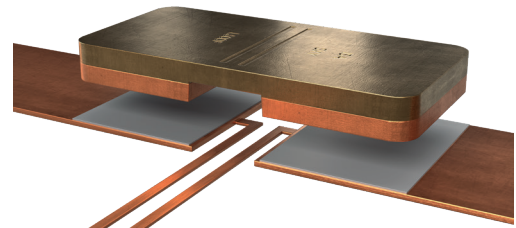


WAT (2512)

PRECISION RESISTOR



FEATURES

- Constant current up to 100 A (0.5 mOhm)
- 5 W power rating at 135 °C (0.5 mOhm)
- Two-terminal configuration
- Excellent temperature behavior
- Large contact surfaces
- Excellent heat dissipation
- High application temperature range -65 to +170 °C
- AEC-Q200 qualified



APPLICATIONS

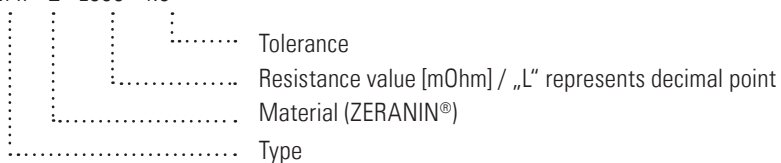
- High current applications for the automotive market
- Frequency converters
- Power modules
- Inverter for e-bikes and e-scooter

Technical data

Resistance values	mOhm	0.2 to 1.0
Material		ZERANIN®
Tolerance	%	1 / 5
Temperature coefficient (20-60 °C)	ppm/K	from 0 ± 50
Applicable temperature range	°C	-65 to +170
Power rating P_{100 °C}	W	up to 8
Power rating P_{70 °C}	W	up to 10
Internal heat resistance (R_{th})	K/W	from 4
Inductance	nH	<2
Stability (at rated power) deviation after 2000 h	%	<0.5 ($T_{max} = 140 °C$) <1.0 ($T_{max} = 170 °C$)

Ordering code

WAT - Z - L500 - 1.0

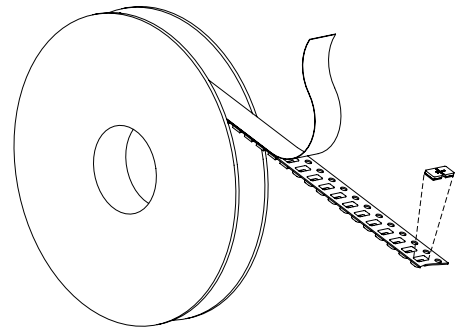


Recommended solder profile

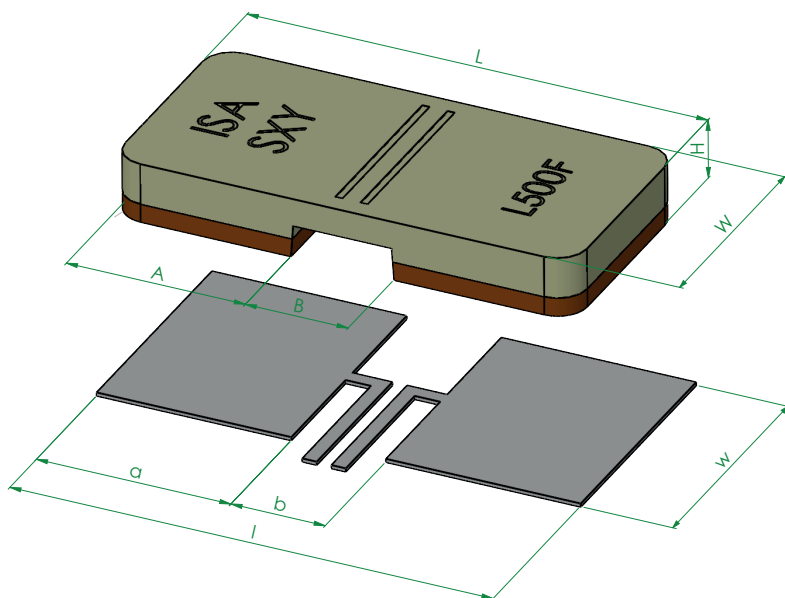
Reflow- and IR-soldering				
Temperature	°C	260	255	217
Time	sec	peak	40	90

Tape and reel information

Specification	DIN EN 60286-3			
Tape width	mm	12		
Parts per reel	pcs	5000		



Mechanical dimensions and pcb layout proposal (reflow soldering) [mm]



Type	L	W	H	A	B
WAT-Z-R001			0.83 ± 0.2	1.83 ± 0.2	2.68 ± 0.2
WAT-Z-L750			0.83 ± 0.2	2.09 ± 0.2	2.16 ± 0.2
WAT-Z-L500	6.35 ± 0.2	3.05 ± 0.2	0.83 ± 0.2	2.48 ± 0.2	1.41 ± 0.2
WAT-Z-L300			1.10 ± 0.2	2.45 ± 0.2	1.46 ± 0.2
WAT-Z-L200			1.10 ± 0.2	2.75 ± 0.2	0.85 ± 0.2

Solder pad type	l	w	a	b
WAT-Z-R001			2.05	2.56
WAT-Z-L750			2.39	1.88
WAT-Z-L500	6.66	3.35	2.68	1.3
WAT-Z-L300			2.68	1.3
WAT-Z-L200			2.95	0.75

Electrical specification

Type	Material	Value [mΩ]	R_{thi} [K/W]	TCR [ppm/K]	$P_{70^\circ\text{C}^*}$ [W]	$P_{>100^\circ\text{C}}$ [W]	Note
WAT-Z-L200	ZERANIN®	0.2	4	50 ± 50	10	7	C-Samples available, AEC-Q200 (Q4/2026)
WAT-Z-L300	ZERANIN®	0.3	5	25 ± 50	10	6	B-samples available
WAT-Z-L500	ZERANIN®	0.5	7	0 ± 50	10	5.5	in series production
WAT-Z-L750	ZERANIN®	0.75	10	0 ± 50	8	4	B-samples available
WAT-Z-R001	ZERANIN®	1	14	0 ± 50	7	3	B-samples available

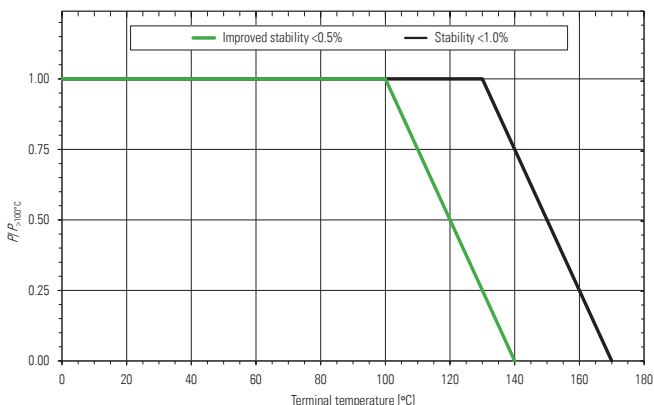
*Recommended max. power (limited by thermal conditions of the assembly)

Note

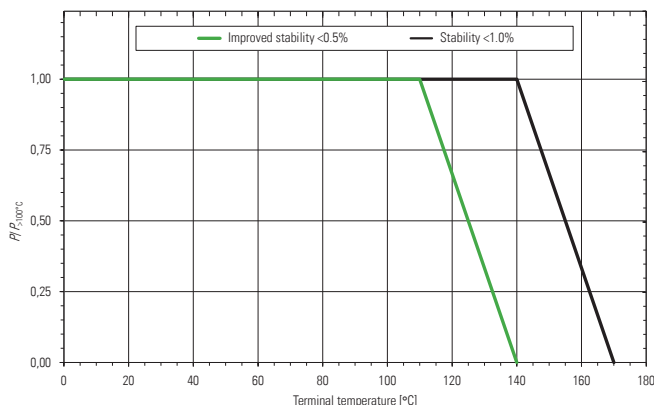
For calculation of the maximum derating terminal temperature (T_K) the following formula can be used: $T_K = T_{max} - (R_{thi} \times P)$.

Example for WAT-Z-L200-1.0: $T_K = 170^\circ\text{C} - (4\text{ K/W} \times 8\text{ W}) = 138^\circ\text{C}$.

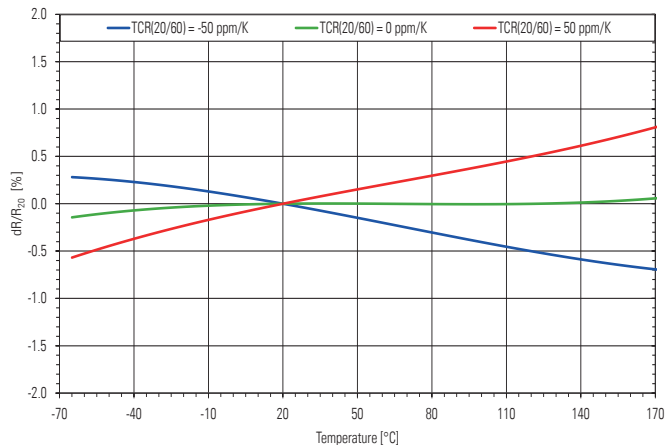
Power derating curve WAT-Z-L500 / L750 / R001



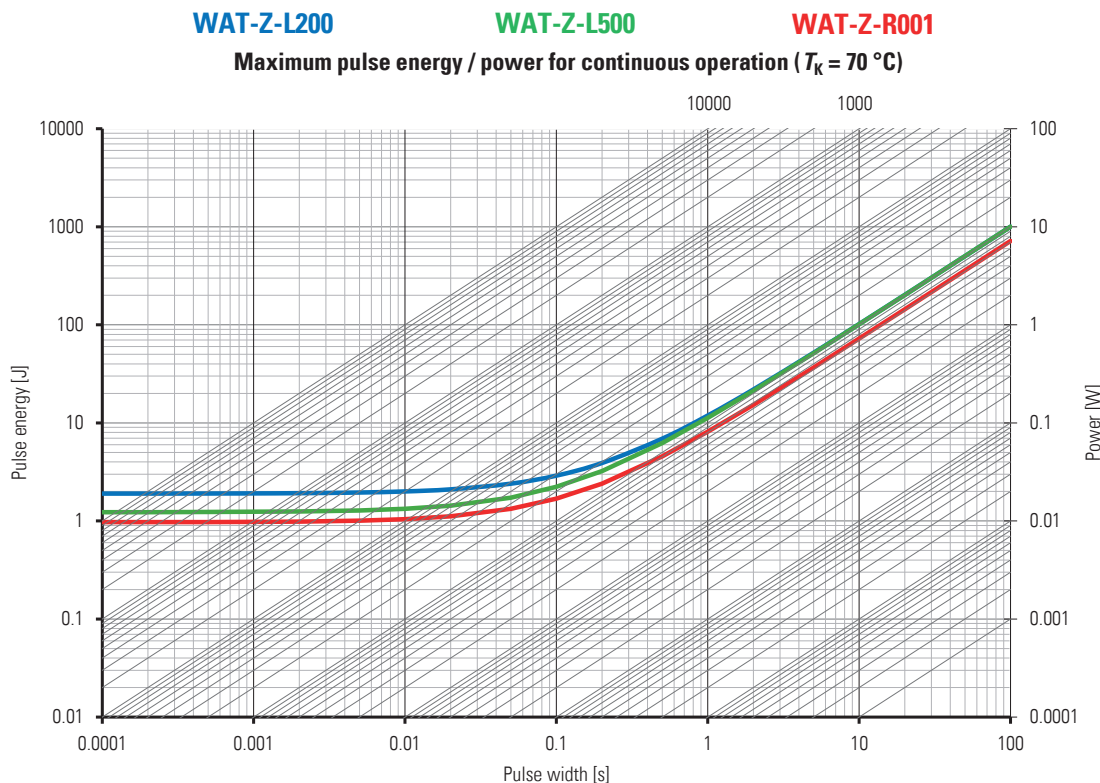
Power derating curve WAT-Z-L200 / L300



Temperature dependence of the electrical resistance of ZERANIN® (WAT-Z-L500)



Maximum pulse energy respectively pulse power for permanent operation



Specification

Parameters	Test conditions	Specified values
Temperature Cycling	2000 cycles (-55 °C to +150 °C)	±0.5%
Low Temperature Storage and Operation	-65 °C for 250 h	±0.1%
Mechanical Shock	100 g, 6 ms half sine	±0.2%
Vibration, High Frequency	10 g, 10-2000 Hz, 24 h each axis	±0.2%
Operational Life	2000 h, max. T_K at rated power	±1.0%
High Temperature Exposure	2000 h / 170 °C (in covered condition)	±1.0%
Bias Humidity	+85 °C, 85 r.F., 1000 h	±0.5%

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