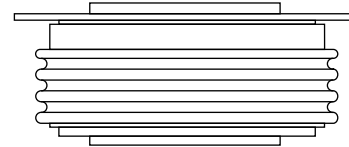


Standard Recovery Diodes (Hockey PUK Version), 3800A

FEATURES

- Wide current range
- High voltage ratings up to 5500V
- 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

$I_{F(AV)}$	3800A
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MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	VALUES	UNIT
$I_{F(AV)}$		3800	A
	T_{hs}	55	°C
$I_{F(RMS)}$		5970(6410)	A
	T_{hs}	55(25)	°C
I_{FSM}	50 HZ	35000	A
	60 HZ	36650	
I^2t	50 HZ	6125	kA ² s
	60 HZ	5575	
V_{RRM}		4000 to 5500	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
D3800E	40	4000	4100	100
	45	4500	4600	
	50	5000	5100	
	55	5500	5600	

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		3800(1925)	A
				55(85)	°C
Maximum RMS forward current	$I_{F(RMS)}$	55°C heatsink temperature double side cooled		5970	A
Maximum peak, one cycle non-repetitive surge current	I_{FSM}	t = 10ms	No voltage reapplied	Sinusoidal half wave, initial $T_J = T_J$ maximum	A
		t = 8.3ms			
		t = 10ms	100% V_{RRM} reapplied		
		t = 8.3ms			
Maximum I^2t for fusing	I^2t	t = 10ms	No voltage reapplied	Sinusoidal half wave, initial $T_J = T_J$ maximum	kA ² s
		t = 8.3ms			
		t = 10ms	100% V_{RRM} reapplied		
		t = 8.3ms			
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied		61250	kA ² √s
Maximum value of threshold voltage	$V_{F(TO)}$	$I_F = 5900A \sim 17900A, T_J = T_J$ maximum		0.903	V
Maximum value of forward slope resistance	r_t			0.136	mΩ
Maximum forward voltage drop	V_{FM}	$I_{pk} = 4000A, T_J = T_J$ maximum, $t_p = 10$ ms sinusoidal wave		1.50	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			990	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

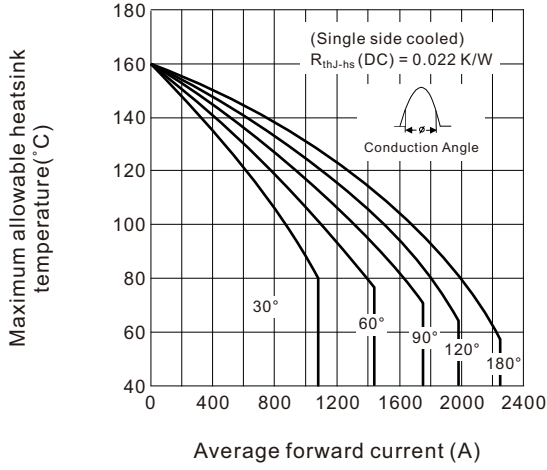


Fig.2 Current ratings characteristics

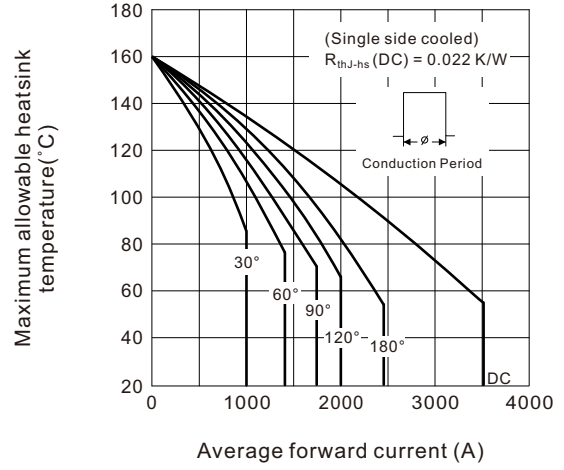


Fig.3 Current ratings characteristics

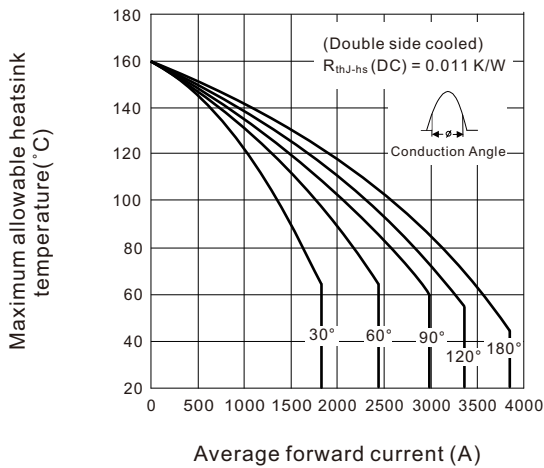


Fig.4 Current ratings characteristics

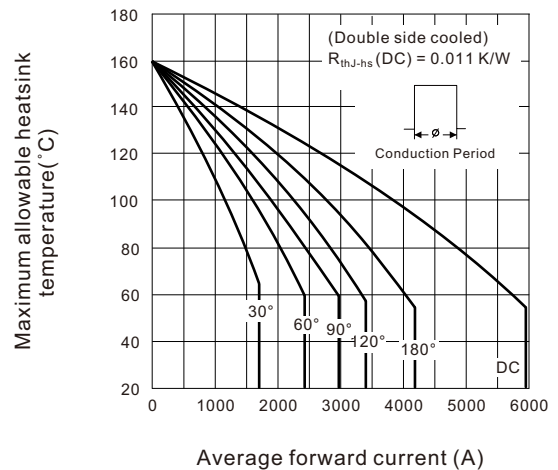


Fig.5 Forward power loss characteristics

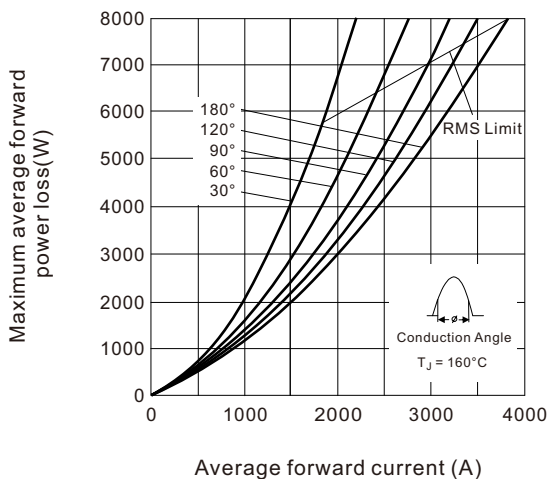


Fig.6 Forward power loss characteristics

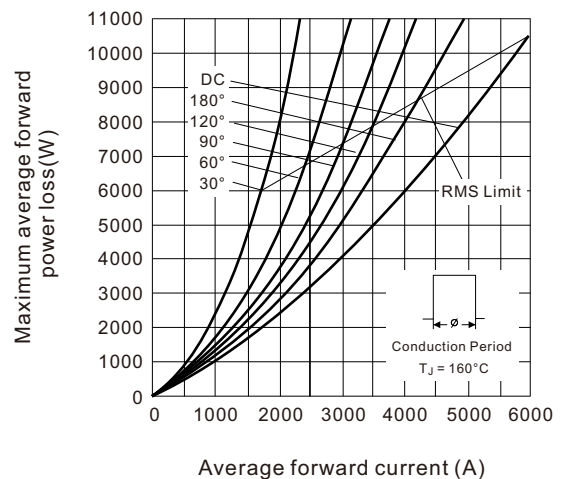


Fig.7 Maximum non-repetitive surge current single and double side cooled

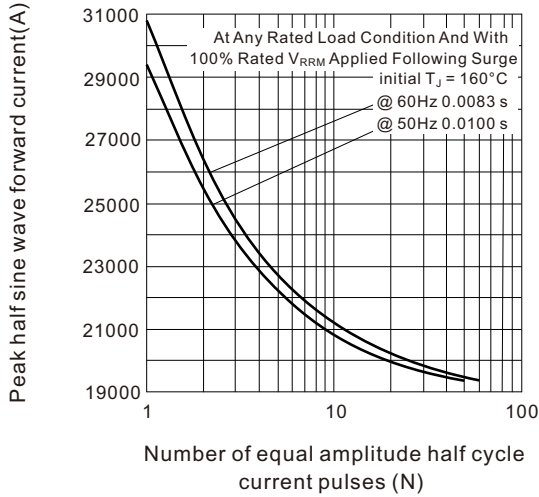


Fig.8 Maximum non-repetitive surge current single and double side cooled

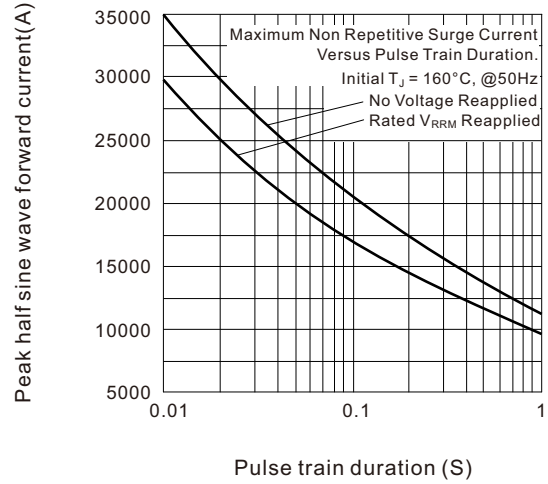


Fig.9 Forward voltage drop characteristics

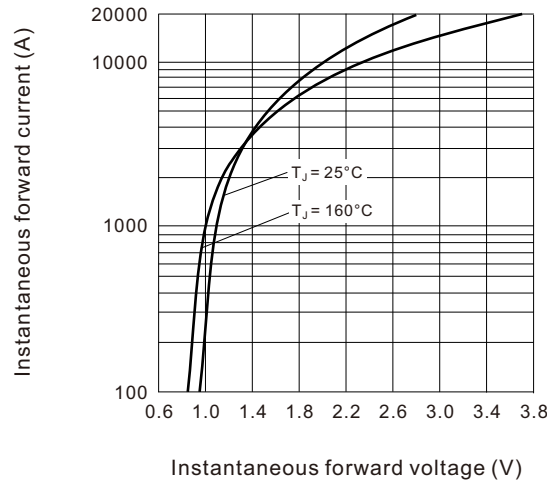
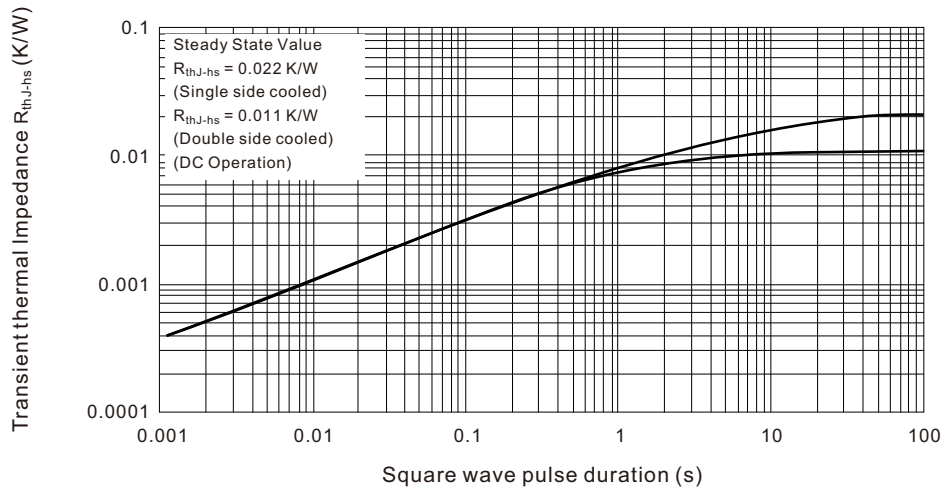


Fig.10 Thermal Impedance R_{thJ-hs} characteristics

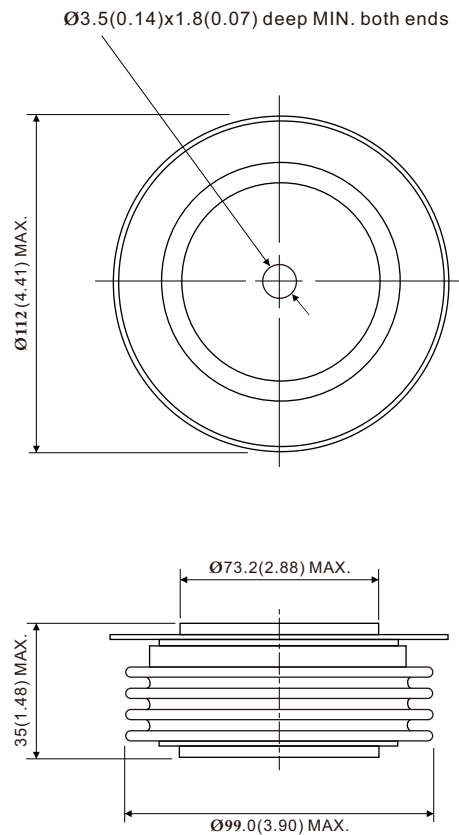


ORDERING INFORMATION TABLE

Device code	D	3800	E	50
	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)

