
11	+ V <sub>in</sub>	1.5 mm <sup>2</sup>
10	- V <sub>in</sub>	1.5 mm <sup>2</sup>
9	+ V <sub>in</sub>	1.5 mm <sup>2</sup>
8	- V <sub>in</sub>	1.5 mm <sup>2</sup>
7	ENABLE	1.0 mm <sup>2</sup>
6	N.B.	Not connected
5	Power Fail	1.0mm <sup>2</sup>
4	- V <sub>O</sub>	2.5 mm <sup>2</sup>
3	+ V <sub>O</sub>	2.5 mm <sup>2</sup>
2	- V <sub>O</sub>	2.5 mm <sup>2</sup>
1	+ V <sub>O</sub>	2.5 mm <sup>2</sup>

### Order key:

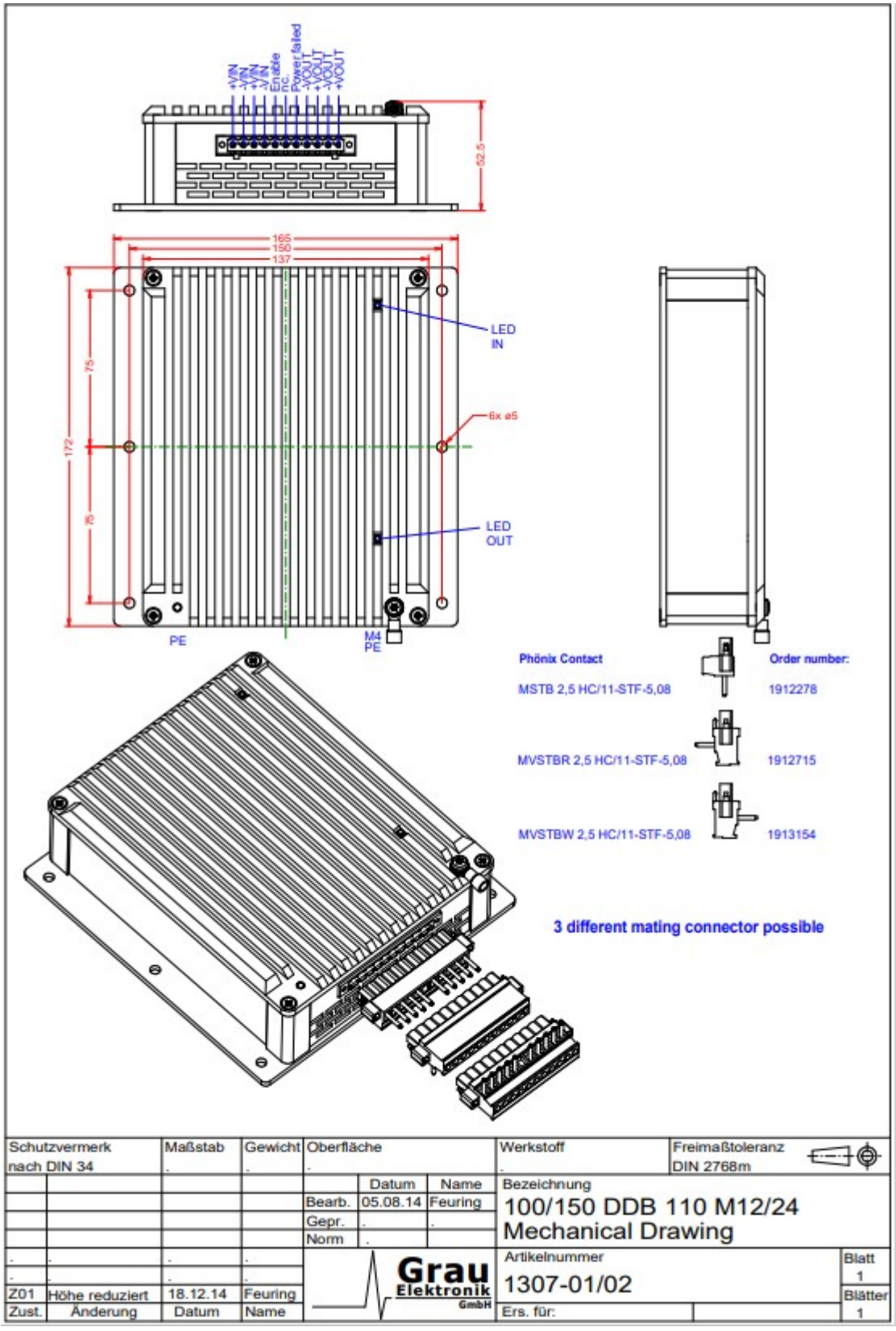
**150 DDB 110 M12 W □ □ select**


**W = Wall mounting**

IP 20	0 0 = cl. S1	0ms
	0 1 = cl. S1	and external connector
	1 0 = cl. S2	10ms
	1 1 = cl. S2	and external connector
	2 0 = cl. S1	0ms
IP 30	2 1 = cl. S1	0ms and external connector
	3 0 = cl. S2	10ms
	3 1 = cl. S2	10ms and external connector

SE: ≥ 4.0mm<sup>2</sup> connected with housing  
Necessary distance for free air convection below converter unit: ≥ 25 mm.  
Recommendation: for optimal heating transfer take care for good thermal contact between converter mounting plate and external wall or!

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Schutzvermerk nach DIN 34	Maßstab	Gewicht	Oberfläche	Werkstoff	Freimaßtoleranz DIN 2768m 
			Datum: 05.08.14 Name: Feuring	Bezeichnung: 100/150 DDB 110 M12/24 Mechanical Drawing	
			Gepr.	Artikelnummer: 1307-01/02	
			Norm	Blatt: 1	
Z01	Höhe reduziert	18.12.14	Feuring	Blätter: 1	
Zust.	Änderung	Datum	Name	Ers. für:	