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| **Unprecedentedly Perfect Electrolytic Capacitor** |



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**J.P. 2,606,771** **/ U.S.P. 5,379,181**

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| **The Finest Electrolytic Capacitor Based on The New Theory�gThe Transcendent Electron Transfer�h** |


On sale in 25 countries in the world with best reputation

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| **��Background of The Invention** | Figure 1:**Existing Electrolytic Capacitor Structure** |
| �@The quality of a capacitor depends on whether that of a dielectric is good or not. Electrolytic capacitors using an aluminum oxide, the best dielectric on earth, therefore, has to be ranked at the top of the capacitors. �@ Existing electrolytic capacitors, however, hold serious inherent defects: There is no practical way to make a conductive connection between a true cathode on the surface of an aluminum oxide dielectric layer and an external cathode. A separator, therefore, is required to act as an intermediary between the two cathodes, and signals with electrons transfer riding on ions in an electrolyte that impregnates the separator. �@ While signals pass the electrolyte in the separator that has a thickness of 20,000 times wider than the dielectric layer, some of the signal information is lost, and distortion is radiated due to the slowness of ions and non-linearity. The signal quality deteriorates sharply, and the total performance of the capacitor declines a great deal. | Figure 1:Existing Electrolytic Capacitor Structure |

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| **��Why Is The Black Gate Best?** | Figure2:**Black Gate Structure** |
| �@The quality of a capacitor depends on whether that of a dielectric is good or not. Electrolytic capacitors using an aluminum oxide, the best dielectric on earth, therefore, has to be ranked at the top of the capacitors. �@ Existing electrolytic capacitors, however, hold serious inherent defects: There is no practical way to make a conductive connection between a true cathode on the surface of an aluminum oxide dielectric layer and an external cathode. A separator, therefore, is required to act as an intermediary between the two cathodes, and signals with electrons transfer riding on ions in an electrolyte that impregnates the separator. �@ While signals pass the electrolyte in the separator that has a thickness of 20,000 times wider than the dielectric layer, some of the signal information is lost, and distortion is radiated due to the slowness of ions and non-linearity. The signal quality deteriorates sharply, and the total performance of the capacitor declines a great deal. | Figure 2: Black Gate Structure |

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| http://sharksystems.narod.ru/blackgate/image/m1.gif |  | http://sharksystems.narod.ru/blackgate/image/m2.gif |
| �@ | Essence of Black Gate

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| Jelmax Co.,Ltd. has developed and sells excellent electolytic capacitor called�eBlackGate�f. The BlackGate was invented based on a new concept for electron transfer. The BlackGate (BG) shows an excellent characteristics, beyond the conventional comprehension, in various aspects. It has realized the�eTranscendence Electron Transfer�fin electrolyte between the two electric poles.�eTranscendence Electron Transferring�ftransfers signal electrons in the special condition which occurs only in the BG. It enables to make unbelievable breakthroughs from the various limits of conventional type electrolytic capacitors based on�eIon Transfer�f. For example, harmonic distortion noise is reduced to 1/1000, coverage of frequency is expanded 100,000 times (10GHz range) wider and life-time of the capacitor is extended almost 10 times and more. Because of the remarkable improvements mentioned above, application area of the BG, as a super capacitor, is expanding rapidly. As outstanding improvement by BG is verified widely among the experts in the Audio Area, the BG is continuously getting well known all over the world. The sales of the BG is growing rapidly in the twenty-two advanced countries in the world. By utilizing BG technology, Jelmax has also developed non-polarized electrolytic capacitors, which have been believed to be impossible to develop. It has brought to us a possibility of a noiseless switching regulator power-unit, e.g. By just adopting the BG in an equipment, it will bring outstanding improvements in the quality of the system, for example, in reality of sound, sharpness of image/color, sensing capabilities, or precision levels. The candidate systems will be an audio-visual or image handling equipments, equipments for medical analysis, various sensors or high-level precision equipments. The BG is attracting hot interests from many companies and organizations of advanced technical areas. Please refer to http://www.BlackGate.jp |

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| http://sharksystems.narod.ru/blackgate/image/m3.gif | �@ | http://sharksystems.narod.ru/blackgate/image/m4.gif |

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| **��** | **The Difference between Polarized and Non-Polarized Black Gate** |

�@There is no big structural difference between a polarized Black Gate capacitor and a non-polarized one. The formation voltage for a cathode oxide film of every polarized Black Gate can be selected differently from that of an anode one as Table 1, and moreover, the film is permanent. Whether current flows from the cathode electrode or the anode one, a non-polarized operation with ultra-low distortion, having the same electro-characteristics is secured within each selected voltage (It operates non-reciprocally over the voltage). �@ The cathode formation voltage of the non-polarized Black Gate is exactly the same as the anode one: The one and only non-polarized capacitor which perfectly operates even in AC/DC compatible circuits, has been completed. �@ Particularly when connecting two pieces of the identical non-polarized Black Gates, an inherent resonance generated by its internal inductance is totally canceled, and the impedance and E.S.R.values limitlessly decrease as frequency rises as Table 3 on the next page. We named the ideal system �gSuper E-Caps�h. Please refer to our �gNon-polarized and Super E-Caps�h catalog for details. �@ The invention of Black Gate due to �gThe Transcendent Electron Transfer�h realizes an outstanding operation which hardly utilizes ions. No other ion transfer capacitor can operate like Black Gate does.

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| Table 1:**Cathode Formation Voltages for Whole Black Gates** |

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| Kinds | Cathode Formation Voltage�iV�j |
| Standard BG,BG-PK,C  | 2.0 |
| BG-FK,BG-VK,K  | 10 |
| BG-WK  | 100 |
| BG-WKZ�@350V | 160 |
| BG-WKZ�@500V  | 250 |
| BG-AC,BG-NBG-NX,BG-NH  | Same as anode,Perfect non-polarized |

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| Figure 3:**Model inside Black Gate** |

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| **Polarized Black Gate** |

Polarized Black Gate

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| **Non-Polarized** **Black Gate** |

Non-Polarized Black Gate |

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| **��Chief Features** |

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| Frequency Characteristic | 10GHz (100,000 times higher than existing ones) |
| Transmission Speed  | The same as above (As fast as that of optical cables:The highest speed in capacitors) |
| Impedance, E.S.R.characteristic  | Very low (Reduced to 1/10) |
| Noise Value  | -174db (Reduced to 1/1000, the world record) |
| Phase Characteristic | Perfectly accurate even in digital satellite broadcasting |
| Operating Temperature  | -40�� to +85�� (Hardly rises due to no ion consumption) |
| Life Span  | Almost permanent (25 to 30 years) |

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| **��The Idling Process** |
| �@When a Black Gate capacitor mounted on an electronic device is actuated, its electrodes are gradually activated as signal current runs into them, and typical non-linear and phase distortion characteristics decrease a great deal while the power transfer efficiency improves significantly. This�gidling process�htakes about 30 hours as a standard level to demonstrate to the best of Black Gate ability, and the time required varies according to its capacity, voltage, and signal level. �@ Once this process is completed, the effect continues as long as the capacitor is kept at the same place or the operating environment does not experience a change. The effect has been proved with all types of electronic equipment: Analog, digital and high-frequency ones. Please note that the�gidling�htotally differs from�gaging�h, which applies a direct current voltage without giving signals(Refer to Jelmax Technical Report No.47 for detail) .  |

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| **��Intellectual Property** |

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| Japanese Patent:  | No.1,368,245; 1,662,570; 2,606,771  |
| U.S.Patent:  | No.4,345,302; 5,057,972; 5,379,181 |
| German Patent: | No.2,900,742 |
| Trade Mark:  | No.1,601,800; 1,601,801; 2,503,956; 3,132,300  |

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| Table 2:**Distortion Characteristics of Capacitors** |

Table 2:Distortion Characteristics of Capacitors

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| Table 3:**Frequency vs.Impedance and E.S.R. Characteristics�iBlack Gate N�j** |

Table 3:Frequency vs.Impedance and E.S.R. Characteristics�iBlack Gate N�j |

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| **��How to Order** |

**Please contact to our oveseas agent in japan**

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| **Takeda Machinery Supply Corp.** | **Fax: �{81-3-3818-8447 Phone: �{81-3-3815-7781****e-mail: takemac-komeiji@blackgate.jp** |

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| **Jelmax Company,Ltd.** | 5-4, shimbashi 6-chome, Minato-ku, Tokyo, 105-0004,Japan**Phone: �{81-3-3436-4568**  |

��All available and future Black Gate products should be purchased from Jelmax, its overseas agent or its dealers. For the product you purchase, no obligation will be imposed for the use of �gSuper E-Caps�h, consists of non-polarized Black Gates, related patented circuits.

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| **��Technical Reports Support The Black Gate Concepts** |
| �@The amazing Black Gate performance, due to the conversion of existing ion transfer into The Transcendent Electron Transfer, is unprecedented and might be beyond your comprehension based on present capacitors. The performance, however, is a fact that has been independently verified. When Black Gates are properly utilized throughout a circuit, great results will be obtained.�@ Jelmax Technical Reports support you much. Our decades-long accumulation of valuable know-hows over 110 reports have been published in main technical magazines. The genuine contents are highly valued as useful information not available in books or schools, and engineers and educators use the reports as texts in their educational programs. The English version of the reports are also well received in the world. Each report is available upon request, please contact the email above. �@ The Black Gate product and its technology are adopted by dozens of leading manufactures all over the world and greatly contributes to their technological advances, and regarded as one of the biggest component innovations. �@ Black Gates are applied to all sorts of electronic devices such as TVs, PCs, broadband transmission devices, cell phones, digital cameras, VTRs, audio equipment, communication equipment, medical electronic equipment such as MRI, CT, US, DSA, electron microscopes, AD/DA converters, AC/DC and DC/DC power supplies, WSs, FAX machines, high resolution copy machines, printing machines, laser instruments, NC type machine tools, and any applications. The capacitor is now especially welcomed as indispensable component for high density portable equipment for multimedia, in order to eradicate noise. �@ Black Gates will universally spread because no superior capacitor would be developed. The Technical Reports No.50, 51 and 52 introduce the primary technology, please read them.  |

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| **�� Black Gate Kinds ��** |
| [��Standard **Black Gate**�iDC�j](http://sharksystems.narod.ru/blackgate/ebg4.htm#1)[��AC Power Use Low E.S.R. **Black Gate AC**](http://sharksystems.narod.ru/blackgate/ebg4.htm#2) [��Very Low-Noise for Coupling **Black Gate C**�iDC�j](http://sharksystems.narod.ru/blackgate/ebg4.htm#3) [��High Performance **Black Gate K** series�iDC�j](http://sharksystems.narod.ru/blackgate/ebg4.htm#4)[��AC/DC Compatible **Black Gate N�ANX**](http://sharksystems.narod.ru/blackgate/ebg4.htm#5) [��High Voltage AC/DC Compatible **Black Gate NH**](http://sharksystems.narod.ru/blackgate/ebg4.htm#6) [��High-Voltage Power Supply Smooting **Black Gate WKZ**�iLug Terminal Type �j�iDC�j](http://sharksystems.narod.ru/blackgate/ebg4.htm#7) [��**Black Gate-WK POWER TANK**](http://sharksystems.narod.ru/blackgate/ebg4.htm#8) [��Very-Small High Performance **Black Gate PK**�iDC�j](http://sharksystems.narod.ru/blackgate/ebg4.htm#9)  |

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| Standard **Black Gate**�iDC�j |
| Standard Black Gate�iDC�j |
| The real champion capacitor superior to any other existing ones regarding every feature. The cathode electrode is especially formed at 2V, and distortion is extremely low. Limitlessly Improves equipment S/N. Capacity tolerance: +/-20% |

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| Voltage | Capacitance | Size |
| 16WV�iTotal 12 Varieties�j  | 10��F�`4700��F | 5�~11�`18�~35.5 |
| 25WV  | 1000��F | 16�~36 |
| 35WV  | 4700��F | 40�~40 |
| 50WV�iTotal 9 Varieties�j  | 10��F�`4700��F | 8�~11�`40�~50 |
| 100WV�iTotal 7 Varieties�j  | 4.7��F�`470��F | 8�~11�`22�~42 |
| 160WV�iTotal 3 Varieties�j  | 33��F�`470��F | 12.5�~20�`30�~45  |
| 250WV�iTotal 2 Varieties�j  | 3.3��F / 10��F | 10�~15 / 12�~25 |

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| AC Power Use Low E.S.R. **Black Gate AC** |
| AC Power Use Low E.S.R. Black Gate AC |
| Designed for speaker networks requiring an AC of high voltage. Non-polarized and having the lowest E.S.R. Resolving the inadequacy in information and power in the mid-to-low frequency bands. DC operation applicable. Capacity tolerance: +/-10% |

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| Voltage | Capacitance | Size |
| 50WV�iTotal 5 Varieties�j | 6.8��F�`47��F | 16�~32�`25�~51 |

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| Very Low-Noise for Coupling **Black Gate C**�iDC�j |
| Very Low-Noise for Coupling Black Gate C�iDC�j |
| Suitable for coupling between circuits with a direct-current potential difference. Unrivaled features for a leakage and distortion characteristic surpass those of a tantalum capacitor. |

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| Voltage | Capacitance | Size |
| 50WV�iTotal 5 Varieties�j  | 1��F�`47��F | 5�~12.5�`10�~21.5 |

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| High Performance **Black Gate K** Series �iDC�j |
| High Performance Black Gate K Series �iDC�j |
| Extended cathode formation voltage of standard Black Gate to nearly 10V for being close to a non-polarized structure. Successfully decreased the distortion that affects signals. Suitable for all electronic equipment. |

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| Voltage | Capacitance | Size |
| 16WV�iTotal 5 Varieties�j  | FK 47��F�`FK 1000��F | 10�~12.5�`16�~31.5 |
| 25WV �iTotal 2 Varieties�j  | FK 100��F / FK 220��F | 10�~20 / 12.5�~25 |
| 35WV  | FK 2200��F | 18�~35 |
| 50WV�iTotal 2 Varieties�j  | K 100��F / FK 1000��F | 12.5�~20 / 22�~40 |
| 63WV �iTotal 2 Varieties�j  | FK 2200��F / FK 10000��F | 30�~50 / 40�~100 |
| 80WV  | FK 10000��F | 50�~75 |
| 100WV �iTotal 2 Varieties�j  | FK 100��F / K 10000��F | 18�~35 / 50�~80 |
| 160WV  | VK 47��F | 12.5�~25 |
| 350WV �iTotal 2 Varieties�j | VK 22��F / VK 150��F | 22�~25 / 30�~25 |

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| AC/DC Compatible **Black Gate N,NX** |
| AC/DC Compatible Black Gate N,NX |
| The king of Black Gate realizes perfect non-polarized operation for the first time, holds a revolutionary features. Improves any equipment performance a great deal. No capacitor can be equal in digital pulse transfer at super high speed. Refer to the �gNon-polarized and Super E-Caps�h catalog for detail. |

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| Voltage | Capacitance | Size |
| 6.3WV�iTotal 7 Varieties�j  | NX 22��F�`NX 2200��F | 5�~7�`18�~35 |
| 10WV  | NX 1500��F | 16�~24 |
| 16WV�iTotal 3 Varieties�j  | N 33��F�`N 470��F  | 6.3�~11�`16�~24 |
| 25WV  | NX 1000��F | 16�~24 |
| 35WV�iTotal 2 Varieties�j  | NX 680��F / N 4700��F | 16�~24 / 40�~40 |
| 50WV�iTotal 8 Varieties�j  | NX 0.1��F�`N 1000��F | 4�~7�`22�~35 |
| 100WV�iTotal 2 Varieties�j  | N 330��F / N 2200��F | 18�~36 / 30�~100 |

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| High Voltage AC/DC Compatible **Black Gate NH** |
| High Voltage AC/DC Compatible Black Gate NH |
| Successfully extended the operation voltage of non-polarized Black Gate to sharply 350V. The performance is so amazing that can losslessly rectify and smooth an AC power supply. Contributes revolutionary to future SR power supplies. |

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| Voltage | Capacitance | Size |
| 160WV�iTotal 2 Varieties�j  | 100��F / 220��F | 22�~25 / 30�~25 |
| 350WV�iTotal 2 Varieties�j  | 68��F / 150��F | 30�~25 / 35�~35 |

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| High Voltage Power Supply Smooting **Black Gate WKZ** �iLug Terminal Type�j�iDC�j |
| High Voltage Power Supply Smooting Black Gate WKZ �iLug Terminal Type�j�iDC�j |
| Created for use in Hi-Fi vacuum tube amplifier. Developed from an asymmetrical non-polarized Black Gate, and provided a reverse counter voltage characteristic of 160V or 250V to its cathode. The excellent transparency, resolution and presence are desired by audiophiles all over the world. The diameter of 35mm�� is compatible with conventional products. |

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| Voltage | Capacitance | Size |
| 350WV�iTotal 2 Varieties�j  | 100��F�~2 / 220��F�~2  | 35�~60 / 35�~100 |
| 500WV�iTotal 3 Varieties�j  | 100��F�`100��F�~2  | 35�~65 / 35�~120 |

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| **Black Gate-WK POWER TANK** |
| Black Gate-WK POWER TANK |
| Holding an asymmetrical non-polarized structure and even having half a reverse counter voltage of its operation voltage. The innovative performance is capable of handling high voltages and the long life in the compact body. |

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| Voltage | Capacitance | Size |
| 200WV  | 220��F | 30�~25 |

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| Very-Small High Performance **Black Gate PK**�iDC�j |
| Very-Small High Performance Black Gate PK�iDC�j |
| Very compact size capable of delivering high performances of large models: The first kind ever in the world. Suitable for communication, OA and portable equipment.  |

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| Voltage | Capacitance | Size |
| 4WV  | **220��F** | **6.3�~7** |
| 6.3WV�iTotal 4 Varieties�j | 22��F�`100��F | 4�~7�`6.3�~7 |
| 10WV�iTotal 4 Varieties�j | 22��F�`**100��F** | 5�~7�`**6.3�~7** |
| 16WV�iTotal 4 Varieties�j  | 10��F�`47��F | 4�~7�`6.3�~7 |
| 25WV�iTotal 5 Varieties�j  | 4.7��F�`**47��F** | 4�~7�`**6.3�~7** |
| 35WV�iTotal 5 Varieties�j  | 3.3��F�`**33��F** | 4�~7�`**6.3�~7** |
| 50WV�iTotal 10 Varieties�j  | **0.1��F�`22��F** | **4�~7�`6.3�~7** |
| 63WV�iTotal 5 Varieties�j  | 0.47��F�`4.7��F | 4�~7�`6.3�~7 |
| 100WV�iTotal 4 Varieties�j | **0.47��F**�`3.3��F | **4�~7**�`6.3�~7 |

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| Bold-faced models are standard stock items. |

��The specifications may be changed without notice.**For further information in detail,Please ask our overseas agent for Jelmax catalogs.** **takemac-komeiji@blackgate.jp** |

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| Black GateOn sale in 25 countries in the world with best reputation | Jelmax |

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| http://sharksystems.narod.ru/blackgate/image/m1.gif |  | http://sharksystems.narod.ru/blackgate/image/m2.gif |
| �@ | **[I] The champion of the circuit cleaning; Black Gate as a super-E-Caps capacitor.** The grade of an electronic device is revolutionarily raised by replacing a part of the device.

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| An electric device is an aggregation of two or more active elements and passive elements, so that all the elements should have perfect functions. However, it is most difficult to find which element has a defect. For an electric performance, it is also quite difficult to reach a satisfactory point, since there is necessarily a defect in a certain part, even if the electric performance test is cleared. Conventionally, it was believed that a defect was in active elements. Conversely, it is now an established theory that a defect is in the side of passive elements. Among them, a capacitor is sure to be just the greatest cause of the circuit infection. |
| Reason |
| (1)It is hard to use a dielectric of the highest quality (such as sapphire).(2)An electrolyte and a conductive semiconductor are used as electric conduction medium for transmitting electric signals. However, the medium has a frequency, loss, and distortion characteristics, which are extraordinarily inferior to an ideal. (3)The electrodes have a polarity, which lose a bi-directional signal transmission when a DC potential is applied (for both wet type and dry type electrolytic capacitor), resulting in a large amount of distortion. (4)The last one is an internal resonance in the main body of the capacitor. That is, the internal resonance due to the minute inductance and distribution capacity of the electrodes. This kind of defect is unsolvable. Jelmax has, however, confirmed that it has made a great contribution to the cleaning up of the circuits applying an evolutional invention of super-E-Caps. According to the invention, the parasitic�@energy, which is an origin of the signal infection, is mutually cancelled by a pair of non-polarize Black Gates capasitors. Thus, the effect of cleaning up by the super-E-Caps will be explained taking the simplest amplifying circuit currently used in the various devices as an example. |

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| **[II] How is the performance improved if super-E-Caps is used?** This is a sound output circuit of DVD currently used for the commercially available DVD or similar devices. This is improved in the following Steps 1 to 4.  |

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| **Original circuit** | 0 | **�qPerformance�r**The sound of DVD player composed of the original circuit is so inferior that you feel bad if you keep hearing it for several hours.**�qCapacitor�r**

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| Capacitor S25V10��Polarized ordinary electrolysisIon transfar |

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| �@ **http://sharksystems.narod.ru/blackgate/image/jel_ya.gif** |
| **Step 1** | 1 | **�qPerformance�r**Needless to say, distorted bad sounds due to the electrolytic capacitor usually decreased. The boomy bass sounds in mid-range and low range became tense sound.**�qCapacitor�r**

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| BGPK 10V100��Polarized BlackGate |
| BGN 50V10��Non-polarized Blac kGate |
| Transcendence electron transfar |

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| **�@ http://sharksystems.narod.ru/blackgate/image/jel_ya.gif** |
| **Step 2**  | 2 | **�qPerformance�r**The sound density clearly increased and the quantity of information drastically increased.**�qCapacitor�r**

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| --- |
| BGPK 10V100��Polarized BlackGate |
| BGN 50V10��Non-polarized Blac kGate |
| Transcendence electron transfar |

 |
| **�@ http://sharksystems.narod.ru/blackgate/image/jel_ya.gif** |
| **Step 3** | 3 | **�qPerformance�r**Bass region was further improved to a satisfactory level with the range spread to one octave lower. The metallic sound is slightly felt in the high region of the vocal.�B**�qCapacitor�r**

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| BGN 16V33��Non-polarized Black GateBGN 50V10�ʁ~2Non-polarized Black Gate |
| Super-E-Caps |

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| **�@ http://sharksystems.narod.ru/blackgate/image/jel_ya.gif** |
| **Step 4**�ithe final circuit�j  | 4 | **�qPerformance�r**It was surprising that all the problems worried about at item (3) were resolved by replacing all the capacitors with the super-E-Caps. An amplifier made by Ippinkan, in which all the capacitors are replaced by the Black Gates, is connected to the output side. **�qCapacitor�r**

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| BGN 16V33�ʁ~2Non-polarized Black Gate |
| Super-E-Caps |
| BGN 50V10�ʁ~2Non-polarized Black Gate |
| Transcendence electron transfar |

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| In the super-E-Caps, the lead wire is connected as follows; followsLong lead L and short lead S are connected in parallel to each other.

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| USP.5,379,181 J.P2,606,771 |

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| **Writer sketch** | Mr. Y He is a professor specializing in the electric field. He has been engaged in research and experiment on the Black Gate more than ten years, and has offered a lot of valuable advice. Especially, he succeeded in the experimental production of nonlinear distortion meter CLT1-EX-180db having the highest sensitivity in the world by improving the nonlinear distortion meter CLT-1 using the Black Gate. He has given a big power for the development of Black Gate. |

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| JELMAX | **What is the "Super-E-Caps"?** A pair of nonpolarized Black Gate electrolytic capacitors are particularly connected in parallel or in series so that each one of the capacitors cancels the internal magnetic flux generated by the other, thereby completely eliminating internal resonance and decreasing total impedance to absolute zero as the frequency increase.  |

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**J.P. 2,606,771** **/ U.S.P. 5,379,181**

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| **The Finest Electrolytic Capacitor Based on The New Theory�gThe Transcendent Electron Transfer�h** |


On sale in 25 countries in the world with best reputation

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| http://sharksystems.narod.ru/blackgate/image/m1.gif |  | http://sharksystems.narod.ru/blackgate/image/m2.gif |
| �@ | **[I] An ultimate DC current power source revolution by the ultra electrolytic capacitor Black Gate** A roll of the DC current power source in electronic devices

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| The DC current power source for driving the electronic devices usually converts a commercial AC current into a DC current by rectifying and smoothing the AC current, in which an electrolytic capacitor is used for smoothing the rectified AC current.Although it is natural that the power source must be able to afford all the load of the electronic device, it receives all the signal currents returned from the device including noises from inside or outside of the device |

Importance of the capacitor for smoothing

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| The electrolytic capacitor generally used is operated based on an ion transfer, with which a signal component is transferred by ions in an electrolytic solution. The electrolytic capacitor thus generates the largest non-linear distortion among other passive components, in which the signal speed and phase are delayed affected by the property of the ion. Moreover, the electrolytic capacitor generally used has irreversibility, in which a conductive property is quite different from each other depending on the direction of the current flow between the electrodes of the capacitor. Thus, the complete performance of the electronic devices has been greatly affected by the large distortions generated by the capacitor due to its irreversibility. |

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| http://sharksystems.narod.ru/blackgate/image/m1.gif |  | http://sharksystems.narod.ru/blackgate/image/m2.gif |
| �@ | **[II] The completely reversible Black Gate has been accomplished first in the world**

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| As is already informed, Jelmax Co., Ltd. has invented the transcendent electron transferBlack Gate, in which fine conductive particles are distributed in the separator between the electrodes under a certain conditions and only electrons separated from the ions are transferred in a high speed by suppressing a movement of the ions. The Black Gate is characterized by a completely non-polarized capacitor, which has a cathode electrode having the same structure as the anode electrode. The drawbacks described above are resolved. The characteristics are as follows; Frequency is 10GHz (100 thousand times). A transmitting speed is as fast as an optical fiber. Impedance and E.S.R. characteristic are about 1/10. A phase characteristic is not changed in BS digital frequency band, 70MHz. A noise is -174db (1/1000, which is world record). An operating temperature is -40 ���`�{85 ��. A life is nearly permanent. The Black Gate can be applied to all kinds of electronic devices. |

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| **The advantages of the super-E-Caps capacitor provided by a pair of non-polarized Black Gate** |
| **The noiseless world never has been realized A device with unlimitedly high performance** |

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| The super-E-Caps capacitor is an ultimate mechanism, in which the internal resonance (generated by an inductance of the electrodes and an internal capacitance) indispensable for capacitors is completely eliminated. |

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| http://sharksystems.narod.ru/blackgate/image/m1.gif |  | http://sharksystems.narod.ru/blackgate/image/m2.gif |
| �@ | **[III] Why the internal resonance of the capacitor is harmful�@internal resonance**

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| Most of engineers can understand that the capacitor, which is manufactured by winding electrode foils, have a resonance phenomenon with an inductance component and an internal capacitance. However, they are unconscious of its harmfulness that may be a cancer of the electronic devices. The capacitor has a resonant point fo varying from 10KHz to a few MHz depending on its capacitance or structure, which can not be avoided by even a capacitor having sheet electrodes. The impedance continues decreasing to the resonant point (a real area) in a nonreflecting and absorbing area and suddenly enters into a reflecting area where the impedance begins increasing (an imaginary area) at the resonant point fo. In this area, the capacitor loses its function, reflecting signals and noises instead of absorbing them giving a heavy damage to the electronic devices.In the reflecting area, pulse noises interfere with each other emitting a lot of harmonic noises in or out of digital circuits using pulse signals. There is no effective measure against the situation.In that situation, for example, a technical standard has to be admitted at ones discretion that noise frequencies are inevitable up to about 20 % of the rectified output voltage.Black Gate has broken through the situation for the first time in the world. That is a revolutionary capacitance, which has succeeded in converting all the frequency areas into the nonreflecting and absorbing area (the real area) by eliminating the internal resonance.See the Technical report No. 96, super-E-Caps capacitor series 11. |

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| http://sharksystems.narod.ru/blackgate/image/m1.gif |  | http://sharksystems.narod.ru/blackgate/image/m2.gif |
| �@ | **Black Gate ultra electrolytic capacitor block** **[IV] The structure and function of the connecting portions of the super-E-Caps capacitor are important**

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| Non-polarized Black Gates are mass-produced by automated fabricating machines, so that the difference in the electrical properties among the products is negligibly small compared with their difference among the capacitances or structures. However, long lead wires are undesirable although they are marked as L and S meaning long and short respectively to distinguish the winding direction of the electrode foils. It is important to connect the lead wires at their root directly to a broad and good conducting connecting board or rod, which does not provide a resistance or inductance, with a solder of good quality. It is also important to arrange the capacitors so that axis of them may lie in parallel with each other and that the magnetic fluxes generated from them may be completely coupled with each other. It is desirable for the leading wire of the connecting board or rod to be a twist wire of a little bit large diameter, one end of which is connected to them at their center portion. A table is attached herewith for showing lengths of [the lead wires for those who design the connecting board or rod](http://sharksystems.narod.ru/blackgate/ez_bg7_1.htm).

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| **Harmonic Distortion Characteristics** |

Harmonic Distortion CharacteristicsDownload ic amp pdf |

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| **Fig.1** |

Fig.1

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| **AA two pole type super-E-Caps capacitor** |

A

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| **BNeutral point grounded type super-E-Caps capacitor** |

B |

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**PATENT PEND**

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