

## 50 DDB 110 M24 W □ □ A

$V_{I\text{ nom}} = 72\text{ V}, 110\text{ V}$      $V_{O\text{ nom}} = 24\text{ V}$      $I_{O} = 2.1\text{ A} / 2.7\text{ A}$

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
<b>INPUT</b>						
$V_I$	Input voltage range	Continuously	50.4		137.5	$V_{DC}$
$V_I$	Input voltage range	Dynamic $t \leq 0.1\text{ s}$	43.2		50.4	$V_{DC}$
$V_I$	Input voltage range	Dynamic $t \leq 1.0\text{ s}$	137.5		154	$V_{DC}$
$V_{I\text{ min}}$	Converter switch ON		47.0		50.0	$V_{DC}$
$V_{I\text{ min}}$	Converter shutdown		40.0	42	43.0	$V_{DC}$
$V_{I\text{ max}}$	Converter shutdown		154.5		160	$V_{DC}$
$V_{\text{Enable}}$	Enable Function	Converter On: Enable = High	43.2		154	$V_{DC}$
	Reference: $-V_{In}$	Converter Off: Enable = Low	0		6	$V_{DC}$
$V_{\text{Enable}}$	Switch OFF time duration (Default)	ENABLE High $\rightarrow$ Low	1			h
	Stand by current	$43.2\text{ V} \leq V_I \leq 154\text{ V}$ , Enable = Low			2.0	mA
$I_I$	Input current	No load $V_{In} = 154.0\text{ V}, I_{O} = 0\text{ A}$ Nominal load $V_{In} = 110\text{ V}, I_{O} = 2.7\text{ A}$ Nominal load $V_{In} = 72\text{ V}, I_{O} = 2.7\text{ A}$ $V_{In} = 43.2\text{ V}, I_{O} = 2.7\text{ A}$		25 0,7 1,1 1,7	40	mA A A A
	Input current integral, (Inrush current)	$V_I = 154\text{ V}$			10	A <sup>2</sup> s
$I_{I\text{ max}}$	Max. input switch on current	$I_{O} = 2.7\text{ A}$ $\Delta t \leq 100\text{ ms}$	on request			
	Input fuse	Yes	10AF			
$C_I$	Converter input capacity			10		$\mu\text{F}$
	External line inductance				50	$\mu\text{H}$
	Reverse input protection	Yes	- 154			$V_{DC}$
	Input voltage transient protection	Varistor + Transil Diode	S20K115 1.5KE150CA			

### OUTPUT: Power Unit

$43.2\text{ V} \leq V_I \leq 154\text{ V}$

$P_{O\text{ nom}}$	Output power	$T_A = -40^\circ\text{C} \dots +70^\circ\text{C}$		50		W
$P_{O\text{ nom}}$	Output peak power	$t \leq 1\text{ s}$	50		65	W
$V_{O\text{ nom}}$	Output voltage adjustment, factory set		23.8	24.0	24.1	$V_{DC}$
$\Delta V_O$	Regulation	$0\text{ A} \leq I_O \leq 2.7\text{ A}$ $T_A = -40^\circ\text{C} \dots +70^\circ\text{C}$ $T_A = +70^\circ\text{C} \dots +85^\circ\text{C}$ Class Tx	$\leq 3.0\% V_{O\text{ nom}}$			V
			10			Min.
$\Delta V_{O\text{ dyn}}$	Load regulation dynamic	Load: 20 - 80 - 20 % $\times I_{O\text{ nom}}$		100	250	mV
$t_{\text{dyn}}$	Response time	Load: 20 - 80 - 20 % $\times I_{O\text{ nom}}$		1	3	ms
$V_{O\text{ rms}}$	Ripple	Nom. load BW 300 kHz		100	250	$\text{mV}_{\text{rms}}$
$V_{O\text{ pp}}$	Noise	Nom. load BW 20 MHz			350	$\text{mV}_{\text{pp}}$
$t_{\text{on}}$	Turn on time $V_O$	$50.4\text{ V} \leq V_I \leq 137.5\text{ V}$ , $0\text{ A} \leq I_O \leq 2.7\text{ A}$ Resistive load	20		200	ms
$t_{\text{h}}$	Hold up time $P_O = 50\text{ W}$ Recharge time loading storage cap: $t \leq 5\text{ s}$ , @ $0.5\text{ A} \leq I_O \leq 2.0\text{ A}$	$0\text{ A} \leq I_O \leq 2.0\text{ A}$ Class S2 @ EN 50155	10			ms
	Overvoltage shutdown $V_O$	$0\text{ A} \leq I_O \leq 2.7\text{ A}$	Converter off: $V_O \leq 32.4\text{ V}$			V
$I_O$	Output current	$T_A = -40^\circ\text{C} \dots +85^\circ\text{C}$	2.7	2.7		A
	Output current limitation of $I_O$	$T_A = -40^\circ\text{C} \dots +85^\circ\text{C}$	2.8			A
	Output short circuit current	Short circuit between $+V_O$ and $-V_O$			3.6	A
$C_O$	Internal output capacity			5		mF
	Max. external output capacity	Battery charging on request			30	mF

### OUTPUT: Signals

PF	Power Fail (Option) Open Collector Transistor $V_{CE\text{ max}} \leq 70\text{ V}$ , $I_{CE\text{ max}} \leq -20\text{ mA}^*$ Reference: $-V_{\text{Out}}$	Transistor On: PF = Low, $V_O < V_{O\text{ min}}$ Transistor Off: PF = High, $V_O \geq V_{O\text{ min}}$	$V_O < 0.95 \times V_{O\text{ nom}} \pm 3\%$ $V_O \geq 0.95 \times V_{O\text{ nom}} \pm 3\%$	$V_{DC}$ $V_{DC}$
	Signals. Optionally	Input: Output:	LED yellow LED yellow	

### GENERAL SPECIFICATIONS

f	Switching frequency	$V_I = 110\text{ V}, I_O = 2.7\text{ A}$		105		kHz
$\eta$	Efficiency	$P_O \geq 0.7 \times P_{O\text{ nom}}$	87	90		%
	MTBF (SN 29500)	$V_I = 110\text{ V}, I_O = 2.7\text{ A}, T_A = +40^\circ\text{C}$		450 000		h
	No load, short circuit proof		Continuously			

\*ENABLE High:  $0 \leq I_{EN} \leq 1\text{ mA}$  Switch OFF time adjustable 0, 15Min, 30Min. Default: 60min. Please, consult manufacturer  
Low:  $0 \leq I_{EN} \leq 5\text{ mA}$

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
<b>SAFETY / DIMENSIONS</b>						
	Creepage / clearance distances PD2 PCB FR4, V0, TG = + 140°C (+150°C on request)	Input   Output Input   Case Output   Case	2.0 2.0 2.0			mm mm mm
	Converter dielectric strength test every unit ramp function 2 s - 3 s - 2 s	Input   Output Input   Case Output   Case			2100 1500 750	V <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub>
	Connectors	Input , Output: 7 pins Req. external femal plug (2 * 7 pins)	TMSTB 2,5/7-STF-5,08 TMSTB 2,5/7-STF-5,08			
	Protection class, protection system	SE M4 metal case	I, IP 50			
	Dimensions with mounting plate <i>see drawing</i>	w x h x d Chassis mounting	120 x 154 x 42.0			mm
	Assembling	Chassis mounting with screws	4 x M4			
	Weight			750		g

### ENVIROMENTAL CONDITIONS

T <sub>A</sub>	Operating temperature range T <sub>A</sub>	Continuously EN 50155 Classe Tx 10 minutes	- 40 + 70		+ 70 + 85	°C °C
T <sub>Storage</sub>	Storage Temperature		- 40		+ 85	°C
	Cooling		free air convection			
	Humidity	EN 50155, IEC 60571	75% averaged year, 95% 30 days			
	Vibration / Shock valid only for chassis mounting	IEC 61373, IEC 68-2-27 Cat. I 3 Shocks per axis	50 m / s <sup>2</sup> , 30 ms			

### EMC

	Emission	Line conducted and radiated	EN 50121 - 3 - 2: 2006		
	Immunity	ESD EN 61000 - 4 - 2	6 kV / 8 kV Performance criteria - B -		
		High frequency 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, Perf. criteria - A -		
		HF – Current injection EN 61000 - 4 - 6	10 V <sub>eff</sub> , R <sub>i</sub> = 150 Ω Performance criteria - A -		

### STANDARDS

	Applied 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 specifications valid for: - 40° C ≤ T<sub>A</sub> ≤ + 70° C, 50.4 V ≤ V<sub>I</sub> ≤ 137.5 V, unless otherwise noted.

### Dimensions (in mm) and Pin Assignment

#### Pin Assignment XP10

Pin		Recommended wire gauge
7	+ V <sub>In</sub>	1.5mm <sup>2</sup>
6	- V <sub>In</sub>	1.5mm <sup>2</sup>
5	ENABLE	1.0mm <sup>2</sup>
4	NC	
3	PowerFail	1.0mm <sup>2</sup>
2	- V <sub>Out</sub>	2.5mm <sup>2</sup>
1	+ V <sub>Out</sub>	2.5mm <sup>2</sup>

SE: ≥ 4,0mm<sup>2</sup> connected to case

Keep free space on top and below the converter unit: ≥ 25 mm.

Attention: Take care to a close thermal connection between converter mounting plate and wall.

<b>Order Code:</b> <b>50 DDB 110 M24 W □ □ A select</b>	
<b>W = Chassis mounting</b>	
<b>IP 20</b>	<b>0 0 = class S1 0ms</b> <b>0 1 = class S1 and external counter connector</b> <b>1 0 = class S2 10ms</b> <b>1 1 = class S2 and external counter connector</b> <b>2 0 = class S1 0ms</b> <b>2 1 = class S1 0ms and ext. connector</b>
<b>IP 54</b>	<b>3 0 = class S2 10ms</b> <b>3 1 = class S2 10ms and external connector</b>

