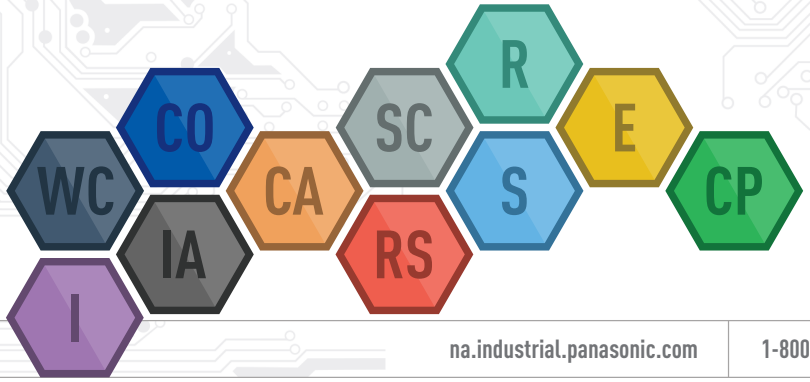
Panasonic



ZNR Application Note

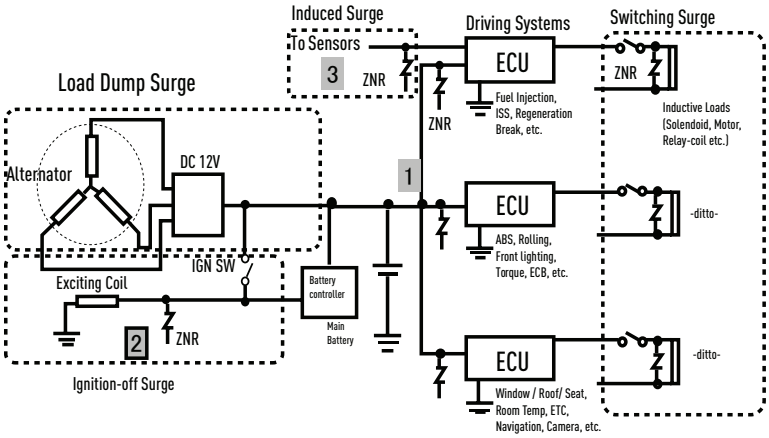
Automotive Electronics

1. Industry Segments:

Field of Industry: Automotive Electronics

Product: ECU (Electronic Control Unit) for Power Train, Safety, Driving, Body and Information Systems

2. Transient Surge Voltage and its Protection by Using ZNR:



Aim of ZNR Application:

Protection of ECU against load dump surge,switching surges and induced surges

Problems with Surge Voltage:

Kind of surge voltage: 1 :Load dump surge, 2 :Switching surge, 3 :Induced surge

Path of surge voltage: 1 :DC line connected to an alternator, 2 :DC line for Inductive loads, 3 :Sensor lines

Failed parts or circuits: Damage or malfunction of ECU

How to Apply ZNR to Circuit:

Connection: DC power line(line-line) for 1 and 2 application, Sensor line(line-line) for 3

ZNR part number selection (representative):

1 :ERZHF2M270, 2 :ERZV□□D270, 3 : ERZV□□D220 For AC200V system

□□□Nominal dics size of ZNR according to surge energy

Precaution in surge protection designing (Parameters to be considered for ZNR selection):

1. Load dump surge: Peak volts, duration, number of repetition, interval and impedance of surge source
2. Switching surge: Current into inductive loads, a number of repetition, interval and ambient conditions

3 :Sensor lines

3. Relevant Technical Information and References:

JASOD001(no more effective), JASOD007(new)	EMC Safety Standard
ISO7637-2Ed3(2011), ISO16750-2	EMC Safety Standard

4. More Information:

Home page for up-to-date information: http://na.industrial.panasonic.com/products/circuit-thermal-protection/circuit-protection/znr-transientsurge-absorbers