

25 LPB 024 M12 □ □ □

$V_{I\text{ nom}} = 24\text{V}, 36\text{V}$ $V_{O\text{ nom}} = 12\text{V}$ $I_{O\text{ nom}} = 2.0\text{A}$

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
INPUT:						
V_{IN}	Input voltage range	Continuously	16.8		45.0	V_{DC}
$V_{IN\text{ Dyn}}$	Input voltage range dynamic	$V_{IN} = 14.4\text{V} \dots 16.8\text{V}$ for $t \leq 0.1\text{s}$ $V_{IN} = 45.0\text{V} \dots 50.4\text{V}$ for $t \leq 1\text{s}$	14.4		50.4	V_{DC}
$V_{IN\text{ Min}}$	Converter switch off		13.8		14.3	V_{DC}
$V_{IN\text{ Max}}$	Converter switch off		-		-	V_{DC}
I_{IN}	Input current no load Nominal load Nominal load	$V_{IN} = 50.4\text{V}, I_{OUT} = 0\text{A}$	10	1.2 0.8 2.0	25	mA
		$V_{IN} = 24.0\text{V}, I_{OUT} = 2.0\text{A}$			A	
		$V_{IN} = 36.0\text{V}, I_{OUT} = 2.0\text{A}$			A	
		$V_{IN} = 14.4\text{V}, I_{OUT} = 1.0\text{A}$			2.4	A
	Input current integral	$V_{IN} = 50.4\text{V}$			10	A^2s
$I_{IN\text{ Max}}$	Switch on current at $V_{in} \geq V_{in\text{ min}}$	$I_{OUT} = 2.0\text{A}$ $\Delta t \leq 200\text{ms}$			2	A
	Input Fuse	5 x 20 mm		6.3 A		
C_{IN}	Converter input capacitance			6	12	μF
	External line Inductance				50	μH
	Reverse input protection	parallel diode + input fuse		1.5KE33A		

OUTPUT: Power Unit		14.4 V ≤ V_{IN} ≤ 50.4 V			
$P_{OUT\text{ Nom}}$	Output power	$T_A = -40^\circ\text{C} \dots +70^\circ\text{C}$ (10 min + 85°C)	25	W	
$V_{OUT\text{ Nom}}$	Output voltage adjustment, factory set		+ 11.9 + 12.0 + 12.1	V_{DC}	
ΔV_{OUT}	Load regulation static	$0\text{A} \leq I_{OUT} \leq 2.0\text{A}$ $T_A = -40^\circ\text{C} \dots +70^\circ\text{C}$	± 2.5 % $V_{out\text{ nom}}$		
		$0\text{A} \leq I_{OUT} \leq 2.0\text{A}$ $T_A = -40^\circ\text{C} \dots +85^\circ\text{C}$	± 3.0 % $V_{out\text{ nom}}$		
$\Delta V_{O\text{ dyn}}$	Load regulation dynamic	Pulse load: 20 - 80 - 20 % x I_{OUT}		± 250	mV
t_{dyn}	Response time	Pulse load: 20 - 80 - 20 % x I_{OUT}	1	2	ms
$V_{O\text{ rms}}$	Ripple	Nominal load BW 300 kHz	50	150	mV_{rms}
$V_{O\text{ pp}}$	Noise	$0\text{A} \leq I_{OUT} \leq 2.0\text{A}$ Nominal load BW 20 MHz	75	250	mV_{pp}
t_{on}	Turn on time V_o	$0\text{A} \leq I_{OUT} \leq 2.0\text{A}$ resistive load	20	150	ms
t_h	Hold Up Time	$0\text{A} \leq I_{OUT} \leq 2.0\text{A}$ $T_A = -40^\circ\text{C} \dots +85^\circ\text{C}$	0		ms
	Oversvoltage Protection	$0\text{A} \leq I_{OUT} \leq 2.0\text{A}$ $T_A = -40^\circ\text{C} \dots +85^\circ\text{C}$	Transil Diode 1,5KE30A		
I_{OUT}	Output current		2.0		A
	Output current limitation	$T_A = -40^\circ\text{C} \dots +85^\circ\text{C}$	2.1		A
I_{AK}	Output short circuit current	short circuit between + V_o and - V_o		3.0	A
	Sense Lines	none			
C_o	Converter Capacitance	Output	300		μF

Signals

Signals	Option:	Input	LED yellow
		Output	LED yellow

GENERAL SPECIFICATIONS

f	Switching frequency	$V_{IN} = 24\text{V}, I_{OUT} = 2.0\text{A}$	125	kHz
η	Efficiency	$P_{OUT} \geq 0.7 \times P_{OUT\text{ Nom}}$	86	%
	MTBF (SN 29500)	$V_{IN} = 24\text{V}, I_{OUT} = 2.0\text{A}, T_A = +40^\circ\text{C}$	750 000	h
	No load, short circuit proof		Continuously	

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SYMBOL PARAMETER TEST CONDITIONS MIN TYP MAX UNIT

SAFETY / DIMENSIONS

	Creepage, Clearance @ PD 2, OV 2 PCB: FR4, V0, TG = + 140°C	Input – Output Input – Ground Output – Ground	2.0 1.0 1.0			mm mm mm
	Converter Isolation Strength Test Unit test: ramp function 2 s – 3 s – 2 s Type test: 1 minute	Input – Output Input – Ground Output – Ground			2'100 1'500 500	V _{DC} V _{DC} V _{DC}
	Connector	± Input, ± Output, SE:	Cable wiring			
	Pin Assignment	Recommended gauge size s. table below				
	Protection Class, Protection degree	I, IP 20				
	Dimensions <i>see drawing</i>	l x b x d	103 x 27 x 57 132 x 30 x 60 (+3 mm Stecker) 107 x 30 x 60 (+3 mm Stecker)			mm
	Assembling	PCB mounting with screws				
	Weight		200			g

ENVIRONMENTAL CONDITIONS

T _A	Operating Range	Continuously EN 50155 class Tx for 10 Min.	- 40 - 40		+ 70 + 85	°C °C
T _{Sto}	Storage 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, EN 50155 Cat. I 3 shocks each axis	50 m / s ² , 30 ms			

EMC

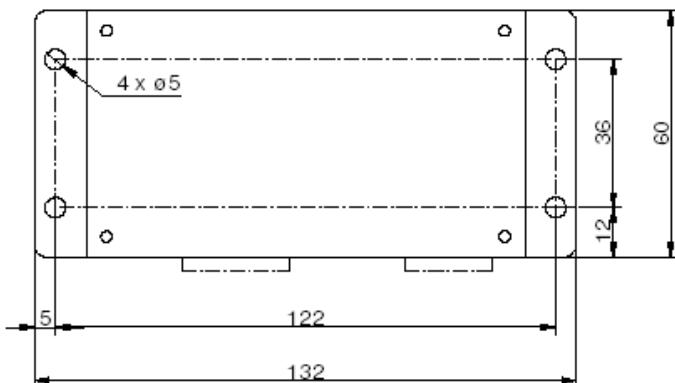
	Emission	Line conducted and radiated	EN 50121 - 3 - 2: 2006		
	Immunity	ESD EN 61000 - 4 - 2	6 kV / 8 kV performance criteria - B -		
		High Frequency Field EN 61000 - 4 - 3	20 V / m 80 MHz ... 1 GHz *) performance criteria - A -		
		Burst EN 61000 - 4 - 4	Level 3 asym., sym. performance criteria - A -		
		Surge EN 61000 - 4 - 5	2 kV asym. / 1 kV sym. R _i = 42 Ω performance criteria - A -		
		HF – Current Injection EN 61000 - 4 - 6	10 V _{eff} , R _i = 150 Ω performance criteria - A -		

STANDARDS

Applied Standards:	EN 50155: 2007	BN 411 002	EN 50124 - 1: 2006	EN 50121 - 3 - 2: 2007	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	EN 60721 - 3 - 5	EN 61373	EN 60529

Technical specifications valid for: - 40° C ≤ T_A ≤ + 70° C, 16.8 V ≤ V_{IN} ≤ 45.0 V, unless otherwise noted.

- in closed housing **) 1400 MHz – 2100MHz 10V/m 2100MHz – 2500MHz 5V/m



Pin Assignment

Pinning	Pin	Average
INPUT		
+ V _{In}	1	0.75 mm ²
PE	2	1.5 mm ²
- V _{In}	3	0.75 mm ²
OUTPUT		
+ V _{Out}	1	0.75 mm ²
- V _{Out}	2	0.75 mm ²

Order Key: 25 LPB 024 M12 □00

Please, select

- W = Wall mounting
- H = TS35 Rail mounting
- P = Print mounting