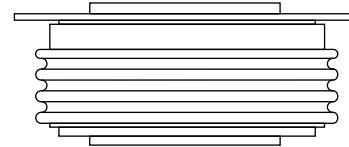


## Standard Recovery Diodes (Hockey PUK Version), 4310A

### FEATURES

- Wide current range
- High voltage ratings up to 3000V
- High surge current capabilities
- Diffused junction
- Hockey PUK version
- Case style B-44(R-PUK), Nell's E-type Capsule
- Lead (Pb)-free



B-44(R-PUK)  
(Nell's E-type Capsule)

### TYPICAL APPLICATIONS

- Converters
- Power supplies
- Machine tool controls
- High power drives
- Auxiliary system supplies for traction applications

### PRODUCT SUMMARY

$I_{F(AV)}$	4310A
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### MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	VALUES	UNIT
$I_{F(AV)}$		4310	A
	$T_{hs}$	55	°C
$I_{F(RMS)}$		6760 (7450)	A
	$T_{hs}$	55 (25)	°C
$I_{FSM}$	50 HZ	55000	A
	60 HZ	57590	
$I^2t$	50 HZ	15125	kA <sup>2</sup> s
	60 HZ	13760	
$V_{RRM}$		2000 to 3000	V
$T_J$	Typical	-40 to 160	°C

### ELECTRICAL SPECIFICATIONS

#### VOLTAGE RATINGS

TYPE NUMBER	VOLTAGE CODE	$V_{RRM}$ , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	$V_{RSM}$ , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	$I_{RRM}$ , MAXIMUM AT $T_J = T_J$ MAXIMUM mA
D4310E	20	2000	2100	75
	24	2400	2500	
	26	2600	2700	
	30	3000	3100	

FORWARD CONDUCTION					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNIT
Maximum average forward current at heatsink temperature	$I_{F(AV)}$	180° conduction, half sine wave Double side (single side) cooled		4310(2150)	A
				55(85)	°C
Maximum RMS forward current	$I_{F(RMS)}$	55°C heatsink temperature double side cooled		6760	A
Maximum peak, one cycle non-repetitive surge current	$I_{FSM}$	t = 10ms	No voltage reapplied	55000	A
		t = 8.3ms		57590	
		t = 10ms	100% $V_{RRM}$ reapplied	46200	
		t = 8.3ms		48370	
Maximum $I^2t$ for fusing	$I^2t$	t = 10ms	No voltage reapplied	15125	kA <sup>2</sup> s
		t = 8.3ms		13760	
		t = 10ms	100% $V_{RRM}$ reapplied	10670	
		t = 8.3ms		9710	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied		151250	kA <sup>2</sup> √s
Maximum value of threshold voltage	$V_{F(TO)}$	$I_F = 13000A, T_J = T_J$ maximum		0.86	V
Maximum value of forward slope resistance	$r_t$			0.080	mΩ
Maximum forward voltage drop	$V_{FM}$	$I_{pk} = 6000A, T_J = T_J$ maximum, $t_p = 10$ ms sinusoidal wave		1.60	V

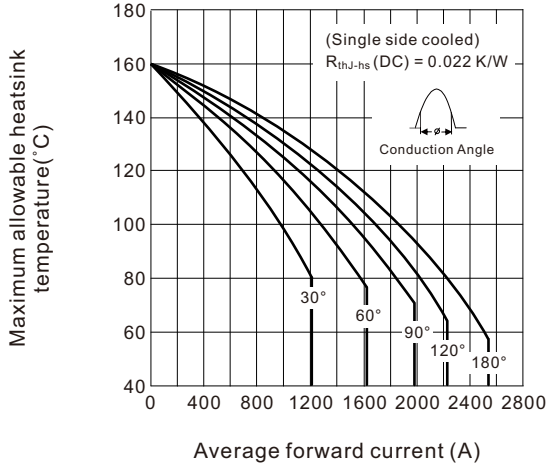
THERMAL AND MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNIT
Maximum junction operating temperature range	$T_J$		-40 to 160	°C
Maximum storage temperature range	$T_{stg}$		-55 to 160	
Maximum thermal resistance, junction to heatsink	$R_{thJ-hs}$	DC operation single side cooled	0.022	K/W
		DC operation double side cooled	0.011	
Mounting force, ±10%			40000 (4045)	N (kg)
Approximate weight			1100	g
Case style		B-44(R-PUK), Nell's E-type Capsule		

△ $R_{thJC}$ CONDUCTION						
CONDUCTION ANGLE	SINUSOIDAL CONDUCTION		RECTANGULAR CONDUCTION		TEST CONDUCTIONS	UNITS
	SINGLE SIDE	DOUBLE SIDE	SINGLE SIDE	DOUBLE SIDE		
180°	0.0009	0.0010	0.0006	0.0006	$T_J = T_J$ maximum	K/W
120°	0.0010	0.0011	0.0010	0.0010		
90°	0.0013	0.0013	0.0014	0.0014		
60°	0.0019	0.0019	0.0020	0.0020		
30°	0.0033	0.0033	0.0034	0.0034		

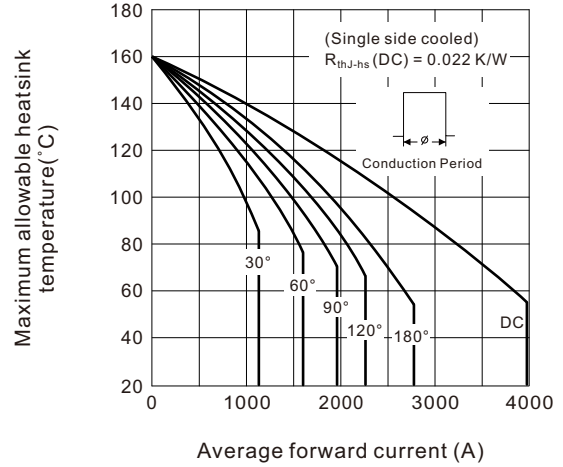
**Note**

- The table above shows the increment of thermal resistance  $R_{thJ-hs}$  when devices operate at different conduction angles than DC

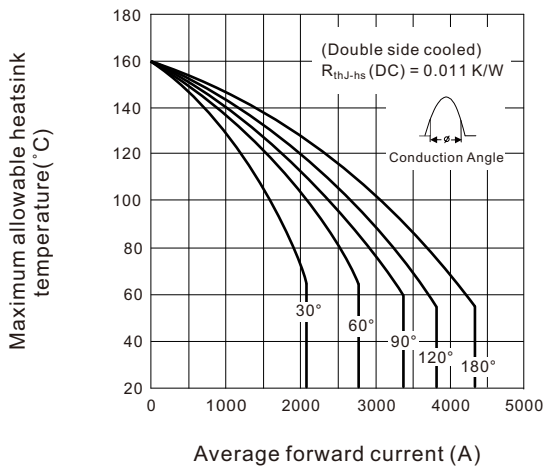
**Fig.1 Current ratings characteristics**



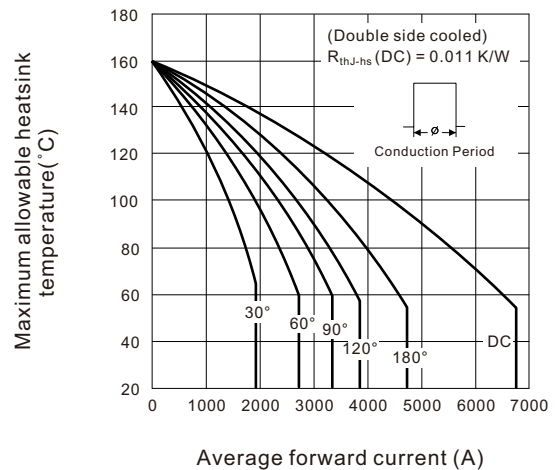
**Fig.2 Current ratings characteristics**



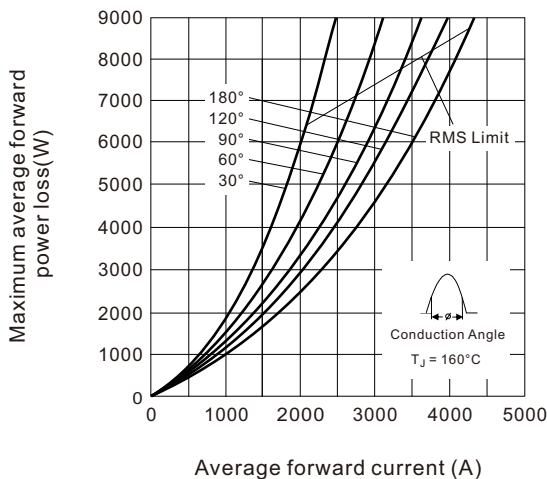
**Fig.3 Current ratings characteristics**



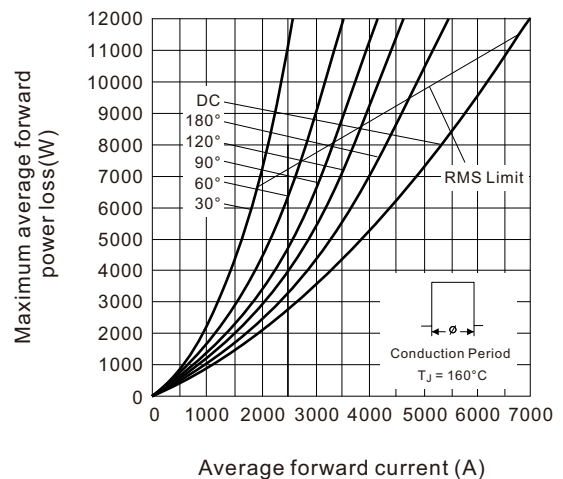
**Fig.4 Current ratings characteristics**



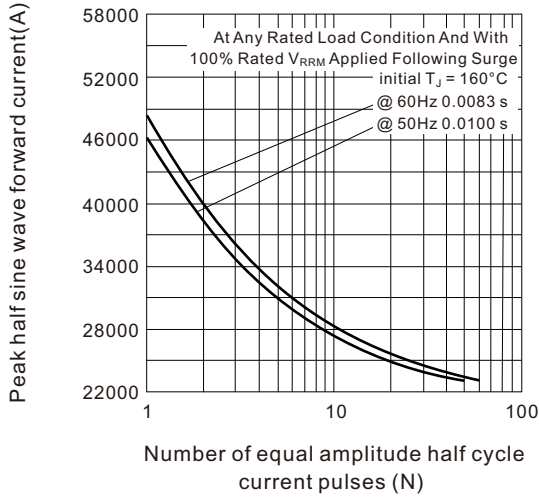
**Fig.5 Forward power loss characteristics**



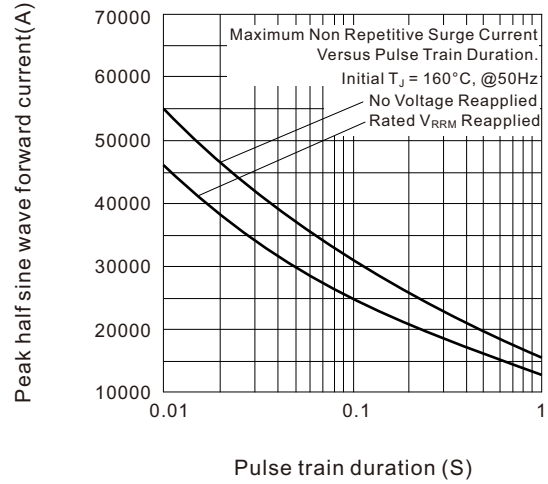
**Fig.6 Forward power loss characteristics**



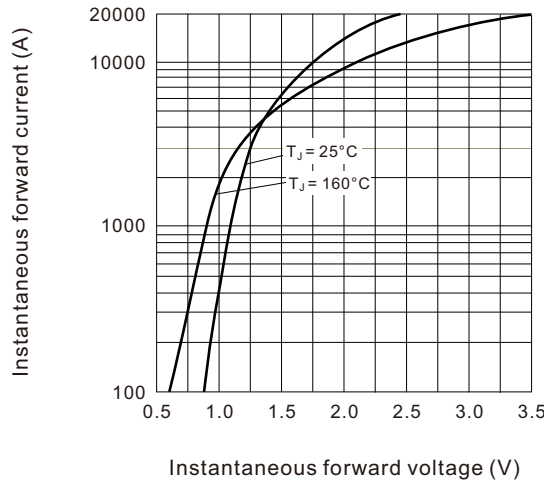
**Fig.7 Maximum non-repetitive surge current single and double side cooled**



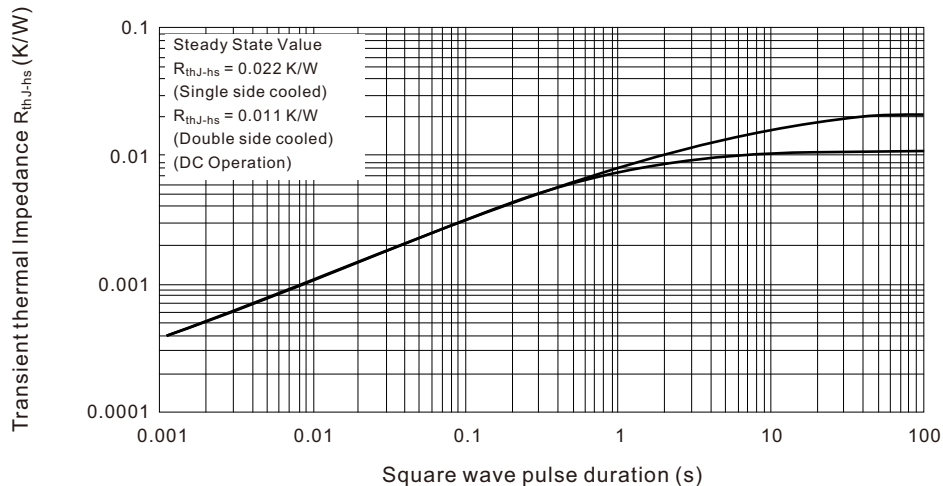
**Fig.8 Maximum non-repetitive surge current single and double side cooled**



**Fig.9 Forward voltage drop characteristics**



**Fig.10 Thermal Impedance  $R_{thJ-hs}$  characteristics**

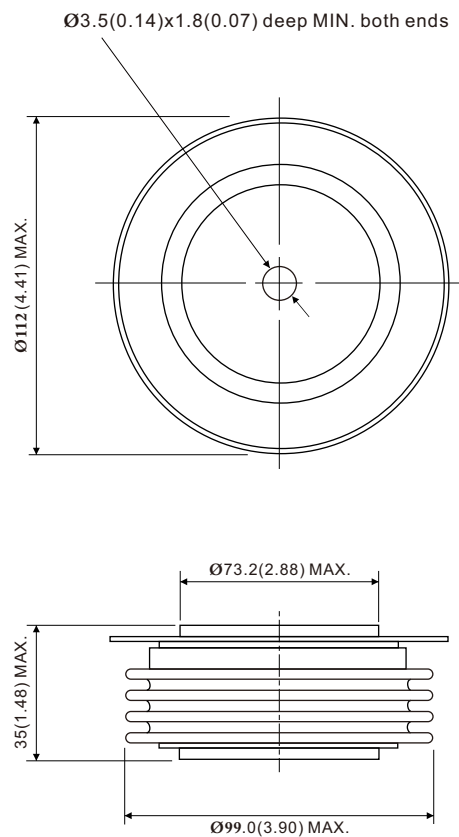


## ORDERING INFORMATION TABLE

Device code	<b>D</b>	<b>4310</b>	<b>E</b>	<b>30</b>
	①	②	③	④

- ① - "D" for standard recovery diode
- ② -
- ③ - Case style : "E" for Nell's E-type Capsule, B-44(R-PUK)
- ④ - Voltage code, code x 100 =  $V_{RRM}$

### B-44(R-PUK), Nell's E-type Capsule



All dimensions in millimeters (inches)

