

### “ZNR” Surge Absorbers SMD Type

Series: **HF**



#### ■ Features

- Meet for Load Dump Surge Test (JASO D 001-94)  
[ $V_p=70\text{ V}$ ,  $\tau=200\text{ ms}$ ,  $R_i=0.8\ \Omega$ ]
- Suitable for requirements of Automotive (12 V)
- Compact size SMD
- Meet flow/reflow/iron soldering
- Strong against “Soldering heat shock” due to molded construction

RoHS compliant

#### ■ Recommended Applications

- Protection of Body & Accessory ECU about automotive against Load Dump Surge

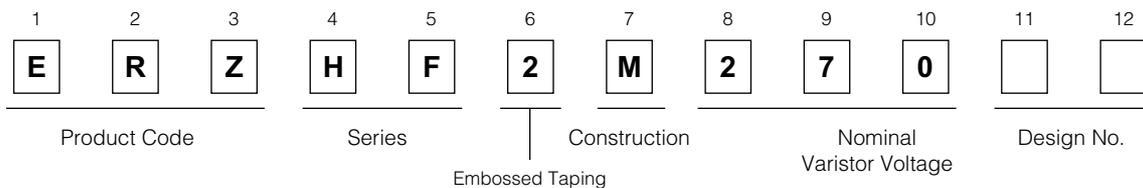
#### ■ Handling Precautions

Please see Pages 335 to 337

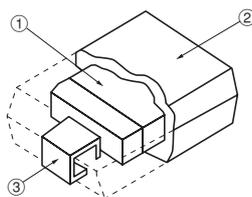
#### ■ Minimum Quantity / Packing Unit

Please see Page 360

#### ■ Explanation of Part Numbers

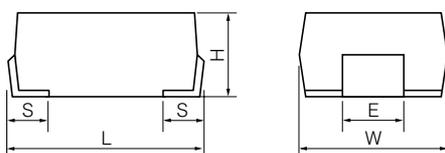


#### ■ Construction



① Multilayer Varistor	ZnO, others
② Mold Resin	Epoxy (UL94 V-0 approved)
③ Lead Terminal	Sn plated Ni-Fe alloy

#### ■ Dimensions in mm (not to scale)



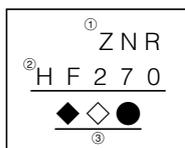
Series	W	L	H	S	E
HF	6.4±0.4	8.0±0.5	4.5±0.5	1.3±0.3	2.5±0.2

### ■ Ratings and Characteristics

- Operating Temperature Range: -40 to 125 °C
- Storage Temperature Range: -40 to 125 °C

Part No.	Varistor Voltage	Maximum Allowable Voltage	Short Time Over-voltage	Clamping Voltage	Load Dump Surge
	V <sub>1 mA</sub> (V)	DC (V)		(V) at I <sub>p</sub> 5(A)	
ERZHF2M270	27 ± 20 %	16	DC24(V) 5 min.	43 (V) max.	JASO Category:A ,A-1 70V, 1time

### ■ Marking Contents



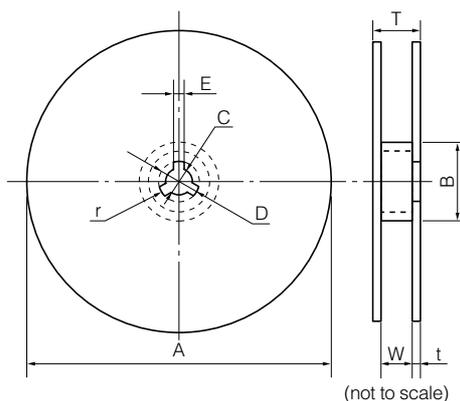
① Part Number	ZNR Surge Absorbers	
② Abbreviation of P/N	ERZHF2M270	
③ Date Code	◆ Yearly	2008:H,2009:J,2010:0,2011:1,2012:2,2013:3
	◇ Monthly	Jan.:1, Feb.:2, Mar.:3, Apr.:4, May:5, Jun.:6, Jul.:7, Aug.:8, Sep.:9, Oct.:O, Nov.:N, Dec.:D
	● 10 Days	1st to 10th:1, 11th to 20th:2, 21st to 31st:3

### ■ Packaging Methods

- Packing Quantity

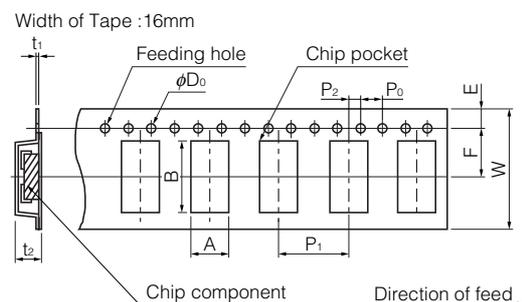
Style	Quantity
Embossed Taping	1000 pcs./reel

- Reel



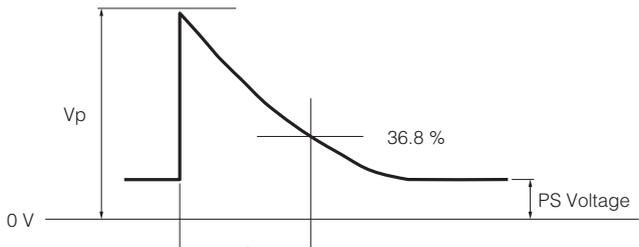
Dimensions (mm)	A	B	C	D	E
	382 max.	50 min.	13.0±0.5	21.0±0.8	2.0±0.5
Dimensions (mm)	W	T	t	r	
	16.4 <sup>+2.0</sup> <sub>0</sub>	22.4 max.	2.5±0.5	1.0	

- Embossed Taping



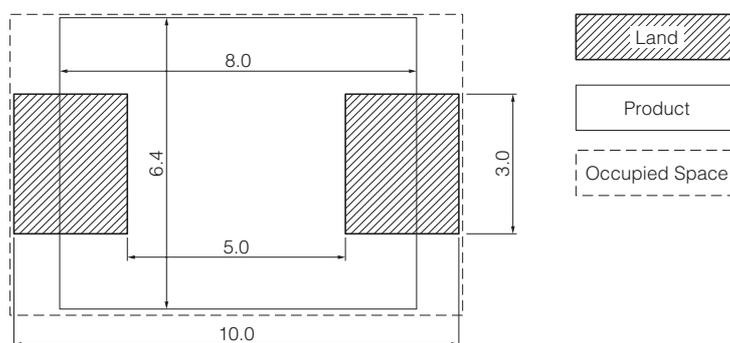
Dimensions (mm)	A	B	W	F	E	P <sub>1</sub>
	7.5 max.	11.9 max.	16.0±0.3	7.5±0.1	1.75±0.10	12.0±0.1
Dimensions (mm)	P <sub>2</sub>	P <sub>0</sub>	φD <sub>0</sub>	t <sub>1</sub>	t <sub>2</sub>	
	2.0±0.1	4.0±0.1	1.5 <sup>+0.1</sup> <sub>0</sub>	0.8 max.	8.0 max.	

### ■ Performance Characteristics

Characteristics	Test Methods	Specifications
Standard Test Condition	Environmental conditions under which every measuring is done without doubt on the measuring results. Unless specially, specified, temperature, relative humidity are 5 °C to 35 °C, 45 to 85% RH respectively.	—
Maximum Allowable Voltage	The maximum DC voltage that can be applied continuously in the specified environmental temperature range.	
Short Time Over-Voltage	The maximum DC Voltage that can be applied specified period without breakdown	
Varistor Voltage	Voltage between both terminals of ZNR measured when 1 mA of DC current is applied under standard conditions. It is called V <sub>1</sub> . Measuring the varistor voltage should be made promptly to avoid heat affection.	To meet the specified value.
Clamping Voltage	The maximum voltage between two terminals with the specified impulse current (8/20 μs).	
Temperature Coefficient of Varistor Voltage	The varistor voltage shall be measured at 25 °C and 85 °C with a DC current of 1 mA. The temperature coefficient of varistor voltage V <sub>1</sub> is calculated by the following equation :  $T.C. (\% / ^\circ C) = \frac{V_1 \text{ at } 85^\circ C - V_1 \text{ at } 25^\circ C}{V_1 \text{ at } 25^\circ C} \times \frac{1}{60} \times 100$	0 to -0.05 %/°C
Load Dump Surge	The test waveform of transient voltage which specified JASO Category A A-1 70 V without breakdown.  	No breakdown

\* Please Check Specification of the products about Mechanical & Environmental requirements

### ■ Recommendation Land Size



(Unit:mm)