

# ACE1V4532

## Automotive grade common-mode chip inductor



### Product features

- AEC-Q200 qualified
- 1812 (4532 metric) package
- Impedance range from 700 ohms to 15000 ohms
- Inductance range from 11 uH to 200 uH
- Moisture sensitivity level (MSL): 1

### Applications

- Controller area network (CAN)
- Ethernet architectures
- Automotive signal line filter
- Advanced driver assistance systems (ADAS)
- Infotainment, safety cameras, sensors, xEV, Powertrain
- Engine control unit (ECU)
- Electric power steering system (EPS)
- Battery management systems (BMS)

### Environmental compliance and general specifications

- Operating temperature range: -40 °C to +125 °C (ambient plus self-temperature rise)
- Solder reflow temperature: J-STD-020 (latest revision) compliant

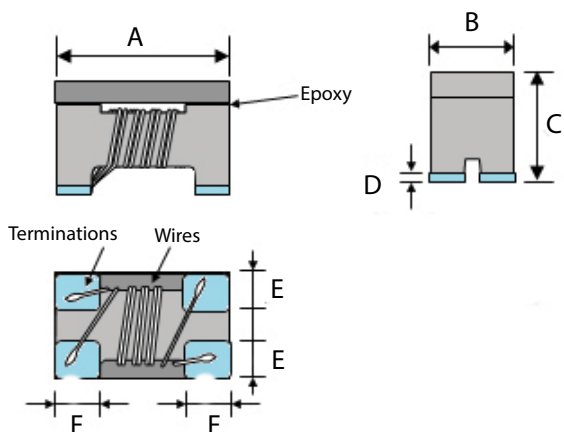


**Product specifications**

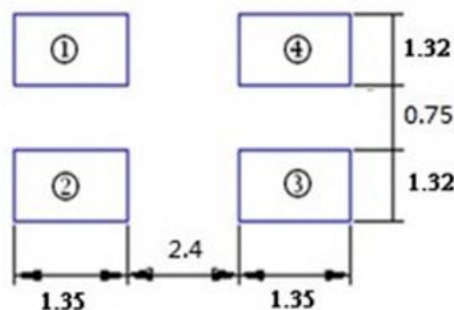
Part number	Common-mode impedance Z (Ω) at 10 MHz	Common-mode inductance (μH) at 100 kHz	DCR (Ω) @ +25 °C maximum	Idc (mA) maximum	Rated voltage (Vdc) typical	Insulation resistance (MΩ) minimum
ACE1V4532-110-R	300 minimum 700 typical	11 +50%/-30%	0.60	250	50	10
ACE1V4532-220-R	500 minimum 1000 typical	22 +50%/-30%	1.00	200	50	10
ACE1V4532-510-R	1000 minimum 2000 typical	51 +50%/-30%	1.00	200	50	10
ACE1V4532-101-R	2000 minimum 5000 typical	100 +50%/-30%	2.00	150	50	10
ACE1V4532-201-R	10000 minimum 15000 typical	200 +50%/-30%	4.50	100	50	10

1. Part Number Definition: ACE1V4532-xxn-R  
 ACE1V4532 = Product code and size  
 xx= inductance value in uH,  
 n= multiplication factor: 10^n (i.e. 110 = 11 \* 10^0 = 11 uH)  
 -R suffix = RoHS compliant

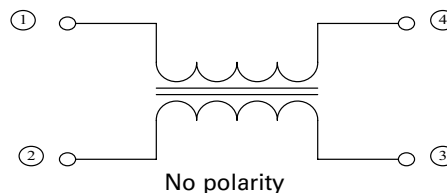
**Mechanical parameters, schematic, pad layout (mm)**



**Recommended pad layout**



**Equivalent circuit**

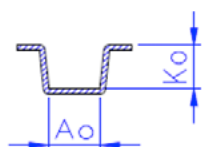
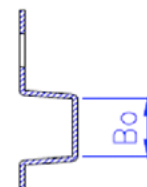
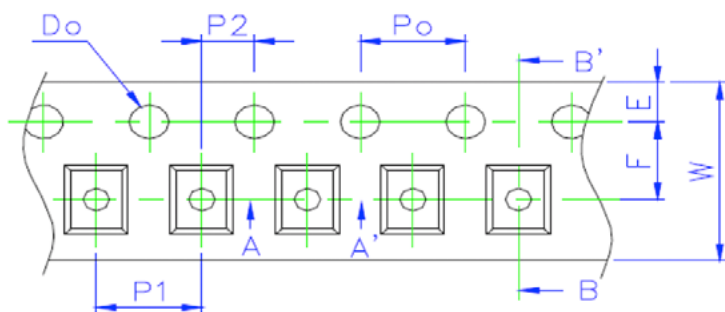


Part Number	A	B	C	D	E	F
ACE1V4532-xxn-R	4.5±0.2	3.2 ±0.2	2.8 ±0.2	0.2 ±0.1	1.2typ.	1.0typ.

All soldering surfaces to be coplanar within 0.1 millimeters  
 Tolerances are ±0.1 millimeters unless stated otherwise  
 Pad layout dimensions are reference only  
 Traces or vias underneath the inductor is not recommended

**Packaging information (mm)**

Supplied in tape and reel packaging, 500 parts per 7" diameter reel



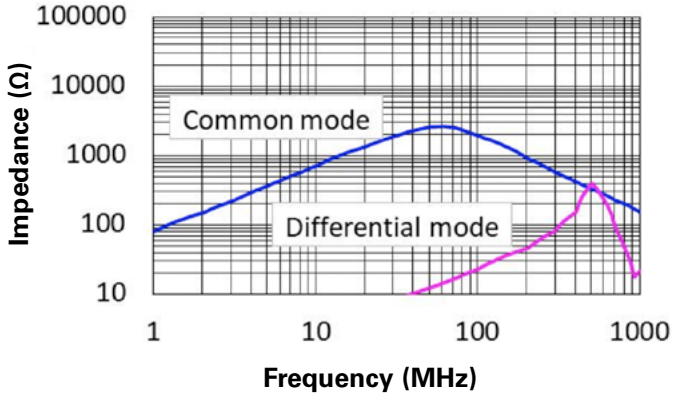
SEC: A-A'

SEC: B-B'

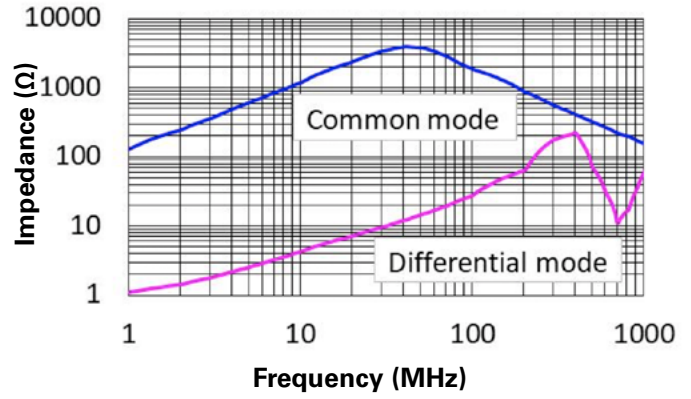
$A_o$	$3.45 \pm 0.10$
$B_o$	$4.90 \pm 0.10$
$K_o$	$3.05 \pm 0.10$
$W$	$12.00 \pm 0.20$
$E$	$1.75 \pm 0.10$
$F$	$5.50 \pm 0.05$
$P_o$	$4.0 \pm 0.05$
$P_1$	$8.0 \pm 0.10$
$D_o$	$1.5 + 0.1, -0$

Performance curves

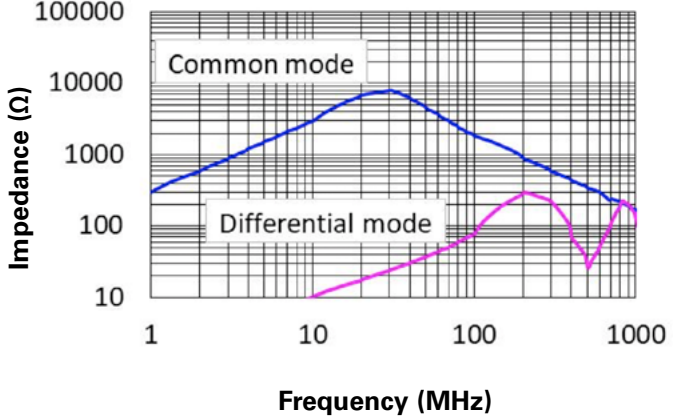
ACE1V4532-110-R



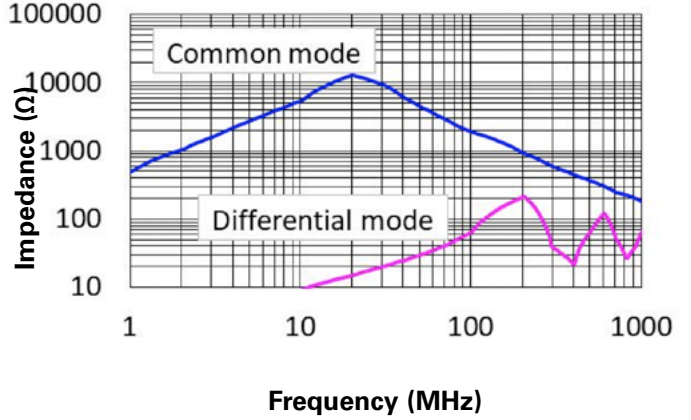
ACE1V4532-220-R



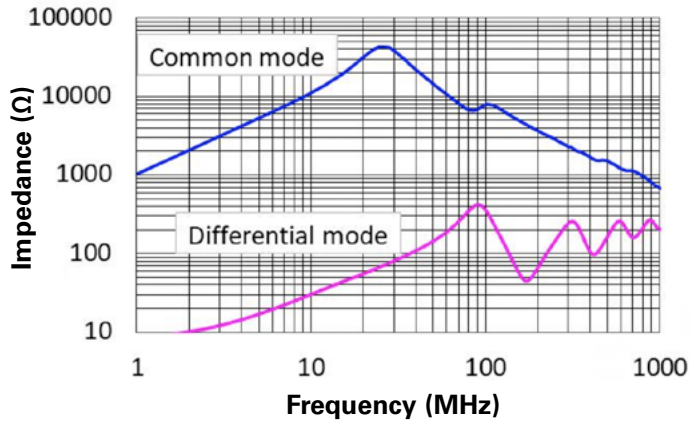
ACE1V4532-510-R



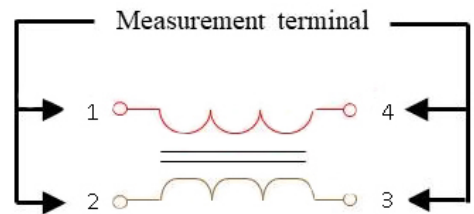
ACE1V4532-101-R



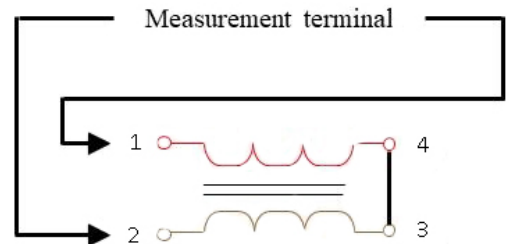
ACE1V4532-201-R



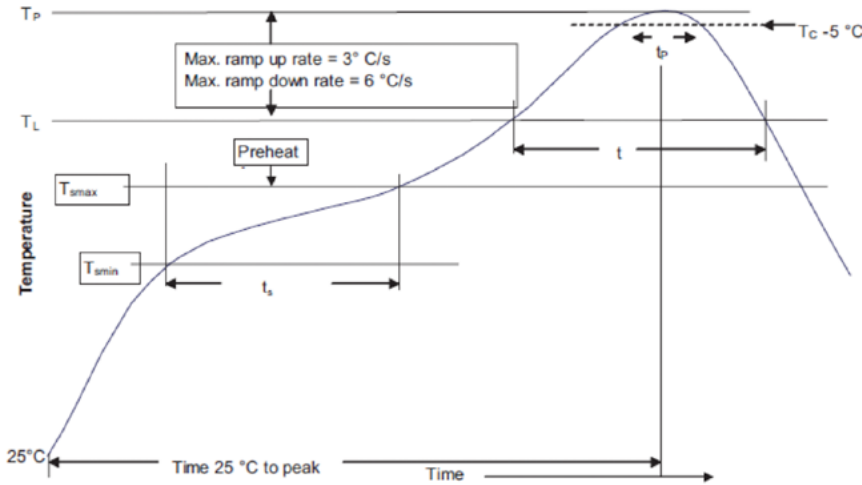
Common mode measurement method:



Differential mode measurement method:



**Solder reflow profile**



**Table 1 - Standard SnPb solder (T<sub>C</sub>)**

Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> ≥350
<2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

**Table 2 - Lead (Pb) free solder (T<sub>C</sub>)**

Package thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> 350 - 2000	Volume mm <sup>3</sup> >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 – 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

**Reference J-STD-020**

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat and soak		
• Temperature min. (T <sub>smin</sub> )	100 °C	150 °C
• Temperature max. (T <sub>smax</sub> )	150 °C	200 °C
• Time (T <sub>smin</sub> to T <sub>smax</sub> ) (t <sub>s</sub> )	60-120 seconds	60-120 seconds
Ramp up rate T <sub>L</sub> to T <sub>P</sub>	3 °C/ second max.	3 °C/ second max.
Liquidous temperature (T <sub>L</sub> )	183 °C	217 °C
Time (t <sub>L</sub> ) maintained above T <sub>L</sub>	60-150 seconds	60-150 seconds
Peak package body temperature (T <sub>P</sub> )*	Table 1	Table 2
Time (t <sub>p</sub> )* within 5 °C of the specified classification temperature (T <sub>C</sub> )	20 seconds*	30 seconds*
Ramp-down rate (T <sub>P</sub> to T <sub>L</sub> )	6 °C/ second max.	6 °C/ second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

\* Tolerance for peak profile temperature (T<sub>P</sub>) is defined as a supplier minimum and a user maximum.

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Printed in USA  
Publication No. 10986 BU-MC19114  
November 2019

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