

$$V_{I \text{ nom}} = 72 \text{ V} \quad V_{O \text{ nom}} = 5.1 \text{ V} \quad I_{O \text{ nom}} = 12 \text{ A}$$

$$V_{I \text{ nom}} = 110 \text{ V}$$

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
INPUT						
V_I	Input voltage range	Continuously	50.4		137.5	V_{DC}
$V_{I \text{ min}}$	Input voltage range dynamic	$V_I = 43.2 \text{ V} \dots 50.4 \text{ V}$ for $t \leq 0.1 \text{ s}$ $V_I = 137.5 \text{ V} \dots 154 \text{ V}$ for $t \leq 1 \text{ s}$	43.2		154	V_{DC}
$V_{I \text{ max}}$	Converter shutdown				43	V_{DC}
$V_{I \text{ max}}$	Converter shutdown		156		158	V_{DC}
V_{Enable}	Enable Function, PIN d22 Reference potential: $-V_I$	Converter on: Enable = low $V_{\text{Enable}} \leq 0.8 \text{ V}$, $I \leq 1.5 \text{ mA}$ Converter off: Enable = high $V_{\text{Enable}} \geq 3.0 \text{ V}$, $I \leq -50 \mu\text{A}^*$	0		0.8	V_{DC}
	Stand by current (converter OFF)	$43.2 \text{ V} \leq V_I \leq 154 \text{ V}$, Enable = High			18	mA
I_I	Input current	No load $V_I = 154 \text{ V}$, $I_O = 0 \text{ A}$ Nominal load $V_I = 72 \text{ V}$, $I_O = 12 \text{ A}$ Nominal load $V_I = 110 \text{ V}$, $I_O = 12 \text{ A}$ Nominal load $V_I = 43.2 \text{ V}$, $I_O = 12 \text{ A}$		1.0 0.7	70	mA A A A
	Input current integral	$V_I = 154 \text{ V}$			5	A^2s
$I_{I \text{ max}}$	Max. input switch on current $V_I \geq V_{I \text{ min}}$, $V_{\text{Enable}} \rightarrow \leq 0.8 \text{ V}$	$I_O = 4.25 \text{ A}$ $\Delta t \leq 100 \text{ ms}$			6	A
	Input fuse		10 A Pico Fuse			
C_I	Converter input capacitance				25	μF
	External line inductance				50	μH
	Reverse input protection	Parallel diode + internal fuse	BZW50-150B			
OUTPUT: Power Unit		$43.2 \text{ V} \leq V_I \leq 154 \text{ V}$		60		W
$P_{O \text{ nom}}$	Output power			60		W
$V_{O \text{ nom}}$	Output voltage adjustment, factory set	$I_O = 6 \text{ A}$	+ 5.0	+ 5.1	+ 5.2	V_{DC}
ΔV_O	Load regulation	$0 \text{ A} \leq I_O \leq 12 \text{ A}$ $T_A = -40^\circ\text{C} \dots +85^\circ\text{C}$	$\pm 2.5 \% V_{O \text{ nom}}$			V_{DC}
$\Delta V_{O \text{ dyn}}$	Load regulation dynamic	Pulse load: 20 - 80 - 20 % x $I_{O \text{ nom}}$			± 150	mV
t_{dyn}	Response time	Pulse load: 20 - 80 - 20 % x $I_{O \text{ nom}}$		1	2	ms
$V_{O \text{ rms}}$	Ripple	Nominal load BW 300 kHz		50	100	mV_{rms}
$V_{O \text{ pp}}$	Noise	Nominal load BW 20 MHz			350	mV_{pp}
t_{on}	Turn on time V_O	$50.4 \text{ V} \leq V_I \leq 154 \text{ V}$, $0 \text{ A} \leq I_O \leq 12 \text{ A}$ Resistive load 1.) $V_I \geq V_{I \text{ min}}$, $V_{\text{Enable}} \rightarrow \leq 0.8 \text{ V}$ 2.) $V_{\text{Enable}} \leq 0.8 \text{ V}$, $V_I \rightarrow \geq V_{I \text{ min}}$	25		200	ms
t_h	Option: Hold up time Standard without 10ms class S1 EN 50155	$50.4 \text{ V} \leq V_I \leq 154 \text{ V}$ $0 \text{ A} \leq I_O \leq 12 \text{ A}$ Option: Class S2 @ EN 50155	0 10			ms ms
	Overvoltage shutdown V_O	$0 \text{ A} \leq I_O \leq 12 \text{ A}$	Converter switch off: $V_O \leq 6 \text{ V}$			
I_O	Output current			12.0		A
	Output current limitation		12.1		12.5	A
	Output short circuit current	Short circuit between + V_O and - V_O			16.0	A
	Sense lines	Max. voltage drop compensation			0.25	V
C_O	Output capacity converter	Output stage		30		mF
OUTPUT: Signals						
PF	Power Fail, PIN z20 Open Collector Transistor $V_{CE \text{ max}} \leq 70 \text{ V}$, $I_{CE \text{ max}} \leq -20 \text{ mA}^*$ Reference potential: - Sense	Transistor on: PF= low, $V_O < V_{O \text{ min}}$ Transistor off: PF= high, $V_O \geq V_{O \text{ min}}$ Signal defined for $V_O \geq 0.6 \times V_{O \text{ nom}}$		$V_O < 0.95 \times V_{O \text{ nom}} \pm 2 \%$ $V_O \geq 0.95 \times V_{O \text{ nom}} \pm 2 \%$		V V
	Signals	$V_O > 4.75 \text{ V} \pm 2 \%$	LED yellow on			
GENERAL SPECIFICATIONS						
f	Switching frequency	$V_I = 110 \text{ V}$, $I_O = 12 \text{ A}$		75		kHz
η	Efficiency	$P_O \geq 0.7 \times P_{O \text{ nom}}$	79	81		%
	MTBF (SN 29500)	$V_I = 110 \text{ V}$, $I_O = 12 \text{ A}$, $T_A = +40^\circ\text{C}$		500 000		h
	No load, short circuit proof		Continuously			

* - Sign: sink current

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
SAFETY / DIMENSIONS						
	Creepage, Clearance PD2, OV 2 PCB: FR4, V0, TG = +140°C	Input – output Input – case Output – case	2.0 2.0 1.0			mm mm mm
	Converter dielectric strength test Type test: every unit Unit test: ramp function 2 s – 3 s – 2 s	Input – output Input – case Output – case			2100 2100 750	V _{DC} V _{DC} V _{DC}
	Connectors DIN 41612	H15, Pin 24 leading				
	Protection class, protection system			I, IP 20		
	Dimensions w x h x d <i>see figure</i>	Plug - in unit incl. handle PCB	45.3 x 128.4 x 160 (3U/9HP)			mm mm
	Weight	Plug - in unit		0.8		kg

ENVIRONMENTAL CONDITIONS						
T _A	Operating temperature range	Continuously EN 50155 Class Tx for 10 min. + 85°C	- 40 - 40		+ 70 + 85	°C °C
T _{Storage}	Storage temperature range		- 50		+ 85	°C
	Start Up capability at T _A = - 40°C	Storage @ - 50°C for 16 hours, EUT in switched OFF condition	-40			°C
	Cooling				free air convection	
	Humidity	EN 50155, IEC 60571			75% av. year, 95% 30 days	
	Vibration / shock	IEC 61373, IEC 68-2-27, BN 411002 Cat. I 3 shocks per axes			50 m / s ² , 30 ms	

EMC			
	Emission	Line conducted and radiated	EN 50121 - 3 - 2: 2016
	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 _f = 42 Ω Performance criteria - B -
		HF – Current injection EN 61000 - 4 - 6	10 V _{eff} , R _f = 150 Ω Performance criteria - A -

STANDARDS						
	Applied Standards:	EN 50155: 2016	BN 411 002	EN 50124 - 1: 2006	EN 50121 - 3 - 2: 2016	IEC 60571
		SN 29 500	EN 50 121 - 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 60529	

Technical specifications valid for - 40° C ≤ T_A ≤ + 85° C, 43.2 V ≤ V_I ≤ 154 V, unless otherwise noted.

H15 – Pin Assignment

Pin	
z 4	+ Vo
d 6	+ Vo
z 8	- Vo
d 10	- Vo
z 12	n. c.
d 14	n. c.
z 16	+ Sense
d 18	- Sense
z 20	Power Fail
d 22	Enable
z 24	⊥
d 26	+ V _I
z 28	+ V _I
d 30	- V _I
z 32	- V _I

Dimensions (in mm)

