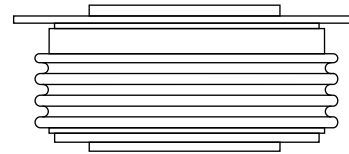


## Standard Recovery Diodes (Hockey PUK Version), 1200A

### FEATURES

- Wide current range
- High voltage ratings up to 4000V
- High surge current capabilities
- Diffused junction
- Hockey PUK version
- Case style DO-200AC(K-PUK), Nell's D-type Capsule
- Lead (Pb)-free



DO-200AC(K-PUK)  
(Nell's D-type Capsule)

### TYPICAL APPLICATIONS

- Converters
- Power supplies
- Machine tool controls
- High power drives
- Medium traction applications

### PRODUCT SUMMARY

$I_{F(AV)}$	1200A
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### MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	VALUES	UNIT
$I_{F(AV)}$		1200	A
	$T_{hs}$	55	°C
$I_{F(RMS)}$		2040	A
	$T_{hs}$	25	°C
$I_{FSM}$	50 HZ	12200	A
	60 HZ	12800	
$I^2t$	50 HZ	744	kA <sup>2</sup> s
	60 HZ	680	
$V_{RRM}$		2400 to 4000	V
$T_J$	Typical	-40 to 150	°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
D1200D	24	2400	2500	50
	30	3000	3100	
	36	3600	3700	
	40	4000	4100	

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		1200(550)	A
				55 (85)	°C
Maximum RMS forward current	$I_{F(RMS)}$	25°C heatsink temperature double side cooled		2040	A
Maximum peak, one cycle non-repetitive surge current	$I_{FSM}$	t = 10ms	No voltage reappplied	12200	A
		t = 8.3ms		12800	
		t = 10ms	50% $V_{RRM}$ reappplied	10290	
		t = 8.3ms		10750	
Maximum $I^2t$ for fusing	$I^2t$	t = 10ms	No voltage reappplied	744	kA <sup>2</sup> s
		t = 8.3ms		680	
		t = 10ms	50% $V_{RRM}$ reappplied	529	
		t = 8.3ms		480	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reappplied		7442	kA <sup>2</sup> √s
Low level value of threshold voltage	$V_{F(TO)1}$	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$ , $T_J = T_J$ maximum		1.06	V
High level value of threshold voltage	$V_{F(TO)2}$	$(I > \pi \times I_{F(AV)})$ , $T_J = T_J$ maximum		1.18	
Low level value of forward slope resistance	$r_{t1}$	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$ , $T_J = T_J$ maximum		0.44	mΩ
High level value of forward slope resistance	$r_{t2}$	$(I > \pi \times I_{F(AV)})$ , $T_J = T_J$ maximum		0.41	
Maximum forward voltage drop	$V_{FM}$	$I_{pk} = 2000A$ , $T_J = T_J$ maximum, $t_p = 10$ ms sinusoidal wave		1.95	V

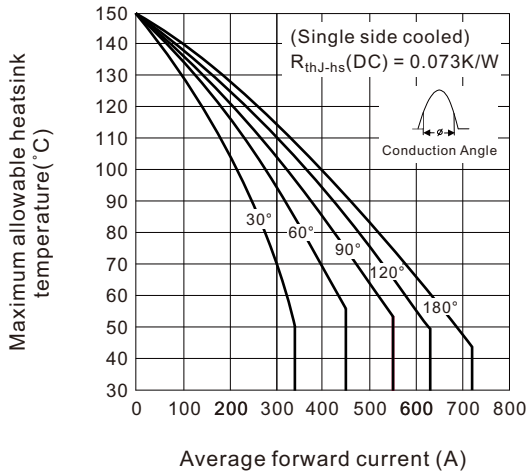
THERMAL AND MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNIT
Maximum junction operating temperature range	$T_J$		-40 to 150	°C
Maximum storage temperature range	$T_{stg}$		-55 to 200	
Maximum thermal resistance, junction to heatsink	$R_{thJ-hs}$	DC operation single side cooled	0.073	K/W
		DC operation double side cooled	0.031	
Mounting force, ±10%			14700 (1500)	N (kg)
Approximate weight			250	g
Case style		DO-200AC (K-PUK), Nell's D-type Capsule		

△ $R_{thJC}$ CONDUCTION						
CONDUCTION ANGEL	SINUSOIDAL CONDUCTION		RECTANGULAR CONDUCTION		TEST CONDUCTIONS	UNITS
	SINGLE SIDE	DOUBLE SIDE	SINGLE SIDE	DOUBLE SIDE		
180°	0.009	0.009	0.006	0.006	$T_J = T_J$ maximum	K/W
120°	0.011	0.011	0.011	0.011		
90°	0.014	0.014	0.015	0.015		
60°	0.020	0.020	0.021	0.021		
30°	0.036	0.036	0.036	0.036		

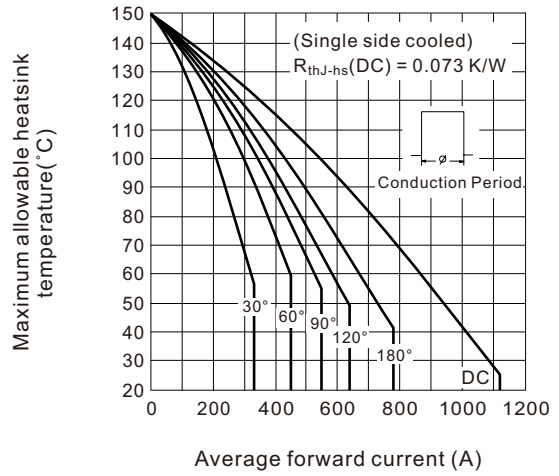
**Note**

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

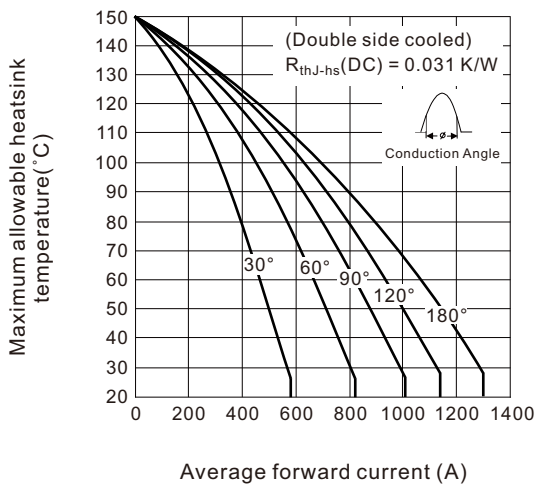
**Fig.1 Current ratings characteristics**



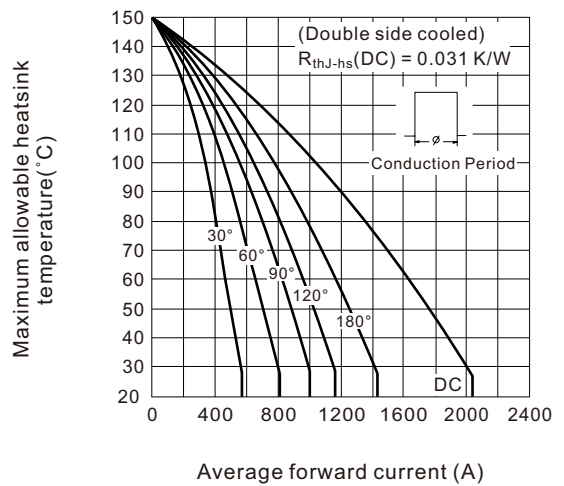
**Fig.2 Current ratings characteristics**



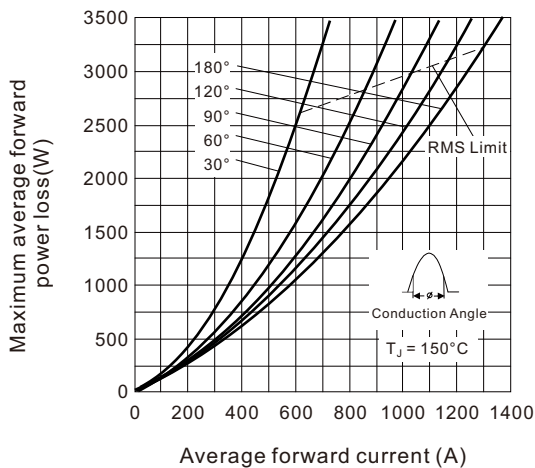
**Fig.3 Current ratings characteristics**



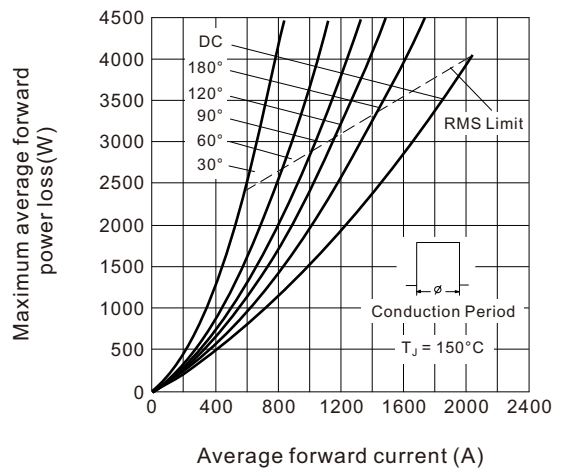
**Fig.4 Current ratings characteristics**



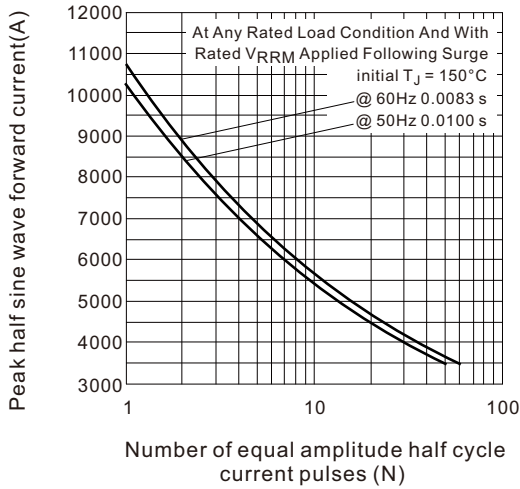
**Fig.5 Forward power loss characteristics**



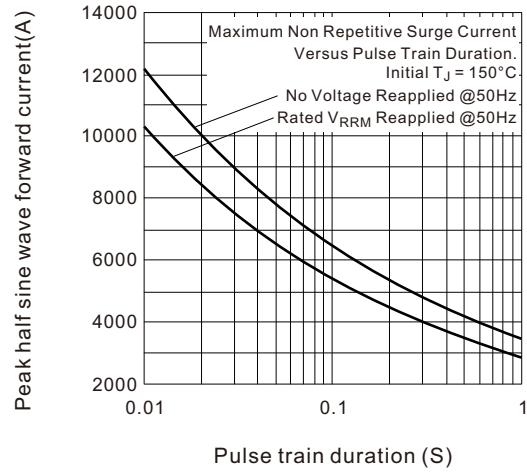
**Fig.6 Forward power loss characteristics**



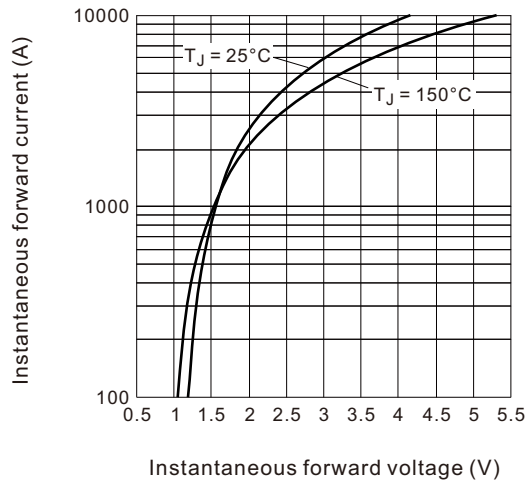
**Fig.7 Maximum non-repetitive surge current single and double side cooled**



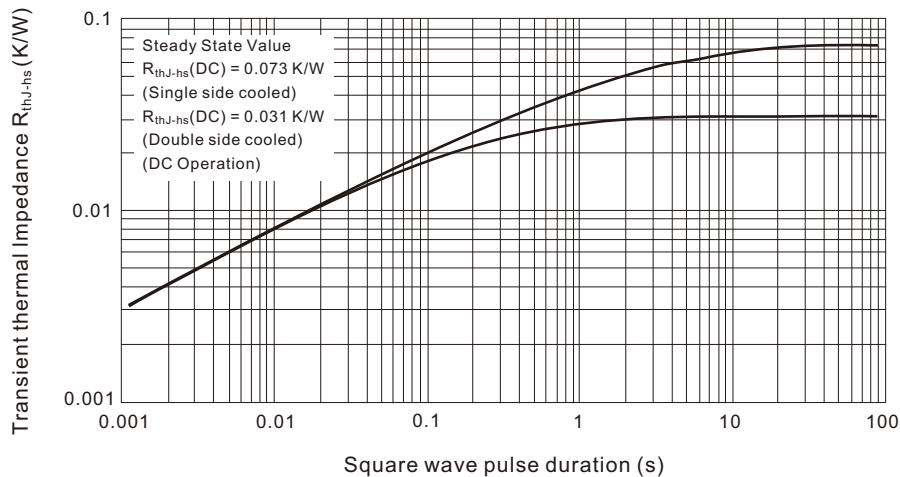
**Fig.8 Maximum non-repetitive surge current single and double side cooled**



**Fig.9 Forward voltage drop characteristics**



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

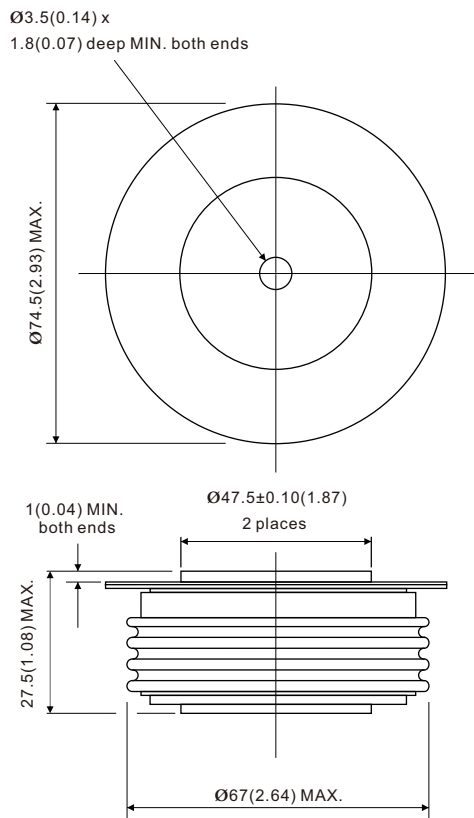


## ORDERING INFORMATION TABLE

Device code	<b>D</b>	<b>1200</b>	<b>D</b>	<b>30</b>
	①	②	③	④

- ① - "D" for standard recovery diode
- ② - Maximum average forward current, "1200" for 1200A
- ③ - Case style : "D" for Nell's D-type Capsule, DO-200AC (K-PUK)
- ④ - Voltage code, code x 100 =  $V_{RRM}$

### DO-220AC (K-PUK), Nell's D-type Capsule



All dimensions in millimeters (inches)

