

$V_{I\text{ nom}} = 72\text{ V}$ $V_{O1\text{ nom}} = 5.0\text{ V}$ $I_{O1\text{ nom}} = 12\text{ A}$
 $V_{I\text{ nom}} = 110\text{ V}$ $V_{O1\text{ nom}} = 24.0\text{ V}$ $I_{O1\text{ nom}} = 10.5\text{ A}$

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
INPUT						
V_{In}	Input voltage range	Continuously	50.4		137.5	V_{DC}
$V_{In\text{ min}}$	Input voltage range dynamic	$V_{In} = 43.2\text{ V} \dots 50.4\text{ V}$ for $t \leq 0.1\text{ s}$ $V_{In} = 137.5\text{ V} \dots 154\text{ V}$ for $t \leq 1\text{ s}$	43.2		154	V_{DC}
$V_{In\text{ min}}$	Converter shutdown				43	V_{DC}
$V_{In\text{ max}}$	Converter shutdown		155		158	V_{DC}
V_{Enable}	Enable Function, PIN d18 Reference potential: $-V_{In}$	Converter On: Enable = low $V_{Enable} \leq 0.8\text{ V}$, $I \leq 1.5\text{ mA}$ Converter Off: Enable = high $V_{Enable} \geq 3.0\text{ V}$, $I \leq -50\text{ }\mu\text{A}^*$	0		0.8	V_{DC}
	Stand by current	$43.2\text{ V} \leq V_I \leq 154\text{ V}$, Enable = high			18	mA
I_I	Input current	No load $V_I = 154\text{ V}$, $I_{O1} = 0\text{ A}$, $I_{O2} = 0\text{ A}$ No load $V_I = 43.2\text{ V}$, $I_{O1} = 0\text{ A}$, $I_{O2} = 0\text{ A}$ Nominal load $V_I = 72\text{ V}$, $I_{O1} = 12\text{ A}$, $I_{O2} = 10.5\text{ A}$ Nominal load $V_I = 110\text{ V}$, $I_{O1} = 12\text{ A}$, $I_{O2} = 10.5\text{ A}$ Nominal load $V_I = 43.2\text{ V}$, $I_{O1} = 12\text{ A}$, $I_{O2} = 10.5\text{ A}$		110 4.8 3.1	30	mA mA A A A
$I_{I\text{ max}}$	Max. input switch on current $V_I \geq V_{I\text{ min}}$, $V_{Enable} \rightarrow \geq 0.8\text{ V}$	$I_{O1} = 12\text{ A}$, $I_{O2} = 10.5\text{ A}$ $\Delta t \leq 200\text{ ms}$			9	A
	Input fuse		10 A Pico Fuse			
C_I	Converter input capacity + Optional damping unit				80 + 200u	μF
	External line inductance				50	μH
	Reverse input protection	Parallel diode + internal fuse	1.5KE160CA			

OUTPUT: Power Unit $43.2\text{ V} \leq V_I \leq 154\text{ V}$

$P_{O\text{ nom}}$	Output power			310		W
$V_{O1\text{ nom}}$	Output voltage adjustment, factory set	$I_{O1} = 12.0\text{ A}$	5.0	5.05	5.1	V_{DC}
$V_{O2\text{ nom}}$	Output voltage adjustment, factory set	$I_{O2} = 10.4\text{ A}$	23.8	24.0	24.2	V_{DC}
$\Delta V_{O1,2}$	Load regulation $V_{O1,2}$	$0\text{ A} \leq I_{O1, O2} \leq I_{O\text{ nom}}$ $T_A = -40^\circ\text{C} \dots +85^\circ\text{C}$	$\pm 2.5\% V_{O\text{ nom}}$			V_{DC}
$\Delta V_{O\text{ dyn.}}$	Load regulation dynamic $V_{O1,2}$	Pulse load: 20 - 80 - 20% x I_{O1}		± 75	± 100	mV
$t_{\text{dyn } O1,2}$	Response time $V_{O1,2}$	Pulse load: 20 - 80 - 20% x $I_{O2\text{ nom}}$		1	2	ms
$V_{O\text{ rms } 1,2}$	Ripple $V_{O1,2}$	Nominal load BW 300 kHz		100	250	mV_{rms}
$V_{O\text{ pp } 1,2}$	Noise $V_{O1,2}$	Nominal load BW 20 MHz			350	mV_{pp}
$t_{\text{on } 1,2}$	Turn on time $V_{O1,2}$	1.) $V_I \geq V_{I\text{ min}}$, $V_{Enable} \rightarrow \leq 0.8\text{ V}$ 2.) $V_{Enable} \leq 0.8\text{ V}$, $V_I \rightarrow \geq V_{I\text{ min}}$	25		200	ms
$t_{\text{off } 1,2}$	Hold up time $V_{O1,2}$	$V_{O1\text{ min}} = 4.75\text{ V}$ and $V_{O1\text{ min}} = 22.8\text{ V}$ $0\text{ A} \leq I_{O1} \leq 12\text{ A}$ and $0\text{ A} \leq I_{O1} \leq 10.5\text{ A}$		0		ms
	Overvoltage shutdown $V_{O1,2}$	$0\text{ A} \leq I_{O1} \leq 12\text{ A}$ $0\text{ A} \leq I_{O2} \leq 10.5\text{ A}$	Converter switch off: $V_{O1} \leq 6.8\text{ V}$ and $V_{O2} \leq 32\text{ V}$			
I_{O1}	Output current			12		A
I_{O2}	Output current			10.4		A
$I_{O1\text{ short}}$	Output short circuit current I_{O1}	Short circuit between + V_{O1} and - V_{O1}			16.5	A
$I_{O2\text{ short}}$	Output short circuit current I_{O2}	Short circuit between + V_{O2} and - V_{O2}			16.5	A
	Sense lines both outputs	Max. voltage drop compensation			0.25	V
C_{O1}	Output capacity converter			4,3		mF
C_{O2}				3,2		

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, $V_O \geq V_{O\text{ min}}$	$V_O < 0.95 \times V_{O\text{ nom}} \pm 2\%$ $V_O \geq 0.95 \times V_{O\text{ nom}} \pm 2\%$	V V
LED	Signals	Signal defined for $V_O \geq 0.6 \times V_{O\text{ nom}}$	$V_O < 0.95 \times V_{O\text{ nom}} \pm 2\%$ $V_O \geq 0.95 \times V_{O\text{ nom}} \pm 2\%$	

* - Sign: sink current

GENERAL SPECIFICATIONS

F	Switching frequency	$V_{In} = 110\text{ V}$, $I_{O1, O2} = I_{O\text{ nom}}$		75		kHz
H	Efficiency	$50.4\text{ V} \leq V_{In} \leq 154\text{ V}$, $P_O \geq 0.7 \times P_{O\text{ nom}}$	91	93		%
	MTBF (SN 29500)	$V_I = 110\text{ V}$, $I_{O1, O2} = I_{O\text{ nom}}$, $T_A = +40^\circ\text{C}$		500 000		h
	No load, short circuit proof		Continuously			

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	2 x H15, Pin 32 leading				
	Pin assignment			see table		
	Protection class, protection system			I, IP 20		
	Dimensions w x h x d see figure	Plug - in unit incl. handle PCB	30.2 x 262 x 204.3 (6U/6HP) 160 x 233.4			mm mm
	Weight	Plug - in unit		0.95		kg

ENVIROMENTAL 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			

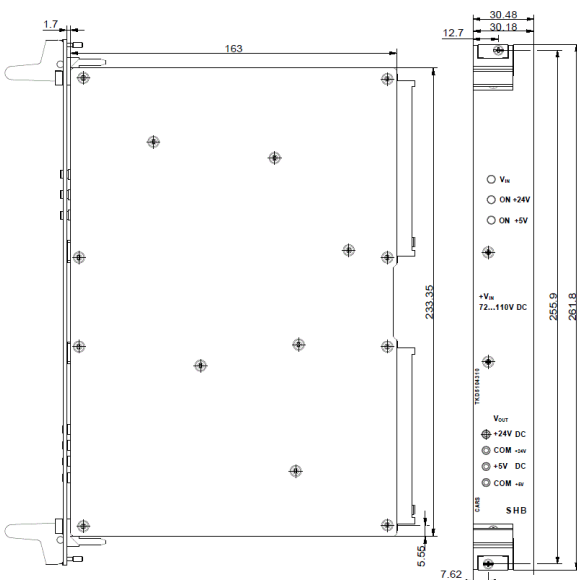
EMC

	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_{In} ≤ 154 V, unless otherwise noted.



H15 male connectors 232 leading

Top		
d	z	Signal
	4	n.c
6		+Vin
	8	+Vin
10		+Vin
	12	-Vin
14		-Vin
	16	-Vin
18		Enable
	20	PE
22		PE
	24	PE
26		n.c
	28	n.c
30		n.c
	32	PE

Bottom		
d	z	Signal
	4	+5V Sense
6		GND Sense(+5V)
	8	+5V
10		+5V
	12	GND (+5V)
14		GND (+5V)
	16	+24V
18		+24V
	20	GND (+24V)
22		GND (+24V)
	24	+24V Sense
26		GND Sense (+24V)
	28	n.c
30		Power Fail 24V
	32	PE