

## AVV50R G9200-33172 Inverter.

### DC / DC HV to 12 Volt converter (underneath inverter).

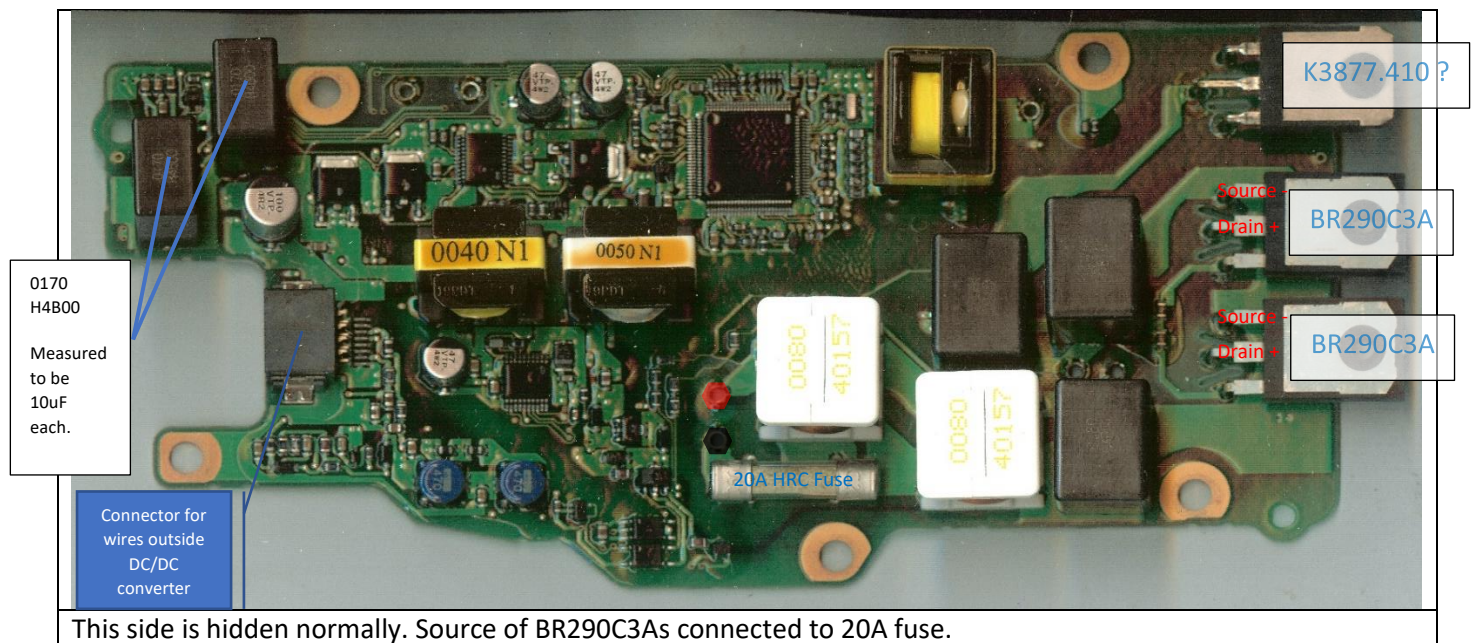
Aim: to find out if there are resistor ladder networks (just as there are for the Prius and Yaris). Find out what values they are, determine what values to use for different HV battery connected directly to the HV battery bus.

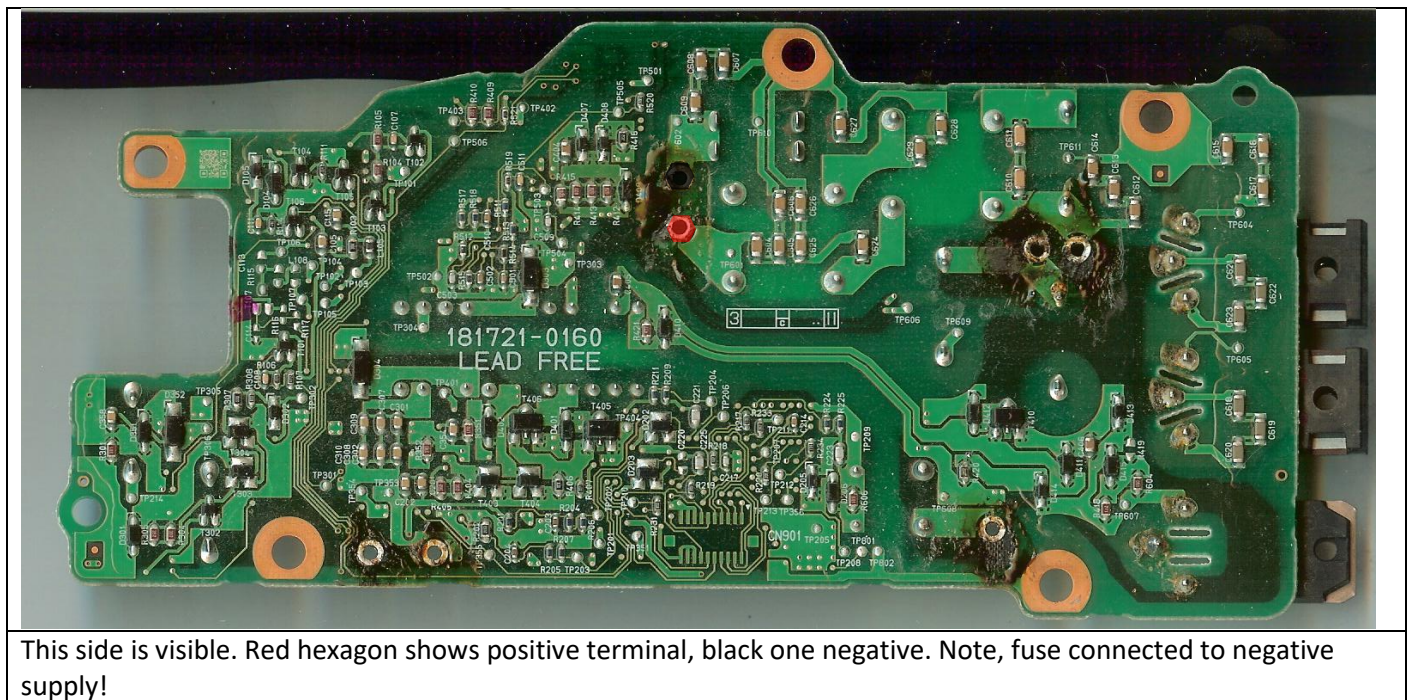
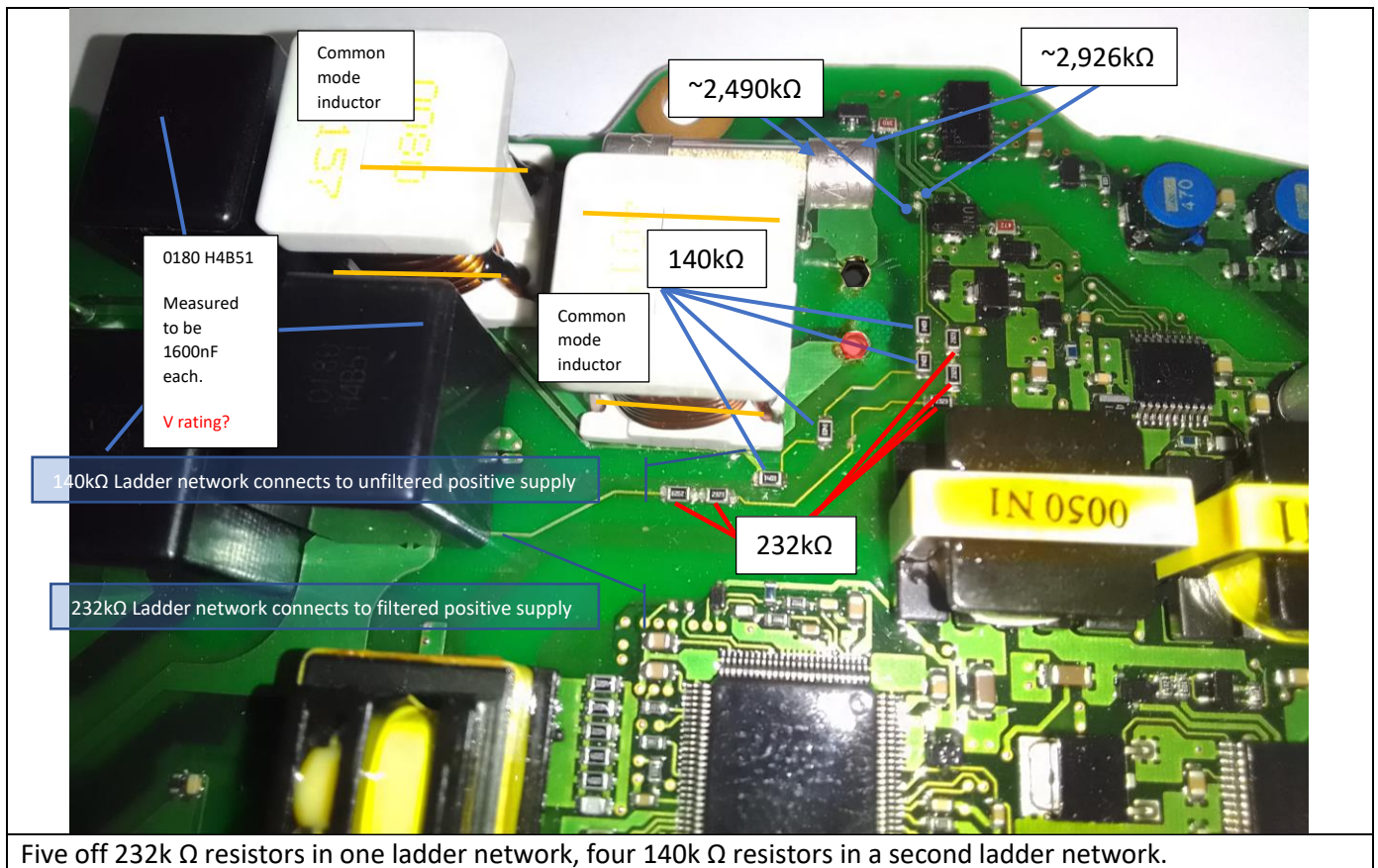
Discovery: AVV50R DC / DC converter has a PCB mounted underneath inverter. PCB needs very hot soldering iron to unsolder 7 connections to remove.

There are two resistor ladder networks.

First one has 5 off: 2323 resistors, or 232k ohm resistors. From this network we measure 2.926kohms to the negative rail (fuse). Note: cannot find resistor of this value.

Second one has 4 off: 1403 or 140k ohm resistors. From this network we measure 2.490 kohms to negative rail (fuse). Note: cannot find resistor of this value.





Initial observations: quite a lot of capacitors to ground have three in series. (Would that be lose one in short circuit mode, still have two to handle voltage drop)?

20A HRC Fuse appears to be in negative voltage rail???



Push Pull mosfet.

IPW80R290C3A



Mfr. #:

IPW80R290C3A

Manufacturer:

Infineon Technologies

Description:

MOSFET AUTOMOTIVE

Lifecycle:

New from this manufacturer.

Datasheet:

[IPW80R290C3A Datasheet](#)

Delivery:

DHL FedEx Ups TNT EMS

Payment:

T/T Paypal Visa MoneyGram Western Union

More Information:

[IPW80R290C3A more Information](#)

Specifications

Product Attribute	Attribute Value
Manufacturer:	Infineon
Product Category:	MOSFET
RoHS:	Y
Technology:	Si
Mounting Style:	Through Hole
Package / Case:	TO-247-3
Number of Channels:	1 Channel
Transistor Polarity:	N-Channel
Vds - Drain-Source Breakdown Voltage:	800 V
Rds On - Drain-Source Resistance:	290 mOhms
Configuration:	Single
Tradename:	CoolMOS



IPW80R290C3A

## CoolMOS® Power Transistor



### Product Summary

$V_{DS}$	800	V
$R_{DS(on)max}$	0.29	$\Omega$
$Q_{g,typ}$	91	nC

### Features

- New revolutionary high voltage technology
- Ultra low gate charge and ultra low effective capacitances
- Extreme dv/dt rated
- High peak current capability
- Automotive AEC Q101 qualified
- RoHS compliant

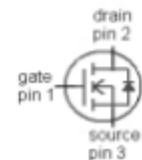
### CoolMOS C3A designed for:

- DC/DC converters for Automotive Applications

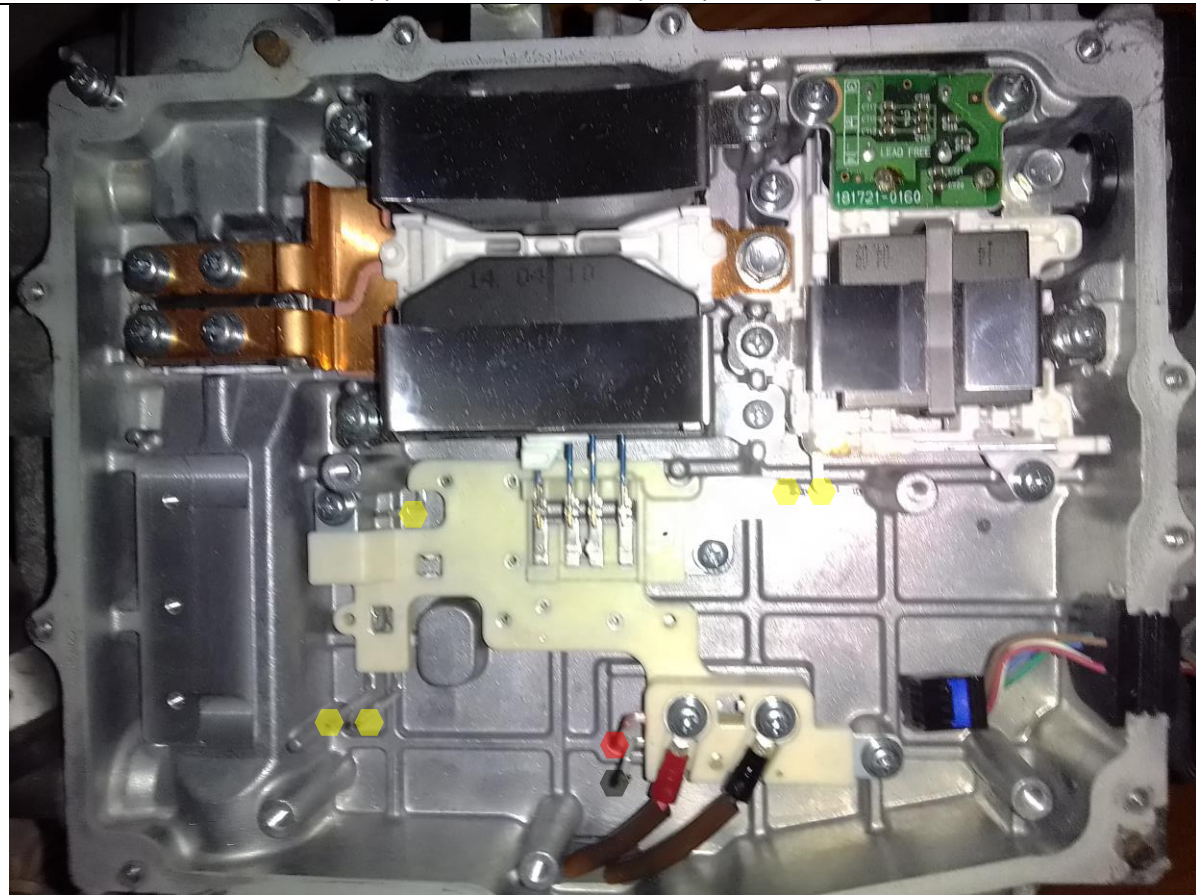
PG-TO247-3



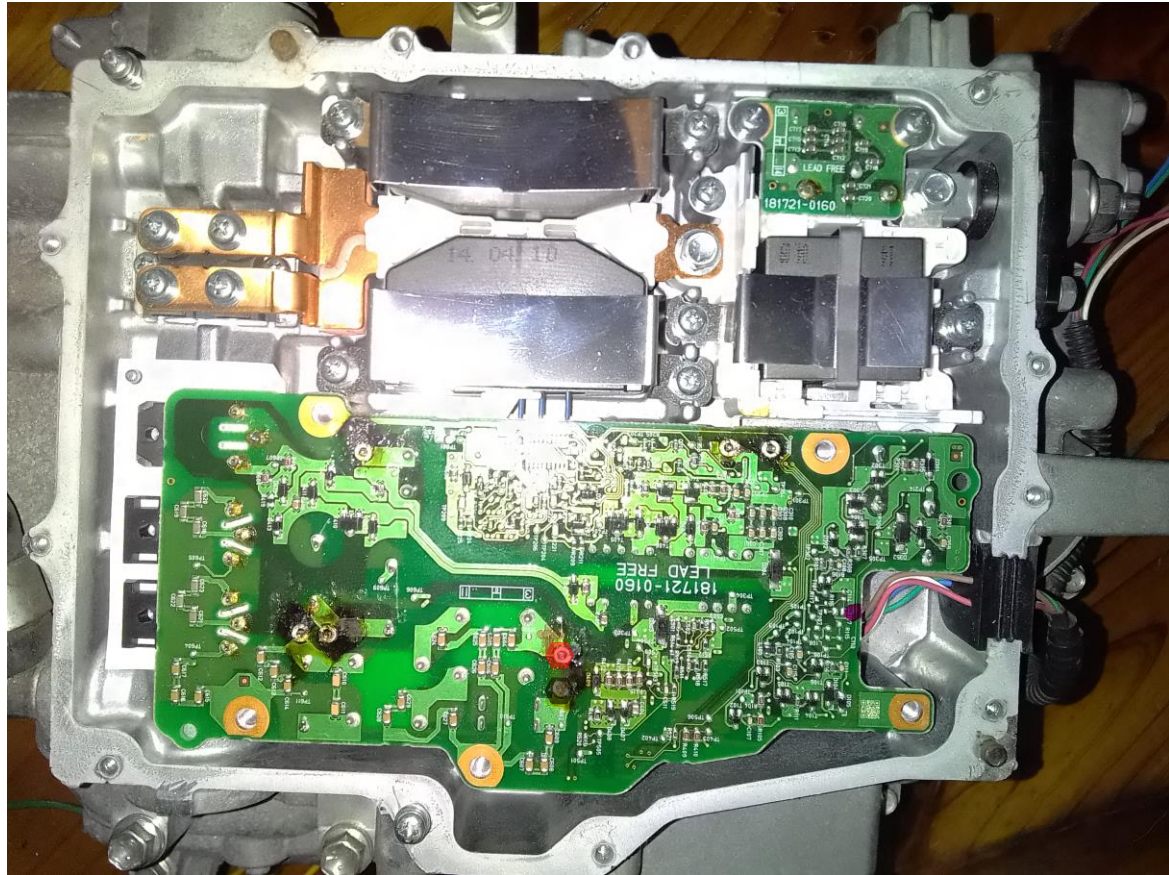
Type	Package	Marking
IPW80R290C3A	PG-TO247-3	8R290C3A



There are two of these, they appear to be wired in a push pull configuration.



This is the DC DC converter without the PCB. Hexagon shows where there is a soldering stub. Red one is positive HV battery connection, black one, is negative HV battery connection.



PCB placed into DC DC converter.

HV Battery Pack	
Battery pack voltage	244.8 V
Number of NiMH battery modules in the pack	34
NiMH battery module voltage	7.2 V
NiMH battery module dimensions	11 x 0.8 x 4.6 in (285 x 19.6 x 117.8 mm)
NiMH module weight	2.3 lbs (1.04 kg)
NiMH battery pack dimensions	35.8 x 19.1 x 12.5 in (909 x 486 x 317 mm)
NiMH battery pack weight	107 lbs (48.5 kg)

Taken from Toyota Camry AVV50 Hybrid (2<sup>nd</sup> generation) vehicle dismantling Manual

What voltage can the Nickel Hydride battery voltage get to?

A NiMH battery pack of 7.2 volts can be charged up to 8.4 volts.

$34 * 8.4 = 285.6$  Volts.

So, if we want 300 Volts HV battery directly connected to the Boost bus, we will be higher voltage than this 285.6 volts. Will that be a problem?