

Transient Voltage Protection



- Vehicle Power Surge Protection
- MIL-STD-1275 Modules
- SAE Compliant Modules
- Lightning Strike Protection Modules
- Standard TVS Modules
- JANTXV/JANS QPL Diodes
- Space Diode Arrays
- TVS Die
- TVS Diodes and Arrays

High Power Vehicle Power Surge Protection

The Sensitron Advantage

- ✓ Proven solutions for tough requirements
- ✓ 100% production test to worst case waveforms, 50ms/80ms/100ms/150ms
- ✓ Capability to customize package or electrical spec
- ✓ Proven heritage on commercial, military & space programs

SuperClamp TVS, SCP-5282-4, SCP-5282-9

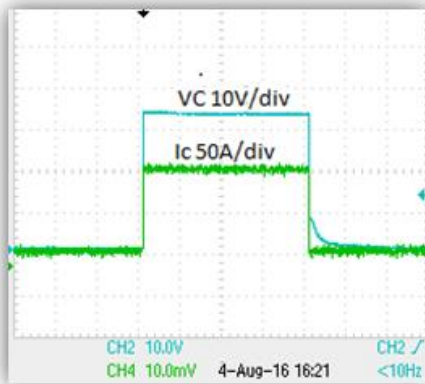
- Handles high energy dump, 150A for 100ms
- Clamps to under 33V at 100A, or under 32V at 50A
- Clamping is independent of temperature
- Narrow window between breakdown voltage and clamping voltage
- Designed to enforce safe paralleling
- Space saving busbar connections
- 100% tested to single pulse of 120A for 100ms
- 100% tested to five pulses @10 sec intervals of 100A for 50ms



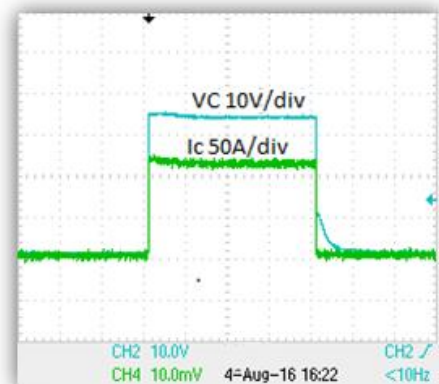
SCP-5282-4, SCP-5282-9
Dimensions (in): 1.85 x 3.20 x 0.82
Dimensions(cm): 46.99 x 81.28 x 20.83
Weight (grams): 115

Part Number	Config	Peak Pwr	V _{WM} Min	Leakage Max V _{WM}	V _{BR} Min	I _{PPM}	V _{CLAMP} @ I _{PPM} Max	100% Tested To:
SCP-5282-4	Uni	10kW	33V	20mA	33.8V	150A	37.4V	120A/100ms
SCP-5282-9	Uni	10kW	30V	20mA	30.2V	150A	33.2V	120A/100ms

Clamping Current and Voltage Waveforms (SCP-5282-9)



@ I_c = 100A



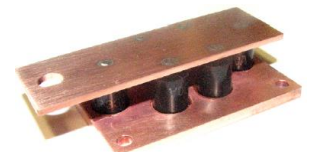
@ I_c = 120A

MIL-STD-1275 Compliant Military Vehicles, 28V

MIL-STD-1275 Transorb

SCP-1275, Replacement for GPZ1275

- Voltage transient protection / load dump function
- Clamping below 55V DC for both 100V and 250V pulse
- 100% production tested to Meet MIL-STD-1275 test method
- Advantages: No power consumption under clamping voltage threshold, no power interruption, high pulse power capability, low cost & small size



SCP-1275

High Power Transient Surge Protection Vehicle Power Surge Protection

MIL-STD-1275 Military Vehicles, 28V

Features/Benefits:

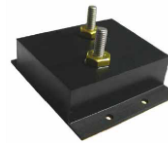
- 28V power system voltage transient protection including load dump
- Clamping below 55V DC for both 100V and 250V pulse
- Power savings by allowing lower voltage FET and power supply ratings
- Reliability: 100% production test to worst case waveforms, 50ms/80ms/100ms/150ms
- Capability to customize package or electrical spec

The Sensitron Advantage:

- Low leakage at working voltage means no significant power loss at normal conditions
- Protection without power interruption

Product Options:

- SCP-5282-3, & -5/A are also designed to meet SAE J1113 xx requirements
- SCP-5282-3 also meets ISO16750 & ISO7637 requirements
- SCP-5282-6 tested to 1275 & Aircraft DO-160 spec



SCP-5282-1, SCP-5282-2
Dimensions (in): 1.24 x 2.25 x 0.61
Dimensions(cm): 31.50 x 57.15 x 15.49
Weight (grams): 72



SCP-5282-3
Dimensions (in): 2.02 x 2.25 x 0.61
Dimensions(cm): 51.31 x 57.15 x 15.49
Weight (grams): 122



SCP-5282-5/A, SCP-5282-6A/B
Dimensions (in): 1.85 x 3.20 x 0.82
Dimensions(cm): 46.99 x 81.28 x 20.83
Weight (grams): 115

Part Number	Config	Peak Pwr 1ms	V _{wm} , Min	Leakage Max @V _{wm}	V _{br} , Min	I _{ppm}	V _{clamp} @ I _{ppm} Max	100% Tested To:
SCP-5282-1	Bi	60kW	33V	25 uA	36.7V	100A	49V	100A/80ms square
SCP-5282-1U	Uni	60kW	33V	25 uA	36.7V	100A	49V	100A/80ms square
SCP-5282-2	Bi	60kW	33V	25 uA	36.7V	100A	49V	5x 100A, 50ms sq
SCP-5282-3	Bi	100kW	33V	40 uA	36.7V	135A	49V	5x 110A, 50ms sq
SCP-5282-5/ A	Uni	50kW	33V	250mA	-	120A	43V/ 42V	120A/100ms
SCP-5282-6A/B	Bi	65kW	52V	30uA	60V	54A	77V	1275 waveform

SAE Compliant Military Vehicles, 12V

- High pulse power transorb for +12 Vdc systems
- Clamping below 32Vdc for 100V pulse /142A peak current
- SAE J1113-11 compliant; 100V surge withstanding with 0.5 Ohm source impedance, 400 msec pulse
- Allows the use of 40V high efficiency FET
- Screw terminals, isolated base plate for mounting to chassis



Dimensions (in): 1.85 x 3.20 x 0.82
Dimensions(cm): 46.99 x 81.28 x 20.83
Weight (grams): 115

Part Number	Config	Peak Pwr	V _{WM} Min	Leakage Max V _{WM}	V _{BR} Min	I _{PPM}	V _{CLAMP} @ I _{PPM} Max	100% Tested To:
SAE-5282-12	Uni	4kW/400ms	18V	250 uA	25.1V	142A	32V	J1113-11, 142A/400ms

Lightning Strike Protection Modules

High Power Lightning Strike Protection (Levels 4 & 5)

- Lightning strike protection for 28V, that handles peak power with margin
- DO-160 Section 22, Level 4 & 5, Waveform 5A & 5B compliant
- 100% tested to 1600A peak current (Level 5), 100% tested to 750A peak current (Level 4)
- Superior clamping performance
- Through hole & SMT available



Compliances:

- DO-160 Sec 22, Levels 4 & 5, Waveform 5A & 5B
- Exceeds MIL-STD-1275
- Exceeds MIL-STD-1399
- MIL-STD-2036
- Exceeds MIL-STD704/A and DOD-STD-1399
- Meets UL-94V0 Flammability Classification

Type	Config	Peak Pwr 50u/500us	Min V _{rwm}	Leakage Max @V _{rwm}	Min V _{br}	I _{ppm}	Max Vclamp @Ippm	100% Tested to DO-160 Req't
LSP28x-1600-41	Bi	100kW	36V	30 uA	41V	1600A	60V	Level 5, Waveform 5B
LSP28x-1600-82	Bi	200kW	72V	30 uA	82V	1600A	120V	Level 5, Waveform 5B
LSP28x-750-39U	Uni	37kW	33V	30 uA	39V	750A	51V	Level 4, Waveform 5B
LSP28x-750-39	Bi	37kW	33V	30 uA	39V	750A	51V	Level 4, Waveform 5B
LSP28C-20K-37	Bi	1.3MW@6.5us	33V	30 uA	36.7V	20,000A	65/60V	Level 5, Waveform 5B
LSP52x-1100-60	Bi	100kW	52V	30 uA	60V	1100A	90V	1100A, Waveform 5B
LSP52x-1600-60	Bi	137kW	52V	30 uA	60V	1600A	90V	Level 5, Waveform 5B

Lightning Strike Protection for High Power Primary LSP Protection Applications

- For induced lightning current spec having 1.3MW peak power, 20kA lpk, 6.5us waveform with 2kA tail for another 50us
- Low inductance, low resistance for the lowest clamping voltage
- Lower height threaded insert connection
- Designed to meet RTCA/DO-160G, Section 16, Category B
- **Part Number:** LSP28C-20K-37



Lightning Strike Protection for Signal Lines, Low Capacitance

- Non-hermetic single in-line package
- Working voltage up to 46V, clamping voltage up to 90V
- Long and short wave capable
- Low cost standard pitch packaging
- Qualified for several aircrafts, ABD 0007 Compliant
- Custom parts available, including dimensions, special lightning curves, other package designs, etc.



Type	Configuration	Working Volt	Leakage Current @ VWM	Capacitance	Short Wave Current	Long Wave Current	Clamp Volt VCL - both Waves
LSP11B-320	Bi-Directional	11V	10 uA	< 1900 pF	320A	150A	40V
LSP46U-320	Uni-Directional	46V	10 uA	N/A	320A	150A	85V
LSP43B-150	Bi-Directional	43V	10 uA	< 500 pF	150A	N/A	65V
LSP43B-320	Bi-Directional	43V	10 uA	< 500 pF	320A	150A	90V

TVS Modules

704-15K36T (Equivalent Industry Standards)

Features/Benefits:

- 15,000 Watts peak pulse power dissipation
- 28 Volt power supply protection, uni-directional protection
- Can be supplied with JAN/JANTX parts, designed for MIL-STD-704



Part Number	Reverse Stand-Off Voltage V_{WM}	Max Reverse Leakage @ V_{WM} I_D	Min Breakdown Voltage @ 10 mA $V_{(BR)}$	Max Clamping Voltage @ I_{PP} V_C	Max Peak Pulse Current I_{PP}	Max Forward Voltage @ 8.3 ms.
704-15K36T	31.5	100mA	36	51	300	3

60KS200C, 90KS200C/90KS200 (Equivalent Industry Standards)

Features/Benefits:

- 60,000 & 90,000 Watts peak pulse power dissipation
- 200 Volt power supply protection, Bi-directional protection
- Exceeds MIL-STD704A & DOD-STD-1399 requirements, UL-94V0 flammability classification



Part Number	Reverse Stand-Off Voltage V_{WM} (Volts)	Max Reverse Leakage @ V_{WM} I_D (μA)	Min Breakdown Voltage @ 1 mA $V_{(BR)}$ (Volts)	Max Clamping Voltage @ I_{PP} V_C (Volts)	Max Peak Pulse Current I_{PP} (Amps)
60KS200C	180	10	200 ~ 225	335	180
90KS200C	180	0.5	200 ~ 225	280	180
90KS200	180	10	200 ~ 225	335	270

PIP (Equivalent Industry Standards)

Features/Benefits:

- 7,500 and 15,000 Watts peak pulse power dissipation , bi-directional protection
- Each device is 100% tested
- DOD-STD-1389, MIL-STD-2036, MIL-STD-704 , MIL-PRF-STD-19500/507 Compliant



Part Number	Average RMS Voltage	Reverse Stand-Off Voltage V_{WM}	Max Reverse Leakage @ V_{WM} I_D @ V_{WM}	Min Breakdown Voltage (BR) @ I_t	Max Clamping Voltage	Max Peak Pulse Current IPP	Max Peak Pulse Power (I msec) PP
PIP8.4	8.4	12	250 μA	14 10mA	22	341 A	7.5kW
PIP24	24	34	250 μA	40 10mA	67	112 A	7.5
PIP30	30	42.5	250 μA	50 1.0mA	84	90A	7.5
PIP60	60	85	250 μA	100 1.0mA	167	90A	15
PIP120	120	170	250 μA	200 1.0mA	319	47	15
PIP206	208	295	250 μA	347 1.0mA	536	28	15
PIP250	250	354	250mA	418 1.0mA	652	23	15
PIP440	440	623	250mA	735 1.0mA	1138	13.2	15
PIP500	500	708	250mA	835 1.0mA	1292	11.6	15

Rugged Transient Voltage Suppressor Module, SCP-5439/L

- Transient Voltage Suppressor Array rated to 60K for 10/1000 μsec
- Repetitive protection capability
- Clamp voltage: 65V max @ 500A
- Bi-directional protection
- Fast response time



MIL-STD-1399 Surge Suppressor Module, SCP-5425

- 460KW power handling capacity across L-N
- Very Fast Response < 1 nsec
- Suitable for PCB or panel mounting
- No limitation on load current capability
- Rugged epoxy construction, internal hermetic seal
- Protects both common & differential mode



TVS Diodes & Arrays

JANTX/JANTXV/JANS QPL TVS Diodes

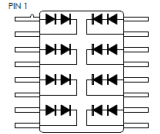
- Hermetically sealed axial lead and surface mount TVS devices
- JAN/TX/TXV qualified in accordance with MIL-PRF-19500/500 (1N5555 thru 1N5557, 1N5635A thru 1N5661A)
- JANS qualified in accordance with MIL-PRF-19500/516 (1N6105 thru 1N6137A)
- All devices are 100% hot solder dipped
- Operating and Storage Temperature: -55°C to +175°C



1N Part Number			MELF Type	Slash Sheet	Qual Status	Description
5555	to	5557	None	500	JANTXV	1500W Unipolar TVS DO-13
5635A	to	5661A	None	500	JANTXV	1500W Unipolar TVS DO13
6105A	to	6137A	US	516	JANS	500W Bi-directional TVS

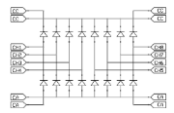
Space Diode Arrays, SDA Series

- Up to 400V, 1A space level diode array
- Devices are serialized
- Die manufactured on qualified JANS line
- Quality Conformance Inspection (QCI) in accordance with MIL-PRF-38534 is performed on each lot
- Add suffix "S" for screening per MIL-PRF-38534, Class H
- Add suffix "SS" for Space Level Screening per MIL-PRF-38534, Class K
- High density, smallest package in the industry



SDA1001SS
SDA1009SS

Part Number	Internal Diode	PIV	IR@V
SDA1001SS	Redundant 1N5806	300 V	1.0A @ 55°C / 0.75A@ 100°C
SDA1002SS	1N6638	150 V	0.30A@ 55°C / 0.16A@ 100°C
SDA1003SS	1N6642	100 V	0.30A@ 55°C / 0.16A@ 100°C
SDA1004SS w/ match	1N6642	75 V	0.05uA @20
SDA1005SS	1N6642	75 V	0.05uA @20
SDA1006SS	1N5615	200 V	0.3A@55°C
SDA1007SS	Redundant 1N5615	400 V	1.0A @ 55°C / 0.75A@ 100°
SDA1008SS	1N5806	150 V	1.0A @ 55°C / 0.75A@ 100°
SDA1009SS	1N5615	400 V	1.0A @ 55°C / 0.75A@ 100°

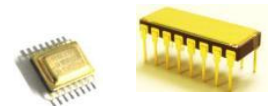


SDA1002SS
SDA1003SS



Space TVS Arrays, STB Series

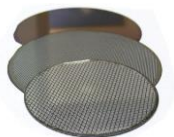
- Low capacitance, 500W capability for 8/20 μs repetitive pulses, 100% tested for clamp performance
- 8 channel hybrid in a hermetic package, saves board space
- Solder temperature, 10s @260°C
- Add suffix "SS" for Space Level Screening per MIL-PRF-38534, up to Class K
- Protection Level: IEC 61000-4-2 ESD



Part Number	Protection	Peak Pulse Power	Standoff Voltage	Capacitance	Vclamp at	Weight
STB1001	Bidirectional	500 W	12 V	9 pF	1A, 5A	1 gm
STB1002	Unidirectional	500 W	24 V	9 pF	1A, 5A	1 gm
STB1003	Unidirectional	500 W	24 V	25 pF	1A, 10A	3 gm

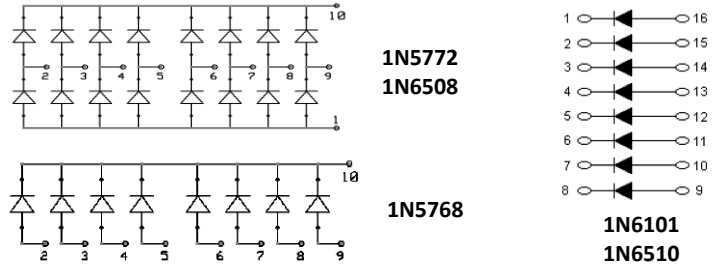
TVS Die Products

- Die manufactured on qualified JANS line
- 1C6141A thru 1C6173A: 125 mils, 1500 W, Unipolar version of bipolar series, Die Geometry MT-125
- 1C6105A thru 1C6137A: 90 mils, 500W, Unipolar version of bipolar series, Die Geometry MT-90
- Front Metal: Al (Ag or Au optional), Back Metal: Ag (Au optional)
- Available with MIL-PRF-38534 Class H or Class K element evaluation



Space Level Isolated Diode Arrays

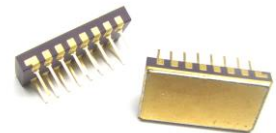
- 1:1 cross to industry standard part numbers
- High density packaging
- Low capacitance, low leakage
- Protect up to 8 I/O ports from ESD, EFT, or surge
- Isolated diodes eliminate crosstalk
- Available in TX, TXV, & S level screening



PN	IF	Vrrm	Vf@If	Trr	Cj P _F	Ports Protected	IR1 (Vr@40)	IR2 (Vr@20)	Configuration
1N5768	0.3A	60V	1V@.1A	20ns	4	8	.1 uA		Common bus – cathodes only
1N5772	0.3A	60V	1V@.1A	20ns	8	8	.1 uA		Common buses – pos & neg
1N5774	0.3A	60V	1V@.1A	20ns	8	8	.1 uA		
1N6100	0.3A	75V	1V@.1A	10ns	4	7	.1 uA	25nA	
1N6101	0.3A	75V	1V@.1A	10ns	4	8	.1 uA	25nA	Individual diodes
1N6506	0.3A	60V	1V@.3A	20ns	4	8	.1 uA		
1N6507	0.3A	60V	1V@.3A	20ns	8	8	.1 uA		
1N6508	0.3A	60V	1V@.1A	20ns	8	8	.1 uA		DIP, Comm buses – pos & neg
1N6509	0.3A	60V	1V@.3A	20ns	8	8			
1N6510	0.3A	75V	1V@.1A	10ns	4	8	.1uA	25nA	Individual diodes, V _F matching
1N6511	0.3A	75V	1V@.3A	10ns	4	7			

MIL TVS Arrays

- Uni- or bidirectional
- 1300W peak pulse power (8/20μs)
- Dual in-line, 16 Pin CerDIP package
- ESD protection > 40KV
- Voltage range 5V to 30V
- Low capacitance
- Common bus configuration
- Available up to TXV + GrpB
- Compliant to: MIL-STD-461, & IEC61000-4-2 & IEC61000-4-4 ESD and EFT protection



Part Number	Reverse Stand-Off Voltage V _{WM} , V	Min V _{br} @ 1 mA V _(BR) , V	Max V _{clamp} @ I _{pp1} = 1A (8x20μs) V _{c1} , V	Max V _{clamp} @ I _{pp2} = 10A (8x20μs) V _{c2} , V	Max Rev Leakage @ V _{WM} I _D , uA	Max Cap @ 0V, 1MHz C, pF	V _{br} Max Temp Variation mV/C
Unidirectional							
DLZ5 /A	5	6	10.2/ 9.5	12.5/ 0.6	200	880	5
DLZ12 /A	12	13.3	21.1/ 19.1	26/ 23.5	2	440	18
DLZ17 /A	17	19.2	30.4/ 27.5	37.4/ 33.9	2	330	20
DLZ24 /A	24	26.7	42.3/ 38.3	52.1/ 47.2	2	275	31
DLZ30 /A	30	33.3	52.8/ 47.8	65/ 58.8	2	220	39
Bidirectional							
DLZ8C /A	8	8.5	13.4/ 12.2	16./ 156	30	440	9
DLZ13C /A	13	14.4	22.8/ 20.6	28.1/ 25.4	4	385	18
DLZ19C /A	19	21.6	34.2/ 31	42.1 /38.1	4	275	24
DLZ30C /A	30	33.3	52.8/ 47.8	65 /58.8	4	165	39

Visit us online at: www.sensitron.com

SENSITRON SEMICONDUCTOR

Part Number: GO
Product Type: GO

PRODUCT HIGHLIGHT: HIGH POWER MILITARY VEHICLE SURGE PROTECTION

THE POWER BEHIND YOUR SYSTEM

Sensitron offers among the industry's highest power levels in Vehicle Surge Protection with proven capability to optimize packaging or electrical specifications. The SCP-2500™ TVS devices are 100% production tested to meet MIL-STD-1275 requirements [more...](#)

Sensitron is a leading manufacturer of high reliability power electronic solutions. Markets served include the complete spectrum of high reliability markets including space, aerospace, and defense.

Discrete Diodes and Die Products

JANTX/JANTXV, JAN Diodes, Zener Diodes, TVS Diodes, Power Rectifier Diodes, Schottky Diodes, Small Signal Switching Diodes, Signal Level Diodes, Zener Diodes, TVS Die, Schottky Rectifier Die [more...](#)

Motor Controllers and Drivers

Fully Integrated Motor Controllers with Bluetooth, CAN, Discrete or Analog Control, MODREF and IGBT Drivers, Three-Phase Brushless DC Motor Control, Field Oriented Control [more...](#)

In The News:

March 2017-Sensitron's SuperClamp TVS is designed to meet tight specification limits and safety use equipment having lower voltage ratings. [more...](#)

September 2016-Value engineering has enabled Sensitron to offer a significant price reduction on the USP Family from 25% to 85% across all order quantities [more...](#)

Power Rectification

Schottky Rectifiers, Diode Power Rectifier Diodes, SiC Schottky Rectifiers and Bridges, Three Phase Bridge Rectifier Assemblies, Primary Power Generation [more...](#)

Solid State Power Management

Multi-Channel Solid State Power Controller Boards, Transistor Power Controllers, High Current / High Voltage Modules, Solid State Power Controller Modules, Solid State Relays [more...](#)

New Product:

SENSITRON IS JANS CERTIFIED. Sensitron has received qualification for various JANTX, JANTXV, JAN Q's, Diodes, per MIL-PRF-19500 test sheets including /226, /256, /259. [more...](#)

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Sensitron is certified to MIL-PRF-38534, Class H, for Hybrid Microelectronics, MIL-PRF-19500 for JANTX, JANTXV and JANS discrete diodes, and registered to AS9100.



SENSITRON OFFERS PROVEN SOLUTIONS FOR TOUGH REQUIREMENTS

Sensitron has over 45 years of heritage as a leading manufacturer of high reliability power electronic component solutions for the Defense, Aerospace, Space, and Medical markets. Our products provide rugged, light-weight, and cost effective solutions for switching power supplies, AC-DC rectification, primary & secondary power distribution, motion control, transient voltage spike protection, and custom applications.

Sensitron has a complete staff of engineers whose specialties include electrical and mechanical design, material science expertise, packaging, and testing. From engineering design to finished product, we can provide your application with innovative product to meet your power system requirements.

For the most updated product information and for product details and specifications, email or visit our website:

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