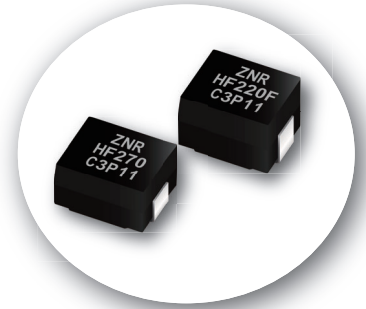


Automotive ZNR Surge Absorber

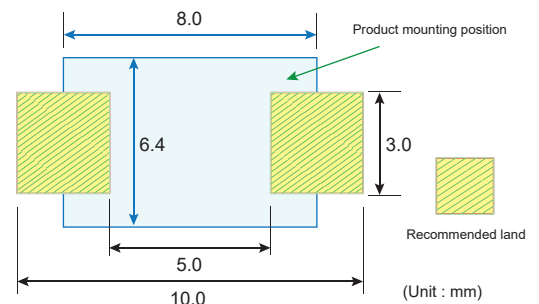
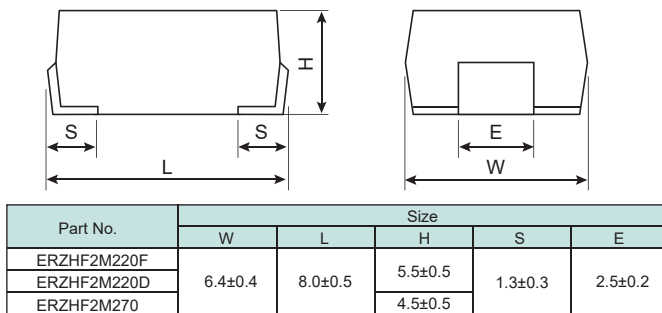
HF series
Load dump surge prevention components



Features

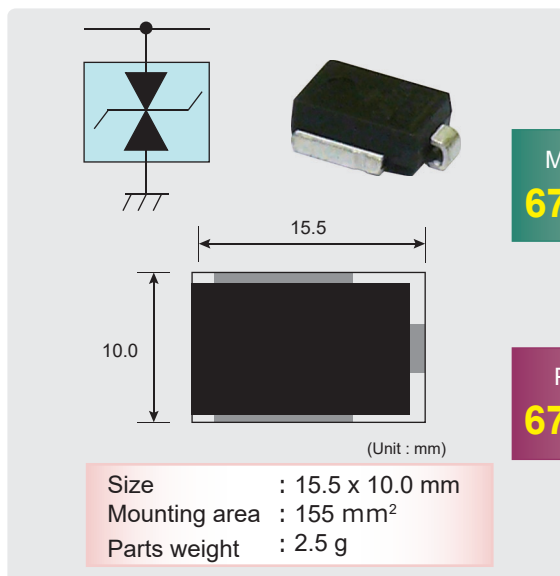
- Resin mold structure with excellent thermal shock resistance during soldering
- Small (8.0x6.4 mm) surface-mount shape for flow/reflow/iron soldering
- RoHS compliant (100% Pb-free)
- Nominal varistor voltage (V_{1mA}) : 22 V
- Clamping voltage : 35 V or less
- ISO7637-2 pulse 5a compatible

Shape dimensions/recommended land dimensions

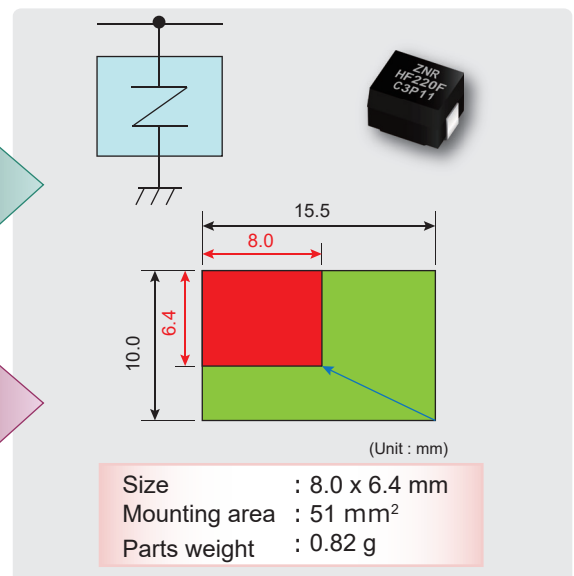


Proposal to replace TVS Diodes with varistors and advantages

3600W TVS Diode Bi-directional



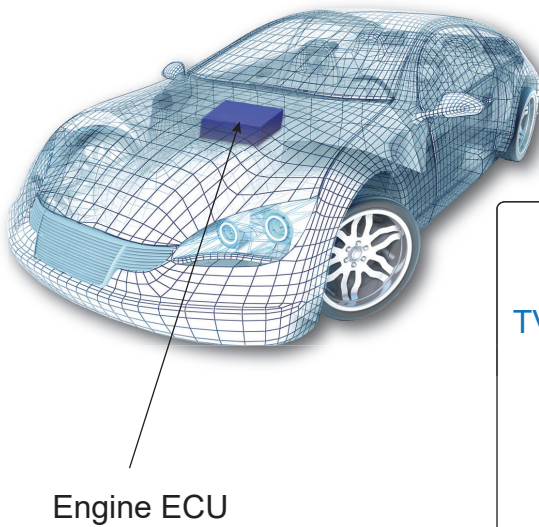
ZNR surge absorber "ERZHF2M220D"



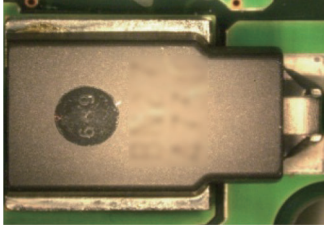
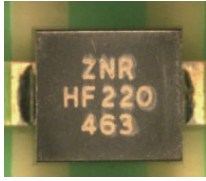
Mounting area
67% Reduction

Parts weight
67% Reduction


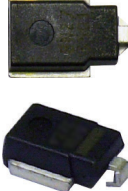



Adoption case



Replacement case from TVS Diodes

[Conventional design]	[Replacement Part No.]
TVS Diode bidirectional / 3600W	ERZHF2M220D
	
Size : 15.5 x 10.0 x 4.9 mm Weight : 2.5 g	Size : 8.0 x 6.4 x 45.5 mm Weight : 0.82 g

Comparison table between TVS Diode (3600W) and ZNR-HF

	TVS Diode bidirectional / 3600W				ZNR-HF
	A company	B company	C company	D company	Panasonic Industry
Part No.	*****	*****	*****	*****	ERZHF2M220D
Appearance					
Size (mm)	15.5x10.0x4.9	15.5x10.0x5.0	7.0x9.0x9.0	15.0x10.0x4.0	8.0x6.4x5.5
Mounting area (mm ²)	155.0	155.0	63.0	150.0	51.2
Parts weight (g)	2.5	2.6	1.5	2.0	0.82
Operating voltage (V) Vz, V1mA	22.4 to 26.9	24 to 30	24.3 to 29.7	24 to 30	20.0 to 23.2
Load dump surge test	OK	OK	OK	OK	OK
ISO7637-2 5a Us = 87 V td = 400 ms Ri = 2.0Ω, 1 time					
Clamping voltage	35 V or less	35 V or less	35 V or less	35 V or less	35 V or less