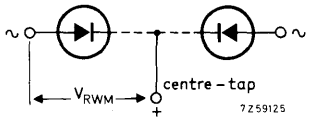
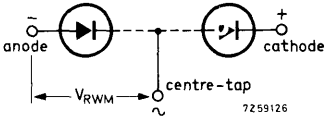
HIGH VOLTAGE RECTIFIER STACKS

Ranges of high voltage rectifier assemblies, incorporating controlled avalanche diodes mounted on fire proof triangular formers. They are supplied with **M6 studs.**
The OSB9410series is intended for application in two phase half wave rectifier circuits.
The OSM9410series is intended for application in single phase or three phase bridges or in voltage doubler circuits.
The OSS9410series is intended for all kinds of high voltage rectification.
The OSB9410series and OSM9410series are supplied with a centre tap (8-32UNC).
The maximum crest working voltages of the OSB9410 and OSM9410series cover the range from 2 kV to 15 kV, and of the OSS9410series the range from 3 kV to 30 kV, in 1 kV steps.

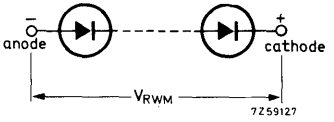
CIRCUIT OSB9410



CIRCUIT OSM9410



CIRCUIT OSS9410



QUICK REFERENCE DATA

Crest working reverse voltage from centre tap to end	V_{RWM}	OSB9410	−4	−6	...	−28	−30	
		OSM9410	−4	−6	...	−28	−30	
		max.	2	3		14	15	kV
Crest working reverse voltage	V_{RWM}	OSS9410	−3	−4	...	−29	−30	
		max.	3	4	...	29	30	kV
Average forward current with R and L load (averaged over any 20 ms period) in free air up to T_{amb} = 35 °C	$I_{F(AV)}$	max.					10	A
in oil up to T_{oil} = 35 °C	$I_{F(AV)}$	max.					30	A
Non-repetitive peak forward current t = 10 ms; half sine wave; T_j = 175 °C prior to surge	I_{FSM}	max.					800	A

MECHANICAL DATA see page 4

All information applies to frequencies up to 400 Hz

RATINGS Limiting values in accordance with the Absolute Maximum System (IEC 134)

		OSB9410	-4	-6	...	-28	-30		
Voltages		OSM9410	-4	-6		-28	-30		
Crest working reverse voltage	V_{RWM}	max.	2	3	...	14	15	kV	
		OSS9410	-3	-4	...	-29	-30		
Crest working reverse voltage	V_{RWM}	max.	3	4	...	29	30	kV	

Currents

Average forward current (averaged over any 20 ms period)				
in free air up to T_{amb} = 35 °C	$I_{F(AV)}$	max.	10	A
in oil up to T_{oil} = 35 °C	$I_{F(AV)}$	max.	30	A
Repetitive peak forward current	I_{FRM}	max.	450	A
Non-repetitive peak forward current t = 10 ms; half sine wave; T_j = 175 °C prior to surge	I_{FSM}	max.	800	A

Reverse power dissipation

		OSB9410	-4	-6	...	-28	-30		
Repetitive peak reverse power dissipation		OSM9410	-4	-6	...	-28	-30		
t = 10 μs (square wave; f = 50 Hz)									
T_j = 175 °C	P_{RRM}	max.	9	13.5	...	63	67.5	kW	
Non-repetitive peak reverse power dissipation									
t = 10 μs (square wave)									
T_j = 25 °C prior to surge	P_{RSM}	max.	55	80	...	375	400	kW	
T_j = 175 °C prior to surge	P_{RSM}	max.	8.5	13	...	60.5	65	kW	
		OSS9410	-3	-4	...	-29	-30		
Repetitive peak reverse power dissipation									
t = 10 μs (square wave; f = 50 Hz)									
T_j = 175 °C	P_{RRM}	max.	13.5	18	...	130.5	135	kW	
Non-repetitive peak reverse power dissipation									
t = 10 μs (square wave)									
T_j = 25 °C prior to surge	P_{RSM}	max.	80	105	...	775	800	kW	
T_j = 175 °C prior to surge	P_{RSM}	max.	13	17	...	126	130	kW	

Temperatures

Storage temperature	T_{stg}	− 55 to + 175	°C
Junction temperature	T_j	max. 175	°C

CHARACTERISTICS (See note 1)

			OSB9410 -4	-6	...	-28	-30
			OSM9410 -4	-6	...	-28	-30
Forward voltage							
I_F = 150 A; T_j = 25 °C	V_F	<	3.6	5.4	...	25.2	27 V
Reverse avalanche breakdown voltage [1]							
I_R = 5 mA; T_j = 25 °C	$V_{(BR)R}$	>	2.5	3.75	...	17.5	18.75 kV
		<	4	6	...	28	30 kV

			OSS9410 -3	-4	...	-29	-30
Forward voltage							
I_F = 150 A; T_j = 25 °C	V_F	<	5.4	7.2	...	52.2	54 V
Reverse avalanche breakdown voltage [1]							
I_R = 5 mA; T_j = 25 °C	$V_{(BR)R}$	>	3.75	5	...	36.25	37.5 kV
		<	6	8	...	58	60 kV

Reverse current

$V_{RM} = V_{RWMmax}$; T_j = 125 °C $\quad I_{RM} < 1.6$ mA

NOTES

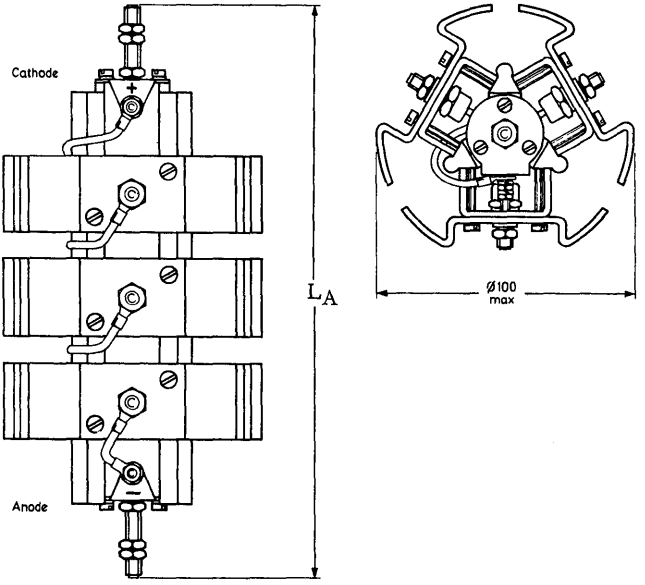
1. The Ratings and Characteristics given apply from centre tap to end. (Not for OSS9410series).
2. Type number suffix
   The suffix consists of a figure indicating the total number of diodes, followed by a letter indicating the base.
   A = M6 studs at the ends.
3. Operating position
   The rectifier units can be operated at their maximum ratings when mounted in any position.

[1] The breakdown voltage increases, by approximately 0.1% per °C with increasing junction temperature.

MECHANICAL DATA Dimensions in mm

n = total number of diodes.

OSS9410-nA

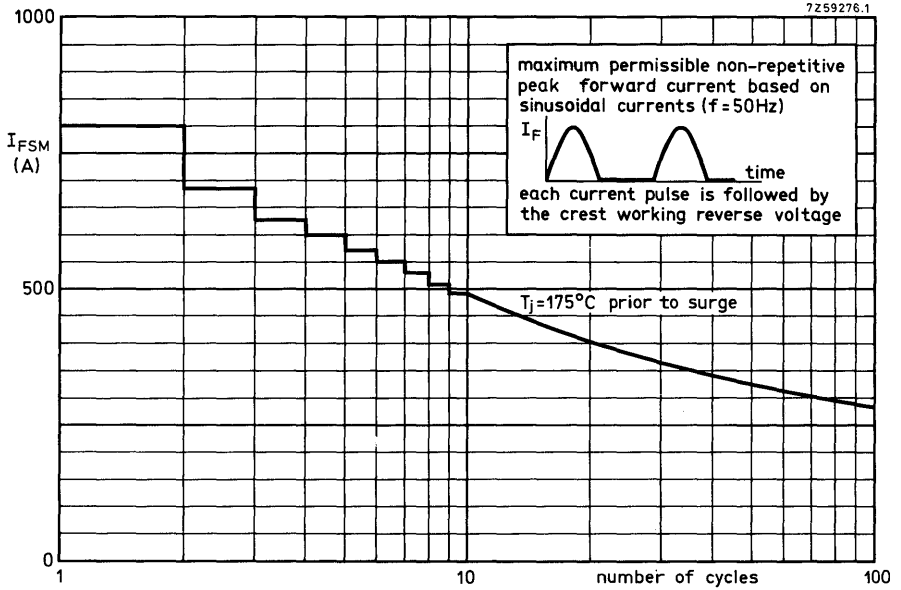


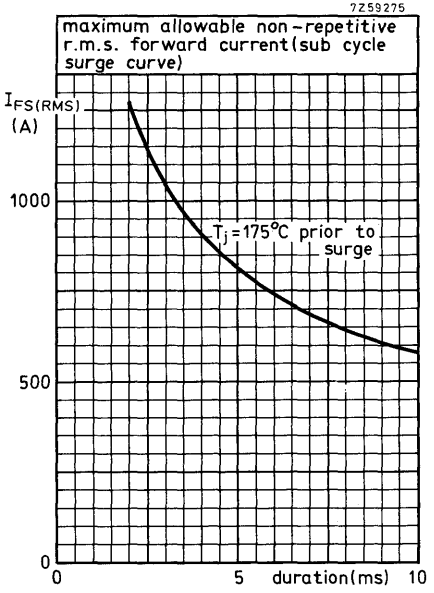
The drawing shows the OSS9410series.
The OSB9410 and OSM9410series differ in the following respects:
OSB9410 series – has a centre tap marked +; anode and cathode terminals are both marked ∿.
OSM9410series – has a centre tap marked ∿.

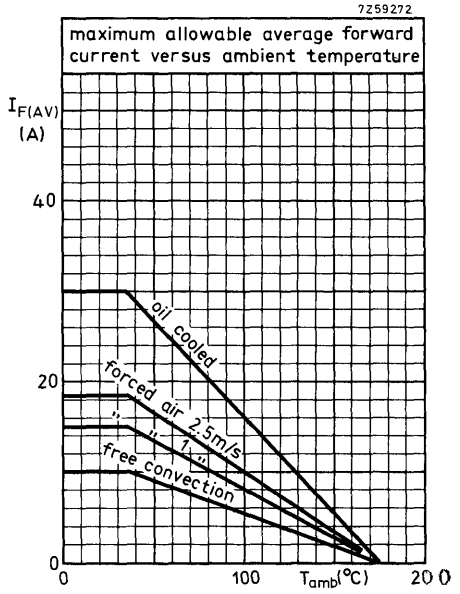
Table of lengths and weights (mm and g)

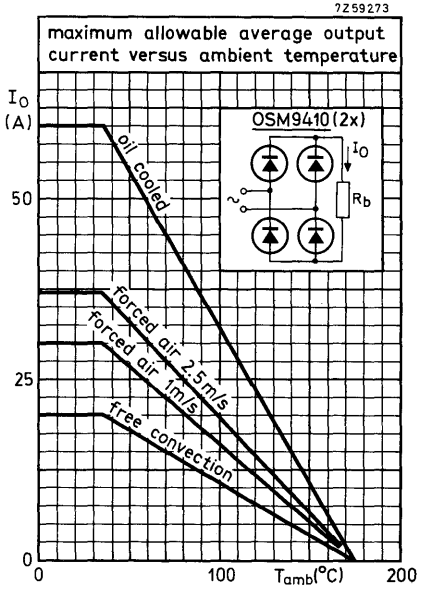
number of diodes	n	3	4 to 6	7 to 9	10 to 12	13 to 15
maximum lengths	L_A	143	184	224	264	305
weights	W_A	215	413	611	809	1007

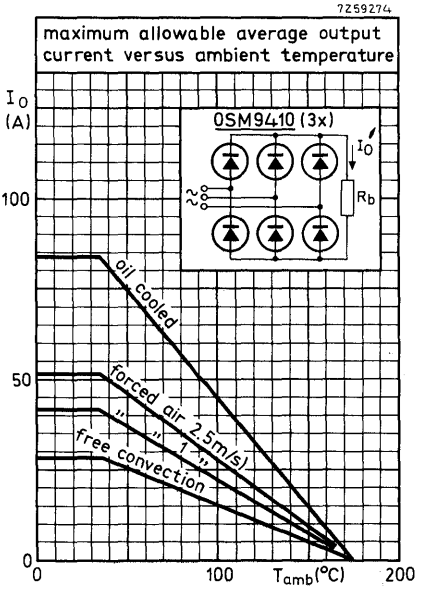
number of diodes	n	16 to 18	19 to 21	22 to 24	25 to 27	28 to 30
maximum lengths	L_A	345	385	426	466	506
weights	W_A	1208	1406	1604	1802	2000


7Z59276.1
1000
I_{FSM} (A)
500
0
1
10
number of cycles
100
maximum permissible non-repetitive peak forward current based on sinusoidal currents (f=50Hz)
I_F
time
each current pulse is followed by the crest working reverse voltage
T_j=175°C prior to surge


7Z59275
maximum allowable non-repetitive r.m.s. forward current(sub cycle surge curve)
$I_{FS(RMS)}$ (A)
1000
500
0
0
5
duration(ms)
10
T_j=175°C prior to surge

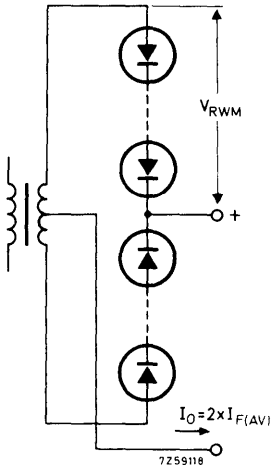

7Z59272
maximum allowable average forward current versus ambient temperature
$I_{F(AV)}$ (A)
40
20
0
oil cooled
forced air 2.5m/s
" 1 "
free convection
0
100
T_{amb}(°C)
200


7Z59273
maximum allowable average output current versus ambient temperature
I_O (A)
50
25
0
OSM9410 (2x)
I_O
R_b
oil cooled
forced air 2.5m/s
forced air 1m/s
free convection
0
100
T_{amb}(°C)
200

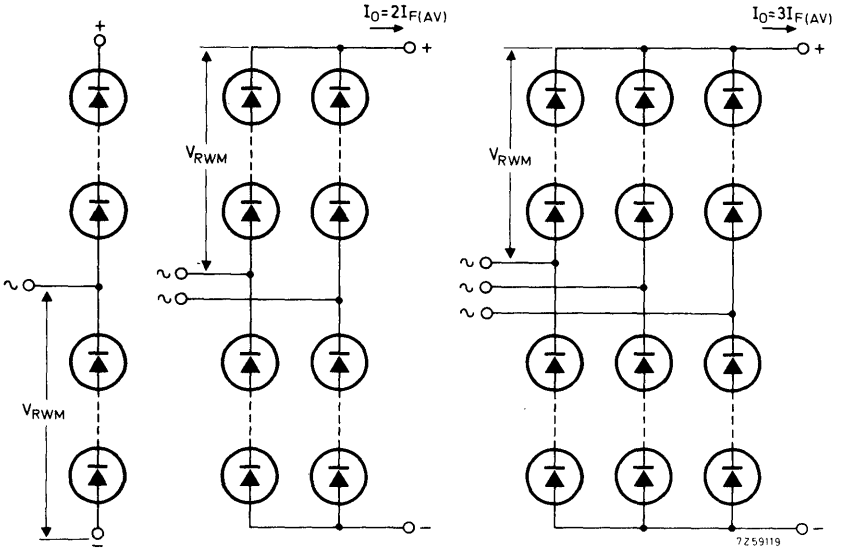

7Z59274
maximum allowable average output current versus ambient temperature
I_O (A)
100
50
0
OSM9410 (3x)
I_O
R_b
oil cooled
forced air 2.5m/s
" 1 "
free convection
0
100
T_{amb}(°C)
200

APPLICATION INFORMATION

OSB9410series



OSM9410series



voltage doubler
1x OSM9410

rectifier circuits with respectively
2x OSM9410 and 3x OSM9410