

Open Air Current Sense Resistor

Token's "tight pitch" version of its open air metal element current sense resistor (OAR) need less PCB space.

▶ Preview

In response to requests from power electronics design engineer with the means to squeeze more current-sensing capability into crowded power supply designs, Token Electronics has developed a "tight pitch" version of its open air metal element current sensing resistor with ratings as high as 5W in a reduced PC board footprint and longer thermal path.

Designated the OAR Series, these open-air through-hole devices offer a high current, flameproof alternative to conventional axial devices and flat chips for current-sense circuits where PC board space is at a premium. The resistor's footprint is reduced by extending the height of the device above the board, thus keeping the resistor element's "hot spot" safely off the PC board and providing for increased air circulation under it, which in turn provides increased heat dissipation and cooler operation.

The OAR devices with increased height improve cooling efficiency, and because many power supply designs are already tightly-packed at the PC board level, the additional height does not create any profile issues. The OAR series resistors feature a reduced pitch, or spacing between the leads on the circuit board with a corresponding increase in the board mounted profile.

The OAR Series resistors are power rated for 1W, 2W, 3W, or 5W at 85°C, with resistance values from 0.05Ω to 0.005Ω, with tolerances down to ±1%. They feature TCRs as low as ±50ppm/°C and inductance values in the single-digit nanohenry range (10 nH Max.). Operating temperature range is -40°C to +125°C. The flameproof OAR resistors are constructed of a wire resistive element with welded copper leads to prevent solder wicking, which can change the device's resistance value in the circuit by as much as 30%.

The OAR Series is available in bulk packaging and is RoHS compliant and lead free. For non-standard technical requirements and special applications, please contact us with your specific needs.



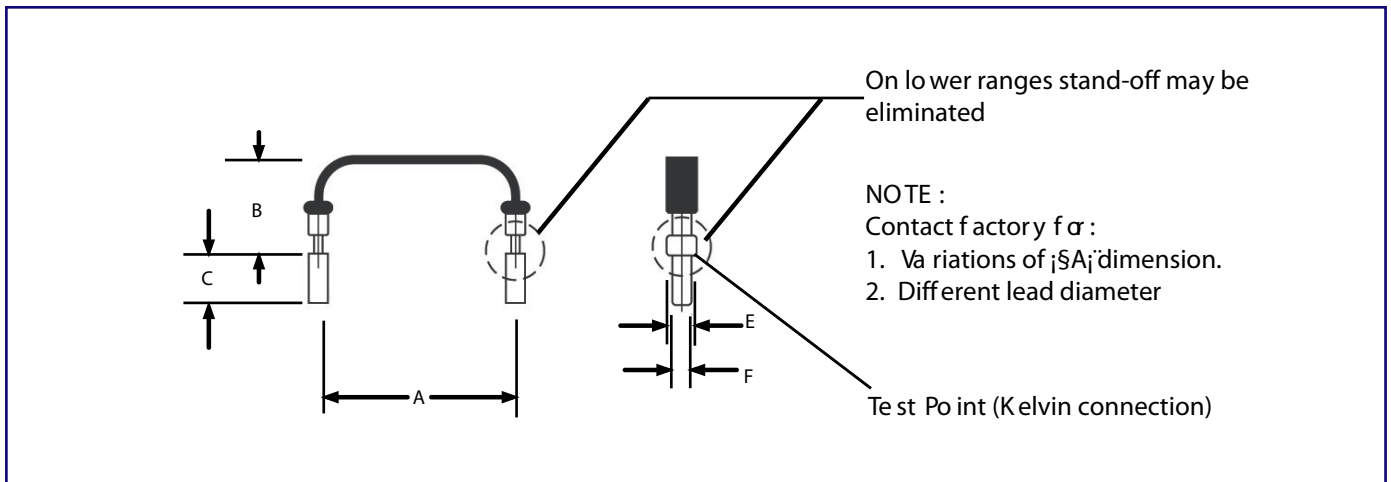
▶ Features

- High stability open-air style.
- Precision alloys resistive element.
- Lead (Pb)-free and RoHS compliant.
- Standard tolerance ±1%, ±2%, ±5%.
- Low inductance. Solderable copper leads (60/40).
- Radial leads, low resistance value 0.05Ω ~ 0.005Ω.

▶ Applications

- CPU Drive Control.
- Power Tool Motor controls.
- Automotive, Feedback System.
- Inverter and Switching Power Supplies.
- Power Supply Shunt, Current Detective.
- Residual Battery Power Detection, and Current Sensing.

► Dimensions (Unit: mm)



Type	Dimensions (Unit: mm)				
	A \pm 1	B \pm 3	C \pm 0.8	E \pm 0.3	F \pm 0.1
OAR-1	10	10	3.5	1.6	1.0
OAR-2	15	15	3.5	1.6	1.0
OAR-3	20	20	3.5	1.6	1.0
OAR-5	20	20	3.5	1.6	1.0

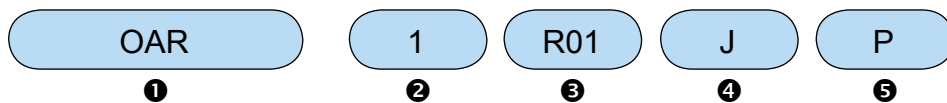
► Specification

Type	Power Rating @ 85°C (W)	Resistance Range (m Ω)	Tolerance (\pm %)	Temperature Coefficient TCR (ppm/ $^{\circ}$ C)	Inductance (nH)
OAR-1	1	R005~R05	\pm 1% \pm 2% \pm 5%	\pm 50	10 Max.
OAR-2	2	R005~R05			
OAR-3	3	R005~R05			
OAR-5	5	R005~R01			

► Characteristic Specification

Test Items	Test Method	Specification
Load Life	1000 hours @ 25°C	$\Delta R/R < 1\%$
Moisture Test	no load for 1000 hours	$\Delta R/R < 1\%$
Temperature Cycling	-40°C to +125°C for 1000 cycles	$\Delta R/R < 1\%$
Operating Temperature		-40°C to +125°C

▶ How to Order



❶ Part Number: OAR

❷ Rated power

Code	Rated power
1	1w
2	2w
3	3w
5	5w

❹ Tolerance %

Code	Resistance Value (Ω)
F	$\pm 1\%$
G	$\pm 2\%$
J	$\pm 5\%$

❸ Resistance Value (Ω)

Code	Resistance Value (Ω)
R005	0.005 Ω
R01	0.01 Ω
R05	0.05 Ω

❺ Package-Code

Code	Resistance Value (Ω)
P	Bulk

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