



Transient Voltage Suppressor
Modules and IC's for
Military Applications



PRODUCT DESCRIPTION

DLZ SERIES

Ideal for military applications, the DLZ Series are TVS diode arrays offered in a 16 pin, hermetically sealed Ceramic Dual-In-Line package. The DLZ series provides protection for bus lines in applications where Nuclear Electromagnetic Pulse (NEMP), Electrostatic Discharge (ESD), and other induced voltage surges can damage or upset voltage-sensitive circuitry. ProTek offers these parts screened to meet the military requirements per MIL-PRF-19500/500 (unidirectional devices) and MIL-PRF-19500/507 (bidirectional devices).

GPZ532 & GPZ1275

The GPZ532 and GPZ1275 are high powered transient voltage suppressors (TVS) designed for use in military vehicles and ground support equipment applications.

704-15K36 & 704-15K36T

The 704-15K36 and 704-15K36T are designed for 28 Volt DC aircraft requirements. These devices meet or exceed MIL-STD-704 and MIL-STD-1375 for power bus protection. The 704-15K36 is designed for high-current, short peak pulse transient applications, whereas the 704-15K36T is designed for extended peak pulse transients greater than 1 millisecond.

PHP & PIP SERIES

The PIP and PHP series of devices were designed for providing protection across an AC line from the effects of induced lightning, power surges and transients caused by inductive switching. These devices meet the following military specifications: DOD-STD-1399, MIL-STD-2036, MIL-STD-704 and MIL-PRF-19500/507.

60KS200C & 90KS200C

This series of devices were designed in accordance with DOD-STD-1399, Section 300 - Power Interface Standard for shipboard electrical alternating systems. When large voltage transients endanger shipboard voltage sensitive components, the 60KS200C and the 90KS200C have proven reliable for protection against these transients caused by power interruptions and shore power switch-over.

CUSTOM PRODUCT'S

Customer Specials and custom voltages are available. Consult ProTek's Sales Department for more information at 602-431-8101.

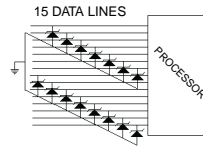


APPLICATION NOTES

The following circuits represent several applications using *ProTek's Military IC's and SurgeBuster™ Modules* for protection against large voltage transients that endanger voltage sensitive equipment.



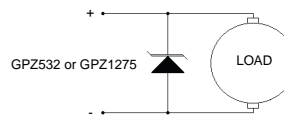
TYPICAL DATA LINE PROTECTION



DLZ SERIES: 15 LINES OF PROTECTION
BIDIRECTIONAL OR UNIDIRECTIONAL



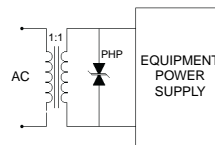
DC MOTOR APPLICATION



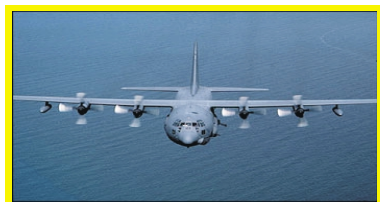
PREFERRED PRODUCT **GPZ532** or **GPZ1275**



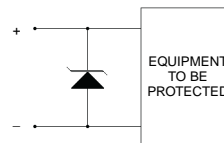
TYPICAL AC CIRCUIT APPLICATION



PREFERRED PRODUCT **60KS200C**, **90KS200C** or **PHP/PIP SERIES**

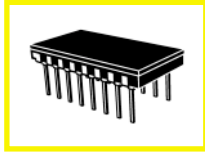


TYPICAL DC CIRCUIT APPLICATION



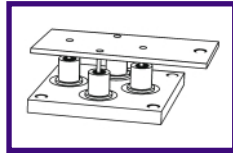
PREFERRED PRODUCT **704-15K36** or **704-15K36T**

PREFERRED PROTEKTM



DLZ Series

- Military & Aerospace Data Line Protection
- 800 Watts Peak Pulse Power per Line ($t_d=8/20\mu s$)
- MIL-STD-461 Compatible
- 100% Surge Tested
- ESD Protection > 40 kilovolts
- Screened for Military Requirements in Accordance with MIL-PRF-19500/500 (unidirectional) and MIL-PRF-19500/507 (bidirectional)
- Ceramic 16 Pin Hermetically Sealed Package



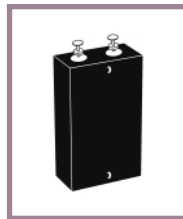
GPZ532 & GPZ1275

- High Energy/Extended Pulse TVS
- 10,000 & 30,000 Watts Peak Pulse Power per Line (1 ms Square Wave)
- MIL-STD-1275 Power Bus Protection
- 100% Surge Tested
- Electric Drive Motors & Control (i.e., Tank Turrets)
- Mobile Electronics Operating in Harsh Environments
- Hermetically Sealed, Small Package Size



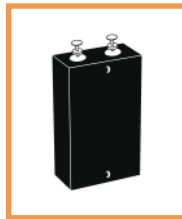
704-15K36T & 704-15K36

- Transient Voltage Suppressor Designed for Aircraft Equipment in accordance with MIL-STD-704 and MIL-PRF-19500
- DC Power Supply Protection (28 Volt)
- 15,000 Watts Peak Pulse Power Dissipation (10/1000 μs)
- Designed for Extended Peak Pulse Transients Greater than 1 Millisecond
- 100% Surge Tested
- UL 94V-0 Flammability Classification



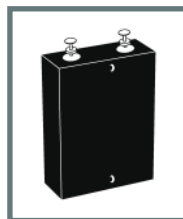
PHP & PIP Series

- Protects Aircraft & Shipboard AC Power Bus
- 7,500 & 15,000 Watts Peak Pulse Power per Line ($T_d=10/1000 \mu s$)
- Used for Protection of Heavy Duty AC Switching
- Meets the Following Military Specifications: DOD-STD-1399, MIL-STD-2036, and MIL-PRF-19500/507
- 100% Surge tested
- Hermetically Sealed Glass to Metal, Sub Assemblies (PHP)
- Sub Assemblies are packaged in a Molded Epoxy Case (PIP)
- UL 94V-0 Flammability Classification



60KS200C

- Protects Aircraft & Shipboard AC Power Bus
- 200 Volts Bidirectional
- 60,000 Watts Peak Pulse Power per Line ($t_d=1.2/50\mu s$)
- Military Processing Available per MIL-PRF-19500
- Exceeds DOD-STD-1399/300 Requirements
- 100% Surge Tested
- Hermetically Sealed Glass to Metal, Sub Assemblies
- UL 94V-0 Flammability Classification



90KS200C

- Protects Aircraft & Shipboard AC Power Bus
- 200 Volts Bidirectional
- 90,000 Watts Peak Pulse Power per Line ($t_d=1.2/50\mu s$)
- Military Processing Available per MIL-PRF-19500
- Exceeds DOD-STD-1399/300 Requirements
- 100% Surge Tested
- Hermetically Sealed Glass to Metal, Sub Assemblies
- UL 94V-0 Flammability Classification

DEVICE CHARACTERISTICS

PART NUMBER	RATED STAND-OFF VOLTAGE	MINIMUM BREAKDOWN VOLTAGE @ 1 mA	MAXIMUM CLAMPING VOLTAGE @ I _b = 10 A	MAXIMUM LEAKAGE CURRENT @ V _{WM}	MAXIMUM CAPACITANCE @ 0V, 1 Mhz
	V _{WM} VOLTS	V _(BR) VOLTS	V _C VOLTS	I _b μA	C pF
DLZ-5A	5	6.0	10.6	200	880
DLZ-12A	12	13.3	23.5	2	440
DLZ-17A	17	19.2	33.9	2	330
DLZ-24A	24	26.7	47.2	2	275
DLZ-30A	30	33.3	58.8	2	220
DLZ-8C	8	8.5	16.6	10	440
DLZ-13CA	13	14.4	25.4	4	385
DLZ-19CA	19	21.6	38.1	4	275
DLZ-30CA	30	33.3	58.8	4	165

PART NUMBER	RATED STAND-OFF VOLTAGE V _{WM} VOLTS	MINIMUM BREAKDOWN VOLTAGE		MAXIMUM CLAMPING VOLTAGE @ I _{PPSM} V _C VOLTS	MAXIMUM LEAKAGE CURRENT @ V _{WM} I _b μA	MAXIMUM PEAK PULSE CURRENT @ I _{PP} AMPS
		V _(BR) VOLTS	@ IT ADC			
GPZ532	28	32	0.20	40	50	100
GPZ1275	28	32	0.03	55	60	500

PART NUMBER	RATED STAND-OFF VOLTAGE	MINIMUM BREAKDOWN VOLTAGE @ 1 mA	MAXIMUM CLAMPING VOLTAGE @ I _{PPSM}	MAXIMUM LEAKAGE CURRENT @ V _{WM}	MAXIMUM PEAK PULSE CURRENT @ I _{PP}
	V _{WM} VOLTS	V _(BR) VOLTS	V _C VOLTS	I _b μA	AMPS
704-15K36T	31.5	36	51	500	300
704-15K36	31.5	36	51	100	300

PART NUMBER	AVERAGE RMS VOLTAGE	RATED STAND-OFF VOLTAGE	MINIMUM BREAKDOWN VOLTAGE @ 1 mA	MAXIMUM CLAMPING VOLTAGE @ I _{PPSM}	MAXIMUM LEAKAGE CURRENT @ V _{WM}	MAXIMUM PEAK PULSE CURRENT @ I _{PP}	MAXIMUM PEAK PULSE POWER @ 1ms P _{pp}
	V _{RMS} VOLTS	V _{WM} VOLTS	V _(BR) VOLTS	V _C VOLTS	I _b μA	I _{PPSM} AMPS	P _{pp} KWATTS
PHP8.4	8.4	12.0	14	22	250	341	7.5
PHP24	24.0	34.0	40	67	250	112	7.5
PHP30	30.0	42.5	50	84	250	90	7.5
PHP60	60.0	85.0	100	167	250	90	15.0
PHP120	120.0	170.0	200	319	250	47	15.0
PHP208	208.0	295.0	347	536	250	28	15.0
PHP250	250.0	354.0	418	652	250	23	15.0
PHP440	440.0	623.0	735	1138	250	13.2	15.0
PHP500	500.0	708.0	835	1292	250	11.6	15.0
PIP8.4	8.4	12.0	14	22	250	341	7.5
PIP24	24.0	34.0	40	67	250	112	7.5
PIP30	30.0	42.5	50	84	250	90	7.5
PIP60	60.0	85.0	100	167	250	90	15.0
PIP120	120.0	170.0	200	319	250	47	15.0
PIP208	208.0	295.0	347	536	250	28	15.0
PIP250	250.0	354.0	418	652	250	23	15.0
PIP440	440.0	623.0	735	1138	250	13.2	15.0
PIP500	500.0	708.0	835	1292	250	11.6	15.0

PART NUMBER	RATED STAND-OFF VOLTAGE	MINIMUM BREAKDOWN VOLTAGE @ 1 mA	MAXIMUM CLAMPING VOLTAGE @ I _{PPSM}	MAXIMUM LEAKAGE CURRENT @ V _{WM}	MAXIMUM PEAK PULSE CURRENT @ I _{PP}
	V _{WM} VOLTS	V _(BR) VOLTS	V _C VOLTS	I _b μA	I _{PPSM} AMPS
60KS200C	180	200	335	10	180
90KS200C	180	200	280	0.5	180



ProTek Devices, based in Tempe, Arizona USA, is a manufacturer of Transient Voltage Suppression (TVS) products designed specifically for the protection of electronic systems from the destructive effects of Lightning, Electrostatic Discharge (ESD), Nuclear Electromagnetic Pulse (NEMP) and Inductive Switching. With over 25 years of engineering and manufacturing experience, ProTek designs TVS devices that provide application specific protection solutions for voice, video and data related systems, industrial controls, military and more.

Contact ProTek for more information about other application specific brochures:

- ✓ *Computer Equipment/Systems*
- ✓ *Network Systems*
- ✓ *Military Applications (Modules)*
- ✓ *PDA's*
- ✓ *Telecom*
- ✓ *Set-Top Boxes*
- ✓ *xDSL*
- ✓ *2002 Short Form Catalog*
- ✓ *2002 CD-ROM*
- ✓ *Wired Communications - Point of Sale Register*

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ProTek Devices
2929 South Fair Lane
Tempe, Arizona 85282
USA
Tel: 602-431-8101
Fax: 602-431-2288
Email: sales@protekdevices.com
Web: www.protekdevices.com



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