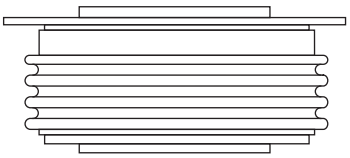
Standard Recovery Diodes (Hockey PUK Version), 1600A

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



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

TYPICAL APPLICATIONS

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

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^2s
	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-reptitive surge current	I_{FSM}	t = 10ms	No voltage reapplied	Sinusoidal half wave, initial $T_J = T_J$ maximum	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^2s
		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	$kA^2\sqrt{s}$
Low level value of threshold voltage	$V_{F(TO)1}$	(16.7% x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), $T_J = T_J$ maximum			0.83	V
High level value of threshold voltage	$V_{F(TO)2}$	(I > π x $I_{F(AV)}$), $T_J = T_J$ maximum			0.95	
Low level value of forward slope resistance	r_{t1}	(16.7% x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), $T_J = T_J$ maximum			0.27	mΩ
High level value of forward slope resistance	r_{t2}	(I > π x $I_{F(AV)}$), $T_J = T_J$ 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

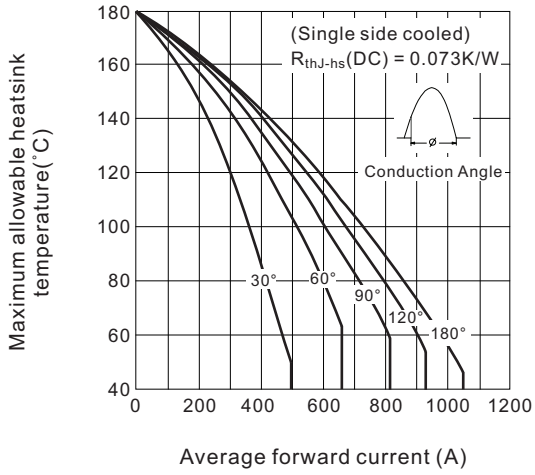


Fig.2 Current ratings characteristics

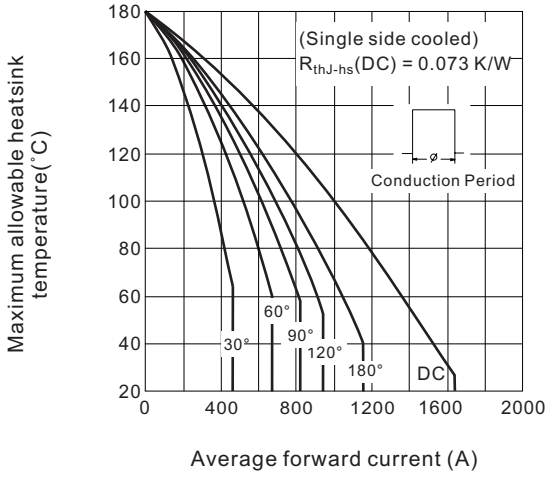


Fig.3 Current ratings characteristics

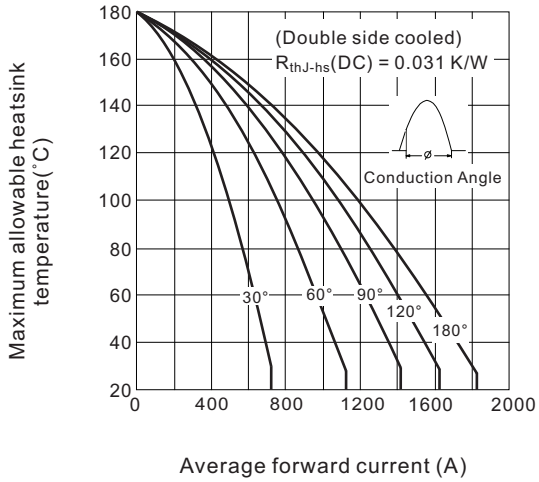


Fig.4 Current ratings characteristics

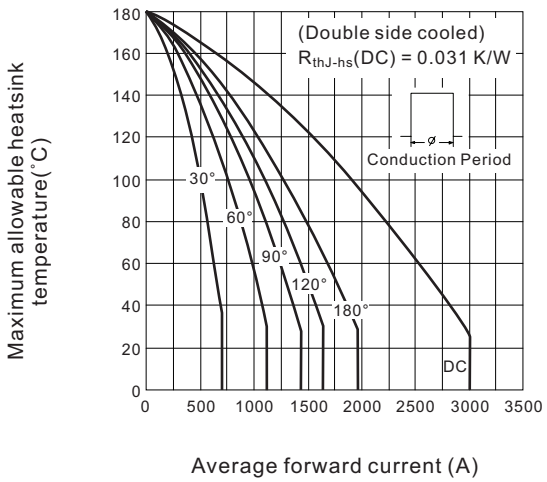


Fig.5 Forward power loss characteristics

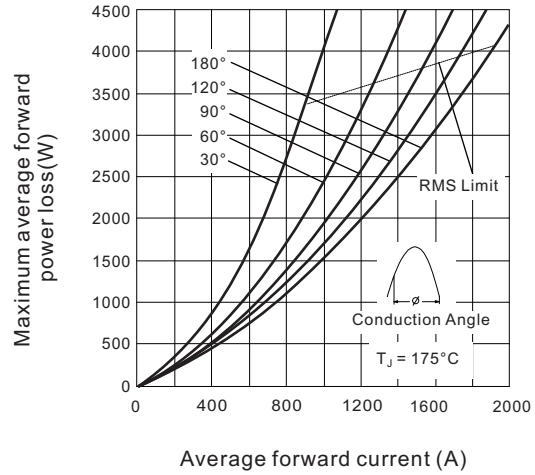


Fig.6 Forward power loss characteristics

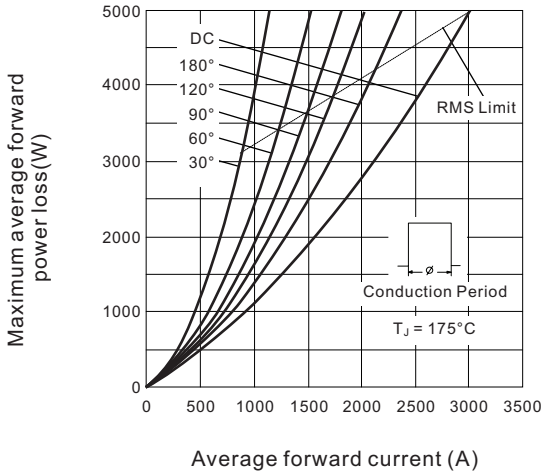


Fig.7 Maximum non-repetitive surge current single and double side cooled

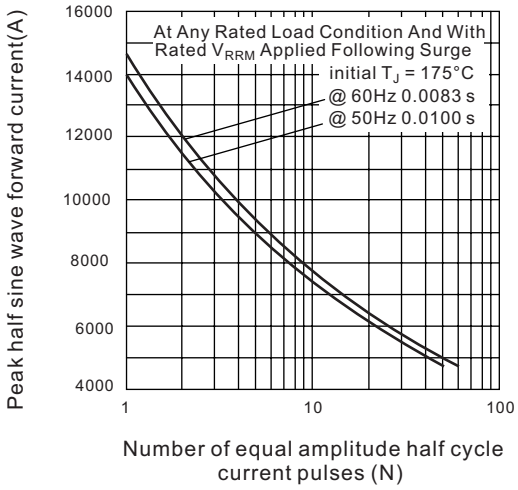


Fig.8 Maximum non-repetitive surge current single and double side cooled

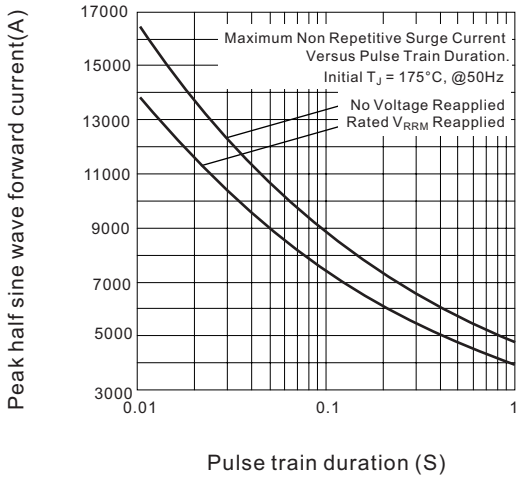


Fig.9 Forward voltage drop characteristcs

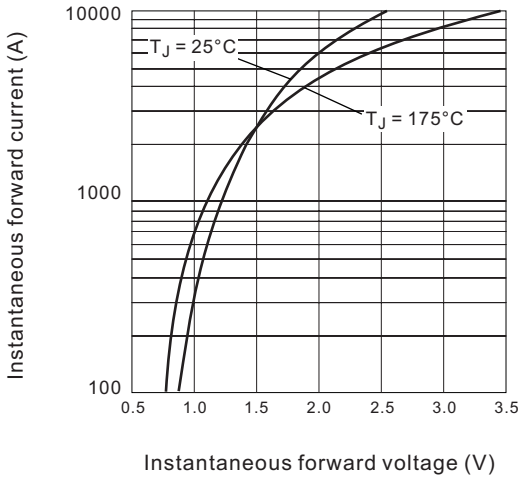
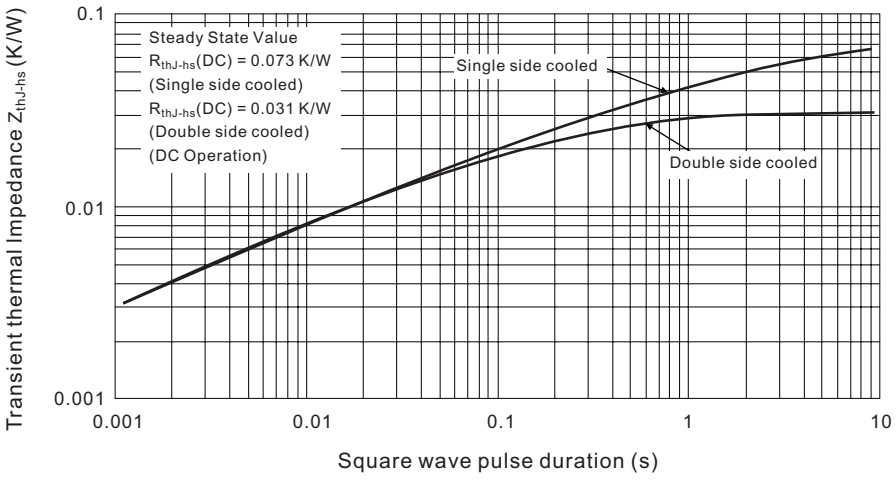


Fig.10 Thermal Impedance $Z_{thJ\text{-}hs}$ characteristics



ORDERING INFORMATION TABLE

Device code	D	1600	C	20
	1	2	3	4

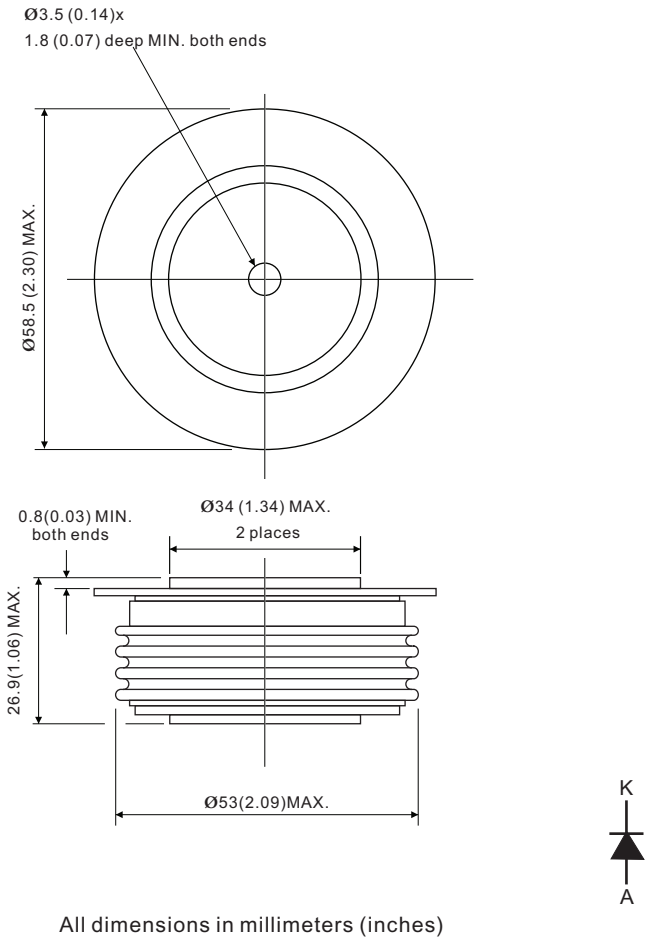
1 - "D" for standard recovery diode

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)