

General Purpose

Energy efficient dry-type transformers 600 Volt Class, isolation type, single and three phase, 15 kVA through 500 kVA. Indoor and outdoor models available.

Accessories and Optional Design Styles

- Electrostatic shield for quality power
- Wall mounting brackets (500 lbs maximum) (Item WB1C)
- Weather Shields (UL Listed/NEMA Type 3R)
- Stainless Steel Enclosures
- Totally enclosed non-ventilated designs (TENV) (Non UL) *
- Open core and coil designs (UL Recognized)
- Copper Wound designs
- Low temperature designs

Features

- UL Listed/NEMA Type 3R ventilated outdoor enclosures when used with optional weather shields (order separately)
- UL Class 220°C insulation system, 150°C temperature rise under full load
- Terminal board connections and spacious wiring compartment
- Panel enclosure design reduces labor time. Wiring diagram on inside front cover.



- High efficiency for low cost operation
- Compliant to NEMA TP-1 Standards
- Single and three phase availability
- Fast delivery
- 10 year limited warranty

Certifications and Compliances

- Listed
- UL 1561

Selection Tables: Single Phase

Group 1: 240 x 480 Volt Primary, 120/240 Secondary, 60 Hz

kVA	Catalog Number	Type 3R Weather Shield ¹	Height in (mm)	Width in (mm)	Depth in (mm)	Approx. Ship Weight lbs (kg)	Design Style ²	Elec Conn ²	Primary Amps	Secondary Amps
15	ES5H15S	WS-15	28.00 (711.2)	16.00 (406.4)	16.00 (406.4)	210.0 (95.25)	1	1	62.5/31.3	125/62.5
25	ES5H25S	WS-15	28.00 (711.2)	16.00 (406.4)	16.00 (406.4)	245.0 (111.13)	1	1	104/52.1	208/104
37.5	ES5H37S	WS-17	31.00 (787.4)	18.00 (457.2)	18.00 (457.2)	340.0 (154.22)	1	1	156/78	313/156
50	ES5H50S	WS-17	31.00 (787.4)	18.00 (457.2)	18.00 (457.2)	415.0 (188.24)	1	1	208/104	416/208
75	ES5H75S	WS-09	44.00 (1117.6)	23.00 (584.2)	21.00 (533.4)	610.0 (276.69)	1	1	313/156	625/313
100	ES5H100S	WS-09	44.00 (1117.6)	23.00 (584.2)	21.00 (533.4)	705.0 (319.78)	1	1	417/208	833/417
167	ES5H167S	WS-16	46.00 (1168.4)	26.00 (660.4)	24.00 (609.6)	980.0 (444.52)	1	1	695/348	1392/695

Group 2 – 120/208/240/277 Volt Primary, 120/240 Secondary, 60 Hz

kVA	Catalog Number	Type 3R Weather Shield ¹	Height in (mm)	Width in (mm)	Depth in (mm)	Approx. Ship Weight lbs (kg)	Design Style ²	Elec Conn ²	Primary Amps @ 277 V	Secondary Amps
15	ES12H15S	WS-15	28.00 (711.2)	16.00 (406.4)	16.00 (406.4)	215.0 (97.52)	1	2	54.2	125/62.5
25	ES12H25S	WS-15	28.00 (711.2)	16.00 (406.4)	16.00 (406.4)	250.0 (113.40)	1	2	90.3	208/104

Notes:

1. Weather shields (set of two) must be ordered separately.
2. Design Styles and Electrical Connections can be found at the end of the Ventilated Distribution Transformers section.

* Not all optional designs are listed. Contact Technical Services.

Selection Tables: Three Phase

Group A: 480 Volt Δ Primary, 208/120 Secondary, 60 Hz

kVA	Catalog Number	Type 3R Weather Shield ¹	Height in (mm)	Width in (mm)	Depth in (mm)	Approx. Ship Weight lbs (kg)	Design Style ²	Elec Conn ²	Primary Amps	Secondary Amps
15	ET2H15 ³	WS-02	23.00(584.2)	18.00 (457.2)	14.00 (355.6)	187.0 (84.82)	1	5	18.1	41.7
	ET2H15S									
30	ET2H30 ³	WS-14	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	292.0 (132.45)	1	5	36.1	83.4
	ET2H30S									
45	ET2H45 ³	WS-14	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	376.0 (170.55)	1	5	54.2	125.0
	ET2H45S									
75	ET2H75 ³	WS-30	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	569.0 (258.09)	1	5	90.3	208.0
	ET2H75S									
112.5	ET2H112S	WS-30	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	768.0 (348.36)	1	5	135.0	313.0
150	ET2H150S	WS-10	44.00 (1117.6)	33.00 (838.2)	21.00 (533.4)	933.0 (423.20)	1	5	181.0	417.0
225	ET2H225S	WS-11	46.00 (1168.4)	36.00 (914.4)	24.00 (609.6)	1342.0 (608.72)	1	5	271.0	625.0
300	ET2H300S	WS-11	46.00 (1168.4)	36.00 (914.4)	24.00 (609.6)	1525.0 (691.73)	1	5	361.0	834.0
500	ET2H500S	WS-12	65.00 (1651.0)	45.00 (1143.0)	35.00 (889.0)	2460.0 (1115.84)	1	5	602.0	1390.0

Group B: 480 Volt Δ Primary, 240 Volt Δ , Secondary with reduced capacity center tap ⁴, 60 Hz

kVA	Catalog Number	Type 3R Weather Shield ¹	Height in (mm)	Width in (mm)	Depth in (mm)	Approx. Ship Weight lbs (kg)	Design Style ²	Elec Conn ²	Primary Amps	Secondary Amps
15	ET5H15 ³	WS-02	23.00 (584.2)	19.00 (482.6)	14.00 (355.6)	189.0 (85.73)	1	6	18.1	36.1
	ET5H15S									
30	ET5H30 ³	WS-14	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	292.0 (132.45)	1	6	36.1	72.3
	ET5H30S									
45	ET5H45 ³	WS-14	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	381.0 (172.82)	1	6	54.2	108.0
	ET5H45S									
75	ET5H75 ³	WS-30	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	560.0 (254.01)	1	6	90.3	181.0
	ET5H75S									
112.5	ET5H112S	WS-30	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	760.0 (344.73)	1	6	135.0	271.0
150	ET5H150S	WS-10	44.00 (1117.6)	33.00 (838.2)	21.00 (533.4)	940.0 (426.38)	1	6	181.0	361.0
225	ET5H225S	WS-11	46.00 (1168.4)	36.00 (914.4)	24.00 (609.6)	1342.0 (608.72)	1	6	271.0	542.0
300	ET5H300S	WS-11	46.00 (1168.4)	36.00 (914.4)	24.00 (609.6)	1525.0 (691.73)	1	6	361.0	723.0
500	ET5H500S	WS-12	65.00 (1651.0)	45.00 (1143.0)	35.00 (889.0)	2460.0 (1115.84)	1	6	602.0	1204.0

Notes:

1. Weather shields (set of two) must be ordered separately.
2. Design Styles and Electrical Connections can be found at the end of the Ventilated Distribution Transformers section.
3. Unshielded model.
4. Refer to *Capacity of Center Tap in Center Tap Delta Transformers* at the beginning of this section.

Selection Tables: Three Phase

Group C: 480 Volt Δ Primary, 480Y/277 Secondary, 60 Hz

KVA	Catalog Number	Type 3R Weather Shield ¹	Height in (mm)	Width in (mm)	Depth in (mm)	Approx. Ship Weight lbs (kg)	Design Style ²	Elec Conn ²	Primary Amps	Secondary Amps
15	ET81H15S	WS-02	23.00 (584.2)	18.00 (457.2)	14.00 (355.6)	189.0 (85.73)	1	8	18.1	18.1
30	ET81H30S	WS-14	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	295.0 (133.81)	1	8	36.1	36.1
45	ET81H45S	WS-14	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	380.0 (172.37)	1	8	54.2	54.2
75	ET81H75S	WS-30	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	560.0 (254.01)	1	8	90.3	90.3
112.5	ET81H112S	WS-30	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	780.0 (353.80)	1	8	135.0	135.0
150	ET81H150S	WS-10	44.00 (1117.6)	33.00 (838.2)	21.00 (533.4)	933.0 (423.20)	1	8	181.0	181.0
225	ET81H225S	WS-11	46.00 (1168.4)	36.00 (914.4)	24.00 (609.6)	1342.0 (608.72)	1	8	271.0	271.0
300	ET81H300S	WS-11	46.00 (1168.4)	36.00 (914.4)	24.00 (609.6)	1525.0 (691.73)	1	8	361.0	361.0
500	ET81H500S	WS-12	65.00 (1651.0)	45.00 (1143.0)	35.00 (889.0)	2460.0 (1115.84)	1	8	602.0	602.0

Group D: 208 Volt Δ Primary, 480Y/277 Secondary, 60 Hz

KVA	Catalog Number	Type 3R Weather Shield ¹	Height in (mm)	Width in (mm)	Depth in (mm)	Approx. Ship Weight lbs (kg)	Design Style ²	Elec Conn ²	Primary Amps	Secondary Amps
15	ET84H15S	WS-02	23.00 (584.2)	18.00 (457.2)	14.00 (355.6)	195.0 (88.45)	1	10	41.7	18.1
30	ET84H30S	WS-14	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	295.0 (133.81)	1	10	83.4	36.1
45	ET84H45S	WS-14	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	375.0 (170.09)	1	10	125.0	54.2
75	ET84H75S	WS-30	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	570.0 (258.55)	1	10	208.0	90.3
112.5	ET84H112S	WS-30	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	780.0 (353.80)	1	10	313.0	135.0
150	ET84H150S	WS-10	44.00 (1117.6)	33.00 (838.2)	21.00 (533.4)	972.0 (440.89)	1	10	417.0	181.0

Notes:

1. Weather shields (set of two) must be ordered separately.
2. Design Styles and Electrical Connections can be found at the end of the Ventilated Distribution Transformers section.

Selection Tables: Three Phase

Group E: 208 Volt Δ Primary, 208Y/120 Secondary, 60 Hz

kVA	Catalog Number	Type 3R Weather Shield ¹	Height in (mm)	Width in (mm)	Depth in (mm)	Approx. Ship Weight lbs (kg)	Design Style ²	Elec Conn ²	Primary Amps	Secondary Amps
15	ET3H15S	WS-02	23.00 (584.2)	18.00 (457.2)	14.00 (355.6)	190.0 (86.18)	1	9	41.7	41.7
30	ET3H30S	WS-14	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	295.0 (133.81)	1	9	83.4	83.4
45	ET3H45S	WS-14	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	380.0 (172.37)	1	9	125.0	125.0
75	ET3H75S	WS-30	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	570.0 (258.55)	1	9	208.0	208.0
112.5	ET3H112S	WS-30	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	805.0 (365.14)	1	9	313.0	313.0
150	ET3H150S	WS-10	44.00 (1117.6)	33.00 (838.2)	21.00 (533.4)	972.0 (440.89)	1	9	416.0	416.0

Group F: 240 Volt Δ Primary, 208Y/120 Secondary, 60 Hz

kVA	Catalog Number	Type 3R Weather Shield ¹	Height in (mm)	Width in (mm)	Depth in (mm)	Approx. Ship Weight lbs (kg)	Design Style ²	Elec Conn ²	Primary Amps	Secondary Amps
15	ET6H15S	WS-02	23.00 (584.2)	18.00 (457.2)	14.00 (355.6)	190.0 (86.18)	1	11	36.1	41.7
30	ET6H30S	WS-14	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	295.0 (133.81)	1	11	72.3	83.4
45	ET6H45S	WS-14	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	380.0 (172.37)	1	11	108.0	125.0
75	ET6H75S	WS-30	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	570.0 (258.55)	1	11	181.0	208.0
112.5	ET6H112S	WS-30	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	805.0 (365.14)	1	11	271.0	313.0
150	ET6H150S	WS-10	44.00 (1117.6)	33.00 (838.2)	21.00 (533.4)	972.0 (440.89)	1	11	361.0	417.0

Group G: 240 Volt Δ Primary, 480Y/277 Secondary, 60 Hz

kVA	Catalog Number	Type 3R Weather Shield ¹	Height in (mm)	Width in (mm)	Depth in (mm)	Approx. Ship Weight lbs (kg)	Design Style ²	Elec Conn ²	Primary Amps	Secondary Amps
15	ET85H15S	WS-02	23.00 (584.2)	18.00 (457.2)	14.00 (355.6)	190.0 (86.18)	1	12	36.1	18.1
30	ET85H30S	WS-14	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	295.0 (133.81)	1	12	72.3	36.1
45	ET85H45S	WS-14	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	380.0 (172.37)	1	12	108.0	54.2
75	ET85H75S	WS-30	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	560.0 (254.01)	1	12	181.0	90.3
112.5	ET85H112S	WS-30	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	805.0 (365.14)	1	12	271.0	135.0
150	ET85H150S	WS-10	44.00 (1117.6)	33.00 (838.2)	21.00 (533.4)	972.0 (440.89)	1	12	361.0	181.0

Notes:

- Weather shields (set of two) must be ordered separately.
- Design Styles and Electrical Connections can be found at the end of the Ventilated Distribution Transformers section.

Selection Tables: Three Phase

Group J: 480 Volt Δ Primary, 380Y/220 Secondary, 60 Hz

kVA	Catalog Number	Type 3R Weather Shield ¹	Height in (mm)	Width in (mm)	Depth in (mm)	Approx. Ship Weight lbs (kg)	Design Style ²	Elec Conn ²	Primary Amps	Secondary Amps
15	ET79H15S	WS-02	23.00 (584.2)	18.00 (457.2)	14.00 (355.6)	190.0 (86.18)	1	7	18.1	22.8
30	ET79H30S	WS-14	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	295.0 (133.81)	1	7	36.1	45.6
45	ET79H45S	WS-14	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	380.0 (172.37)	1	7	54.2	68.4
75	ET79H75S	WS-30	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	360.0 (163.29)	1	7	90.3	114.0
112.5	ET79H112S	WS-30	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	770.0 (349.27)	1	7	135.3	170.9
150	ET79H150S	WS-10	44.00 (1117.6)	33.00 (838.2)	21.00 (533.4)	933.0 (423.20)	1	7	180.4	227.9

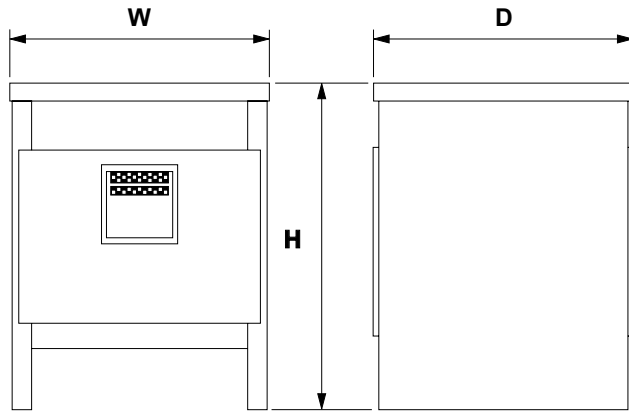
Group K: 480 Volt Δ Primary, 208Y/120 Secondary, 60 Hz, Copper-Wound

kVA	Catalog Number	Type 3R Weather Shield ¹	Height in (mm)	Width in (mm)	Depth in (mm)	Approx. Ship Weight lbs (kg)	Design Style ²	Elec Conn ²	Primary Amps	Secondary Amps
15	ET2H15SCU	WS-02	23.00 (584.2)	18.00 (457.2)	14.00 (355.6)	205.0 (92.98)	1	5	18.1	41.7
30	ET2H30SCU	WS-14	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	305.0 (138.35)	1	5	36.1	83.4
45	ET2H45SCU	WS-14	28.00 (711.2)	23.00 (584.2)	16.00 (406.4)	405.0 (183.70)	1	5	54.2	125.0
75	ET2H75SCU	WS-30	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	535.0 (242.67)	1	5	90.3	208.0
112.5	ET2H112SCU	WS-30	34.00 (863.6)	28.00 (711.2)	22.00 (558.8)	805.0 (365.14)	1	5	135.0	313.0
150	ET2H150SCU	WS-10	44.00 (1117.6)	33.00 (838.2)	21.00 (533.4)	972.0 (440.89)	1	5	181.0	417.0
225	ET2H225SCU	WS-11	46.00 (1168.4)	36.00 (914.4)	24.00 (609.6)	1325.0 (601.01)	1	5	271.0	625.0
300	ET2H300SCU	WS-11	46.00 (1168.4)	36.00 (914.4)	24.00 (609.6)	1515.0 (687.19)	1	5	361.0	834.0
500	ET2H500SCU	WS-12	65.00 (1651.0)	45.00 (1143.0)	35.00 (889.0)	2460.0 (1115.84)	1	5	602.0	1390.0

Notes:

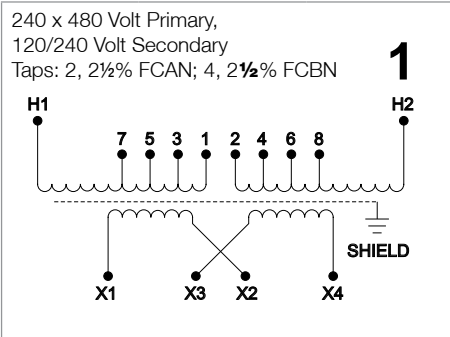
1. Weather shields (set of two) must be ordered separately.
2. Design Styles and Electrical Connections can be found at the end of the Ventilated Distribution Transformers section.

Design Style



Style 1 - Ventilated

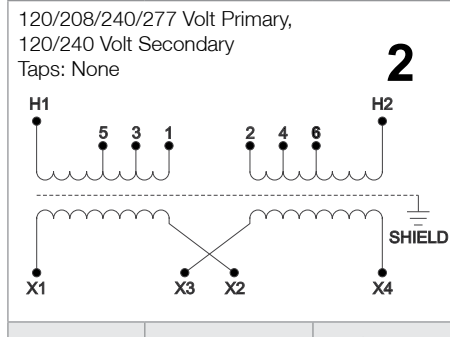
Electrical Connections (Single Phase)



Primary Voltage	Interconnect	Connect Lines To
504	1 to 2	H1 & H2
492	2 to 3	H1 & H2
480	3 to 4	H1 & H2
468	4 to 5	H1 & H2
456	5 to 6	H1 & H2
444	6 to 7	H1 & H2
432	7 to 8	H1 & H2
252	H1 to 2 H2 to 1	H1 & H2
240	H1 to 4 H2 to 3	H1 & H2
228	H1 to 6 H2 to 5	H1 & H2
216	H1 to 8 H2 to 7	H1 & H2

Secondary Voltage	Interconnect	Connect Lines To
240	X2 to X3	X1 & X4
120-0-120	X2 to X3 X2 to $\frac{\perp}$	X1-X2-X4
120	X1 to X3 X2 to X4	X1 & X4

ES5 Series

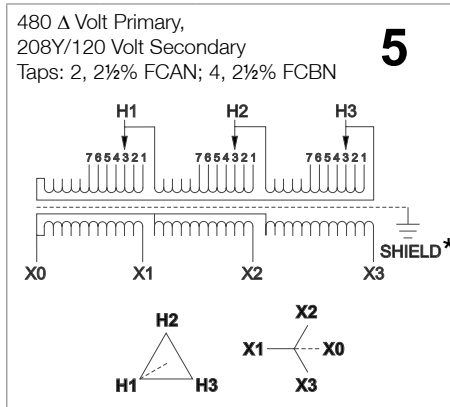


Primary Voltage	Interconnect	Connect Lines To
277	1 to 2	H1 & H2
240	3 to 4	H1 & H2
208	5 to 6	H1 & H2
120	H1 to 4 H2 to 3	H1 & H2

Secondary Voltage	Interconnect	Connect Lines To
240	X2 to X3	X1 & X4
120-0-120	X2 to X3 X2 to $\frac{\perp}$	X1-X2-X4
120	X1 to X3 X2 to X4	X1 & X4

ES12 Series

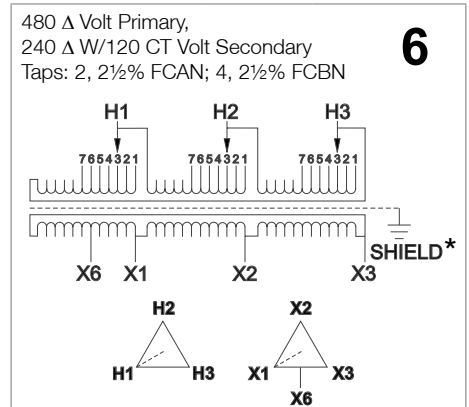
Electrical Connections (Three Phase)



Primary H1-H2-H3		Secondary Voltage	
@ Tap	Voltage	X1, X2, X3	X0- X1, X2, X3
1	504	208	120
2	492		
3	480		
4	468		
5	456		
6	444		
7	432		

ET2 and 3H Series

** Shield available in electrostatically shielded units only.*



Primary H1-H2-H3		Secondary Voltage	
@ Tap	Voltage	X1, X2, X3	X6-X1, X6-X3
1	504	240	120
2	492		
3	480		
4	468		
5	456		
6	444		
7	432		

ET5 Series

** Shield available in electrostatically shielded units only.*

Electrical Connections (Three Phase) cont.

480 Δ Volt Primary
380/220 Volt Secondary
Taps: 2, 2½% FCAN; 4, 2½% FCBN **7**

Primary H1-H2-H3		Secondary Voltage	
@ Tap	Voltage	X1, X2, X3	X0- X1, X2, X3
1	504	380	220
2	492		
3	480		
4	468		
5	456		
6	444		
7	432		

ET79 Series

480 Δ Volt Primary
480Y/277 Volt Secondary
Taps: 2, 2½% FCAN; 4, 2½% FCBN **8**

Primary H1-H2-H3		Secondary Voltage	
@ Tap	Voltage	X1, X2, X3	X0- X1, X2, X3
1	504	480	277
2	492		
3	480		
4	468		
5	456		
6	444		
7	432		

ET81 Series

208 Δ Volt Primary
208Y/120 Volt Secondary
Taps: 2, 2½% FCAN; 4, 2½% FCBN **9**

Primary H1-H2-H3		Secondary Voltage	
@ Tap	Voltage	X1, X2, X3	X0- X1, X2, X3
1	218	208	120
2	213		
3	208		
4	203		
5	198		
6	192		
7	187		

ET3 Series

208 Δ Volt Primary
480Y/277 Volt Secondary
Taps: 2, 2½% FCAN; 4, 2½% FCBN **10**

Primary X1-X2-X3		Secondary Voltage	
@ Tap	Voltage	H1-H2-H3	H0- H1, H2, H3
1	218	480	277
2	213		
3	208		
4	203		
5	198		
6	192		
7	187		

ET84 Series

240 Δ Volt Primary
208Y/120 Volt Secondary
Taps: 2, 2½% FCAN; 4, 2½% FCBN **11**

Primary H1-H2-H3		Secondary Voltage	
@ Tap	Voltage	X1, X2, X3	X0- X1, X2, X3
1	252	208	120
2	246		
3	240		
4	234		
5	228		
6	222		
7	216		

ET6 Series

240 Δ Volt Primary
480Y/277 Volt Secondary
Taps: 2, 2½% FCAN; 4, 2½% FCBN **12**

Primary X1-X2-X3		Secondary Voltage	
@ Tap	Voltage	H1, H2, H3	H0- H1, H2, H3
1	252	480	277
2	246		
3	240		
4	234		
5	228		
6	222		
7	216		

ET85 Series

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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