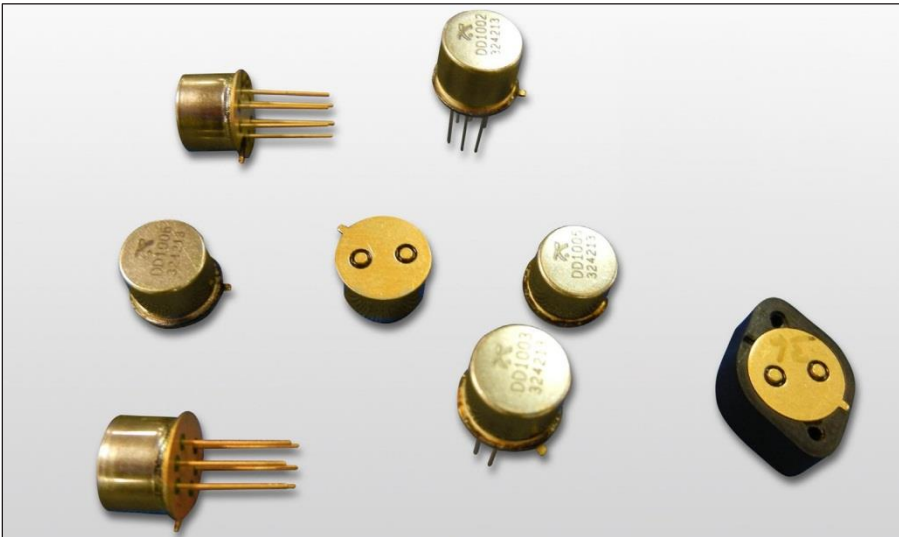


Blue Chip® Detonator



The Blue Chip® family of high voltage chip slapper detonators are designed for a wide variety of applications. The detonators have been qualified to MIL-DTL-23659 Appendix A and are qualified for use in-line. The various versions of the detonator all have the same basic shape with variations in the explosive column.

The chip slapper consists of an exploding metal foil, covered by a polyimide flying plate, deposited on a ceramic “chip” substrate. The assembly is laser welded to ensure the device is hermetic to a minimum leak rate of 10^{-6} ATM-CC/SEC. Excelitas manufactures Blue Chip® Detonators with either 2 or 6 pin TO-5 headers that can be utilized as surface mount, plugged into a connector, or attached to a flexible tape strip line.

All members of the Blue Chip® Detonator family exceed the mechanical and thermal requirements of MIL-DTL-23659. They have been shown to be reliable at temperatures ranging from liquid Nitrogen (-196°C) to over 200°C . The devices are not degraded by high shocks (up to 100,000g) generated during thick wall penetration. Aggressive long term aging studies have shown that they have a simulated reliability of hundreds of years.

The design of the Blue Chip® Detonator provides easy control of the critical parameters, resulting in consistent performance from one device to the next.

Features

- Low cost, commercial device
- Low firing energy
- MIL-DTL-23659 qualified
- MIL-STD-1316 compliant design
- MIL-STD-1901 compliant design
- Minimum Hermetic Leak rate of 10^{-6} ATM-CC/SEC
- Demonstrated ability to initiate various booster and main charges
- Wide temperature operating range (-196° to 200°C)
- Multiple configurations
- Full lot and serialization control
- Manufactured in state-of-the-art ISO 9001 facility

Applications

- Safe and Arm Devices
- Ignition Safety Devices
- Warheads
- Rocket Motor initiation
- Payload launch vehicles
- Oil and gas exploration

Blue Chip® Detonator

TABLE 1 Specifications

Drawing #	# Pins	Firing Energy	Maximum Explosive Load	Description
327920	6 Pin	Low	0.12 g HNS IV	Standard Profile
327912	6 Pin	Low	0.30 g PBXN-5	Dual Load (HNS IV / PBXN-5)
324490	6 Pin	Low	0.17 g HNS IV	Integral Sleeve Shock Hardened
324236	2 Pin	Low	0.12 g HNS IV	Standard Profile
332123	6 Pin	Low	0.03 g HNS IV	Low Profile
324638	6 Pin	Low	0.12 g HNS IV	High Temperature

TABLE 2 MIL-DTL-23659 Appendix A Qualification

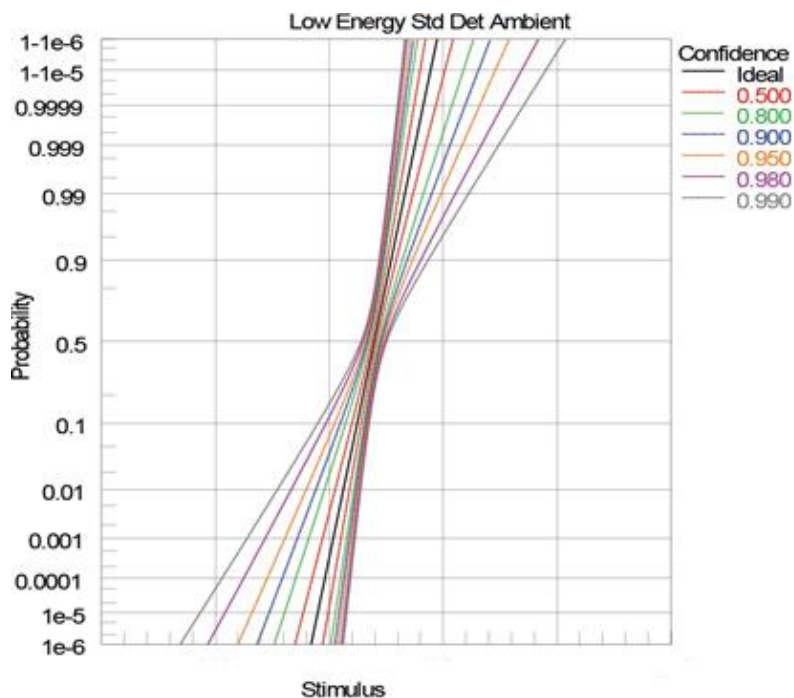
Requirement	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Total
Number	30	30	30	30	5	30	30	30	50	30	30	30	30	30	5	500
Visual Inspection	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	500
Radiographic Examination	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	500
Resistance	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	500
Leakage	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	500
Threshold Ambient	X															30
Threshold Cold		X														30
Threshold Hot			X													30
Max No Damage Current				X												30
Thermal Cook-Off					X											5
Electrical Cook-Off						X										10
Max Allowed Sensitivity							X									30
1.5 meter drop								X	X	X	X					180
Electro Static Discharge												X				50
Temperature Shock/Humidity								X	X	X	X					180
Vibration								X	X	X	X					180
Shock								X	X	X	X					180
Visual Inspection								X	X	X	X					180
Radiographic Examination								X	X	X	X					180
Resistance								X	X	X	X					180
Leakage								X	X	X	X					180
All Fire Ambient									X			X				100
All Fire Cold										X			X			100
All Fire Hot											X			X		100
Threshold Ambient								X								30
High Voltage Fire															X	5

Blue Chip® Detonator

TABLE 3 Blue Chip® Detonator Parameters

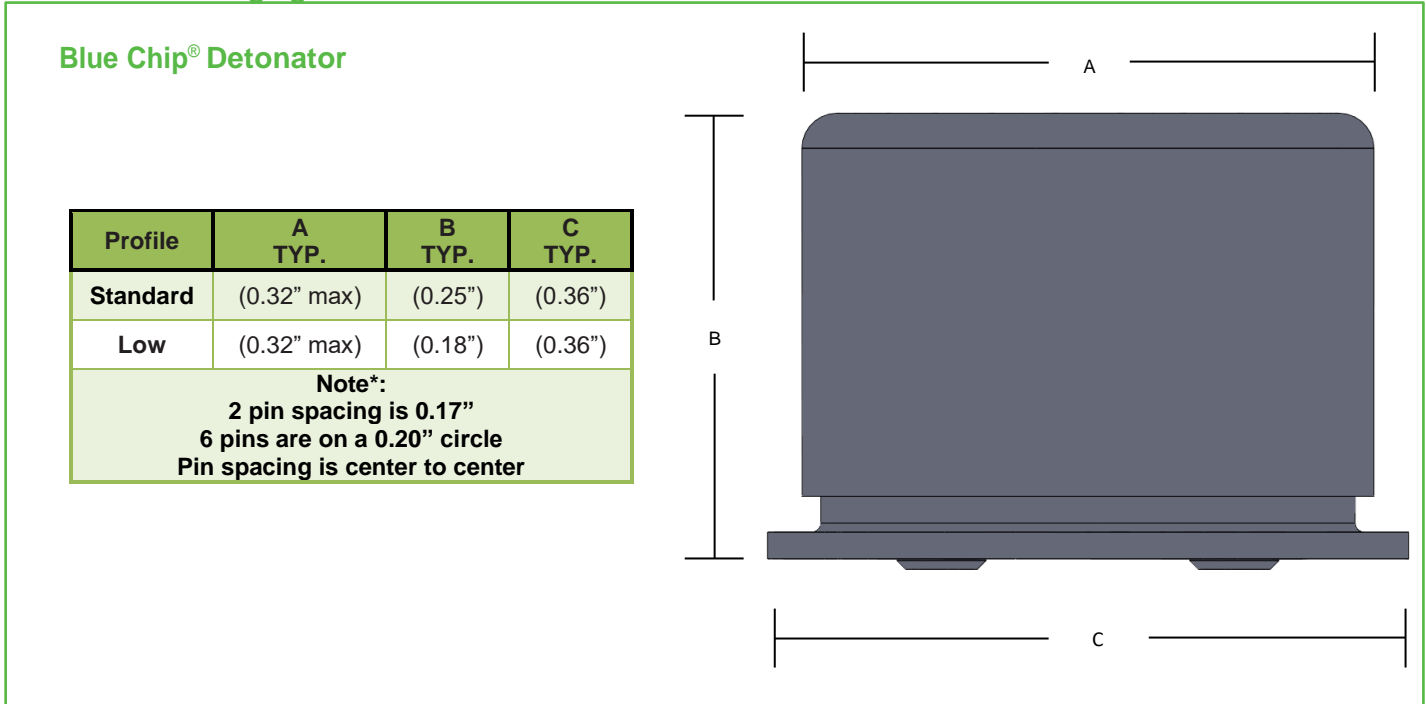
Typical Parameter (at ambient temp)	Typical Value
Mean Threshold Voltage Low Energy*	920 V
Standard Deviation (relative to mean)	1.5%
Variation of mean at Temperature (-54 C to +71 C)	±3%
.99999 All Fire @ 95% confidence Low Energy*	1030 V
No-Fire (1e ⁻⁶ @ 95%)*	670 V
Dent Depth (low profile)	10 mils
Dent Depth (standard output)	19 mils
Dent Depth (dual load output)	33 mils
Proven Temperature Operating Range	-196 to +200°C
Proven Long Term Temperature Storage	111°C
Maximum No Damage Current (1 minute)	8 Amps
Diameter (not including flange)	0.324 in max
Diameter (including flange)	0.36 in
Height (Top to base, excluding pins)	0.25 in
Weight	1.3 - 1.9 g
Pin Length (6 Pin Detonator)	0.35 in max
*Strongly dependent on firing system parameters.	

FIGURE 1 All-Fire Probability



Blue Chip® Detonator

FIGURE 2 Packaging Dimensions



About Excelitas Technologies

Excelitas Technologies is a global technology leader focused on delivering innovative, customized solutions to meet the lighting, detection and other high-performance technology needs of OEM customers.

From analytical instrumentation to clinical diagnostics, medical, industrial, safety and security, and aerospace and defense applications, Excelitas Technologies is committed to enabling our customers' success in their specialty end-markets. Excelitas Technologies has over 6,000 employees in North America, Europe and Asia, serving customers across the world.

Excelitas Technologies
 Energetic Systems
 1100 Vanguard Blvd.
 Miamisburg, Ohio 45432 USA
 Telephone: (+1) 937.865.3800
 Toll Free: (+1) 866.539.5916
 Fax: (+1) 937.865.5170
aes@excelitas.com

Excelitas Technologies
 Power Supplies and Systems
 35 Congress Street
 Salem, Massachusetts 01970 USA
 Telephone: (+1) 978.224.4100
 Toll Free: (+1) 800.950.3441
 Fax: (+1) 978.745.0894
aes.na@excelitas.com

Excelitas Technologies
 Power Supplies and Systems
 1330 East Cypress Street
 Covina, California 91724 USA
 Telephone: (+1) 626.967.6021
 Toll Free: (+1) 800.363.2095
 Fax: (+1) 626.967.3151
aes.na@excelitas.com



For a complete listing of our global offices, visit www.excelitas.com/locations

© 2013 Excelitas Technologies Corp. All rights reserved. The Excelitas logo and design are registered trademarks of Excelitas Technologies Corp. All other trademarks not owned by Excelitas Technologies or its subsidiaries that are depicted herein are the property of their respective owners. Excelitas reserves the right to change this document at any time without notice and disclaims liability for editorial, pictorial or typographical errors.

www.excelitas.com