

- Usable on extreme fluctuating on-board networks
- Very high functional reliability
- Suitable for mobile applications
- Plastic housing (potted)
- 100% functional tests of all parameters
- Dyn. und stat. short circuit proof
- MSR.O open design (NEW)

Replacement for linear regulators 3 W - 16 W.  
The functionality is controlled in all operational situations and characteristics.



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## Series MSR

### Main points:

#### Output:

- Accuracy absolute  $\pm 1\%$
- Regulation  $\Sigma(U_{in} + I_{out} + T_U) < \pm 1,5\%$
- Ripple  $< 40 \text{ mV}_{\text{rms}}$  (typ.  $20 \text{ mV}_{\text{rms}}$ ) constant over  $T_U$
- Spikes  $< 50 \text{ mV}_{\text{rms}}$  (T 1:1/50MHz)
- Response time  $\Delta I = 50\% \leq 250 \mu\text{s}$
- No-load-, static over load- and static short circuit protected
- Short circuit current  $\leq 1,2 I_{o \text{ max}}$
- Reference  $5 \text{ V} \pm 1,5\% / 2 \text{ mA}$  (REF)

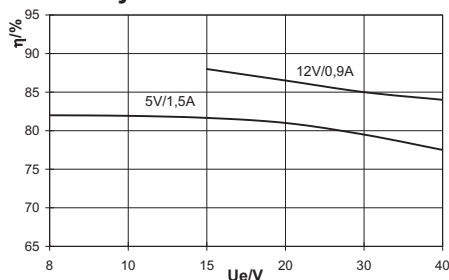
#### Input:

- No-load power consumption approx. 0,4 Watt
- ON-OFF-control (Inhibit)
- Transient adapted
- Do not use without CE
- Simply noise suppressible (application)

#### General:

- Ambient temperature  $-25^\circ\text{C} / +70^\circ\text{C}$   
Option:  $-40^\circ\text{C} / +85^\circ\text{C}$
- Derating  $1\% / ^\circ\text{C} > 70^\circ\text{C}$  (except \*)
- Free air convection
- Common 0V input-output
- MTBF  $G_F(40^\circ) > 1 \text{ Mio h}$
- Plastic housing
- Dimension  $40 \times 40 \times 13 \text{ mm}^3$
- Base plate with distance to the PCB [Soldering cone]

#### Efficiency:



<u>U<sub>in</sub></u> V	<u>U<sub>out</sub></u> V	<u>I<sub>out</sub></u> A	<u>CE</u> μF/V	Model number
<b>7 - 38</b>	5,1	0,8	100/50	MSR 05-08-38
	5,1	1,2	220/50	MSR 05-12-38
	5,1	1,5	220/50	MSR 05-15-38
	5,1	2,0	220/50	MSR 05-20-38 *
	5,1	2,0**	22/50	MSR.O 05-20-38
<b>9,5-42</b>	5,1	0,8	150/63	MSR 05-08-42
	5,1	1,2	220/63	MSR 05-12-42
	5,1	1,5	220/63	MSR 05-15-42
	5,1	4,0**	22/50	MSR.O 05.40.42
<b>8 - 38</b>	6	0,6	150/50	MSR 06-06-38
	6	1,2	220/50	MSR 06-12-38
	6	1,5	220/50	MSR 06-15-38
<b>15-42</b>	12	0,4	150/50	MSR 12-04-42
	12	0,6	150/50	MSR 12-06-42
	12	0,9	150/50	MSR 12-09-42
	12	1,2	220/50	MSR 12-12-42
	12	2,5**	22/50	MSR.O 12.25.42
<b>18-42</b>	15	0,35	100/50	MSR 15-03-42
	15	0,5	100/50	MSR 15-05-42
	15	0,8	150/50	MSR 15-08-42
	15	1,1	220/50	MSR 15-11-42
	15	2,0**	22/50	MSR.O 15.20.42

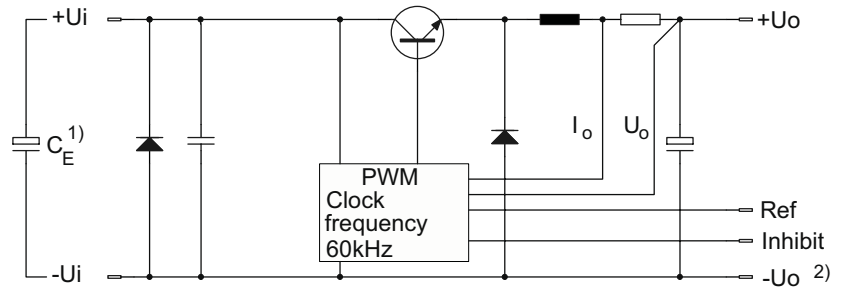
(H)  $-40^\circ\text{C}$  up to  $+85^\circ\text{C}$  Additional charge

Modification costs for possible changes above values: on request

\* Derating  $1\% / ^\circ\text{C} > 60^\circ\text{C}$

\*\*open design with efficiency  $> 90\%$   
optional on request

Converters of the **MSR** series are designed especially for the replacement of linear-regulators in industrial networks or on-board networks with 12/24 and 48V nominal voltage as well as secondary switching regulators on power supplies with multiple outputs. The source voltage can be extremely fluctuating and the occurring transients are absorbed based on external pre-filters (application).

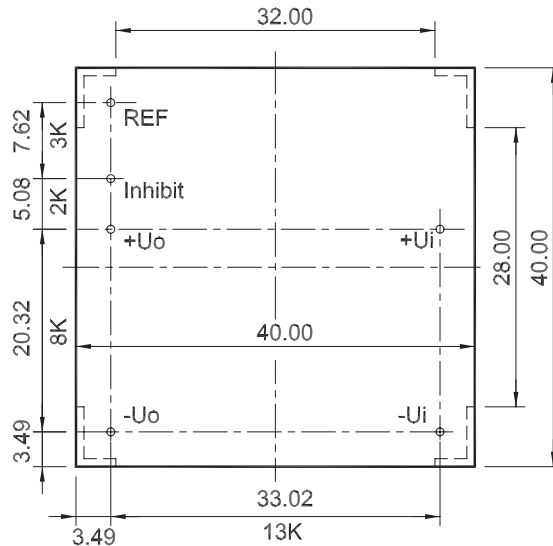
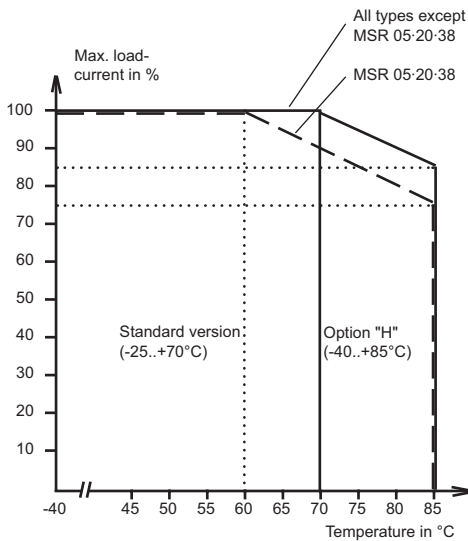


2) Reference all potentials to -Uout

1) Do not use without CE  
See product line M  
for special capacitors and filters

All electrical parameters (voltages, currents, frequencies, efficiency, ripple, spikes etc.) are 100%-tested at all internal points as well as on all customer interface points. The result is that the modules can guarantee a very high quality level, which has been displayed in several thousand applications within our customer's systems. The functionality over the wide voltage and temperature range is based on the use of pre-tested components with temperature-independent parameters. The choice of components and the manufacturing technology at this series with a open build-up lead to this regulator's especially high functional life time and reliable security.

**Derating curve**

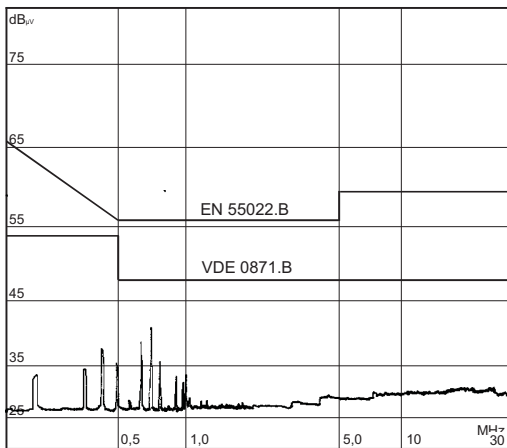


Drilling view  
in plugging direction

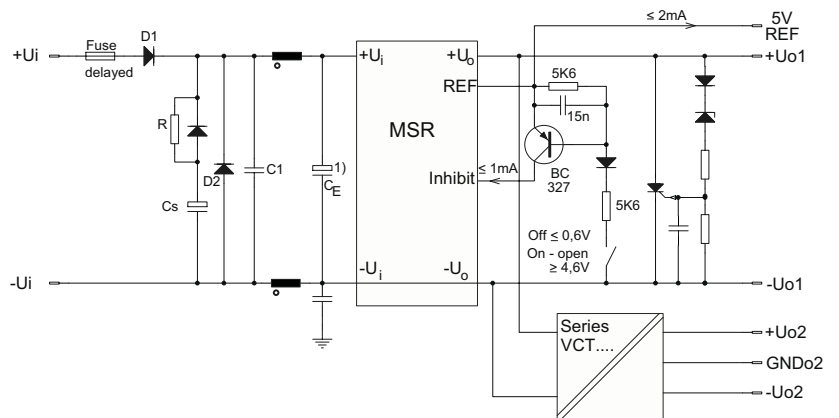
Height: 13mm  
Pins: 0,8mm  
K=2,54mm

Open version  
with the same  
pin-assignment

**Measurement of radio interference**



**Application (Noise suppression / multiple outputs)**



$$C_s = \frac{2 \cdot PA}{\eta} \cdot \frac{T_s}{UE^2 - UE_{min}^2} \cdot 2$$

Hold-up capacitor

R for inrush current limitation  
Power loss at voltage ripples