



Optimized for high current rectifiers  
Very low on-state voltage  
Very low thermal resistance  
Typical applications: welding

**Rectifier Diode  
For Welding  
Type D053-7100-4-N**

Average forward current	$I_{FAV}$	7100 A
Repetitive peak reverse voltage	$V_{RRM}$	200 ÷ 400 V
$V_{RRM}$ , V	200	400
Voltage code	2	4
$T_j$ , °C	- 60 ÷ 170	

**MAXIMUM ALLOWABLE RATINGS**

Symbols and parameters		Units	Values	Test conditions
<b>ON-STATE</b>				
$I_{FAV}$	Average forward current	A	7100 7065	$T_c = 84.5$ °C; Double side cooled; $T_c = 85$ °C; Double side cooled; 180° half-sine wave; 50 Hz
$I_{FRMS}$	RMS forward current	A	11147	$T_c = 84.5$ °C; Double side cooled; 180° half-sine wave; 50 Hz
$I_{FSM}$	Surge forward current	kA	55.0 63.0	$T_j = T_{j\max}$ $T_j = 25$ °C 180° half-sine wave; 50 Hz ( $t_p = 10$ ms); single pulse; $V_R = 0$ V;
			58.0 67.0	$T_j = T_{j\max}$ $T_j = 25$ °C 180° half-sine wave; 60 Hz ( $t_p = 8.3$ ms); single pulse; $V_R = 0$ V;
$I^2t$	Safety factor	$A^2s \cdot 10^3$	15125 19845	$T_j = T_{j\max}$ $T_j = 25$ °C 180° half-sine wave; 50 Hz ( $t_p = 10$ ms); single pulse; $V_R = 0$ V;
			13960 18625	$T_j = T_{j\max}$ $T_j = 25$ °C 180° half-sine wave; 60 Hz ( $t_p = 8.3$ ms); single pulse; $V_R = 0$ V;
<b>BLOCKING</b>				
$V_{RRM}$	Repetitive peak reverse voltages	V	200 ÷ 400	$T_{j\min} < T_j < T_{j\max}$ ; 180° half-sine wave; 50 Hz;
$V_{RSM}$	Non-repetitive peak reverse voltages	V	300 ÷ 500	$T_{j\min} < T_j < T_{j\max}$ ; 180° half-sine wave; 50 Hz; single pulse;
$V_R$	Reverse continuous voltages	V	$0.75 \cdot V_{RRM}$	$T_j = T_{j\max}$ ;
<b>THERMAL</b>				
$T_{stg}$	Storage temperature	°C	- 60 ÷ 170	
$T_j$	Operating junction temperature	°C	- 60 ÷ 170	
<b>MECHANICAL</b>				
F	Mounting force	kN	20.0 ÷ 24.0	
a	Acceleration	$m/s^2$	100	Device unclamped
			50	Device clamped

**JSC "PROTON-ELECTROTEX"**

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## CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions	
<b>ON-STATE</b>					
$V_{FM}$	Peak forward voltage, max	V	1.05 0.85	$T_j=25\text{ }^\circ\text{C}; I_{FM} = 5000\text{ A}$ $T_j=T_{j\text{ max}}; I_{FM} = 5000\text{ A}$	
$V_{F(TO)}$	Forward threshold voltage, max	V	0.700	$T_j=T_{j\text{ max}};$	
$r_T$	Forward slope resistance, max	m $\Omega$	0.029	$0.5\pi I_{FAV} < I_T < 1.5\pi I_{FAV}$	
<b>BLOCKING</b>					
$I_{RRM}$	Repetitive peak reverse current, max	mA	50	$T_j=T_{j\text{ max}};$ $V_R=V_{RRM}$	
<b>THERMAL</b>					
$R_{thjc}$	Thermal resistance, junction to case, max	$^\circ\text{C/W}$	0.0100	Direct current	Double side cooled
$R_{thjc-A}$			0.0220		Anode side cooled
$R_{thjc-K}$			0.0180		Cathode side cooled
$R_{thck}$	Thermal resistance, case to heatsink, max	$^\circ\text{C/W}$	0.0050	Direct current	
<b>MECHANICAL</b>					
w	Weight, typ	g	140		
$D_s$	Surface creepage distance	mm (inch)	7.3 (0.287)		
$D_a$	Air strike distance	mm (inch)	4.0 (0.157)		

### PART NUMBERING GUIDE

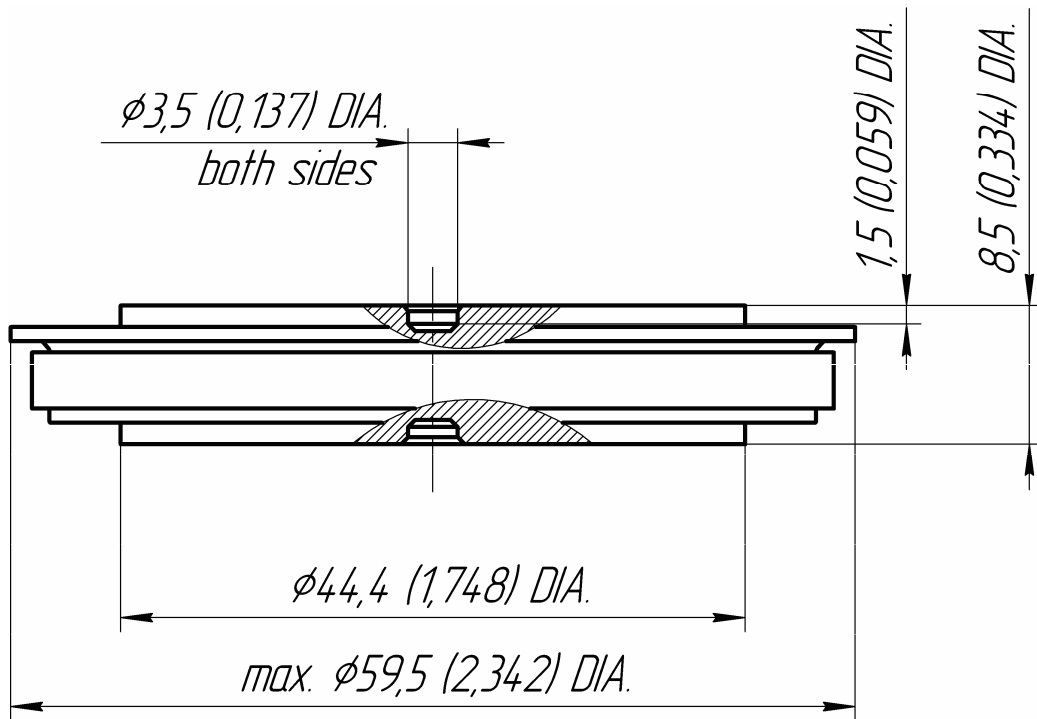
D	053	7100	4	N
1	2	3	4	5

1. Design version
2. Average forward current, A
3. Voltage code
4. Ambient conditions: N – normal; T – tropical

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All dimensions in millimeters (inches)

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