

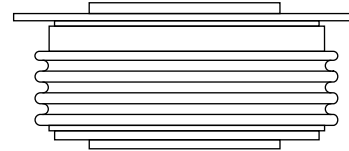
## Standard Recovery Diodes (Hockey PUK Version), 1600A

### FEATURES

- Wide current range
- High voltage ratings up to 2000 V
- High surge current capabilities
- Diffused junction
- Hockey PUK version
- Case style DO-200AB(B-PUK), Nell's C-type Capsule
- Lead (Pb)-free

### TYPICAL APPLICATIONS

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



DO-200AB(B-PUK)  
(Nell's C-type Capsule)

PRODUCT SUMMARY	
$I_{F(AV)}$	1600A

MAJOR RATINGS AND CHARACTERISTICS			
PARAMETER	TEST CONDITIONS	VALUES	UNIT
$I_{F(AV)}$		1600	A
	$T_{hs}$	55	°C
$I_{F(RMS)}$		3010	A
	$T_{hs}$	25	°C
$I_{FSM}$	50 HZ	16600	A
	60 HZ	17400	
$I^2t$	50 HZ	1378	kA <sup>2</sup> s
	60 HZ	1256	
$V_{RRM}$		400 to 3000	V
$T_J$	Typical	-40 to 175	°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
D1600C	08	800	900	50
	12	1200	1300	
	16	1600	1700	
	18	1800	1900	
	20	2000	2100	

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		1600(820)	A
				55 (85)	°C
Maximum RMS forward current	$I_{F(RMS)}$	25°C heatsink temperature double side cooled		3010	A
Maximum peak, one cycle non-repetitive surge current	$I_{FSM}$	t = 10ms	No voltage reapplied	16600	A
		t = 8.3ms		17400	
		t = 10ms	100% $V_{RRM}$ reapplied	14000	
		t = 8.3ms		14700	
Maximum $I^2t$ for fusing	$I^2t$	t = 10ms	No voltage reapplied	1378	kA <sup>2</sup> s
		t = 8.3ms		1256	
		t = 10ms	100% $V_{RRM}$ reapplied	980	
		t = 8.3ms		897	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied		13778	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		0.83	V
High level value of threshold voltage	$V_{F(TO)2}$	$(I > \pi \times I_{F(AV)})$ , $T_J = T_J$ maximum		0.95	
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		0.27	mΩ
High level value of forward slope resistance	$r_{t2}$	$(I > \pi \times I_{F(AV)})$ , $T_J = T_J$ maximum		0.25	
Maximum forward voltage drop	$V_{FM}$	$I_{pk} = 3000A$ , $T_J = T_J$ maximum, $t_p = 10$ ms sinusoidal wave		1.64	V

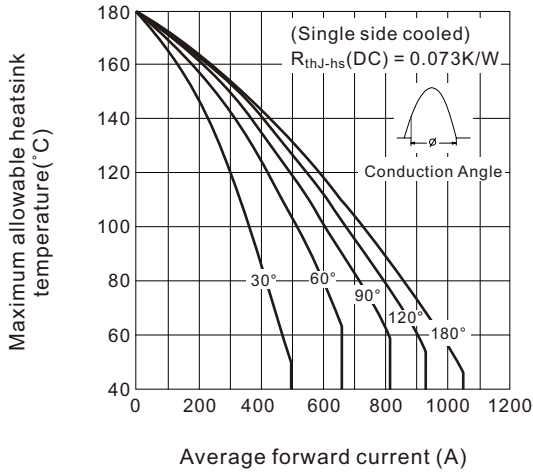
THERMAL AND MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNIT
Maximum junction operating temperature range	$T_J$		-40 to 175	°C
Maximum storage temperature range	$T_{stg}$		-40 to 200	
Maximum thermal resistance, junction to heatsink	$R_{thJ-hs}$	DC operation single side cooled	0.073	K/W
		DC operation double side cooled	0.031	
Mounting force, ±10%			14700 (1500)	N (kg)
Approximate weight			255	g
Case style		TO-200AB (B-PUK), Nell's C-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°	0.035	0.035	0.036	0.036		

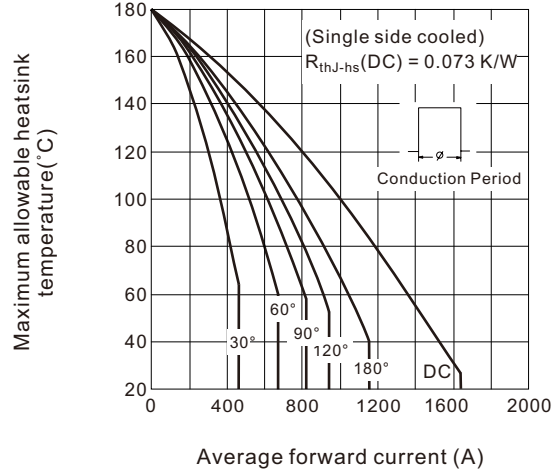
**Note**

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

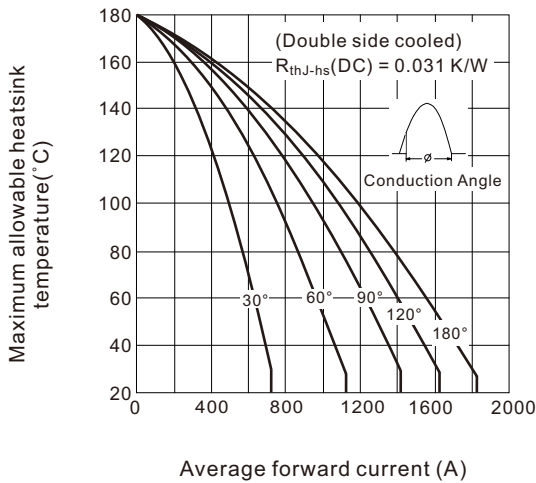
**Fig.1 Current ratings characteristics**



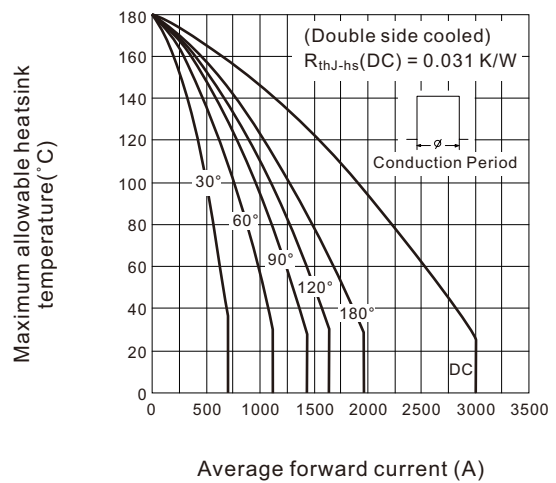
**Fig.2 Current ratings characteristics**



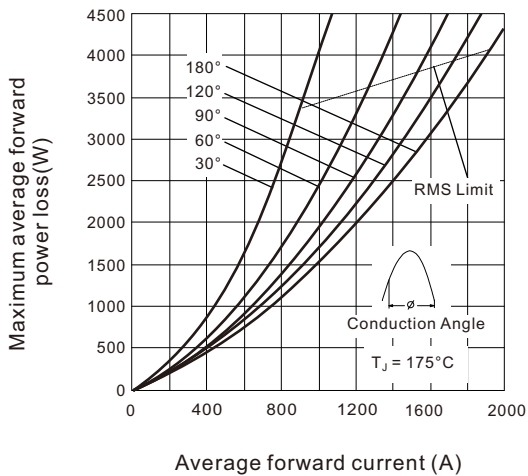
**Fig.3 Current ratings characteristics**



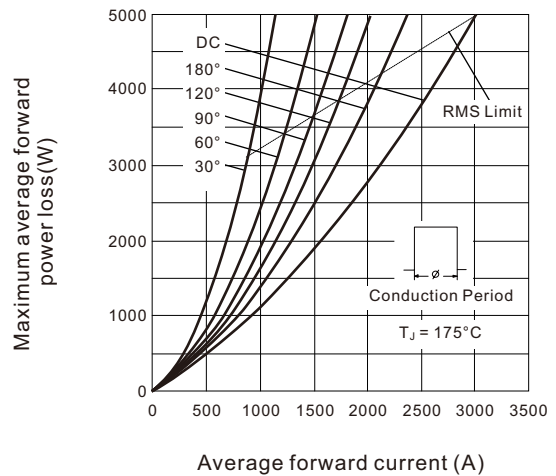
**Fig.4 Current ratings characteristics**



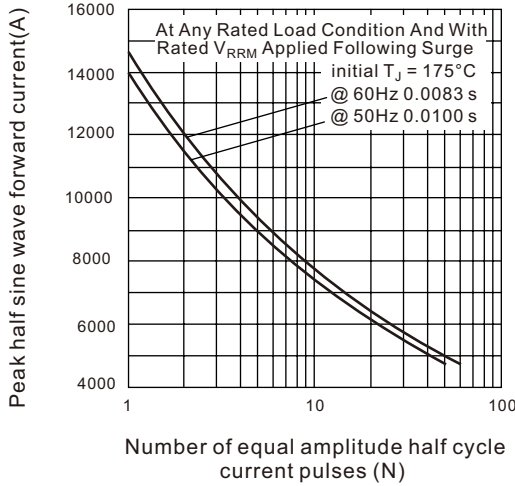
**Fig.5 Forward power loss characteristics**



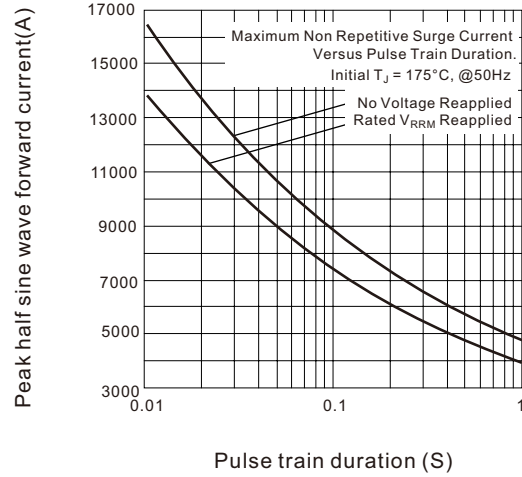
**Fig.6 Forward power loss characteristics**



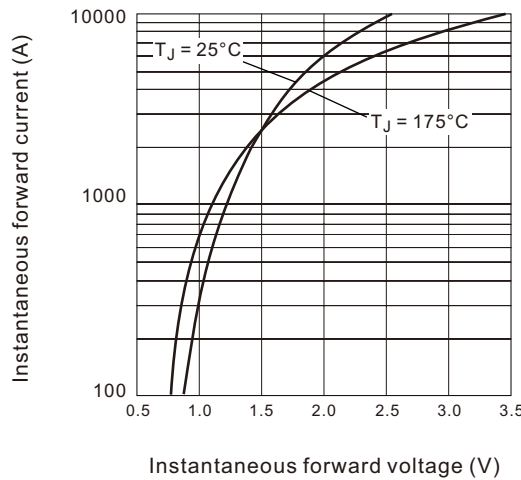
**Fig.7 Maximum non-repetitive surge current single and double side cooled**



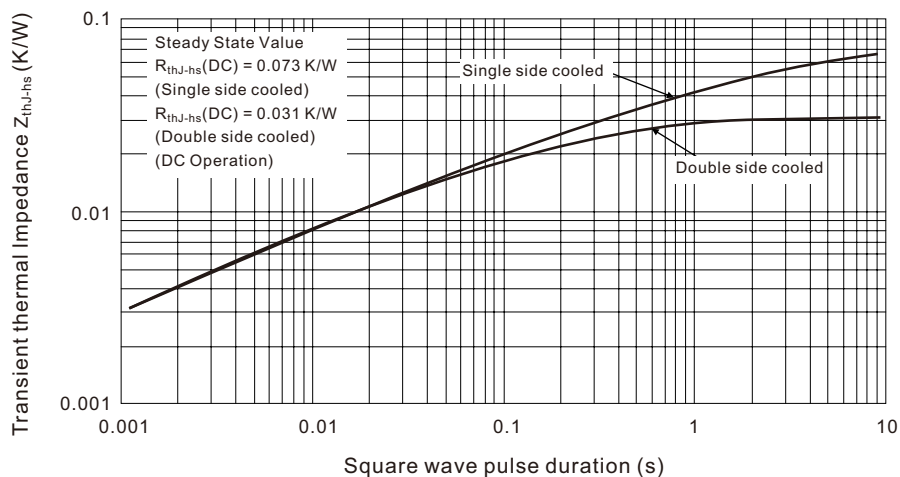
**Fig.8 Maximum non-repetitive surge current single and double side cooled**



**Fig.9 Forward voltage drop characteristics**



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

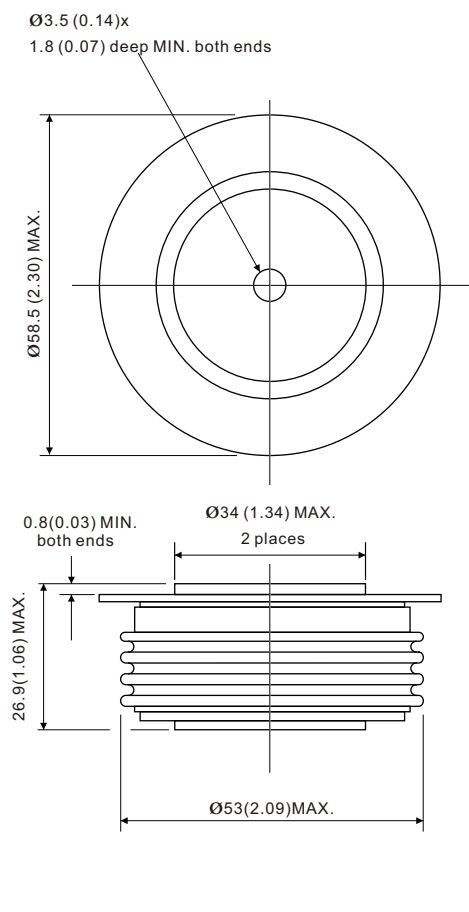


## ORDERING INFORMATION TABLE

Device code	<b>D</b>	<b>1600</b>	<b>C</b>	<b>20</b>
	①	②	③	④

- ① - "D" for standard recovery diode
- ② - Maximum average forward current, "1600" for 1600A
- ③ - Case style : "C" for Nell's C-type Capsule, DO-200AB (B-PUK)
- ④ - Voltage code, code x 100 =  $V_{RRM}$

### DO-220AB (B-PUK), Nell's C-type Capsule



All dimensions in millimeters (inches)

