

REFERENCES

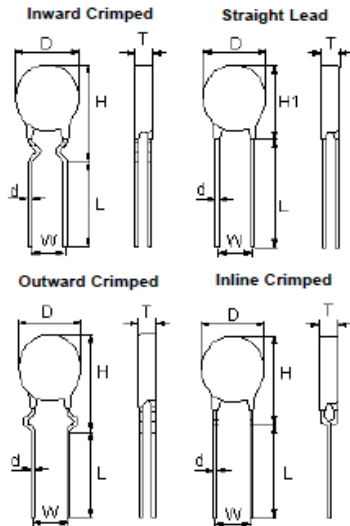
- [1] Md Hisam Hanapei and Mohd Rezaudin Hassan, "Satellite Communication Equipments Reliability And Lightning Surge Measurement Results", Lightning Protection And EMC Unit, CEEM'2006/Dalian 3A1-05.
- [2] Kostas Samaras, Chet Sandberg, Chris J.Salmas and Andreas Kouloxouzis, "Electrical Surge-Protection Devices for Industrial Facilities", *IEEE Transactions on Industrial Applications*, vol.43, No.1, January/February 2007.
- [3] N. Kularatna, J. Fernando, S. James, A. Pandey, "Surge capability testing of supercapacitor families using a lightning surge simulator", *IEEE transactions on Industrial Electronics*, 2011, 58, 10, pp.. 4942 – 4949.
- [4] Nihal Kularatna, "Energy Storage Devices For Electronic Systems-Rechargeable Batteries and Supercapacitors" , School of Engineering, The University of Waikato Hamilton, New Zealand, 8th September 2014.
- [5] Chandima Gomes, "On the selection and installation of surge protection devices in a TT wiring system for equipment and human safety" , 4th February 2011, Elsevier Journal.
- [6] Texas Instrument, reference with "Magnetic Core Properties," originally titled "An Electrical Circuit Model for Magnetic Cores. " Unitrode Seminar Manual SEMIOOO, 1995.
- [7] Alin Grama, Dorin Petrcus, Paul Borza, and Lacrimioara Gramal," Experimental Determination of Equivalent Series Resistance of a Supercapacitor", Applied Electronics Department, Technical University, Cluj-Napoca, Romania & Department of Electronics and Computers, Transilvania University, Brasov, Romania.
- [8] <http://news.nationalgeographic.com/news/2013/11/131102-lightning-deaths-developing-countries-storms/>
- [9] http://batteryuniversity.com/learn/article/whats_the_role_of_the_supercapacitor
- [10] <http://www.capacitorguide.com/supercapacitor/>
- [11] <https://www.mag-inc.com/Products/Powder-Cores/Learn-More-about-Powder-Cores.aspx>

Appendix A

Cost of implemented unit.

Type	Part No.	Quantity	Price
Resistors			
1 Ω / 1 W		3	30.00
Supercapacitors			
1F / 2.5 V	2148494	3	1440.00
Transformer			
Powdered core	0077071A7	3	1080.00
MOV			
Epcos S-20	1004287	4	600.00
Miscellaneous			350.00
Total (Rs):			3500.00

Metal Oxide Disc Thermistors



Remark : The lead length (L) is 20 mm minimum unless requested by customers; please refer to lead cutting code in "How to Order"

Dimensions Quick Reference

Series (Maximum)	5D	7D	10D	14D	20D
D	7	9.5	12	16.5	22.5
d*	0.6	0.6	0.8	0.8	1
W**	5	5	7.5	7.5	10
H	12.5	14.5	19	22.5	29
H1	10	12	17	20.5	28
T	4.9	4.9	8.5	8.5	9

* ±0.02

Dimensions : Millimetres

** ±1

Characteristics

- High performance transient voltage suppression
- Short response time to surge voltage
- Low standby power dissipation
- Excellent clamping characteristics
- High performance withstanding surge currents
- High reliability
- Disk type : Standard
- Lead type : Straight

www.element14.com
www.farnell.com
www.newark.com



Metal Oxide Disc Thermistors



Definition of Varistor Terms

Rated RMS Voltage, Rated DC Voltage

The maximum designated values of power system voltage that may be applied continuously between the terminals of a device

Varistor Voltage

Test characteristic that is used to classify varistors by type. A test current of 1 mA DC is typically used to determine varistor voltage classification type. Varistor voltage clamping characteristics can be defined at various test levels

Rated Peak Single Pulse Transient Current

Maximum surge current, 8 / 20 μ s waveform which a varistor is rated to withstand for a single surge

Rated Single Pulse Transient Energy

Maximum allowable energy for a single impulse (see specified waveforms)

Maximum Clamping Voltage

Measured peak voltage across the device terminals when a current impulse of specified amplitude and waveform is conducted through the varistor

Typical Capacitance

Typical capacitance values are measured at a test frequency of 1 kHz. Capacitance values are only for reference purpose only, not object to outgoing inspection

Applications

Surge protection in

Consumer electronics
Industrial electronics
Communication electronics
Measuring and controlling systems
Electronic home appliances

Protection against surges induced by lightning striking incoming power lines
Suppression of surges caused by switching inductive loads such as transformers, relays and coils
Protection of rectification diodes, SCRs, power transistors, semiconductor devices, etc

General Characteristics

Storage Temperature	: -55°C to +125°C
Operating Surface Temperature	: 125°C
Operating Ambient Temperature	: -55°C to +85°C (without derating)
Maximum Voltage-Temperature Coefficient	: < -0.05% / °C
Minimum Insulation Resistance	: 1,000 M
Hi Pot (Leads To Case, 1 Minimum)	: 2,500 V dc
Typical Response Time	: <15 Nero-seconds
Epoxy Rating	: 94V-0
Current / Energy Derating (>85 °C)	: -2.5% / °C
DC Leakage Current	: 200 μ A maximum (at rated DC working voltage)
Solderability	: MIL-STD-202F

www.element14.com
www.farnell.com
www.newark.com



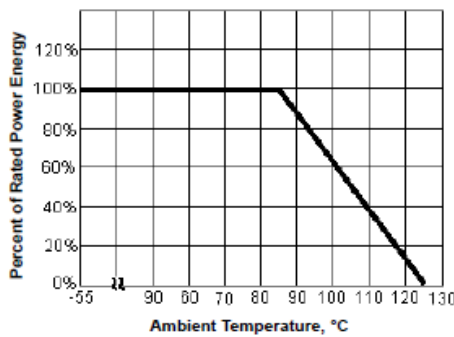
Metal Oxide Disc Thermistors



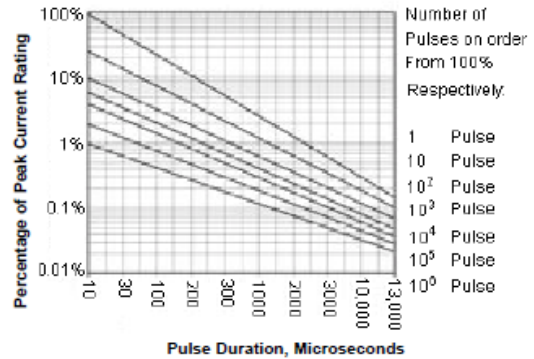
Power Dissipation Ratings (P, in-watts)

Disc Size (mm)	11 V ac to 40 V ac	50 V ac to 680 V ac
5	0.01	0.15
7	0.02	0.25
10	0.05	0.4
14	0.1	0.6
18	-	0.8
20	0.2	1
25	-	1.2
32	-	1.6
34 (Single)	-	2.1
34 (Dual)	-	2.73
40	-	2.1
53	-	2.5

Energy Derating Versus Temperature



Peak Current Per Pulse Versus Pul Seduration



www.element14.com
www.farnell.com
www.newark.com



Metal Oxide Disc Thermistors



Specifications Table

Maximum Allowable Voltage		Varistor Voltage		Withstanding Surge Current (8 / 20 μ s)	Maximum Claming Voltage (8 / 20 μ s)		Maximum Energy		Typical Capacitance	Varistor Voltage	Tolerance (%)	Disk Size (mm)	Part Number	
Acrms	DC	DC Volts		1 Time	Vc	Ip	2 ms	10 / 100 μ s	at 1 KHz					
Volts		Min.	Max.	Amps	Volts	Amps	Joules		PF					
11	14	18	20	100	38	1	0.4	0.6	1,500	18 V	± 10	5	MCFT000215	
14	18	20	24		43		0.6	0.8	1,260	22 V			MCFT000216	
17	22	24	30		53		0.7	0.9	1,050	27 V			MCFT000217	
20	26	30	36		65		0.9	1.2	850	33 V			MCFT000218	
25	31	35	43		77		1.1	1.3	600	39 V			MCFT000219	
30	38	42	52		93		1.4	1.6	500	47 V			MCFT000220	
35	45	50	62		110		1.5	1.9	400	56 V			MCFT000221	
40	56	61	75		135		1.8	2.3	360	68 V			MCFT000222	
50	66	74	90		135		2.4	3	350	82 V			MCFT000223	
75	102	108	132	200	3	5	250	120 V	MCFT000224					
95	127	135	165	250	3.5	5.5	180	150 V	MCFT000225					
130	175	185	225	340	5	8.5	140	200 V	MCFT000226					
150	200	216	264	395	6.5	10	115	240 V	MCFT000227					
230	300	324	396	595	9	13	80	360 V	MCFT000228					
250	330	351	429	650	10	15	75	390 V	MCFT000229					
275	370	387	473	710	11	16	65	430 V	MCFT000230					
300	385	423	517	775	13	19	55	470 V	MCFT000231					
420	560	612	748	1120	21	30	30	680 V	MCFT000232					
11	14	16	20	250	38	2.5	0.8	1	2,900	18 V		± 10	7	MCFT000233
14	18	20	24		43		0.9	1.3	2,400	22 V				MCFT000234
17	22	24	30		53		1	1.4	1,800	27 V			5	MCFT000235
20	26	30	36		65		1.2	1.7	1,500	33 V			7	MCFT000236
25	31	35	43		77		1.5	2.1	1,230	39 V				MCFT000237
30	38	42	52		93		1.8	2.5	950	47 V	MCFT000238			
35	45	50	62		110		2.2	3.1	890	56 V	MCFT000239			
40	56	61	75		135		2.5	3.8	850	68 V	MCFT000240			
50	66	74	90		135		3.5	5.5	830	82 V	MCFT000241			
75	102	108	132	200	5	7.8	570	120 V	MCFT000242					
95	127	135	165	250	6.5	9.7	400	150 V	MCFT000243					
130	175	185	225	340	10	13	275	200 V	MCFT000244					
150	200	216	264	395	11	16	230	240 V	MCFT000245					

www.element14.com
www.farnell.com
www.newark.com



Metal Oxide Disc Thermistors



Specifications Table

Maximum Allowable Voltage		Varistor Voltage		Withstanding Surge Current (8 / 20 μ s)	Maximum Clamping Voltage (8 / 20 μ s)		Maximum Energy		Typical Capacitance	Varistor Voltage	Tolerance (%)	Disk Size (mm)	Part Number
ACrms	DC	DC	Volts		1 Time	Vc	Ip	2ms	10 / 100 μ s				
Volts		Min.	Max.	Amps	Volts	Amps	Joules		PF				
230	300	324	396	1,200	595	10	15	25	155	360 V	±10	7	MCFT000246
250	330	351	429		650		17	26	145	390 V			MCFT000247
275	370	387	473		710		20	28	130	430 V			MCFT000248
300	385	423	517		775		21	30	115	470 V			MCFT000249
420	560	612	748		1120		32	45	78	680 V			MCFT000250
11	14	16	20	500	36	5	1.5	2.1	6,000	18 V		MCFT000251	
14	18	20	24		43		2	2.5	5,000	22 V		MCFT000252	
17	22	24	30		53		2.5	3	4,000	27 V		MCFT000253	
20	26	30	36		65		3	4	3,500	33 V		MCFT000254	
25	31	35	43		77		3.5	4.6	3,100	39 V		MCFT000255	
30	38	42	52		93		4.5	5.5	2,800	47 V		MCFT000256	
35	45	50	62		110		5.5	7	2,400	56 V		MCFT000257	
40	56	61	75		135		6.5	8.2	2,100	68 V		MCFT000258	
50	66	74	90	2,500	135	25	8	12	1,800	82 V		10	MCFT000259
75	102	108	132		200		12	18	1,200	120 V	MCFT000260		
95	127	135	165		250		16	22	1,100	150 V	MCFT000261		
130	175	185	225		340		20	30	640	200 V	MCFT000262		
150	200	216	264		395		25	35	560	240 V	MCFT000263		
230	300	324	396		595		35	47	380	360 V	MCFT000264		
250	330	351	429		650		40	60	350	390 V	MCFT000265		
275	370	387	473		710		45	65	310	430 V	MCFT000266		
300	385	423	517		775		46	70	280	470 V	MCFT000267		
11	14	16	20		1,000		36	10	3.5	4	15,000	18 V	14
14	18	20	24	43		4	5		12,000	22 V	MCFT000269		
17	22	24	30	53		5	6		8,500	27 V	MCFT000270		
20	26	30	36	65		6	7.5		7,200	33 V	MCFT000271		
25	31	35	43	77		7	8.6		6,300	39 V	MCFT000272		
30	38	42	52	93		8.5	10		5,500	47 V	MCFT000273		
35	45	50	62	110		10	11		4,800	56 V	MCFT000274		
40	56	61	75	135		12	14		4,000	68 V	MCFT000275		
50	66	74	90	4,500	135	50	5	22	3,300	82 V	MCFT000276		

www.element14.com
www.farnell.com
www.newark.com



Metal Oxide Disc Thermistors



Specifications Table

Maximum Allowable Voltage		Varistor Voltage		Withstanding Surge Current (8 / 20 μ s)	Maximum Clamping Voltage (8 / 20 μ s)		Maximum Energy		Typical Capacitance at 1 KHz	Varistor Voltage	Tolerance (%)	Disk Size (mm)	Part Number
ACrms	DC	DC	Volts		1 Time	Vc	Ip	2ms					
Volts		Min.	Max.	Amps	Volts	Amps	Joules		PF				
75	102	108	132	4,500	200	50	22	34	2,600	120 V	±10	14	MCFT000277
95	127	135	165		250		30	45	2,000	150 V			MCFT000278
130	175	185	225		340		38	60	1,370	200 V			MCFT000279
150	200	216	264		395		45	66	1,060	240 V			MCFT000280
230	300	324	396		595		70	98	725	360 V			MCFT000281
250	330	351	429		650		72	102	665	390 V			MCFT000282
275	370	387	473		710		75	115	600	430 V			MCFT000283
300	385	423	517		775		80	125	570	470 V			MCFT000284
11	14	18	20		2,000		38	20	10	12			27,000
14	18	20	24	43		13	15		20,000	22 V	MCFT000286		
17	22	24	30	53		15	17		15,000	27 V	MCFT000287		
20	26	30	36	65		22	22		12,200	33 V	MCFT000288		
25	31	35	43	77		24	26		10,000	39 V	MCFT000289		
30	38	42	52	93		30	33		9,350	47 V	MCFT000290		
35	45	50	62	110		35	38		8,000	56 V	MCFT000291		
40	56	61	75	135		40	43		6,800	68 V	MCFT000292		
50	66	74	90	135		37	48		5,600	82 V	MCFT000293		
75	102	108	132	6,500	200	100	40	55	4,100	120 V	±10	20	MCFT000294
95	127	135	165		250		50	70	3,200	150 V			MCFT000295
130	175	185	225		340		70	95	2,200	200 V			MCFT000296
150	200	216	264		395		82	110	1,900	240 V			MCFT000297
230	300	324	396		595		120	163	1,320	360 V			MCFT000298
250	330	351	429		650		130	180	1,210	390 V			MCFT000299
275	370	387	473		710		140	190	1,120	430 V			MCFT000300
300	385	423	517		775		50	220	1,000	470 V			MCFT000301

www.element14.com
www.farnell.com
www.newark.com



NEW

Panasonic

"ZNR" Transient/Surge Absorbers (Type D)

"ZNR" Transient/Surge Absorbers

Type: **D**
Series: **E**



"ZNR" Transient/Surge Absorber, Series E, Type D features large surge current and energy handling capability for absorbing transient overvoltage in a compact size.

■ Features

- Large withstanding surge current capability in compact sizes
- Large "Energy Handling Capability" absorbing transient overvoltages in compact sizes
- Wide range of varistor voltages
- RoHS compliant

■ Recommended Applications

- Transistor, diode, IC, thyristor or triac semiconductor protection
- Surge protection in consumer electronic equipment
- Surge protection in communication, measuring or controller electronics
- Surge protection in electronic home appliances, gas or petroleum appliances

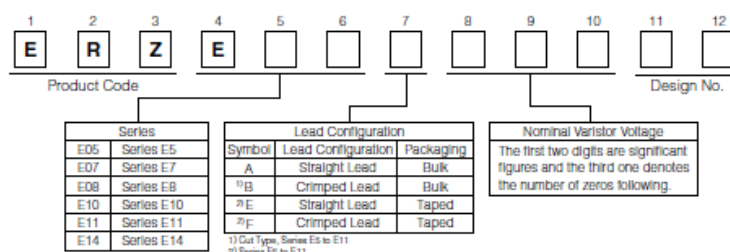
■ Applicable Standards

- UL1449 (VZCA2/UL, VZCA8/C-UL)
 - VDE IEC61051-1, -2, -2-2, IEC60950-1 Annex Q
 - CQC(GB/T10193, GB/T10194, GB4943.1, GB8898)
- Refer to pages 2 to 3, and 19 for the details

■ Handling Precautions and Minimum Quantity / Packing Unit

Please see Related Information

■ Explanation of Part Numbers



Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately. 06 Sep. 2013

NEW

Panasonic

"ZNR" Transient/Surge Absorbers (Type D)

■ Reference Guide to Standard Products

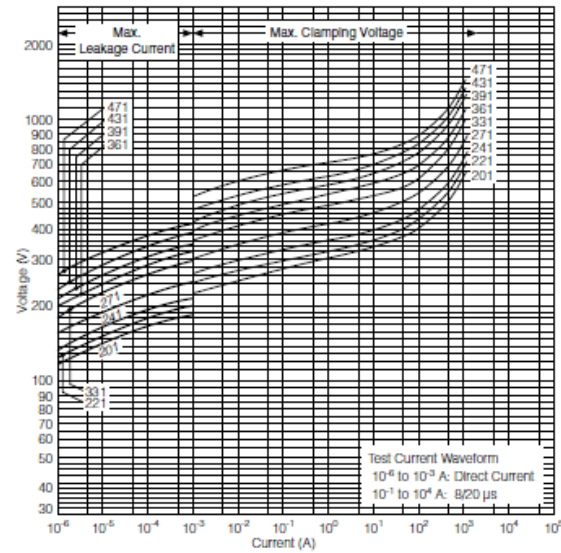
Part No.	Applicable Standards		Varistor Voltage at 1 mA (V)	Maximum Allowable Voltage (V)		Clamping Voltage at 8/20µs (V)		Maximum Peak Current at 8/20µs(A)		Recommended Applications	
	Type Name	Approvals		ACrms	DC	max.	Ip	1 time	2 times		
ERZE05A201	E201	○☆◇	200 (185 to 225)	130	170	340	10	1200	600	AC 100 V Line-Line Applications	
ERZE07A201	E7201	○☆◇				340	25	2500	1250		
ERZE08A201	E8201	○☆◇				340	25	3500	2500		
ERZE10A201	E10201	○☆◇				340	50	4500	3000		
ERZE11A201	E11201	○◎☆★◇◆				340	50	6000	5000		
ERZE14A201	E14201	○◎☆★◇◆				340	100	10000	7000		
ERZE05A221	E221	○☆◇	220 (198 to 242)	140	180	360	10	1200	600		
ERZE07A221	E7221	○☆◇				360	25	2500	1250		
ERZE08A221	E8221	○☆◇				360	25	3500	2500		
ERZE10A221	E10221	○☆◇				360	50	4500	3500		
ERZE11A221	E11221	○◎☆★◇◆				360	50	6000	5000		
ERZE14A221	E14221	○◎☆★◇◆				360	100	10000	7000		
ERZE05A241	E241	○☆◇	240 (216 to 264)	150	200	395	10	1200	600		AC 100 V to 120 V, Line-Line Applications
ERZE07A241	E7241	○☆◇				395	25	2500	1250		
ERZE08A241	E8241	○☆◇				395	25	3500	2500		
ERZE10A241	E10241	○☆◇				395	50	4500	3000		
ERZE11A241	E11241	○◎☆★◇◆				395	50	6000	5000		
ERZE14A241	E14241	○◎☆★◇◆				395	100	10000	7000		
ERZE05A271	E271	○☆◇	270 (247 to 303)	175	225	455	10	1200	600		
ERZE07A271	E7271	○☆◇				455	25	2500	1250		
ERZE08A271	E8271	○☆◇				455	25	3500	2500		
ERZE10A271	E10271	○☆◇				455	50	4500	3000		
ERZE11A271	E11271	○◎☆★◇◆				455	50	6000	5000		
ERZE14A271	E14271	○◎☆★◇◆				455	100	10000	7000		
ERZE05A331	E331	○☆◇	330 (297 to 363)	210	270	545	10	1200	600	AC 100 V to 120 V, Line-Line Applications Telephone Line Applications, (For DC 250 V Insulation Resistance Test)	
ERZE07A331	E7331	○☆◇				545	25	2500	1250		
ERZE08A331	E8331	○☆◇				545	25	3500	2500		
ERZE10A331	E10331	○☆◇				545	50	4500	3000		
ERZE11A331	E11331	○◎☆★◇◆				545	50	6000	4500		
ERZE14A331	E14331	○◎☆★◇◆				545	100	10000	6500		
ERZE05A361	E361	○☆◇	360 (324 to 396)	230	300	595	10	1200	600		
ERZE07A361	E7361	○☆◇				595	25	2500	1250		
ERZE08A361	E8361	○☆◇				595	25	3500	2500		
ERZE10A361	E10361	○☆◇				595	50	4500	3000		
ERZE11A361	E11361	○◎☆★◇◆				595	50	6000	4500		
ERZE14A361	E14361	○◎☆★◇◆				595	100	10000	6500		
ERZE05A391	E391	○☆◇	390 (351 to 429)	250	320	650	10	1200	600		AC 100 V to 220 V, Line-Line and Line-Ground Applications
ERZE07A391	E7391	○☆◇				650	25	2500	1250		
ERZE08A391	E8391	○☆◇				650	25	3500	2500		
ERZE10A391	E10391	○☆◇				650	50	4500	3000		
ERZE11A391	E11391	○◎☆★◇◆				650	50	6000	4500		
ERZE14A391	E14391	○◎☆★◇◆				650	100	10000	6500		
ERZE05A431	E431	○☆◇	430 (387 to 473)	275	350	710	10	1200	600		
ERZE07A431	E7431	○☆◇				710	25	2500	1250		
ERZE08A431	E8431	○☆◇				710	25	3500	2500		
ERZE10A431	E10431	○☆◇				710	50	4500	3000		
ERZE11A431	E11431	○◎☆★◇◆				710	50	6000	4500		
ERZE14A431	E14431	○◎☆★◇◆				710	100	10000	6500		

○ : UL1449 (VZCA2JUL, VZCAB/C-UL), ● : UL1449 Type3 (or Code-Connected and Direct plug-in),
 ◎ : UL1449 Type2 (or Permanently Connected), ☆ : VDE (IEC61051-1, -2, -2-2), ★ : VDE (IEC60950-1 Annex Q)
 ◇ : CQC (GB/T10193, GB/T10194), ◆ : CQC (GB4943.1, GB8898)
 ※ Approval number (File No.) of safety regulations are subject to revision without notice. Ask factory for a copy of the latest file No.

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately. 06 Sep. 2013

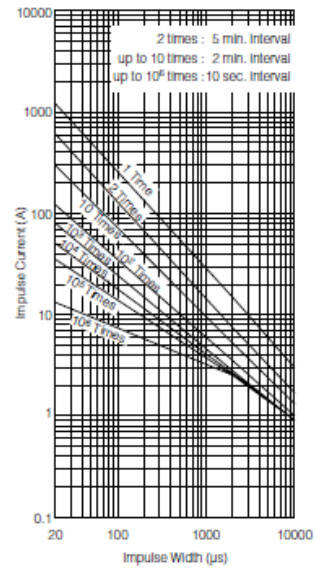
■ Typical Characteristics
Voltage vs. Current

ERZE05A201 to ERZE05A471



Impulse Derating (Relation between impulse width and impulse current multiple)

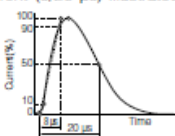
ERZE05A201 to ERZE05A471



Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.



■ Performance Characteristics (Series E)

Characteristics	Test Methods/Description	Specifications																																			
Standard Test Condition	Electrical measurements (initial/after tests) shall be conducted at temperature of 5 to 35 °C, relative humidity of maximum 85 %	-----																																			
Varistor Voltage	The voltage between two terminals with the specified measuring current I_{mA} DC applied is called VC or V_{CmA} . The measurement shall be made as fast as possible to avoid heat affection.	To meet the specified value.																																			
Maximum Allowable Voltage	The maximum sinusoidal RMS voltage or maximum DC voltage that can be applied continuously.																																				
Clamping Voltage	The maximum voltage between two terminals with the specified standard impulse current (8/20 μ s) illustrated below applied. 																																				
Rated Power	The power that can be applied in the specified ambient temperature.																																				
Maximum Energy	The maximum energy within the varistor voltage change of ± 10 % when a single impulse current of 2 ms or 10/1000 μ s is applied.																																				
Maximum Peak Current (Withstanding Surge Current)	2 times		The maximum current within the varistor voltage change of ± 10 % when a standard impulse current of 8/20 μ s is applied two times with an interval of 5 minutes.																																		
	1 time		The maximum current within the varistor voltage change of ± 10 % with a single standard impulse current of 8/20 μ s is applied.																																		
Temperature Coefficient of Varistor Voltage	$\frac{V_{CmA} \text{ at } 85 \text{ }^\circ\text{C} - V_{CmA} \text{ at } 25 \text{ }^\circ\text{C}}{V_{CmA} \text{ at } 25 \text{ }^\circ\text{C}} \times \frac{1}{60} \times 100 \text{ (\%}/^\circ\text{C)}$	0 to -0.05 %/°C max.																																			
Capacitance	Capacitance shall be measured at 1 kHz ± 10 %, 1 Vrms max. (1 MHz ± 10 % below 100 pF), 0 V bias and 20 ± 2 °C.	To meet the specified value																																			
Withstanding Voltage (Body Insulation)	AC 1500 Vrms shall be applied between both terminals of the specimen connected together and metal foil closely wrapped round its body for 1 minute.	No breakdown																																			
Impulse Life	The change of VC shall be measured after the impulse current listed below is applied 10000 or 100000 times continuously with the interval of 10 seconds at room temperature. <table border="1" data-bbox="606 1377 1117 1568"> <thead> <tr> <th rowspan="2">Part No.</th> <th>Item</th> <th>Impulse Life (I)</th> <th>Impulse Life (II)</th> </tr> <tr> <th>Times</th> <th>$\times 10^4$ Times</th> <th>$\times 10^5$ Times</th> </tr> <tr> <th colspan="2">Current</th> <th colspan="2">Impulse Current</th> </tr> </thead> <tbody> <tr> <td>ERZE05A201 to ERZE05A471</td> <td></td> <td>50 A (8/20 μs)</td> <td>35 A (8/20 μs)</td> </tr> <tr> <td>ERZE07A201 to ERZE07A621</td> <td></td> <td>100 A (8/20 μs)</td> <td>70 A (8/20 μs)</td> </tr> <tr> <td>ERZE08A201 to ERZE08A751</td> <td></td> <td>150 A (8/20 μs)</td> <td>85 A (8/20 μs)</td> </tr> <tr> <td>ERZE10A201 to ERZE10A112</td> <td></td> <td>170 A (8/20 μs)</td> <td>90 A (8/20 μs)</td> </tr> <tr> <td>ERZE11A201 to ERZE11A112</td> <td></td> <td>200 A (8/20 μs)</td> <td>110 A (8/20 μs)</td> </tr> <tr> <td>ERZE14A201 to ERZE14A112</td> <td></td> <td>250 A (8/20 μs)</td> <td>120 A (8/20 μs)</td> </tr> </tbody> </table>	Part No.	Item	Impulse Life (I)	Impulse Life (II)	Times	$\times 10^4$ Times	$\times 10^5$ Times	Current		Impulse Current		ERZE05A201 to ERZE05A471		50 A (8/20 μ s)	35 A (8/20 μ s)	ERZE07A201 to ERZE07A621		100 A (8/20 μ s)	70 A (8/20 μ s)	ERZE08A201 to ERZE08A751		150 A (8/20 μ s)	85 A (8/20 μ s)	ERZE10A201 to ERZE10A112		170 A (8/20 μ s)	90 A (8/20 μ s)	ERZE11A201 to ERZE11A112		200 A (8/20 μ s)	110 A (8/20 μ s)	ERZE14A201 to ERZE14A112		250 A (8/20 μ s)	120 A (8/20 μ s)	$\Delta V_{CmA}/V_{CmA} \leq 0$ to 20 %
Part No.	Item		Impulse Life (I)	Impulse Life (II)																																	
	Times	$\times 10^4$ Times	$\times 10^5$ Times																																		
Current		Impulse Current																																			
ERZE05A201 to ERZE05A471		50 A (8/20 μ s)	35 A (8/20 μ s)																																		
ERZE07A201 to ERZE07A621		100 A (8/20 μ s)	70 A (8/20 μ s)																																		
ERZE08A201 to ERZE08A751		150 A (8/20 μ s)	85 A (8/20 μ s)																																		
ERZE10A201 to ERZE10A112		170 A (8/20 μ s)	90 A (8/20 μ s)																																		
ERZE11A201 to ERZE11A112		200 A (8/20 μ s)	110 A (8/20 μ s)																																		
ERZE14A201 to ERZE14A112		250 A (8/20 μ s)	120 A (8/20 μ s)																																		

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately. 03 Jul. 2013

NEW

Panasonic

"ZNR" Transient/Surge Absorbers (Type D)

■ Performance Characteristics (Series E)

Characteristics	Test Methods	Specifications																
Mechanical	<p>Robustness of Terminations (Tensile)</p> <p>After gradually applying the force specified below and keeping the unit fixed for 10 seconds, the terminal shall be visually examined for any damage.</p> <table border="1"> <thead> <tr> <th>Terminal diameter</th> <th>Force</th> </tr> </thead> <tbody> <tr> <td>φ0.6 mm</td> <td>9.8 N</td> </tr> <tr> <td>φ0.8 mm</td> <td>9.8 N</td> </tr> <tr> <td>φ1.0 mm</td> <td>19.6 N</td> </tr> </tbody> </table>	Terminal diameter	Force	φ0.6 mm	9.8 N	φ0.8 mm	9.8 N	φ1.0 mm	19.6 N	No remarkable mechanical damage								
	Terminal diameter	Force																
	φ0.6 mm	9.8 N																
	φ0.8 mm	9.8 N																
	φ1.0 mm	19.6 N																
<p>Robustness of Terminations (Bending)</p> <p>The unit shall be secured with its terminal kept vertical and the force specified below shall be applied in the axial direction. The terminal shall gradually be bent by 90° in one direction, then 90° in the opposite direction, and again back to the original position. The damage of the terminal shall be visually examined.</p> <table border="1"> <thead> <tr> <th>Terminal diameter</th> <th>Force</th> </tr> </thead> <tbody> <tr> <td>φ0.6 mm</td> <td>4.9 N</td> </tr> <tr> <td>φ0.8 mm</td> <td>4.9 N</td> </tr> <tr> <td>φ1.0 mm</td> <td>9.8 N</td> </tr> </tbody> </table>	Terminal diameter	Force	φ0.6 mm	4.9 N	φ0.8 mm	4.9 N	φ1.0 mm	9.8 N										
Terminal diameter	Force																	
φ0.6 mm	4.9 N																	
φ0.8 mm	4.9 N																	
φ1.0 mm	9.8 N																	
Vibration	After repeatedly applying a single harmonic vibration (amplitude: 0.75 mm, double amplitude: 1.5 mm) with 1 minute vibration frequency cycles (10 Hz to 55 Hz to 10 Hz) to each of three perpendicular directions for 2 hours. Thereafter, the unit shall be visually examined.																	
Solderability	After dipping the terminals to a depth of approximately 3mm from the body in a soldering bath of 235±5°C for 2±0.5 seconds, the terminal shall be visually examined.	Approximately 95 % of the terminals shall be covered with new solder uniformly.																
Resistance to Soldering Heat	After each lead shall be dipped into a solder bath having a temperature of 260±5 °C to a point 2.0 to 2.5 mm from the body of the unit, using shielding board (t=1.5 mm), be held there for 10±1 s and then be stored at room temperature and normal humidity for 1 to 2 hours. The change of V _{CMA} and mechanical damages shall be examined.	ΔV _{CMA} /V _{CMA} < ±5 % No remarkable mechanical damage																
Environmental	High Temperature Storage/Dry Heat	The specimen shall be subjected to 125±2 °C for 1000 hours in a thermostatic bath without load and then stored at room temperature and normal humidity for 1 to 2 hours. Thereafter, the change of V _{CMA} shall be measured.	ΔV _{CMA} /V _{CMA} < ±5 %															
	Humidity	The specimen shall be subjected to 40±2 °C, 90 to 95 % RH for 1000 hours without load and then stored at room temperature and normal humidity for 1 to 2 hours. Thereafter, the change of V _{CMA} shall be measured.	ΔV _{CMA} /V _{CMA} < ±5 %															
	Temperature Cycle	<p>The temperature cycle shown below shall be repeated five cycles and then stored at room temperature and normal humidity for 1 to 2 hours. The change of V_{CMA} and mechanical damage shall be examined.</p> <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Period (minutes)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40±3</td> <td>30±3</td> </tr> <tr> <td>2</td> <td>Room temperature</td> <td>15±3</td> </tr> <tr> <td>3</td> <td>125±2</td> <td>30±3</td> </tr> <tr> <td>4</td> <td>Room temperature</td> <td>15±3</td> </tr> </tbody> </table>	Step	Temperature (°C)	Period (minutes)	1	-40±3	30±3	2	Room temperature	15±3	3	125±2	30±3	4	Room temperature	15±3	ΔV _{CMA} /V _{CMA} < ±5 % No remarkable mechanical damage
	Step	Temperature (°C)	Period (minutes)															
	1	-40±3	30±3															
	2	Room temperature	15±3															
	3	125±2	30±3															
4	Room temperature	15±3																
High Temperature Load/Dry Heat Load	After being continuously applied the Maximum Allowable Voltage at 85±2 °C for 1000 hours, the specimen shall be stored at room temperature and normal humidity for 1 to 2 hours. Thereafter, the change of V _{CMA} shall be measured.	ΔV _{CMA} /V _{CMA} < ±10 %																
Damp Heat Load/Humidity Load	The specimen shall be subjected to 40±2 °C, 90 to 95 % RH and the Maximum Allowable Voltage for 1000 hours and then stored at room temperature and normal humidity for 1 to 2 hours. Thereafter, the change of V _{CMA} shall be measured.																	
Low Temperature Storage/Cold	The specimen shall be subjected to -40±2 °C without load for 1000 hours and then stored at room temperature and normal humidity for 1 to 2 hours. Thereafter, the change of V _{CMA} shall be measured.	ΔV _{CMA} /V _{CMA} < ±5 %																

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

03 Jul. 2013

NEW

(4) Concerning current fuse

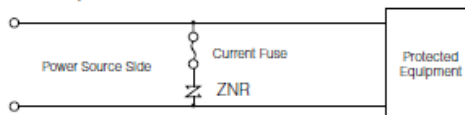
<1> We recommend selecting a ZNR and the rated current of a current fuse as follows.
Finally, please be sure that there is no danger if the ZNR mounted on the equipment breaks.

● Type D, Series E

Standard Part No.	ERZE05A□□□	ERZE07A□□□	ERZE08A□□□	ERZE10A□□□	ERZE11A□□□	ERZE14A□□□
Fuse rated current	5 A max.	7 A max.	7 A max.	10 A max.	10 A max.	10 A max.

* Fuses shall use rated voltages appropriate for circuits.

<2> The recommended fuse position is shown in table 1, "Example of ZNR application", however, if the load current of protected equipment is larger than that of the above recommended fuse rated current, install a current fuse at the position shown below.



(5) Concerning thermal fuse

Set a thermal fuse to get high thermal conductivity with ZNR.

Table 1 Example of ZNR application

		Across-the-Line use		Use between Line to ground		
Connections example	DC/AC Single-phase					
	AC 3-phase					
Example of varistor voltage	ZNR	Source voltage	Nominal varistor voltage	ZNR	Source voltage	Nominal varistor voltage
	ZNR1 ZNR3	AC100 V	201 to 361*	ZNR2 ZNR4	AC100 V	471
		AC120 V	241 to 431*		AC220 V	511
		AC200 V	471 to 621*		AC220 V	621*
		AC220 V	471 to 621*		AC380 V	821 and more**
		AC240 V	511, 621*			AC230 V
AC380 V		751, 821*	AC240 V			621*
				821 and more**		
				112**		

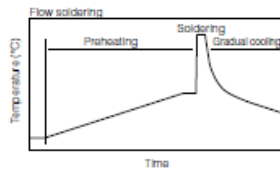
Note : Element size is selected by impulse Condition.

- 2) Operating environments
 - (1) The ZNR is designed to be used indoors. Do not use it exposed outdoors.
 - (2) Do not use the ZNR in places exposed to temperatures beyond the operating temperature range, such as places exposed to sunlight and vicinities of heating equipment.
 - (3) Do not use the ZNR in places exposed to high temperatures and high humidity, such as places exposed directly to rain, wind, dew condensation, and vapor.
 - (4) Do not use the ZNR in dusty and salty places and atmospheres polluted by corrosive gases.
- 3) Processing conditions
 - (1) Do not wash the ZNR by such solvents(thinner, acetone, etc.) as its exterior resin deteriorates.
 - (2) Do not apply a strong vibration or shock (by falling, etc.) to the ZNR, cracking to its exterior resin and element may occur.
 - (3) When coating the ZNR with resin(including molding), do not use such resin.
 - (4) Do not bend the ZNR type D lead wires at the position close to its ZNR type D exterior resin, or apply external force to the position.
 - (5) When soldering the ZNR lead wires, follow the recommended conditions and do not melt the solder and insulating materials constituting the ZNR.

	Soldering Method	Recommended Condition	Attention Item
Type D	Flow soldering	260 °C, within 10 sec.	Type D is not Reflow soldering object part.

※1 Soldering iron temperature should not exceed 400 °C and should not be applied for more than 5 seconds.
 ※2 Profile be careful because there is a margin of error in the way of measuring.
 ※3 The temperature depend on the size and the package density of the substrate. Therefore, confirm every kind of the substrate.

● Soldering temperature-time profile to recommend



Preheating	The normal to 130 °C	max. 120s
Soldering	max. 260 °C	max. 10s
Gradual cooling	Gradual cooling	

- 4) Long-term storage
 - (1) Do not store the ZNR under high temperature and high humidity. Store it at a temperature up to 40 °C and at humidity below 75 %RH, and use it within two years. Before using the ZNR that has been stored for a long period(two years or longer), confirm the solderability.
 - (2) Avoid atmospheres full of corrosive gases(hydrogen sulfide, sulfurous acid, chlorine, ammonia, etc.).
 - (3) Avoid direct sunlight and dew condensation.
- 3. Notices
 - 3.1 In cases that the ZNR is used in equipment(aerospace equipment, medical equipment, etc.) requiring extremely high reliability, ask us for a selection of Part No., and protection coordination, etc. in advance.
 - 3.2 Note that we do not take any responsibility for faults and abnormalities resulting from the use not in conformity with the contents of entries in the delivery specification.
 - 3.3 There is a possibility that the ZNR will unexpectedly cause smoke or ignite because of an abnormal rise of the circuit voltage and invasion of excessive surge. To prevent that accident from spreading over the equipment and not to expand the damage, use multiplex protection such as the adoption of flame-retardant materials for housing parts and structural parts.



Supercapacitors

B Series



Description

Cooper Bussmann PowerStor® supercapacitors are unique, ultra-high capacitance devices utilizing electrochemical double layer capacitor (EDLC) construction combined with new, high performance materials. This combination of advanced technologies allows Cooper Bussmann to offer a wide variety of capacitor solutions tailored to specific applications that range from a few micro-amps for several days to several amps for milliseconds.

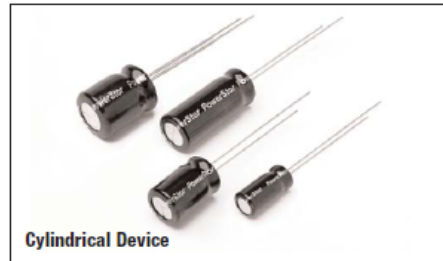
Features & Benefits

- High specific capacitance
- Very low ESR
- Low leakage currents
- Long cycle life
- UL Recognized



Applications

- Main power
- Hybrid battery packs
- Hold-up power
- Pulse power



Cylindrical Device

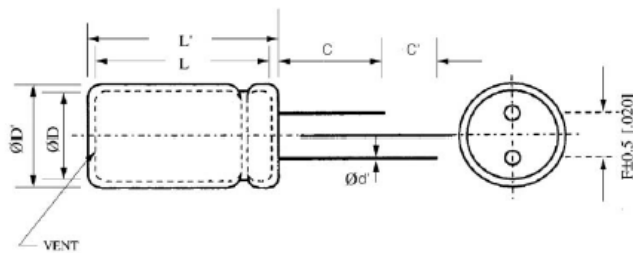
Specifications	
Working Voltage	2.5V
Surge Voltage	3.0V
Capacitance	0.22F to 2.2F
Capacitance Tolerance	-20% to +80% (20°C)
Operating Temperature Range	-25°C to 70°C

Standard Product						
Nominal Capacitance (F)	Part Number	Maximum ESR (Ω) (Equivalent Series Resistance) Measured @ 100Hz	Nominal Leakage Current (μA) After 72 Hours @ 20°C	Nominal Dimensions (mm)		Typical Mass (grams/piece)
				Diameter	Length	
0.22	B0510-2R5224-R	2.00	2	5	11	0.54
1.0	B0810-2R5105-R	0.50	4	8	13	1.2
1.5	B1010-2R5155-R	0.30	7	10	14	1.9
2.2	B0820-2R5225-R	0.20	9	8	20	1.5

Performance		
Parameter	Capacitance Change (% of initial measured value)	ESR (% of initial specified value)
Life (1000 hrs @ 70°C @ 2.5Vdc)	≤ 30 %	≤ 300 %
Storage - Low and High Temperature (1000 hrs @ -25°C and 70°C)	≤ 30 %	≤ 300 %

Dimensions (mm)								
Part Number	D	D'	L	L'	F	d'	C	C'
B0510-2R5224-R	5.0	5.5	11.5	12.0	2.0	0.50	20.0	5.0
B0810-2R5105-R	8.0	8.5	13.0	13.5	3.5	0.50	20.0	5.0
B1010-2R5155-R	10.0	10.5	14.3	14.8	5.0	0.60	20.0	5.0
B0820-2R5225-R	8.0	8.5	20.5	21.0	3.5	0.50	20.0	5.0
Tolerances	Maximum				± 0.5	± 0.02	Minimum	

Note: Longer lead is positive.



Part Numbering System						
B	□ □ □ □	-	2	R	5	□ □ □ □
Series Code	Dimensions (mm)		Voltage (V)		Capacitance (µF)	
	Diameter	Length	R is Decimal		Value	Multiplier
B Series			2R5 = 2.5V		Example: 155 = 15 x 10µF or 1.5F	

Packaging Information

- Packaging:
- Standard packaging: Bulk, 100 units per bag.
 - Larger bulk packages available on request.

Part Marking

- Manufacturer
 Capacitance (F)
 Max Operating Voltage (V)
 Series Code (or part number)
 Polarity

North America
 Cooper Bussmann
 1225 Broken Sound Parkway NW
 Suite F
 Boca Raton, FL 33487-3633
 Tel: 1-561-998-4100
 Fax: 1-561-241-6640
 Toll Free: 1-888-414-2645

Cooper Bussmann
 P.O. Box 14480
 St. Louis, MO 63178-4480
 Tel: 1-636-394-2877
 Fax: 1-636-527-1607

Europe
 Cooper Bussmann
 Cooper (UK) Limited
 Burton-on-the-Wolds
 Leicestershire • LE12 5TH UK
 Tel: +44 (0) 1509 882 737
 Fax: +44 (0) 1509 882 786

Cooper Bussmann
 Avda. Sants Eulalia, 290
 08223
 Terrassa, (Barcelona), Spain
 Tel: +34 937 362 812
 +34 937 362 813
 Fax: +34 937 362 719

Asia Pacific
 Cooper Bussmann
 1 Jalan Klang Timur
 #06-01 Pacific Tech Centre
 Singapore 159303
 Tel: +65 278 6151
 Fax: +65 270 4160

The only controlled copy of this Data Sheet is the electronic read-only version located on the Cooper Bussmann Network Drive. All other copies of this document are by definition uncontrolled. This bulletin is intended to clearly present comprehensive product data and provide technical information that will help the end user with design applications. Cooper Bussmann reserves the right, without notice, to change design or construction of any products and to discontinue or limit distribution of any products. Cooper Bussmann also reserves the right to change or update, without notice, any technical information contained in this bulletin. Once a product has been selected, it should be tested by the user in all possible applications.

Life Support Policy: Cooper Bussmann does not authorize the use of any of its products for use in life support devices or systems without the express written approval of an officer of the Company. Life support systems are devices which support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.

© 2011 Cooper Bussmann
 www.cooperbussmann.com

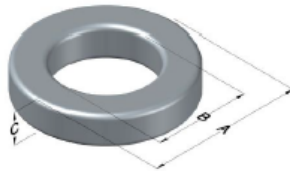


Appendix D



0077071A7

110 Delta Drive
Pittsburgh, PA 15238
NAFTA Sales: (1)800-245-3984
HK Sales : (852)3102-9337
magnetics@spang.com
www.mag-inc.com

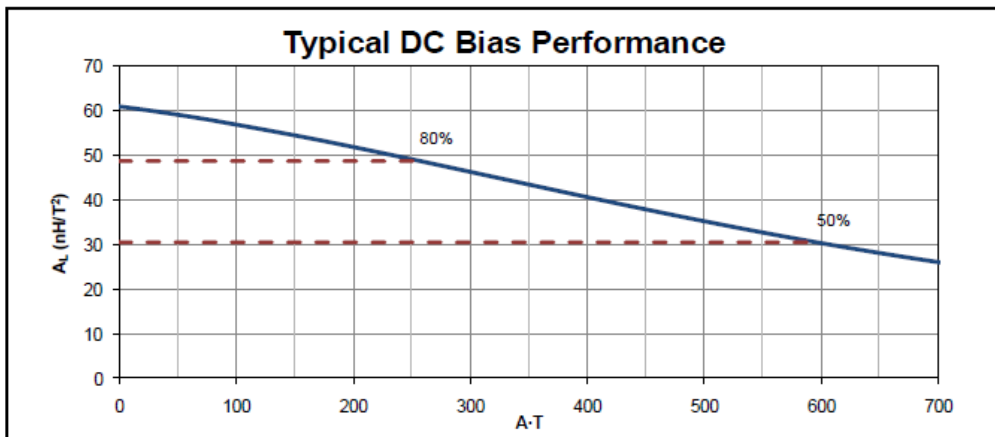


Kool Mu Permeability (μ)	A_L (nH/T ²)	Core Marking			Coating Color
		Lot Number	Part Number	Inductance Grade	
60	61 \pm 8%	XXXXXX	77071A7	N/A	Black

Dimensions	Uncoated		Coated Limits		Packaging
	(mm)	(in)	(mm)	(in)	
OD (A)	32.80	1.291	33.66	1.325	Cardboard cut-outs Box Qty= 250 pcs
ID (B)	20.1	0.791	19.4	0.766	
HT (C)	10.7	0.420	11.5	0.450	

Electrical Characteristics			Physical Characteristics						
Watt Loss @ 100 kHz, 100mT max (mW/cm ²)	DC Bias min (A-T/cm)		Voltage Breakdown wire to wire min (V _{AC})	Break Strength min (kg)	Window Area W _w (mm ²)	Cross Section A _s (mm ²)	Path Length L _p (mm)	Volume V _v (mm ³)	Weight (g)
	80%	50%							
900	31.0	69.1	2000	49	297	65.6	81.4	5340	32

Winding Information				Temperature Rating			
Winding Length Per Turn				Wound Coil Dimensions (mm)			Curie Temp: 500°C
Winding Factor	(mm)	Winding Factor	(mm)	40% Winding Factor		OD	36.8
				Completely Full Window		HT	17.8
0%	37.4	40%	47.2	Max OD	46.7	Coating Temp (Continuous up to): 200°C	
20%	42.4	45%	48.8	Max HT	28.0	Notes:	
25%	43.5	50%	50.1	Surface Area (mm ²)			
30%	44.7	60%	53.2	Unwound Core	3,100		
35%	46.1	70%	56.7	40% Winding Factor	4,900		



Revision 2016-11-16

4 kV

Time(S)	Volt(V)	Current(A)	Power(W)	Energy(J)
0.00E+00	1.79E+02	-2.90E+01	6.62E+03	-1.66E-03
2.50E-07	5.23E+02	9.99E+00	3.91E+03	9.77E-04
5.00E-07	5.52E+02	9.04E+01	4.78E+04	1.19E-02
7.50E-07	5.68E+02	1.42E+02	7.87E+04	1.97E-02
1.00E-06	5.84E+02	2.50E+02	1.44E+05	3.60E-02
1.25E-06	6.03E+02	3.32E+02	1.98E+05	4.96E-02
1.50E-06	6.03E+02	3.72E+02	2.23E+05	5.57E-02
1.75E-06	6.03E+02	4.81E+02	2.88E+05	7.20E-02
2.00E-06	6.04E+02	5.33E+02	3.20E+05	7.99E-02
2.25E-06	6.03E+02	6.13E+02	3.68E+05	9.20E-02
2.50E-06	6.23E+02	6.72E+02	4.17E+05	1.04E-01
2.75E-06	6.23E+02	7.74E+02	4.80E+05	1.20E-01
3.00E-06	6.23E+02	8.14E+02	5.05E+05	1.26E-01
3.25E-06	6.28E+02	8.63E+02	5.40E+05	1.35E-01
3.75E-06	6.38E+02	9.75E+02	6.20E+05	1.55E-01
4.00E-06	6.43E+02	1.02E+03	6.51E+05	1.63E-01
4.25E-06	6.39E+02	1.06E+03	6.78E+05	1.69E-01
4.50E-06	6.33E+02	1.14E+03	7.17E+05	1.79E-01
4.75E-06	6.29E+02	1.18E+03	7.37E+05	1.84E-01
5.00E-06	6.43E+02	1.22E+03	7.81E+05	1.95E-01
5.25E-06	6.28E+02	1.27E+03	7.92E+05	1.98E-01
5.50E-06	6.34E+02	1.30E+03	8.20E+05	2.05E-01
5.75E-06	6.29E+02	1.34E+03	8.38E+05	2.10E-01
6.00E-06	6.43E+02	1.38E+03	8.82E+05	2.21E-01
6.50E-06	6.33E+02	1.42E+03	8.94E+05	2.24E-01
6.75E-06	6.23E+02	1.46E+03	9.06E+05	2.27E-01
7.00E-06	6.43E+02	1.46E+03	9.36E+05	2.34E-01
7.25E-06	6.28E+02	1.47E+03	9.18E+05	2.30E-01
7.50E-06	6.34E+02	1.52E+03	9.59E+05	2.40E-01
7.75E-06	6.43E+02	1.54E+03	9.87E+05	2.47E-01
8.00E-06	6.23E+02	1.54E+03	9.57E+05	2.39E-01
8.25E-06	6.23E+02	1.54E+03	9.56E+05	2.39E-01
8.50E-06	6.34E+02	1.56E+03	9.85E+05	2.46E-01
8.75E-06	6.38E+02	1.58E+03	1.00E+06	2.51E-01
9.00E-06	6.43E+02	1.62E+03	1.04E+06	2.59E-01
9.25E-06	6.28E+02	1.59E+03	9.94E+05	2.49E-01
9.50E-06	6.23E+02	1.62E+03	1.01E+06	2.51E-01
9.75E-06	6.43E+02	1.62E+03	1.04E+06	2.60E-01

Time(S)	Volt(V)	Current(A)	Power(W)	Energy(J)
1.00E-05	6.23E+02	1.58E+03	9.82E+05	2.46E-01
1.03E-05	6.39E+02	1.62E+03	1.03E+06	2.58E-01
1.05E-05	6.23E+02	1.62E+03	1.01E+06	2.52E-01
1.08E-05	6.23E+02	1.61E+03	9.99E+05	2.50E-01
1.10E-05	6.23E+02	1.58E+03	9.81E+05	2.45E-01
1.13E-05	6.23E+02	1.61E+03	1.00E+06	2.50E-01
1.15E-05	6.23E+02	1.58E+03	9.81E+05	2.45E-01
1.20E-05	6.23E+02	1.58E+03	9.81E+05	2.45E-01
1.23E-05	6.19E+02	1.57E+03	9.69E+05	2.42E-01
1.25E-05	6.23E+02	1.54E+03	9.56E+05	2.39E-01
1.28E-05	6.09E+02	1.54E+03	9.34E+05	2.33E-01
1.30E-05	6.22E+02	1.54E+03	9.54E+05	2.39E-01
1.33E-05	6.03E+02	1.50E+03	9.01E+05	2.25E-01
1.35E-05	6.03E+02	1.48E+03	8.90E+05	2.22E-01
1.38E-05	6.03E+02	1.46E+03	8.77E+05	2.19E-01
1.40E-05	6.03E+02	1.46E+03	8.77E+05	2.19E-01
1.43E-05	6.03E+02	1.42E+03	8.53E+05	2.13E-01
1.45E-05	6.03E+02	1.42E+03	8.53E+05	2.13E-01
1.48E-05	5.83E+02	1.42E+03	8.24E+05	2.06E-01
1.50E-05	5.83E+02	1.38E+03	8.00E+05	2.00E-01
1.53E-05	5.83E+02	1.35E+03	7.82E+05	1.96E-01
1.55E-05	5.83E+02	1.32E+03	7.66E+05	1.92E-01
1.58E-05	5.89E+02	1.33E+03	7.78E+05	1.95E-01
1.60E-05	5.83E+02	1.30E+03	7.54E+05	1.88E-01
1.63E-05	5.83E+02	1.26E+03	7.30E+05	1.83E-01
1.65E-05	5.83E+02	1.22E+03	7.07E+05	1.77E-01
1.68E-05	5.83E+02	1.23E+03	7.14E+05	1.78E-01
1.70E-05	5.82E+02	1.21E+03	7.06E+05	1.76E-01
1.73E-05	5.67E+02	1.14E+03	6.48E+05	1.62E-01
1.75E-05	5.63E+02	1.14E+03	6.38E+05	1.59E-01
1.78E-05	5.68E+02	1.10E+03	6.21E+05	1.55E-01
1.80E-05	5.63E+02	1.10E+03	6.14E+05	1.54E-01
1.83E-05	5.63E+02	1.06E+03	5.92E+05	1.48E-01
1.85E-05	5.63E+02	1.03E+03	5.80E+05	1.45E-01
1.88E-05	5.63E+02	9.86E+02	5.53E+05	1.38E-01
1.90E-05	5.63E+02	9.75E+02	5.47E+05	1.37E-01
1.93E-05	5.63E+02	9.75E+02	5.47E+05	1.37E-01
1.95E-05	5.52E+02	8.94E+02	4.92E+05	1.23E-01
1.98E-05	5.43E+02	8.83E+02	4.77E+05	1.19E-01
2.00E-05	5.43E+02	8.54E+02	4.62E+05	1.15E-01
Total				1.46E+01

Time(S)	Volt(V)	Current(A)	Power(W)	Energy(J)
0.00E+00	1.78E+02	-7.29E+00	-1.95E+03	-4.88E-04
2.50E-07	9.11E+02	1.51E+00	1.28E+03	3.20E-04
5.00E-07	1.00E+03	3.29E+01	3.22E+04	8.06E-03
7.50E-07	9.88E+02	7.31E+01	7.16E+04	1.79E-02
1.25E-06	9.02E+02	2.34E+02	2.10E+05	5.25E-02
1.50E-06	9.02E+02	2.93E+02	2.63E+05	6.59E-02
1.75E-06	9.02E+02	3.95E+02	3.55E+05	8.89E-02
2.00E-06	9.02E+02	4.75E+02	4.28E+05	1.07E-01
2.25E-06	9.02E+02	5.56E+02	5.00E+05	1.25E-01
2.50E-06	8.92E+02	6.36E+02	5.66E+05	1.42E-01
2.75E-06	9.02E+02	7.16E+02	6.46E+05	1.61E-01
3.00E-06	8.83E+02	7.95E+02	7.02E+05	1.75E-01
3.25E-06	8.82E+02	8.37E+02	7.37E+05	1.84E-01
3.50E-06	8.93E+02	9.17E+02	8.18E+05	2.05E-01
3.75E-06	8.68E+02	9.69E+02	8.40E+05	2.10E-01
4.00E-06	8.82E+02	1.04E+03	9.13E+05	2.28E-01
4.25E-06	8.67E+02	1.08E+03	9.33E+05	2.33E-01
4.50E-06	8.62E+02	1.12E+03	9.63E+05	2.41E-01
4.75E-06	8.62E+02	1.19E+03	1.02E+06	2.56E-01
5.00E-06	8.62E+02	1.20E+03	1.03E+06	2.58E-01
5.25E-06	8.62E+02	1.28E+03	1.10E+06	2.75E-01
5.50E-06	8.33E+02	1.30E+03	1.08E+06	2.70E-01
5.75E-06	8.48E+02	1.32E+03	1.12E+06	2.79E-01
6.00E-06	8.41E+02	1.40E+03	1.18E+06	2.94E-01
6.25E-06	8.38E+02	1.43E+03	1.20E+06	2.99E-01
6.50E-06	8.22E+02	1.44E+03	1.18E+06	2.96E-01
6.75E-06	8.08E+02	1.44E+03	1.16E+06	2.90E-01
7.00E-06	8.02E+02	1.48E+03	1.19E+06	2.97E-01
7.25E-06	8.22E+02	1.52E+03	1.25E+06	3.12E-01
7.50E-06	8.02E+02	1.50E+03	1.20E+06	3.01E-01
8.00E-06	7.82E+02	1.56E+03	1.22E+06	3.05E-01
8.25E-06	7.82E+02	1.56E+03	1.22E+06	3.05E-01
8.50E-06	7.72E+02	1.60E+03	1.23E+06	3.09E-01
8.75E-06	7.62E+02	1.60E+03	1.22E+06	3.04E-01
9.00E-06	7.62E+02	1.60E+03	1.22E+06	3.04E-01
9.50E-06	7.52E+02	1.62E+03	1.22E+06	3.05E-01
9.75E-06	7.42E+02	1.64E+03	1.22E+06	3.04E-01
1.00E-05	7.42E+02	1.60E+03	1.19E+06	2.97E-01

Time(S)	Volt(V)	Current(A)	Power(W)	Energy(J)
1.03E-05	7.21E+02	1.64E+03	1.18E+06	2.96E-01
1.05E-05	7.21E+02	1.62E+03	1.17E+06	2.92E-01
1.08E-05	7.21E+02	1.64E+03	1.18E+06	2.96E-01
1.13E-05	7.01E+02	1.60E+03	1.12E+06	2.80E-01
1.15E-05	6.92E+02	1.62E+03	1.12E+06	2.80E-01
1.18E-05	6.96E+02	1.57E+03	1.09E+06	2.73E-01
1.20E-05	7.01E+02	1.60E+03	1.12E+06	2.80E-01
1.23E-05	6.81E+02	1.60E+03	1.09E+06	2.72E-01
1.25E-05	6.72E+02	1.54E+03	1.03E+06	2.58E-01
1.28E-05	6.61E+02	1.54E+03	1.02E+06	2.55E-01
1.30E-05	6.61E+02	1.56E+03	1.03E+06	2.57E-01
1.33E-05	6.61E+02	1.56E+03	1.03E+06	2.58E-01
1.35E-05	6.41E+02	1.52E+03	9.74E+05	2.43E-01
1.38E-05	6.41E+02	1.52E+03	9.74E+05	2.43E-01
1.40E-05	6.41E+02	1.48E+03	9.47E+05	2.37E-01
1.45E-05	6.32E+02	1.44E+03	9.08E+05	2.27E-01
1.48E-05	6.07E+02	1.44E+03	8.72E+05	2.18E-01
1.50E-05	6.21E+02	1.40E+03	8.68E+05	2.17E-01
1.53E-05	6.05E+02	1.39E+03	8.40E+05	2.10E-01
1.55E-05	5.91E+02	1.36E+03	8.03E+05	2.01E-01
1.58E-05	5.86E+02	1.35E+03	7.89E+05	1.97E-01
1.60E-05	5.81E+02	1.32E+03	7.65E+05	1.91E-01
1.63E-05	5.65E+02	1.31E+03	7.39E+05	1.85E-01
1.65E-05	5.81E+02	1.28E+03	7.42E+05	1.86E-01
1.68E-05	5.81E+02	1.24E+03	7.19E+05	1.80E-01
1.70E-05	5.80E+02	1.20E+03	6.95E+05	1.74E-01
1.73E-05	5.65E+02	1.19E+03	6.71E+05	1.68E-01
1.75E-05	5.50E+02	1.18E+03	6.47E+05	1.62E-01
1.78E-05	5.46E+02	1.13E+03	6.16E+05	1.54E-01
1.80E-05	5.61E+02	1.12E+03	6.26E+05	1.56E-01
1.83E-05	5.56E+02	1.11E+03	6.16E+05	1.54E-01
1.85E-05	5.51E+02	1.06E+03	5.82E+05	1.45E-01
1.88E-05	5.41E+02	1.04E+03	5.61E+05	1.40E-01
1.90E-05	5.41E+02	1.04E+03	5.61E+05	1.40E-01
1.93E-05	5.25E+02	9.98E+02	5.23E+05	1.31E-01
1.95E-05	5.20E+02	9.58E+02	4.97E+05	1.24E-01
1.98E-05	5.20E+02	9.17E+02	4.77E+05	1.19E-01
2.00E-05	5.20E+02	8.77E+02	4.56E+05	1.14E-01
Total				1.72E+01

6 kV

Time(S)	Volt(V)	Current(A)	Power(W)	Energy(J)
0.00E+00	1.34E+02	-3.44E+01	-5.68E+03	-1.42E-03
2.50E-07	5.21E+02	4.47E+01	2.17E+04	5.42E-03
5.00E-07	5.97E+02	1.25E+02	7.32E+04	1.83E-02
7.50E-07	6.08E+02	2.86E+02	1.72E+05	4.31E-02
1.00E-06	6.37E+02	3.66E+02	2.31E+05	5.78E-02
1.25E-06	6.53E+02	4.87E+02	3.16E+05	7.91E-02
1.50E-06	6.47E+02	6.26E+02	4.03E+05	1.01E-01
1.75E-06	6.57E+02	7.57E+02	4.96E+05	1.24E-01
2.00E-06	6.57E+02	8.88E+02	5.81E+05	1.45E-01
2.25E-06	6.57E+02	9.69E+02	6.35E+05	1.59E-01
2.50E-06	6.57E+02	1.09E+03	7.14E+05	1.78E-01
2.75E-06	6.77E+02	1.20E+03	8.10E+05	2.02E-01
3.00E-06	6.77E+02	1.33E+03	8.99E+05	2.25E-01
3.25E-06	6.77E+02	1.41E+03	9.54E+05	2.39E-01
3.50E-06	6.67E+02	1.47E+03	9.79E+05	2.45E-01
3.75E-06	6.77E+02	1.57E+03	1.06E+06	2.66E-01
4.00E-06	6.77E+02	1.65E+03	1.12E+06	2.79E-01
4.25E-06	6.82E+02	1.73E+03	1.18E+06	2.95E-01
4.50E-06	6.77E+02	1.79E+03	1.21E+06	3.03E-01
4.75E-06	6.92E+02	1.89E+03	1.31E+06	3.27E-01
5.00E-06	6.97E+02	1.93E+03	1.35E+06	3.36E-01
5.25E-06	6.82E+02	1.98E+03	1.35E+06	3.37E-01
5.50E-06	6.77E+02	2.08E+03	1.40E+06	3.51E-01
5.75E-06	6.92E+02	2.14E+03	1.48E+06	3.69E-01
6.00E-06	6.97E+02	2.17E+03	1.51E+06	3.78E-01
6.25E-06	6.77E+02	2.22E+03	1.50E+06	3.75E-01
6.50E-06	6.88E+02	2.27E+03	1.56E+06	3.91E-01
6.75E-06	6.83E+02	2.30E+03	1.57E+06	3.91E-01
7.00E-06	6.78E+02	2.30E+03	1.56E+06	3.89E-01
7.25E-06	6.93E+02	2.38E+03	1.64E+06	4.11E-01
7.50E-06	6.97E+02	2.40E+03	1.67E+06	4.17E-01
7.75E-06	6.77E+02	2.46E+03	1.66E+06	4.16E-01
8.00E-06	6.77E+02	2.42E+03	1.64E+06	4.09E-01
8.25E-06	6.77E+02	2.46E+03	1.66E+06	4.16E-01
8.50E-06	6.77E+02	2.50E+03	1.69E+06	4.22E-01
8.75E-06	6.83E+02	2.50E+03	1.70E+06	4.26E-01
9.00E-06	6.77E+02	2.50E+03	1.69E+06	4.22E-01
9.25E-06	6.77E+02	2.53E+03	1.71E+06	4.27E-01
9.50E-06	6.77E+02	2.54E+03	1.72E+06	4.29E-01

Time(S)	Volt(V)	Current(A)	Power(W)	Energy(J)
9.75E-06	6.77E+02	2.57E+03	1.74E+06	4.34E-01
1.00E-05	6.77E+02	2.54E+03	1.72E+06	4.29E-01
1.03E-05	6.62E+02	2.54E+03	1.68E+06	4.19E-01
1.05E-05	6.77E+02	2.54E+03	1.72E+06	4.29E-01
1.08E-05	6.72E+02	2.54E+03	1.70E+06	4.25E-01
1.10E-05	6.77E+02	2.54E+03	1.71E+06	4.29E-01
1.13E-05	6.73E+02	2.51E+03	1.68E+06	4.21E-01
1.15E-05	6.57E+02	2.54E+03	1.67E+06	4.16E-01
1.18E-05	6.72E+02	2.50E+03	1.67E+06	4.19E-01
1.20E-05	6.57E+02	2.46E+03	1.61E+06	4.03E-01
1.23E-05	6.53E+02	2.46E+03	1.60E+06	4.00E-01
1.25E-05	6.47E+02	2.46E+03	1.59E+06	3.97E-01
1.28E-05	6.43E+02	2.43E+03	1.56E+06	3.90E-01
1.30E-05	6.57E+02	2.42E+03	1.58E+06	3.96E-01
1.33E-05	6.53E+02	2.38E+03	1.55E+06	3.87E-01
1.35E-05	6.47E+02	2.34E+03	1.51E+06	3.77E-01
1.38E-05	6.43E+02	2.34E+03	1.50E+06	3.75E-01
1.40E-05	6.57E+02	2.30E+03	1.51E+06	3.76E-01
1.43E-05	6.57E+02	2.26E+03	1.49E+06	3.72E-01
1.45E-05	6.37E+02	2.22E+03	1.41E+06	3.52E-01
1.48E-05	6.37E+02	2.22E+03	1.41E+06	3.52E-01
1.50E-05	6.37E+02	2.21E+03	1.41E+06	3.52E-01
1.53E-05	6.37E+02	2.14E+03	1.36E+06	3.41E-01
1.55E-05	6.28E+02	2.12E+03	1.33E+06	3.32E-01
1.58E-05	6.23E+02	2.09E+03	1.30E+06	3.26E-01
1.60E-05	6.17E+02	2.05E+03	1.27E+06	3.16E-01
1.63E-05	6.17E+02	2.01E+03	1.24E+06	3.10E-01
1.68E-05	6.11E+02	1.93E+03	1.18E+06	2.95E-01
1.73E-05	6.17E+02	1.89E+03	1.17E+06	2.92E-01
1.75E-05	6.06E+02	1.85E+03	1.12E+06	2.80E-01
1.78E-05	6.03E+02	1.84E+03	1.11E+06	2.77E-01
1.80E-05	6.17E+02	1.77E+03	1.09E+06	2.73E-01
1.83E-05	6.01E+02	1.73E+03	1.04E+06	2.60E-01
1.85E-05	5.97E+02	1.73E+03	1.03E+06	2.58E-01
1.88E-05	5.97E+02	1.66E+03	9.91E+05	2.48E-01
1.90E-05	5.98E+02	1.65E+03	9.85E+05	2.46E-01
1.93E-05	5.97E+02	1.61E+03	9.61E+05	2.40E-01
1.95E-05	6.08E+02	1.57E+03	9.53E+05	2.38E-01
1.98E-05	5.97E+02	1.53E+03	9.13E+05	2.28E-01
2.00E-05	5.97E+02	1.53E+03	9.13E+05	2.28E-01
Total				2.52E+01

Time(S)	Volt(V)	Current(A)	Power(W)	Energy(J)
0.00E+00	1.18E+02	-7.29E+00	-1.95E+03	-4.88E-04
2.50E-07	9.98E+02	2.41E+01	2.27E+04	5.68E-03
5.00E-07	1.00E+03	5.18E+01	5.05E+04	1.26E-02
7.50E-07	1.00E+03	1.13E+02	1.13E+05	2.83E-02
1.00E-06	1.00E+03	2.74E+02	2.73E+05	6.84E-02
1.25E-06	9.87E+02	3.95E+02	3.88E+05	9.71E-02
1.50E-06	9.93E+02	5.34E+02	5.29E+05	1.32E-01
1.75E-06	1.00E+03	6.65E+02	6.65E+05	1.66E-01
2.00E-06	1.00E+03	7.97E+02	7.97E+05	1.99E-01
2.25E-06	1.02E+03	9.26E+02	9.46E+05	2.37E-01
2.50E-06	1.02E+03	1.02E+03	1.04E+06	2.60E-01
2.75E-06	1.00E+03	1.16E+03	1.16E+06	2.90E-01
3.00E-06	1.00E+03	1.24E+03	1.24E+06	3.10E-01
3.25E-06	1.02E+03	1.32E+03	1.34E+06	3.36E-01
3.50E-06	1.00E+03	1.44E+03	1.44E+06	3.60E-01
3.75E-06	1.01E+03	1.52E+03	1.53E+06	3.83E-01
4.00E-06	1.00E+03	1.60E+03	1.60E+06	4.01E-01
4.25E-06	1.00E+03	1.72E+03	1.72E+06	4.31E-01
4.50E-06	1.00E+03	1.78E+03	1.78E+06	4.46E-01
4.75E-06	9.83E+02	1.84E+03	1.81E+06	4.52E-01
5.00E-06	9.83E+02	1.92E+03	1.89E+06	4.72E-01
5.25E-06	9.83E+02	1.97E+03	1.94E+06	4.84E-01
5.50E-06	9.72E+02	2.06E+03	2.00E+06	5.01E-01
5.75E-06	9.63E+02	2.08E+03	2.00E+06	5.01E-01
6.00E-06	9.63E+02	2.16E+03	2.08E+06	5.20E-01
6.25E-06	9.63E+02	2.24E+03	2.15E+06	5.37E-01
6.50E-06	9.52E+02	2.27E+03	2.15E+06	5.39E-01
6.75E-06	9.43E+02	2.30E+03	2.16E+06	5.40E-01
7.00E-06	9.43E+02	2.33E+03	2.19E+06	5.48E-01
7.25E-06	9.22E+02	2.36E+03	2.18E+06	5.45E-01
7.50E-06	9.22E+02	2.38E+03	2.20E+06	5.49E-01
7.75E-06	9.22E+02	2.44E+03	2.25E+06	5.63E-01
8.00E-06	9.22E+02	2.44E+03	2.25E+06	5.63E-01
8.25E-06	9.02E+02	2.52E+03	2.27E+06	5.67E-01
8.50E-06	8.92E+02	2.53E+03	2.25E+06	5.63E-01
8.75E-06	8.82E+02	2.53E+03	2.23E+06	5.57E-01
9.00E-06	8.82E+02	2.53E+03	2.23E+06	5.57E-01
9.25E-06	8.46E+02	2.53E+03	2.14E+06	5.34E-01
9.50E-06	8.51E+02	2.57E+03	2.18E+06	5.46E-01
9.75E-06	8.57E+02	2.57E+03	2.19E+06	5.49E-01
1.00E-05	8.41E+02	2.56E+03	2.16E+06	5.39E-01

Time(S)	Volt(V)	Current(A)	Power(W)	Energy(J)
1.03E-05	8.22E+02	2.60E+03	2.13E+06	5.33E-01
1.05E-05	8.02E+02	2.57E+03	2.05E+06	5.14E-01
1.08E-05	8.02E+02	2.57E+03	2.05E+06	5.14E-01
1.10E-05	8.02E+02	2.57E+03	2.05E+06	5.14E-01
1.13E-05	7.86E+02	2.57E+03	2.02E+06	5.04E-01
1.15E-05	7.82E+02	2.53E+03	1.97E+06	4.93E-01
1.18E-05	7.67E+02	2.53E+03	1.94E+06	4.84E-01
1.20E-05	7.62E+02	2.49E+03	1.89E+06	4.73E-01
1.23E-05	7.62E+02	2.48E+03	1.88E+06	4.71E-01
1.25E-05	7.31E+02	2.49E+03	1.81E+06	4.54E-01
1.28E-05	7.42E+02	2.49E+03	1.84E+06	4.60E-01
1.30E-05	7.41E+02	2.44E+03	1.81E+06	4.52E-01
1.33E-05	7.06E+02	2.40E+03	1.70E+06	4.24E-01
1.35E-05	7.01E+02	2.40E+03	1.69E+06	4.21E-01
1.38E-05	7.01E+02	2.38E+03	1.66E+06	4.16E-01
1.40E-05	7.01E+02	2.32E+03	1.63E+06	4.07E-01
1.43E-05	6.86E+02	2.32E+03	1.59E+06	3.98E-01
1.45E-05	7.01E+02	2.28E+03	1.60E+06	4.00E-01
1.48E-05	6.67E+02	2.26E+03	1.50E+06	3.76E-01
1.50E-05	6.61E+02	2.24E+03	1.48E+06	3.71E-01
1.53E-05	6.61E+02	2.20E+03	1.46E+06	3.64E-01
1.55E-05	6.50E+02	2.16E+03	1.40E+06	3.51E-01
1.58E-05	6.55E+02	2.12E+03	1.39E+06	3.48E-01
1.60E-05	6.41E+02	2.12E+03	1.36E+06	3.40E-01
1.63E-05	6.61E+02	2.04E+03	1.35E+06	3.37E-01
1.65E-05	6.30E+02	2.04E+03	1.29E+06	3.22E-01
1.68E-05	6.35E+02	2.00E+03	1.27E+06	3.18E-01
1.70E-05	6.21E+02	1.96E+03	1.22E+06	3.04E-01
1.73E-05	6.21E+02	1.92E+03	1.19E+06	2.98E-01
1.75E-05	6.32E+02	1.88E+03	1.19E+06	2.97E-01
1.78E-05	6.15E+02	1.87E+03	1.15E+06	2.87E-01
1.80E-05	6.01E+02	1.84E+03	1.11E+06	2.77E-01
1.83E-05	6.17E+02	1.76E+03	1.08E+06	2.71E-01
1.85E-05	6.01E+02	1.76E+03	1.06E+06	2.64E-01
1.88E-05	6.01E+02	1.72E+03	1.03E+06	2.58E-01
1.90E-05	6.01E+02	1.64E+03	9.85E+05	2.46E-01
1.93E-05	5.96E+02	1.64E+03	9.77E+05	2.44E-01
1.95E-05	5.91E+02	1.60E+03	9.45E+05	2.36E-01
1.98E-05	5.81E+02	1.60E+03	9.28E+05	2.32E-01
2.00E-05	5.81E+02	1.56E+03	9.04E+05	2.26E-01
Total				3.08E+01

4 kV

Time(S)	Volt(V)	Current(A)	Power(W)	Energy(J)
0.00E+00	2.81E+02	7.54E-01	0.00E+00	0.00E+00
2.50E-07	5.53E+02	4.10E+01	2.29E+04	5.74E-03
5.00E-07	5.63E+02	4.10E+01	2.25E+04	5.62E-03
7.50E-07	6.03E+02	8.12E+01	4.69E+04	1.17E-02
1.00E-06	6.03E+02	1.62E+02	9.57E+04	2.39E-02
1.25E-06	6.33E+02	2.22E+02	1.40E+05	3.49E-02
1.50E-06	6.43E+02	3.22E+02	2.05E+05	5.13E-02
1.75E-06	6.43E+02	4.03E+02	2.58E+05	6.45E-02
2.00E-06	6.43E+02	4.83E+02	3.09E+05	7.71E-02
2.25E-06	6.73E+02	4.83E+02	3.23E+05	8.08E-02
2.50E-06	6.43E+02	5.23E+02	3.35E+05	8.37E-02
2.75E-06	6.43E+02	7.04E+02	4.52E+05	1.13E-01
3.00E-06	6.43E+02	7.24E+02	4.65E+05	1.16E-01
3.25E-06	6.43E+02	7.44E+02	4.78E+05	1.19E-01
3.50E-06	6.43E+02	8.85E+02	5.68E+05	1.42E-01
3.75E-06	6.73E+02	8.85E+02	5.95E+05	1.49E-01
4.00E-06	6.03E+02	9.66E+02	5.80E+05	1.45E-01
4.25E-06	6.43E+02	1.05E+03	6.72E+05	1.68E-01
4.50E-06	6.43E+02	1.09E+03	6.97E+05	1.74E-01
4.75E-06	6.43E+02	1.05E+03	6.72E+05	1.68E-01
5.00E-06	6.43E+02	1.13E+03	7.23E+05	1.81E-01
5.25E-06	6.53E+02	1.21E+03	7.88E+05	1.97E-01
5.50E-06	6.43E+02	1.29E+03	8.26E+05	2.07E-01
5.75E-06	6.43E+02	1.23E+03	7.88E+05	1.97E-01
6.00E-06	6.43E+02	1.29E+03	8.26E+05	2.07E-01
6.25E-06	6.83E+02	1.35E+03	9.20E+05	2.30E-01
6.50E-06	6.43E+02	1.29E+03	8.26E+05	2.07E-01
6.75E-06	6.73E+02	1.37E+03	9.20E+05	2.30E-01
7.00E-06	6.83E+02	1.37E+03	9.34E+05	2.33E-01
7.25E-06	6.43E+02	1.45E+03	9.30E+05	2.32E-01
7.50E-06	6.43E+02	1.45E+03	9.30E+05	2.32E-01
7.75E-06	6.43E+02	1.45E+03	9.30E+05	2.32E-01
8.00E-06	6.43E+02	1.45E+03	9.30E+05	2.32E-01
8.25E-06	6.73E+02	1.47E+03	9.87E+05	2.47E-01
8.50E-06	6.43E+02	1.53E+03	9.82E+05	2.46E-01
8.75E-06	6.03E+02	1.47E+03	8.83E+05	2.21E-01

Time(S)	Volt(V)	Current(A)	Power(W)	Energy(J)
9.00E-06	6.43E+02	1.53E+03	9.82E+05	2.46E-01
9.25E-06	6.43E+02	1.53E+03	9.82E+05	2.46E-01
9.50E-06	6.23E+02	1.61E+03	1.00E+06	2.50E-01
9.75E-06	6.53E+02	1.59E+03	1.04E+06	2.59E-01
1.00E-05	6.43E+02	1.61E+03	1.03E+06	2.58E-01
1.03E-05	6.33E+02	1.55E+03	9.79E+05	2.45E-01
1.05E-05	6.23E+02	1.61E+03	1.00E+06	2.50E-01
1.08E-05	6.13E+02	1.55E+03	9.48E+05	2.37E-01
1.10E-05	6.43E+02	1.61E+03	1.03E+06	2.58E-01
1.13E-05	6.03E+02	1.53E+03	9.20E+05	2.30E-01
1.15E-05	6.03E+02	1.57E+03	9.44E+05	2.36E-01
1.18E-05	6.13E+02	1.61E+03	9.85E+05	2.46E-01
1.20E-05	6.03E+02	1.53E+03	9.20E+05	2.30E-01
1.23E-05	6.03E+02	1.55E+03	9.32E+05	2.33E-01
1.25E-05	6.03E+02	1.53E+03	9.20E+05	2.30E-01
1.28E-05	6.03E+02	1.53E+03	9.20E+05	2.30E-01
1.30E-05	6.43E+02	1.45E+03	9.30E+05	2.32E-01
1.33E-05	6.03E+02	1.47E+03	8.83E+05	2.21E-01
1.35E-05	6.03E+02	1.45E+03	8.71E+05	2.18E-01
1.38E-05	6.03E+02	1.45E+03	8.71E+05	2.18E-01
1.40E-05	6.03E+02	1.45E+03	8.71E+05	2.18E-01
1.43E-05	6.13E+02	1.43E+03	8.73E+05	2.18E-01
1.45E-05	6.03E+02	1.45E+03	8.71E+05	2.18E-01
1.48E-05	6.03E+02	1.43E+03	8.59E+05	2.15E-01
1.50E-05	5.63E+02	1.45E+03	8.14E+05	2.04E-01
1.53E-05	6.03E+02	1.37E+03	8.24E+05	2.06E-01
1.55E-05	5.83E+02	1.29E+03	7.49E+05	1.87E-01
1.58E-05	6.03E+02	1.31E+03	7.88E+05	1.97E-01
1.60E-05	6.03E+02	1.29E+03	7.75E+05	1.94E-01
1.63E-05	5.63E+02	1.29E+03	7.23E+05	1.81E-01
1.65E-05	5.83E+02	1.21E+03	7.02E+05	1.76E-01
1.68E-05	5.53E+02	1.27E+03	6.99E+05	1.75E-01
1.70E-05	5.63E+02	1.21E+03	6.78E+05	1.69E-01
1.73E-05	5.63E+02	1.19E+03	6.67E+05	1.67E-01
1.75E-05	5.63E+02	1.13E+03	6.33E+05	1.58E-01
1.78E-05	5.93E+02	1.13E+03	6.67E+05	1.67E-01
1.80E-05	5.63E+02	1.05E+03	5.88E+05	1.47E-01
1.83E-05	5.63E+02	1.05E+03	5.88E+05	1.47E-01
1.85E-05	5.63E+02	1.01E+03	5.65E+05	1.41E-01

Time(S)	Volt(V)	Current(A)	Power(W)	Energy(J)
1.88E-05	5.63E+02	9.86E+02	5.54E+05	1.39E-01
1.90E-05	5.63E+02	1.05E+03	5.88E+05	1.47E-01
1.93E-05	5.63E+02	9.66E+02	5.43E+05	1.36E-01
1.95E-05	5.63E+02	8.85E+02	4.96E+05	1.24E-01
1.98E-05	5.23E+02	8.85E+02	4.61E+05	1.15E-01
2.00E-05	5.63E+02	8.05E+02	4.51E+05	1.13E-01
Total				1.43E+01

Time(S)	Volt(V)	Current(A)	Power(W)	Energy(J)
0.00E+00	2.81E+02	-7.96E+01	-2.34E+04	-5.86E-03
2.50E-07	1.14E+03	-1.93E+01	-2.34E+04	-5.86E-03
5.00E-07	1.45E+03	7.54E-01	0.00E+00	0.00E+00
7.50E-07	1.53E+03	6.11E+01	9.08E+04	2.27E-02
1.00E-06	1.45E+03	1.62E+02	2.32E+05	5.81E-02
1.25E-06	1.24E+03	1.82E+02	2.22E+05	5.54E-02
1.50E-06	1.07E+03	3.63E+02	3.84E+05	9.59E-02
1.75E-06	1.01E+03	3.42E+02	3.42E+05	8.56E-02
2.00E-06	9.65E+02	4.03E+02	3.87E+05	9.67E-02
2.25E-06	9.55E+02	5.23E+02	5.00E+05	1.25E-01
2.50E-06	9.05E+02	6.04E+02	5.45E+05	1.36E-01
2.75E-06	9.25E+02	7.04E+02	6.49E+05	1.62E-01
3.00E-06	9.25E+02	7.24E+02	6.68E+05	1.67E-01
3.25E-06	9.25E+02	8.05E+02	7.42E+05	1.86E-01
3.50E-06	9.05E+02	8.05E+02	7.27E+05	1.82E-01
3.75E-06	8.84E+02	8.65E+02	7.64E+05	1.91E-01
4.00E-06	8.84E+02	8.85E+02	7.81E+05	1.95E-01
4.25E-06	8.84E+02	9.66E+02	8.52E+05	2.13E-01
4.50E-06	8.84E+02	1.05E+03	9.24E+05	2.31E-01
4.75E-06	8.54E+02	1.05E+03	8.92E+05	2.23E-01
5.00E-06	8.84E+02	1.13E+03	9.94E+05	2.49E-01
5.25E-06	8.44E+02	1.19E+03	1.00E+06	2.50E-01
5.50E-06	8.44E+02	1.17E+03	9.83E+05	2.46E-01
5.75E-06	8.34E+02	1.21E+03	1.01E+06	2.51E-01
6.00E-06	8.44E+02	1.21E+03	1.02E+06	2.54E-01
6.25E-06	8.34E+02	1.35E+03	1.12E+06	2.81E-01
6.50E-06	8.24E+02	1.33E+03	1.09E+06	2.73E-01
6.75E-06	8.04E+02	1.37E+03	1.10E+06	2.74E-01

Time(S)	Volt(V)	Current(A)	Power(W)	Energy(J)
7.00E-06	8.04E+02	1.37E+03	1.10E+06	2.74E-01
7.25E-06	7.74E+02	1.37E+03	1.06E+06	2.64E-01
7.50E-06	7.64E+02	1.45E+03	1.10E+06	2.76E-01
7.75E-06	7.64E+02	1.47E+03	1.12E+06	2.80E-01
8.00E-06	7.64E+02	1.53E+03	1.17E+06	2.92E-01
8.25E-06	7.64E+02	1.47E+03	1.12E+06	2.80E-01
8.50E-06	7.64E+02	1.49E+03	1.13E+06	2.84E-01
8.75E-06	7.34E+02	1.59E+03	1.16E+06	2.91E-01
9.00E-06	7.24E+02	1.53E+03	1.10E+06	2.76E-01
9.25E-06	7.24E+02	1.59E+03	1.15E+06	2.87E-01
9.50E-06	7.24E+02	1.49E+03	1.08E+06	2.69E-01
9.75E-06	6.93E+02	1.53E+03	1.06E+06	2.65E-01
1.00E-05	7.24E+02	1.61E+03	1.16E+06	2.91E-01
1.03E-05	7.24E+02	1.53E+03	1.10E+06	2.76E-01
1.05E-05	7.04E+02	1.53E+03	1.07E+06	2.68E-01
1.08E-05	7.14E+02	1.53E+03	1.09E+06	2.72E-01
1.10E-05	6.83E+02	1.53E+03	1.04E+06	2.61E-01
1.13E-05	6.83E+02	1.59E+03	1.08E+06	2.71E-01
1.15E-05	6.63E+02	1.53E+03	1.01E+06	2.53E-01
1.18E-05	6.43E+02	1.53E+03	9.82E+05	2.46E-01
1.20E-05	6.83E+02	1.61E+03	1.10E+06	2.74E-01
1.23E-05	6.43E+02	1.51E+03	9.69E+05	2.42E-01
1.25E-05	6.23E+02	1.53E+03	9.51E+05	2.38E-01
1.28E-05	6.13E+02	1.47E+03	8.99E+05	2.25E-01
1.30E-05	6.43E+02	1.45E+03	9.30E+05	2.32E-01
1.33E-05	6.43E+02	1.45E+03	9.30E+05	2.32E-01
1.35E-05	6.03E+02	1.41E+03	8.48E+05	2.12E-01
1.38E-05	6.03E+02	1.51E+03	9.08E+05	2.27E-01
1.40E-05	6.03E+02	1.45E+03	8.71E+05	2.18E-01
1.43E-05	6.03E+02	1.37E+03	8.24E+05	2.06E-01
1.45E-05	5.83E+02	1.41E+03	8.19E+05	2.05E-01
1.48E-05	5.73E+02	1.43E+03	8.17E+05	2.04E-01
1.50E-05	6.03E+02	1.37E+03	8.24E+05	2.06E-01
1.53E-05	5.63E+02	1.29E+03	7.23E+05	1.81E-01
1.55E-05	5.63E+02	1.33E+03	7.45E+05	1.86E-01
1.58E-05	5.33E+02	1.31E+03	6.96E+05	1.74E-01
1.60E-05	5.63E+02	1.29E+03	7.23E+05	1.81E-01
1.63E-05	5.23E+02	1.23E+03	6.40E+05	1.60E-01
1.65E-05	5.23E+02	1.25E+03	6.50E+05	1.63E-01

Time(S)	Volt(V)	Current(A)	Power(W)	Energy(J)
1.68E-05	5.23E+02	1.23E+03	6.40E+05	1.60E-01
1.70E-05	5.23E+02	1.21E+03	6.29E+05	1.57E-01
1.73E-05	5.23E+02	1.15E+03	5.98E+05	1.50E-01
1.75E-05	5.23E+02	1.13E+03	5.88E+05	1.47E-01
1.78E-05	5.23E+02	1.09E+03	5.66E+05	1.41E-01
1.80E-05	4.82E+02	1.13E+03	5.43E+05	1.36E-01
1.83E-05	5.23E+02	1.05E+03	5.45E+05	1.36E-01
1.85E-05	4.82E+02	9.66E+02	4.65E+05	1.16E-01
1.88E-05	4.82E+02	9.66E+02	4.65E+05	1.16E-01
1.90E-05	4.82E+02	9.66E+02	4.65E+05	1.16E-01
1.93E-05	4.82E+02	9.45E+02	4.55E+05	1.14E-01
1.95E-05	4.82E+02	9.66E+02	4.65E+05	1.16E-01
1.98E-05	4.72E+02	8.85E+02	4.17E+05	1.04E-01
2.00E-05	4.82E+02	8.85E+02	4.26E+05	1.06E-01
Total				1.57E+01

6 kV

Time(S)	Volt(V)	Current(A)	Power(W)	Energy(J)
0.00E+00	2.81E+02	8.12E+01	2.15E+04	5.37E-03
2.50E-07	5.53E+02	8.12E+01	4.39E+04	1.10E-02
5.00E-07	6.03E+02	1.21E+02	7.13E+04	1.78E-02
7.50E-07	6.33E+02	1.82E+02	1.12E+05	2.81E-02
1.00E-06	6.83E+02	3.22E+02	2.19E+05	5.47E-02
1.25E-06	6.83E+02	4.03E+02	2.73E+05	6.84E-02
1.50E-06	6.83E+02	5.64E+02	3.83E+05	9.57E-02
1.75E-06	6.83E+02	6.64E+02	4.53E+05	1.13E-01
2.00E-06	6.83E+02	7.24E+02	4.94E+05	1.24E-01
2.25E-06	6.93E+02	8.85E+02	6.12E+05	1.53E-01
2.50E-06	6.83E+02	1.05E+03	7.13E+05	1.78E-01
2.75E-06	7.14E+02	1.13E+03	8.03E+05	2.01E-01
3.00E-06	6.83E+02	1.21E+03	8.24E+05	2.06E-01
3.25E-06	7.14E+02	1.29E+03	9.17E+05	2.29E-01
3.50E-06	7.04E+02	1.37E+03	9.59E+05	2.40E-01
3.75E-06	6.83E+02	1.45E+03	9.88E+05	2.47E-01
4.00E-06	6.83E+02	1.53E+03	1.04E+06	2.61E-01
4.25E-06	6.83E+02	1.59E+03	1.08E+06	2.71E-01
4.50E-06	7.04E+02	1.73E+03	1.21E+06	3.03E-01
4.75E-06	7.24E+02	1.85E+03	1.34E+06	3.34E-01
5.00E-06	7.24E+02	1.77E+03	1.28E+06	3.20E-01

Time(S)	Volt(V)	Current(A)	Power(W)	Energy(J)
5.25E-06	6.83E+02	1.85E+03	1.26E+06	3.16E-01
5.50E-06	7.24E+02	1.97E+03	1.42E+06	3.56E-01
5.75E-06	7.14E+02	2.01E+03	1.43E+06	3.58E-01
6.00E-06	6.83E+02	2.01E+03	1.37E+06	3.43E-01
6.25E-06	6.83E+02	2.09E+03	1.43E+06	3.57E-01
6.50E-06	7.24E+02	2.13E+03	1.54E+06	3.85E-01
6.75E-06	7.14E+02	2.17E+03	1.55E+06	3.87E-01
7.00E-06	6.83E+02	2.25E+03	1.54E+06	3.84E-01
7.25E-06	6.83E+02	2.25E+03	1.54E+06	3.84E-01
7.50E-06	7.04E+02	2.29E+03	1.61E+06	4.03E-01
7.75E-06	6.83E+02	2.27E+03	1.55E+06	3.88E-01
8.00E-06	6.83E+02	2.41E+03	1.65E+06	4.12E-01
8.25E-06	6.73E+02	2.33E+03	1.57E+06	3.92E-01
8.50E-06	6.63E+02	2.41E+03	1.60E+06	4.00E-01
8.75E-06	6.83E+02	2.41E+03	1.65E+06	4.12E-01
9.00E-06	6.43E+02	2.41E+03	1.55E+06	3.88E-01
9.25E-06	7.14E+02	2.41E+03	1.72E+06	4.30E-01
9.50E-06	6.43E+02	2.45E+03	1.58E+06	3.94E-01
9.75E-06	6.53E+02	2.49E+03	1.63E+06	4.07E-01
1.00E-05	6.43E+02	2.41E+03	1.55E+06	3.88E-01
1.03E-05	6.83E+02	2.41E+03	1.65E+06	4.12E-01
1.05E-05	6.43E+02	2.45E+03	1.58E+06	3.94E-01
1.08E-05	6.43E+02	2.47E+03	1.59E+06	3.97E-01
1.10E-05	6.83E+02	2.49E+03	1.70E+06	4.26E-01
1.13E-05	6.43E+02	2.43E+03	1.56E+06	3.91E-01
1.15E-05	6.43E+02	2.41E+03	1.55E+06	3.88E-01
1.18E-05	6.43E+02	2.41E+03	1.55E+06	3.88E-01
1.20E-05	6.43E+02	2.33E+03	1.50E+06	3.75E-01
1.23E-05	6.43E+02	2.41E+03	1.55E+06	3.88E-01
1.25E-05	6.43E+02	2.41E+03	1.55E+06	3.88E-01
1.28E-05	6.43E+02	2.35E+03	1.51E+06	3.78E-01
1.30E-05	6.43E+02	2.33E+03	1.50E+06	3.75E-01
1.33E-05	6.43E+02	2.33E+03	1.50E+06	3.75E-01
1.35E-05	6.23E+02	2.25E+03	1.40E+06	3.51E-01
1.38E-05	6.43E+02	2.31E+03	1.49E+06	3.71E-01
1.40E-05	6.03E+02	2.25E+03	1.36E+06	3.39E-01
1.43E-05	6.13E+02	2.25E+03	1.38E+06	3.45E-01
1.45E-05	6.23E+02	2.21E+03	1.38E+06	3.44E-01
1.48E-05	6.43E+02	2.17E+03	1.39E+06	3.49E-01

Time(S)	Volt(V)	Current(A)	Power(W)	Energy(J)
1.50E-05	6.03E+02	2.17E+03	1.31E+06	3.27E-01
1.53E-05	6.03E+02	2.11E+03	1.27E+06	3.18E-01
1.55E-05	6.03E+02	2.13E+03	1.28E+06	3.21E-01
1.58E-05	6.03E+02	2.07E+03	1.25E+06	3.12E-01
1.60E-05	6.03E+02	2.09E+03	1.26E+06	3.15E-01
1.63E-05	6.13E+02	1.99E+03	1.22E+06	3.05E-01
1.65E-05	6.03E+02	1.93E+03	1.16E+06	2.91E-01
1.68E-05	6.03E+02	1.99E+03	1.20E+06	3.00E-01
1.70E-05	6.03E+02	1.93E+03	1.16E+06	2.91E-01
1.73E-05	6.03E+02	1.79E+03	1.08E+06	2.70E-01
1.75E-05	6.03E+02	1.89E+03	1.14E+06	2.84E-01
1.78E-05	5.63E+02	1.85E+03	1.04E+06	2.60E-01
1.80E-05	5.63E+02	1.85E+03	1.04E+06	2.60E-01
1.83E-05	5.73E+02	1.77E+03	1.01E+06	2.53E-01
1.85E-05	5.83E+02	1.69E+03	9.83E+05	2.46E-01
1.88E-05	5.73E+02	1.61E+03	9.20E+05	2.30E-01
1.90E-05	5.63E+02	1.69E+03	9.49E+05	2.37E-01
1.93E-05	5.63E+02	1.61E+03	9.04E+05	2.26E-01
1.95E-05	5.63E+02	1.57E+03	8.82E+05	2.20E-01
1.98E-05	5.93E+02	1.53E+03	9.05E+05	2.26E-01
2.00E-05	6.03E+02	1.53E+03	9.20E+05	2.30E-01
Total				2.40E+01

Time(S)	Volt(V)	Current(A)	Power(W)	Energy(J)
0.00E+00	2.81E+02	7.54E-01	-1.12E-05	-2.79E-12
2.50E-07	1.53E+03	7.54E-01	0.00E+00	0.00E+00
5.00E-07	1.95E+03	7.54E-01	0.00E+00	0.00E+00
7.50E-07	1.89E+03	1.62E+02	3.03E+05	7.57E-02
1.00E-06	1.49E+03	1.62E+02	2.38E+05	5.96E-02
1.25E-06	1.28E+03	4.03E+02	5.12E+05	1.28E-01
1.50E-06	1.21E+03	4.43E+02	5.32E+05	1.33E-01
1.75E-06	1.18E+03	5.64E+02	6.60E+05	1.65E-01
2.00E-06	1.17E+03	7.24E+02	8.42E+05	2.10E-01
2.25E-06	1.17E+03	8.25E+02	9.59E+05	2.40E-01
2.50E-06	1.15E+03	9.25E+02	1.06E+06	2.64E-01
2.75E-06	1.16E+03	1.13E+03	1.30E+06	3.25E-01
3.00E-06	1.09E+03	1.13E+03	1.22E+06	3.05E-01
3.25E-06	1.13E+03	1.27E+03	1.42E+06	3.56E-01

Time(S)	Volt(V)	Current(A)	Power(W)	Energy(J)
3.50E-06	1.13E+03	1.33E+03	1.49E+06	3.73E-01
3.75E-06	1.10E+03	1.45E+03	1.58E+06	3.96E-01
4.00E-06	1.05E+03	1.53E+03	1.60E+06	3.99E-01
4.25E-06	1.08E+03	1.61E+03	1.73E+06	4.32E-01
4.50E-06	1.07E+03	1.69E+03	1.80E+06	4.49E-01
4.75E-06	1.05E+03	1.77E+03	1.85E+06	4.62E-01
5.00E-06	1.05E+03	1.85E+03	1.93E+06	4.83E-01
5.25E-06	1.01E+03	1.85E+03	1.86E+06	4.64E-01
5.50E-06	1.03E+03	1.93E+03	1.98E+06	4.94E-01
5.75E-06	1.01E+03	2.01E+03	2.02E+06	5.05E-01
6.00E-06	1.01E+03	2.01E+03	2.02E+06	5.05E-01
6.25E-06	9.65E+02	2.03E+03	1.96E+06	4.89E-01
6.50E-06	9.45E+02	2.09E+03	1.98E+06	4.94E-01
6.75E-06	9.65E+02	2.17E+03	2.09E+06	5.23E-01
7.00E-06	9.25E+02	2.25E+03	2.08E+06	5.20E-01
7.25E-06	9.25E+02	2.19E+03	2.02E+06	5.06E-01
7.50E-06	9.25E+02	2.33E+03	2.15E+06	5.39E-01
7.75E-06	9.25E+02	2.33E+03	2.15E+06	5.39E-01
8.00E-06	9.25E+02	2.33E+03	2.15E+06	5.39E-01
8.25E-06	8.84E+02	2.41E+03	2.13E+06	5.33E-01
8.50E-06	8.64E+02	2.37E+03	2.05E+06	5.12E-01
8.75E-06	8.54E+02	2.41E+03	2.06E+06	5.15E-01
9.00E-06	8.44E+02	2.41E+03	2.04E+06	5.09E-01
9.25E-06	8.54E+02	2.47E+03	2.11E+06	5.28E-01
9.50E-06	8.24E+02	2.49E+03	2.05E+06	5.13E-01
9.75E-06	8.04E+02	2.49E+03	2.00E+06	5.01E-01
1.00E-05	8.04E+02	2.49E+03	2.00E+06	5.01E-01
1.03E-05	8.04E+02	2.41E+03	1.94E+06	4.84E-01
1.05E-05	8.04E+02	2.45E+03	1.97E+06	4.93E-01
1.08E-05	8.04E+02	2.49E+03	2.00E+06	5.01E-01
1.10E-05	7.64E+02	2.49E+03	1.90E+06	4.76E-01
1.13E-05	7.64E+02	2.47E+03	1.89E+06	4.72E-01
1.15E-05	7.64E+02	2.49E+03	1.90E+06	4.76E-01
1.18E-05	7.34E+02	2.49E+03	1.83E+06	4.57E-01
1.20E-05	7.64E+02	2.41E+03	1.84E+06	4.60E-01
1.23E-05	7.24E+02	2.41E+03	1.74E+06	4.36E-01
1.25E-05	6.83E+02	2.37E+03	1.62E+06	4.05E-01
1.28E-05	6.93E+02	2.33E+03	1.62E+06	4.04E-01
1.30E-05	6.83E+02	2.33E+03	1.59E+06	3.98E-01
1.33E-05	6.83E+02	2.33E+03	1.59E+06	3.98E-01
1.35E-05	6.83E+02	2.33E+03	1.59E+06	3.98E-01

Time(S)	Volt(V)	Current(A)	Power(W)	Energy(J)
1.38E-05	6.53E+02	2.33E+03	1.52E+06	3.80E-01
1.40E-05	6.83E+02	2.17E+03	1.48E+06	3.71E-01
1.43E-05	6.53E+02	2.17E+03	1.42E+06	3.54E-01
1.45E-05	6.63E+02	2.17E+03	1.44E+06	3.60E-01
1.48E-05	6.43E+02	2.17E+03	1.39E+06	3.49E-01
1.50E-05	6.43E+02	2.09E+03	1.34E+06	3.36E-01
1.53E-05	6.43E+02	2.17E+03	1.39E+06	3.49E-01
1.55E-05	6.23E+02	2.09E+03	1.30E+06	3.25E-01
1.58E-05	6.13E+02	2.07E+03	1.27E+06	3.17E-01
1.60E-05	6.03E+02	2.01E+03	1.21E+06	3.03E-01
1.63E-05	5.93E+02	2.03E+03	1.20E+06	3.01E-01
1.65E-05	5.83E+02	2.01E+03	1.17E+06	2.93E-01
1.68E-05	6.03E+02	1.93E+03	1.16E+06	2.91E-01
1.70E-05	5.63E+02	1.85E+03	1.04E+06	2.60E-01
1.73E-05	5.63E+02	1.87E+03	1.05E+06	2.63E-01
1.75E-05	5.83E+02	1.77E+03	1.03E+06	2.58E-01
1.78E-05	5.63E+02	1.85E+03	1.04E+06	2.60E-01
1.80E-05	5.23E+02	1.77E+03	9.24E+05	2.31E-01
1.83E-05	5.63E+02	1.69E+03	9.49E+05	2.37E-01
1.85E-05	5.63E+02	1.73E+03	9.72E+05	2.43E-01
1.88E-05	5.63E+02	1.69E+03	9.49E+05	2.37E-01
1.90E-05	5.23E+02	1.61E+03	8.40E+05	2.10E-01
1.93E-05	5.63E+02	1.61E+03	9.04E+05	2.26E-01
1.95E-05	5.23E+02	1.53E+03	7.97E+05	1.99E-01
1.98E-05	5.53E+02	1.53E+03	8.44E+05	2.11E-01
2.00E-05	5.63E+02	1.53E+03	8.59E+05	2.15E-01
Total				2.91E+01