

ENE series

50 to 300V AC(Ta=25°C)



■ Features

- Excellent clamping characteristics
- High discharge current capability up to 6500Amps
- Remarkably symmetrical V-I characteristics
- UL: recognized (UL1:UL1414 file No.E66188,UL2:UL1449,file No.E123894
UL3:UL497B,file No.E185638), CSA recognized (C22.2 No.1 file No.LR98228)
VDE(Licence No. 119446)

■ Ratings and characteristics

Device type	Maximum ratings					Characteristics						
	Applied voltage *1		Transient			Nominal varistor *4 voltage	Max. Clamping *5		Typical capacitance	Standards		
	RMS 50Hz/60Hz	DC	Energy *2	Average power dissipation	Peak current*3 (8/20µs)		Vc [Volts]	Ip [Amps]				
	Vacm [Volts]	Vdcm [Volts]	Wtm [Joules]	Ptam [Watts]	I _{tm} [Amps]	Tolerance			f=1kHz [pF]	VDE UL3		
					Vnom [Volts]	Min. [Volts]	Max [Volts]					
ENE820D-05A	50	65	2.5	0.1	700	82	74	90	145	5	400	O
ENE820D-07A			5.0	0.25	1350				135	10	800	O O
ENE820D-10A			10.0	0.4	2750				135	25	1500	O O
ENE820D-14A			20.0	0.6	5500				135	50	3000	O O
ENE820D-20A			40.0	1.0	7000				135	100	6000	O O
ENE101D-05A	60	85	3.0	0.1	700	100	90	110	175	5	350	O
ENE101D-07A			6.0	0.25	1350				165	10	700	O O
ENE101D-10A			12.0	0.4	2750				165	25	1500	O O
ENE101D-14A			25.0	0.6	5500				165	50	3000	O O
ENE101D-20A			50.0	1.0	7000				165	100	6000	O O
ENE121D-05A	75	100	3.5	0.1	700	120	108	132	210	5	350	O
ENE121D-07A			7.0	0.25	1350				200	10	700	O O
ENE121D-10A			14.5	0.4	2750				200	25	1300	O O
ENE121D-14A			30.5	0.6	5500				200	50	2600	O O
ENE121D-20A			60.0	1.0	7000				200	100	5200	O O
ENE151D-05A	95	125	4.5	0.1	700	150	135	165	260	5	250	O
ENE151D-07A			9.0	0.25	1350				250	10	500	O O
ENE151D-10A			18.0	0.4	2750				250	25	1000	O O
ENE151D-14A			37.5	0.6	5500				250	50	2000	O O
ENE151D-20A			75.0	1.0	7000				250	100	4000	O O

Operating ambient temperature: -40°C to +85°C Storage temperature: -40°C to +125°C

*1 The waveform of the maximum DC applied voltage is flat. When a ripple voltage as from a rectifier source applied. make sure the peak voltage is within the Vdcm rating. The AC applied voltage (50/60Hz) is sine waveform. When waveform distortion is extensive, make sure that peak voltage is less than $\sqrt{2}$ times the Vacm rating.

*2 Energy Wtm
Transient energy rating are given in the Wtm column in Joules (Watt-second). The rating is the maximum allowable energy of a single 2ms square-waveform impulse current continuously applied. Energy ratings are based on a shift of Vnom of less than $\pm 10\%$ of the initial value.

*3 Transient peak current (I_{tm})
The peak current rating, I_{tm}, is based on 8/20µs test impulse waveform. This peak current is the maximum peak current at which the nominal varistor voltage shift dose not exceed $\pm 10\%$ when the test impulse is applied twice at a 5 minute interval.

*4 Nominal varistor voltage: V_{nom}
Indicates the varistor terminal voltage measured with 1mA DC applied(V_{1mA}). For 0.5A types,0.1mA DC applied(V_{0.1mA})

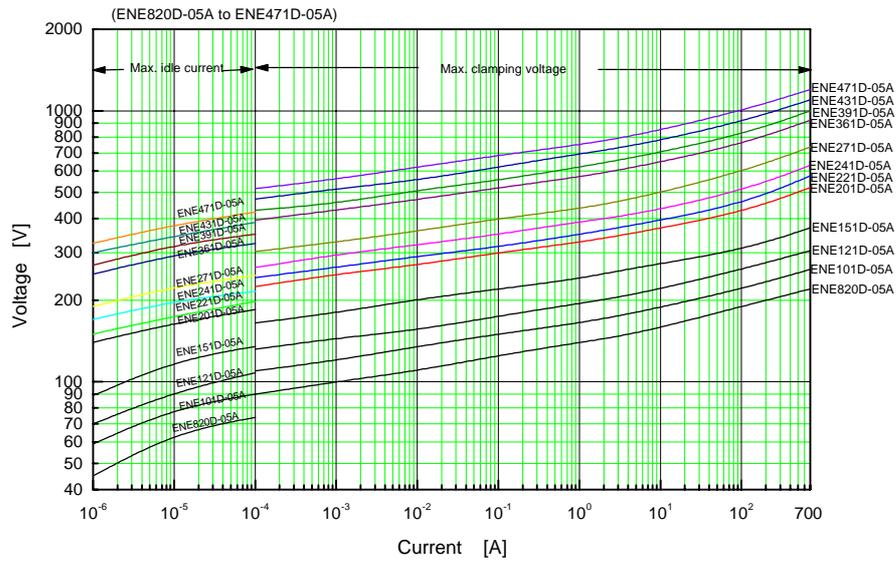
*5 Maximum clamping voltage: V_c
Indicates the peak terminal voltage measured with 8/20µs impulse current applied.

■ Ratings and characteristics

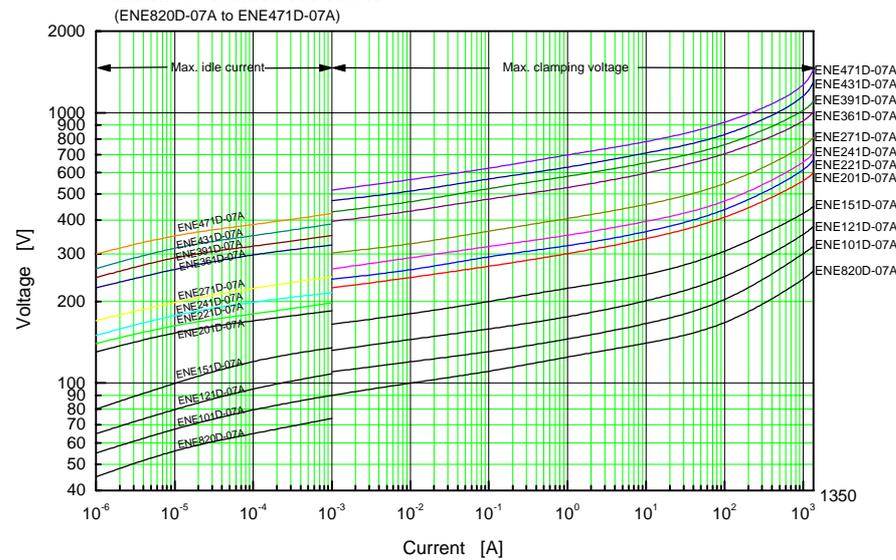
Device type	Maximum ratings					Characteristics						
	Applied voltage *1		Transient			Nominal varistor *4 voltage	Max. Clamping *5 voltage @test current (8/20µs)		Typical capacitance	Standards		
	RMS 50Hz/60Hz	DC	Energy *2	Average power dissipation	Peak current*3 (8/20µs)		Vc [Volts]	Ip [Amps]			f=1kHz [pF]	
	Vacm [Volts]	Vdcm [Volts]	Wtm [Joules]	Ptam [Watts]	Itrm [Amps]	Vnom [Volts]			Tolerance			
						Min. [Volts]	Max [Volts]				UL1 CSA UL2 VDE	
ENE201D-05A	130	170	6.0	0.1	700	200	185	225	355	5	200	O O
ENE201D-07A			12.5	0.25	1350				340	10	400	OOOO
ENE201D-10A			25.0	0.4	2750				340	25	800	OOOO
ENE201D-14A			50.0	0.6	5500				340	50	1600	OOOO
ENE201D-20A			100.0	1.0	7000				340	100	3200	OOOO
ENE221D-05A	140	180	6.5	0.1	700	220	198	242	380	5	170	O O
ENE221D-07A			13.5	0.25	1350				360	10	350	OOOO
ENE221D-10A			28.0	0.4	2750				360	25	700	OOOO
ENE221D-14A			55.0	0.6	5500				360	50	1400	OOOO
ENE221D-20A			110.0	1.0	7000				360	100	2800	OOOO
ENE241D-05A	150	200	7.5	0.1	700	240	216	264	415	5	170	O O
ENE241D-07A			15.0	0.25	1350				395	10	350	OOOO
ENE241D-10A			30.0	0.4	2750				395	25	700	OOOO
ENE241D-14A			60.0	0.6	5500				395	50	1300	OOOO
ENE241D-20A			120.0	1.0	7000				395	100	2600	OOOO
ENE271D-05A	175	225	8.0	0.1	700	270	247	303	475	5	150	O O
ENE271D-07A			17.0	0.25	1350				455	10	300	OOOO
ENE271D-10A			35.0	0.4	2750				455	25	600	OOOO
ENE271D-14A			70.0	0.6	5500				455	50	1200	OOOO
ENE271D-20A			135.0	1.0	7000				455	100	2400	OOOO
ENE361D-05A	230	300	10.5	0.1	700	360	324	396	620	5	120	O O
ENE361D-07A			21.0	0.25	1350				595	10	250	OOOO
ENE361D-10A			42.0	0.4	2750				595	25	500	OOOO
ENE361D-14A			90.0	0.6	5500				595	50	1000	OOOO
ENE361D-20A			180.0	1.0	7000				595	100	2000	OOOO
ENE391D-05A	250	320	11.0	0.1	700	390	351	429	675	5	110	O O
ENE391D-07A			24.0	0.25	1350				650	10	220	OOOO
ENE391D-10A			48.0	0.4	2750				650	25	450	OOOO
ENE391D-14A			100.0	0.6	5500				650	50	900	OOOO
ENE391D-20A			195.0	1.0	7000				650	100	1800	OOOO
ENE431D-05A	275	350	12.5	0.1	700	430	387	473	745	5	100	O O
ENE431D-07A			28.0	0.25	1350				710	10	200	OOOO
ENE431D-10A			55.0	0.4	2750				710	25	400	OOOO
ENE431D-14A			105.0	0.6	5500				710	50	800	OOOO
ENE431D-20A			215.0	1.0	7000				710	100	1600	OOOO
ENE471D-05A	300	385	15.0	0.1	700	470	423	517	810	5	80	O O
ENE471D-07A			30.0	0.25	1350				775	10	170	OOOO
ENE471D-10A			60.0	0.4	2750				775	25	350	OOOO
ENE471D-14A			125.0	0.6	5500				775	50	700	OOOO
ENE471D-20A			250.0	1.0	7000				755	100	1400	OOOO

■ Characteristic curves (Typical)

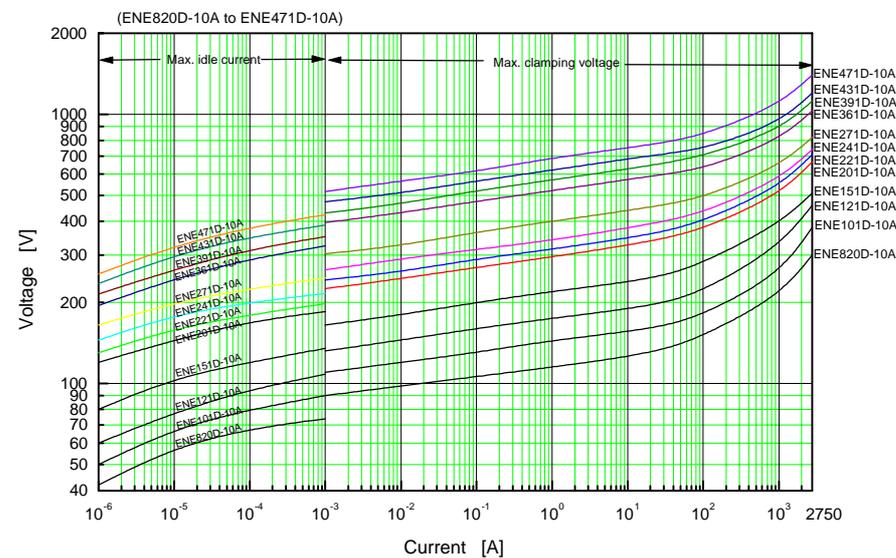
Transient V-I characteristic curves



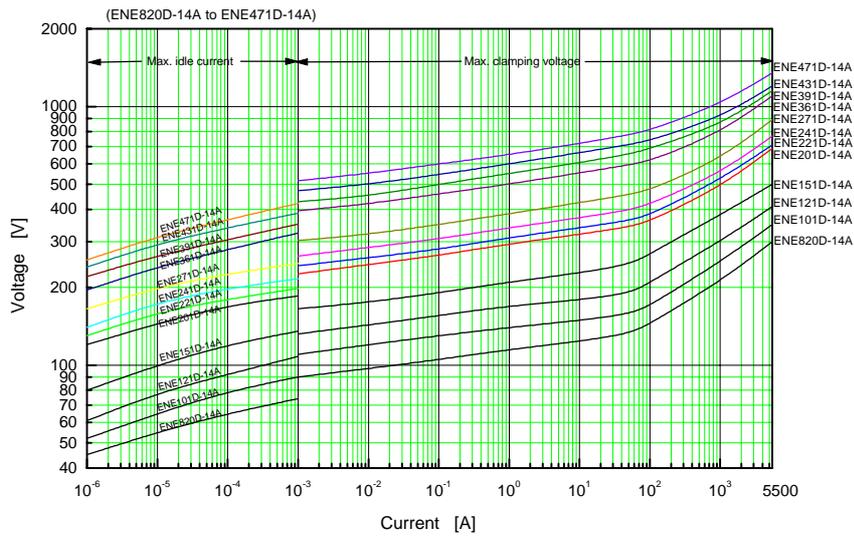
Transient V-I characteristic curves



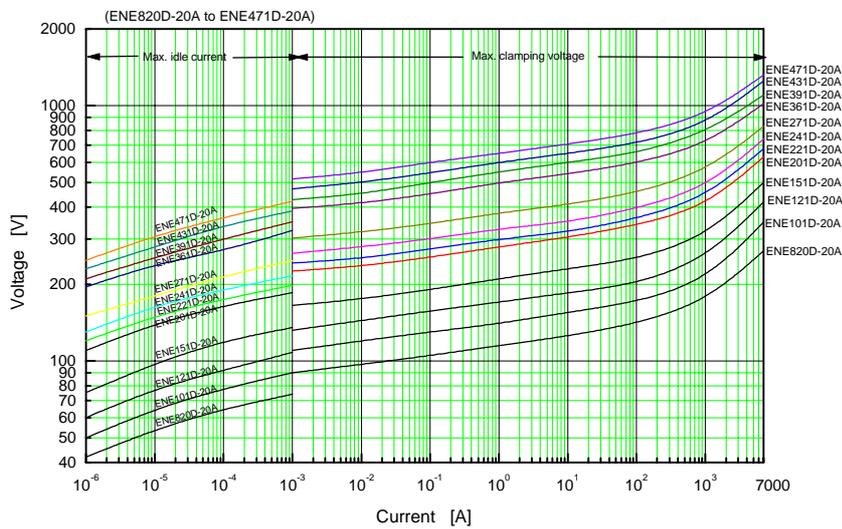
Transient V-I characteristic curves



Transient V-I characteristic curves

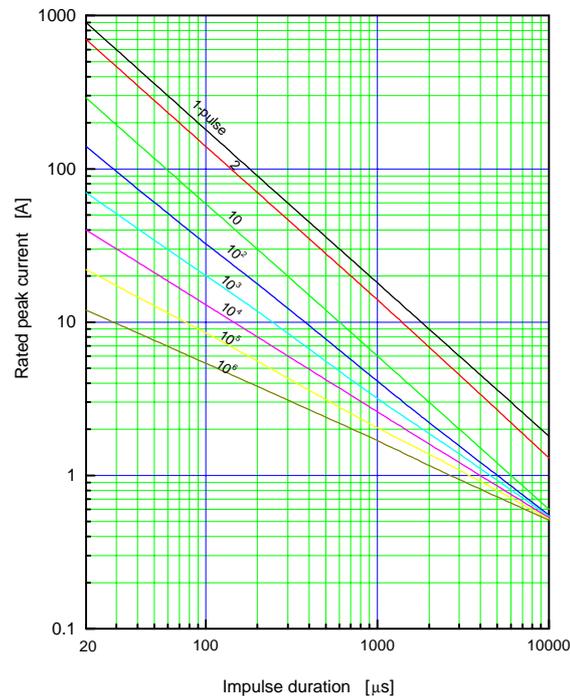


Transient V-I characteristic curves



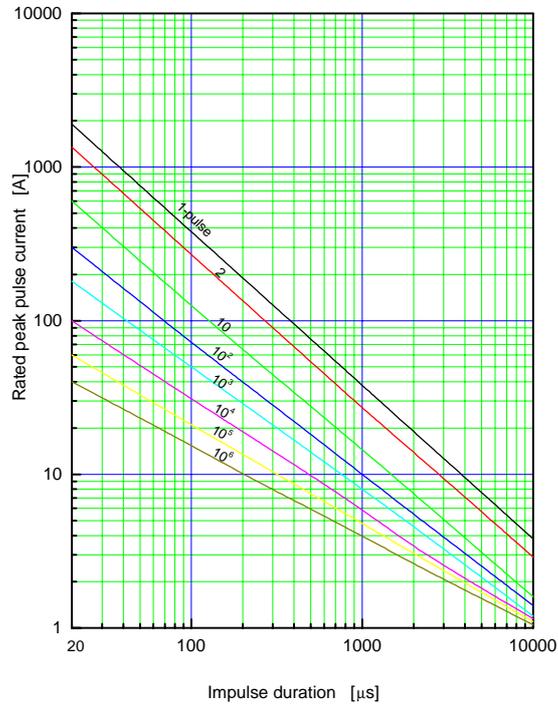
Pulse lifetime ratings

05A series (ENE820D-05A to ENE471D-05A)



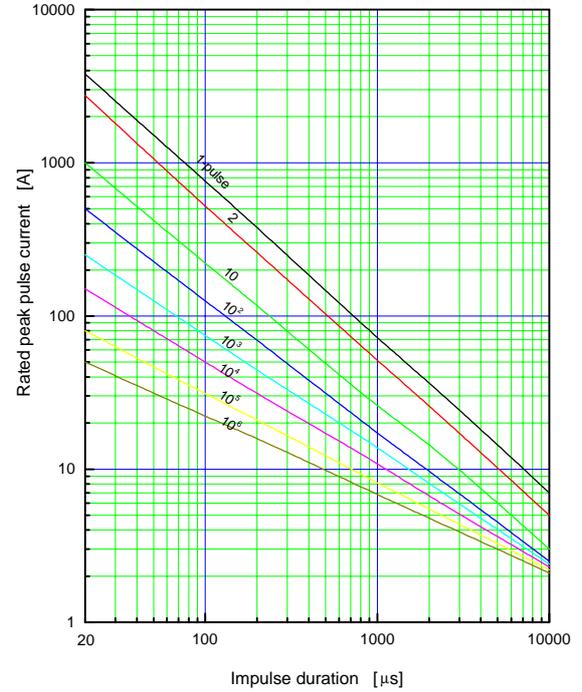
Pulse lifetime ratings

07A series (ENE820D-07A to ENE471D-07A)



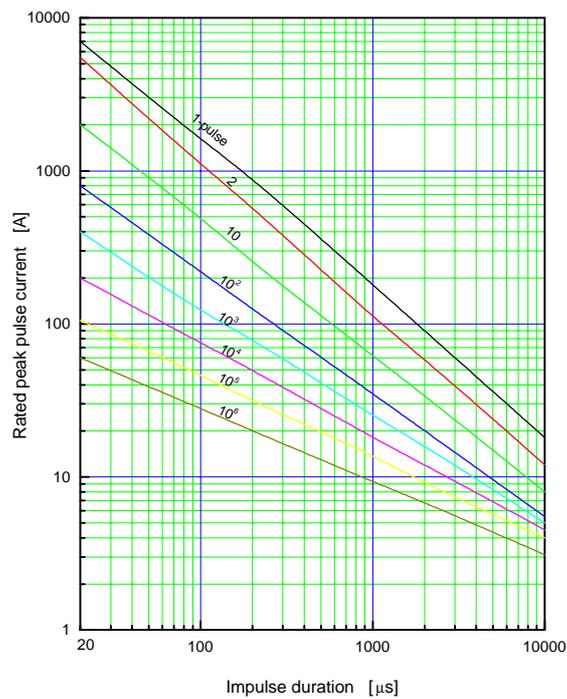
Pulse lifetime ratings

10A series (ENE820D-10A to ENE471D-10A)



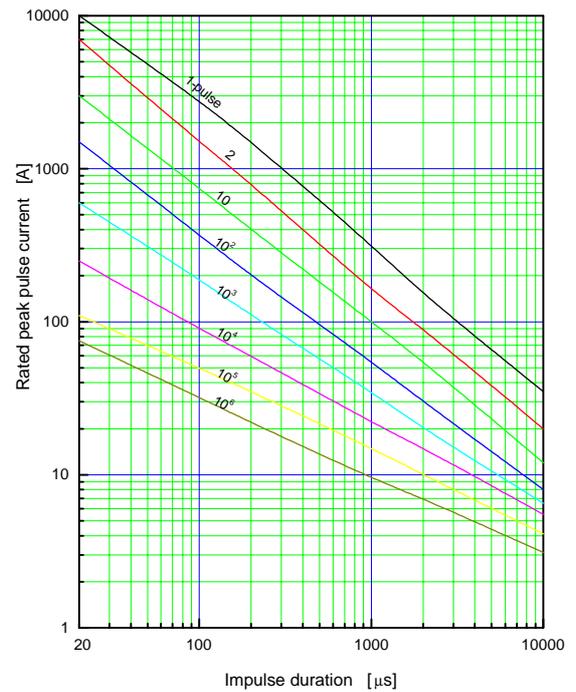
Pulse lifetime ratings

14A series (ENE820D-14A to ENE471D-14A)

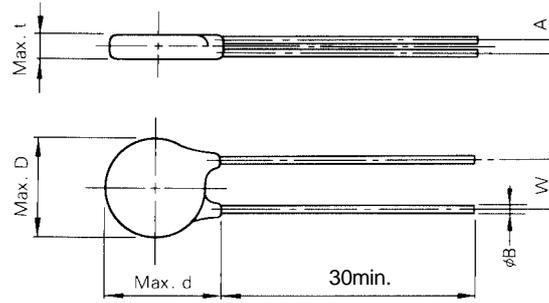


Pulse lifetime ratings

20A series (ENE820D-20A to ENE471D-20A)



■ Dimensions,mm



Type	D max.	d max.	W±1	t max.	A±1	ØB	Net weigh(g)
ENE820D-05A	7.0	10.0	5.0	4.1	1.4	0.6	0.6
ENE820D-07A	9.0	12.0	5.0	4.1	1.4	0.6	0.6
ENE820D-10A	11.5	15.5	7.5	4.5	1.6	0.8	1.5
ENE820D-14A	15.5	19.0	7.5	4.5	1.6	0.8	2.5
ENE820D-20A	21.5	24.5	10.0	4.9	1.9	1.0	3.5
ENE101D-05A	7.0	10.0	5.0	4.3	1.6	0.6	0.6
ENE101D-07A	9.0	12.0	5.0	4.3	1.6	0.6	0.6
ENE101D-10A	11.5	15.5	7.5	4.7	1.8	0.8	1.5
ENE101D-14A	15.5	19.0	7.5	4.7	1.8	0.8	2.5
ENE101D-20A	21.5	24.5	10.0	5.1	2.0	1.0	3.5
ENE121D-05A	7.0	10.0	5.0	4.5	1.8	0.6	0.6
ENE121D-07A	9.0	12.0	5.0	4.5	1.8	0.6	0.6
ENE121D-10A	11.5	15.5	7.5	4.9	2.0	0.8	1.5
ENE121D-14A	15.5	19.0	7.5	4.9	2.0	0.8	2.5
ENE121D-20A	21.5	24.5	10.0	5.3	2.2	1.0	3.5
ENE151D-05A	7.0	10.0	5.0	4.8	2.1	0.6	0.6
ENE151D-07A	9.0	12.0	5.0	4.8	2.1	0.6	0.6
ENE151D-10A	11.5	15.5	7.5	5.2	2.3	0.8	1.5
ENE151D-14A	15.5	19.0	7.5	5.2	2.3	0.8	2.5
ENE151D-20A	21.5	24.4	10.0	5.6	2.5	1.0	3.5
ENE201D-05A	7.0	10.0	5.0	4.4	1.7	0.6	0.6
ENE201D-07A	9.0	12.0	5.0	4.4	1.7	0.6	0.7
ENE201D-10A	11.5	15.5	7.5	4.8	1.9	0.8	1.5
ENE201D-14A	15.5	19.0	7.5	4.8	1.9	0.8	2.5
ENE201D-20A	21.5	24.5	10.0	5.2	2.1	1.0	4.0
ENE221D-05A	7.0	10.0	5.0	4.5	1.8	0.6	0.6
ENE221D-07A	9.0	12.0	5.0	4.5	1.8	0.6	0.7
ENE221D-10A	11.5	15.5	7.5	4.9	2.0	0.8	1.5
ENE221D-14A	15.5	19.0	7.5	4.9	2.0	0.8	2.5
ENE221D-20A	21.5	24.5	10.0	5.3	2.2	1.0	4.5
ENE241D-05A	7.0	10.0	5.0	4.6	1.9	0.6	0.6
ENE241D-07A	9.0	12.0	5.0	4.6	1.9	0.6	0.7
ENE241D-10A	11.5	15.5	7.5	5.0	2.1	0.8	1.7
ENE241D-14A	15.5	19.0	7.5	5.0	2.1	0.8	3.0
ENE241D-20A	21.5	24.5	10.0	5.4	2.3	1.0	4.5
ENE271D-05A	7.0	10.0	5.0	4.8	2.1	0.6	0.6
ENE271D-07A	9.0	12.0	5.0	4.8	2.1	0.6	0.7
ENE271D-10A	11.5	15.5	7.5	5.2	2.3	0.8	1.7
ENE271D-14A	15.5	19.0	7.5	5.2	2.3	0.8	4.0
ENE271D-20D	21.5	24.5	10.0	5.6	2.5	1.0	5.0
ENE361D-05A	7.0	10.0	5.0	5.3	2.5	0.6	0.6
ENE361D-07A	9.0	12.0	5.0	5.3	2.5	0.6	0.8
ENE361D-10A	11.5	15.5	7.5	5.7	2.8	0.8	2.0
ENE361D-14A	15.5	19.0	7.5	5.7	2.8	0.8	4.0
ENE361D-20A	21.5	24.4	10.0	6.1	3.0	1.0	6.0
ENE391D-05A	7.0	10.0	5.0	5.4	2.7	0.6	0.6
ENE391D-07A	9.0	12.0	5.0	5.4	2.7	0.6	0.8
ENE391D-10A	11.5	15.5	7.5	5.8	2.9	0.8	2.2
ENE391D-14A	15.5	19.0	7.5	5.8	2.9	0.8	4.0
ENE391D-20A	21.5	24.5	10.0	6.2	3.1	1.0	6.5
ENE431D-05A	7.0	10.0	5.0	5.6	2.9	0.6	0.6
ENE431D-07A	8.0	12.0	5.0	5.6	2.9	0.6	1.0
ENE431D-10A	11.5	15.5	7.5	6.0	3.1	0.8	2.3
ENE431D-14A	15.5	19.0	7.5	6.0	3.1	0.8	4.5
ENE431D-20A	21.5	24.5	10.0	6.4	3.3	1.0	7.0
ENE471D-05A	7.0	10.0	5.0	5.8	3.1	0.6	0.6
ENE471D-07A	9.0	12.0	5.0	5.8	3.1	0.6	1.0
ENE471D-10A	11.5	15.5	7.5	6.2	3.3	0.8	2.4
ENE471D-14A	15.5	19.0	7.5	6.2	3.3	0.8	5.0
ENE471D-20A	21.5	24.4	10.0	6.6	3.5	1.0	7.5