

## PSS, PSK Series

## 9...25 A Switching Regulators



Input voltage up to 144 V DC  
Single output of 3.3...48 V DC  
No input to output isolation



- Efficiency up to 97%
- Low input-output differential voltage
- No derating over temperature

### Selection chart

Output $U_{o\ nom}$ [V DC]		Input voltage $U_i$ [V DC]		Rated power $P_{o\ tot}$ [W]	Efficiency $\eta_{typ}$ [%]	Type	Options
3.3	25	8...40		82.5	82	PSK 3E25-7	-9, E, P, B, B1
5.1	12	8...80		61.2	79	PSS 5A12-7	-9, E, P, C, B, B1
5.1	14	8...40		71.4	83	PSS 5A14-2	B, B1
5.1	16	8...80		81.6	79	PSK 5A16-7	-9, E, P, C, B, B1
5.1	18	8...40		91.8	82	PSK 5A18-2	B, B1
5.1	20	8...80		102	79	PSK 5A20-7	-9, E, P, C, B, B1
5.1	25	8...40		127.5	82	PSK 5A25-7	-9, E, P, C, B, B1
12 (15)	9	18...144		108 (135)	91	PSS 129-7	-9, E, P, C, B, B1
12 (15)	12	15...80		144 (180)	91	PSS 1212-7	-9, E, P, C, B, B1
12 (15)	12	18...144		144 (180)	91	PSK 1212-7	-9, E, P, C, B, B1
12 (15)	14	16...40		168 (210)	90	PSS 1214-2	B, B1
12 (15)	16	15...80		192 (240)	90	PSK 1216-7	-9, E, P, C, B, B1
12 (15)	18	16...40		216 (270)	90	PSK 1218-2	B, B1
12 (15)	20	15...80		240 (300)	90	PSK 1220-7	-9, E, P, C, B, B1
24	9	31...144		216	94	PSS 249-7	-9, E, P, C, B, B1
24	12	29...80		288	94	PSS 2412-7	-9, E, P, C, B, B1
24	12	31...144		288	94	PSK 2412-7	-9, E, P, C, B, B1
24	14	29...60		336	94	PSS 2414-2	B, B1
24	16	29...80		384	94	PSK 2416-7	-9, E, P, C, B, B1
24	18	29...60		432	94	PSK 2418-2	B, B1
24	20	29...80		480	94	PSK 2420-7	-9, E, P, C, B, B1
36	9	44...144		324	96	PSS 369-7	-9, E, P, C, B, B1
36	12	42...80		432	96	PSS 3612-7	-9, E, P, C, B, B1
36	12	44...144		432	96	PSK 3612-7	-9, E, P, C, B, B1
36	16	42...80		576	95	PSK 3616-7	-9, E, P, C, B, B1
36	20	42...80		720	95	PSK 3620-7	-9, E, P, C, B, B1
48	9	58...144		432	97	PSS 489-7	-9, E, P, C, B, B1
48	12	58...144		576	97	PSK 4812-7	-9, E, P, C, B, B1

**Input**

Input voltage	refer to selection chart
No load input current	$\leq 50$ mA

**Output**

Efficiency	$U_{i\text{ nom}}, I_{o\text{ nom}}$	up to 97%
Output voltage setting accuracy	$U_{i\text{ nom}}, I_{o\text{ nom}}$	$\pm 0.6\%$ $U_{o\text{ nom}}$
Output voltage switching noise	IEC/EN 61204, total	typ. 0.2%
Line regulation	$U_{i\text{ min}} \dots U_{i\text{ max}}, I_{o\text{ nom}}$	typ. $\pm 0.2\%$
Load regulation	$U_{i\text{ nom}}, 0 \dots I_{o\text{ nom}}$	typ. 0.15%
Minimum load	not required	0 A
Current limitation	rectangular U/I characteristic	typ. 110% $I_{o\text{ nom}}$
Operation in parallel	current sharing feature (CS)	
Hold-up time	$U_{i\text{ nom}}, I_{o\text{ nom}}$ , with ext. diode in input line, PSS	up to 7 ms

**Protection**

Input reverse polarity	built-in fuse	
Input undervoltage lockout		typ. 80% $U_{i\text{ min}}$
Input transient protection	suppressor diode	
Output	no-load, overload and short circuit proof	
Output overvoltage	suppressor diode in each output	typ. 150% $U_{o\text{ nom}}$
Overtemperature	switch-off with auto restart	$T_c$ typ. 100°C

**Control**

Inhibit	TTL input, output enabled if left open	
R control	output voltage adjustment, PSS	0...108% $U_{o\text{ nom}}$
Output voltage indication	LED	
Sense lines	compensation of voltage drop across the load lines, PSS	
Test sockets	test sockets for check of output voltage	

**Safety**

Approvals	EN 60950, UL 1950, CSA C22.2 No. 950	
Protection degree	units without options	IP 20/30
Electric strength test voltage	I/case and O/case	500/750/1500 V DC

**EMC**

Electrostatic discharge	IEC/EN 61000-4-2	
Electromagnetic field	IEC/EN 61000-4-3	
Electr. fast transients/bursts	IEC/EN 61000-4-4	
Surge	IEC/EN 61000-4-5	
Conducted disturbances	IEC/EN 61000-4-6	
Electromagnetic emissions	CISPR 22/EN 55022	

**Environmental**

Operating ambient temperature	-2, $U_{i\text{ nom}}$ , $I_{o\text{ nom}}$ , convection cooled	-10...50°C
Operating case temperature $T_C$	-2, $U_{i\text{ nom}}$ , $I_{o\text{ nom}}$	-10...80°C
Storage temperature	-2, non operational	-25...100°C
Operating ambient temperature	-7, $U_{i\text{ nom}}$ , $I_{o\text{ nom}}$ , convection cooled	-25...71°C
Operating case temperature $T_C$	-7, $U_{i\text{ nom}}$ , $I_{o\text{ nom}}$	-25...95°C
Storage temperature	-7, non operational	-40...100°C
Damp heat	IEC/EN 60068-2-3	
Vibration, sinusoidal	IEC/EN 60068-2-6	
Shock	IEC/EN 60068-2-27	
Bump	IEC/EN 60068-2-29	
Random vibration	IEC/EN 60068-2-64	
MTBF	MIL-HDBK-217	

**Options**

Large and small cooling plate instead of standard heatsink	B/B1
Extended temperature range	-40...71°C, ambient, operating
Electronic inrush current limitation	E
Output voltage adjustment	$\pm 8\%$ $U_{o\text{ nom}}$ , excludes feature R and vice versa
Thyristor crowbar on output	C

**Accessories**

Front panels 19" (Schroff/Intermas), 12 und 16 TE
Mating H15 or H15 S4 connectors with screw, solder, fast-on or press-fit terminals
Connector retention facilities
Adapter kit for DIN-rail

**Pin allocation**

Electrical Determination	Type H15		Type H15 S4	
	Pin No.	Ident.	Pin No.	Ident.
Output voltage (positive)	4	Vo+	4/6	Vo+
Output voltage (positive)	6	Vo+		
Output voltage (negative)	8	Go-	8/10	Go-
Output voltage (negative)	10	Go-		
Crowbar trigger input (option C)	12	C	12	C
Inhibit input	14	i	14	i
R-input (output voltage programming) <sup>1</sup>	16	R	16	R
Sense line (negative)	18	S-	18	S-
Sense line (positive)	20	S+	20	S+
Current sharing control input	22	CS	22	CS
Protective ground (leading pin)	24	⊕	24	⊕
Input voltage (negative)	26	Gi-	26/28	Gi-
Input voltage (negative)	28	Gi-		
Input voltage (positive)	30	Vi+	30/32	Vi+
Input voltage (positive)	32	Vi+		

# Cassette Style

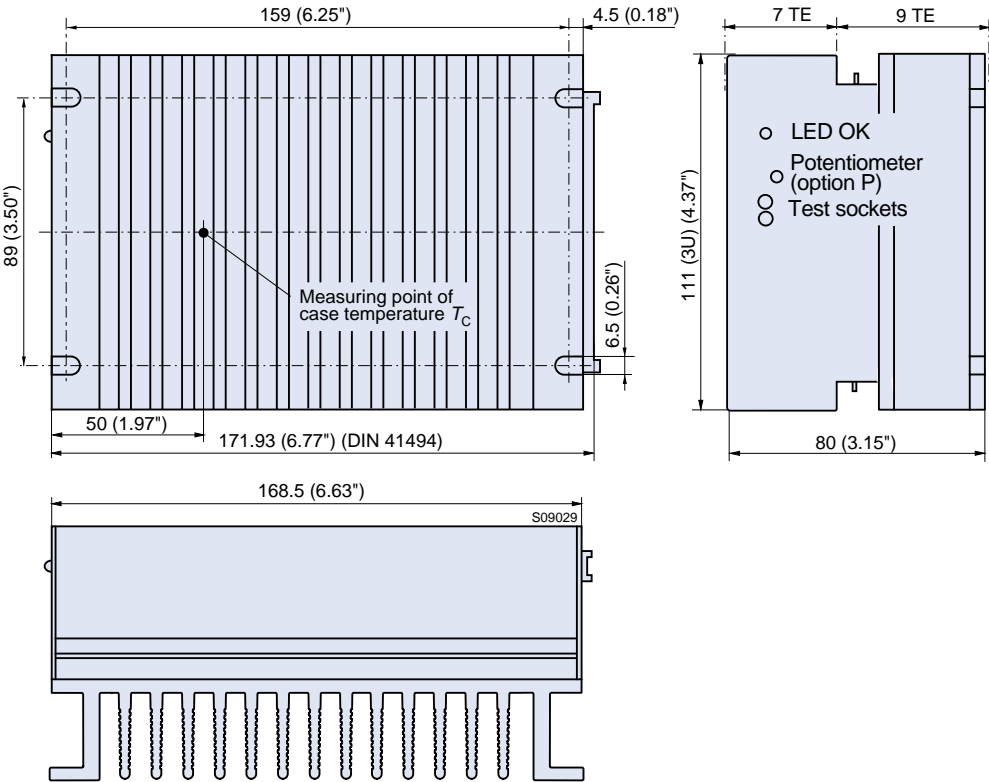
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## Mechanical data

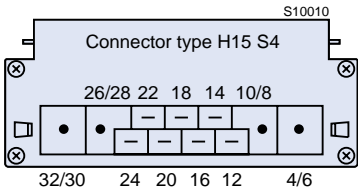
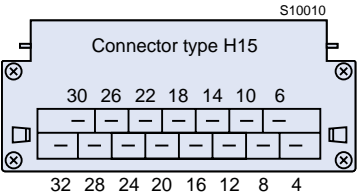
Tolerances  $\pm 0.3\text{ mm}$  (0.012") unless otherwise indicated.



## PSK



## Pin allocation



H15 S4 connectors for 20 and 25 A types

**PSS**

