Electro-Pyrotechnic Initiator Chip Resistor

Electro-pyrotechnic initiator resistors, also known as bridge resistors, are resistive elements, which convert electrical energy into heat energy in a precise electro-thermal profile for the purpose of initiating a series of pyrotechnic events in a controlled energetic reaction. In automotive applications this effect is used to deploy automotive airbags and other safety devices. These same devices are also used in military applications for pilot ejection systems, explosive bolt disengagement of airbone missiles, chaff dispensers, artillery projectile activators, anti-tank mines, etc. Commercially, they are used in mining and de-constructions applications.

FEATURES

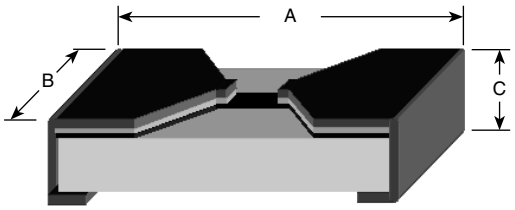
Pb-free Available

RoHS* COMPLIANT

Vishay has developed a special thin film resistor chip specifically designed to provide pyrotechnic engineers with a lot of advantages

- Firing energy down to 50 µJ
- Firing time down to 50 µs
- Ohmic range: 2R to 10R
- Compatibility with various pyrotechnic composition even with no primer
- Joule effect ignition or flash ignition for very fast firing
- Easy set up by design of firing levels
- No fire/all fire ratio up to 70 %
- Very predictable, reproducible and reliable behaviour
- Size: 0603 preferred - other size available upon request

DIMENSIONS in millimeters (inches)



CASE SIZE	DIMENSION		
	A	B	C
	MAX. TOL. + 0.152 (0.006) MIN. TOL. - 0.152 (0.006)	MAX. TOL. + 0.127 (0.005) MIN. TOL. - 0.127 (0.005)	MAX. TOL. + 0.127 (0.005) MIN. TOL. - 0.127 (0.005)
0603	1.52 (0.060)	0.75 (0.030)	0.5 (0.020)

MECHANICAL SPECIFICATIONS

- Substrate: special alumina based substrate
- Resistive element: fine line patterned Tantalum nitride thin film layer
- Diffusion and conductive thin film layers
- Terminations: wraparound over nickel barrier

TECHNOLOGY

This technology contributes to the stability of the heating element, the precise electro-thermal response profile and the ability to design a precise activation energy.
All these features are perfectly controlled on high production volumes.

* Pb containing terminations are not RoHS compliant, exemptions may apply

EXAMPLE OF APPLICATION

Chip: 0603
R: 2R ± 0R2
Energy: around 1.5 mJ
Response time: 0.2 ms

AIRBAGS INITIATORS

Bruceton's tests
2 customers: customer A and customer B have equipped squibs of their own with 3 variants (Variant 1, 2 and 3) . Bruceton's test results of Vishay heating elements are shown in Table 1

HEATING ELEMENT	CUSTOMER A		CUSTOMER B	
	NF (in mA)	AF (in mA)	NF (in mA)	AF (in mA)
Variant 1	546	766	538	776
Variant 2	571	839	577	859
Variant 3	619	891	612	875

ORDERING PROCEDURE

New Global Part Numbering: EPICxxxxNT

E	P	I	C	x	x	x	x	N	T

MODEL	xxxx	TERMINATION (1)	PACKAGING
EPIC	Will be determined at time of design	**N:** Tin/silver **B:** Tin/lead **G:** Gold	**W** = Waffle pack **T** = Tape and reel

Notes:

(1) Tin/lead: Please consult

- Per Vishay policy all the components designed for automotive applications should be tested in accordance to AEC Q200 specification. As the EPIC is just part of an ignitor which is designed and qualified by each customer Vishay is not proceeding to any AEC Q200 test.

Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.