PST 53DN04

HIGH POWER DIODE FOR MEDIUM FREQUENCY WELDING
WITHOUT HOUSING ULTRATHIN DEVICE

Features

- High current capability
- Very low thermal impedance
- High power cycling capability

ELECTRICAL CHARACTERISTICS AND RATINGS

Reverse blocking

Device Type	V_{RRM} (1)	V_{RSM} (1)
PST 53DN04	400 V	500 V

V_{RRM} = Repetitive peak reverse voltage
V_{RSM} = Non repetitive peak reverse voltage (2)

Notes:

All ratings are specified for Tj=25 °C unless otherwise stated.

(1) All voltage ratings are specified for an applied 50Hz/60Hz sinusoidal waveform over the temperature range -40 to +180 °C.

(2) 10 ms max. pulse width

(3) Maximum value for Tj = 180 °C.

Repetitive peak reverse leakage current	I_{RRM}	100 mA (3)

Conducting

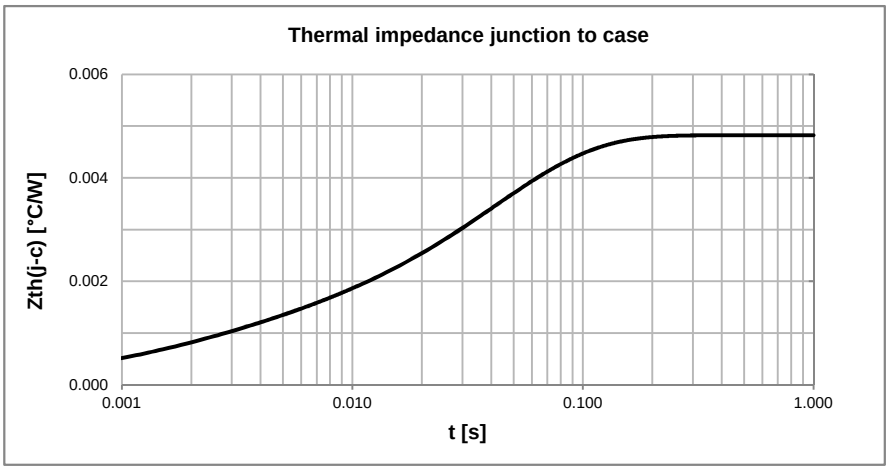
Parameter	Symbol	Min	Max	Typ	Unit	Conditions
Average value of forward current	$I_{F(AV)}$		6300		A	50Hz sinewave,180° conduction, Tc = 126 °C
RMS value of forward current	$I_{F(RMS)}$		9890		A	
Peak one cycle surge (non repetitive) current	I_{FSM}		70		kA	50Hz sinewave,180° conduction, Tj = Tjmax, V_R = 0
I square t	I^2t		24500		kA^2s	Tj = Tjmax
Peak forward voltage	V_{FM}		1.14		V	Forward current 10 kA, Tjmax
Threshold voltage	$V_{F(TO)}$		0.7		V	Tj = Tjmax
Forward slope resistance	r_F		0.046		mΩ	Tj = Tjmax

PST 53DN04

HIGH POWER DIODE FOR MEDIUM FREQUENCY WELDING

Thermal and mechanical characteristics and ratings

Parameter	Symbol	Min	Max	Typ	Unit	Conditions
Operating temperature	T_j	-40	180		°C	
Storage temperature	T_{stg}	-40	180		°C	
Thermal resistance junction to case	$R_{th(j-c)}$		0.0048		°C/W	Double side cooled , DC
Thermal resistance junction to case	$R_{th(j-c)}$		0.0062		°C/W	Double side cooled, 180° sin
Thermal resistance case to sink	$R_{th(c-s)}$		0.0025		°C/W	Double side cooled, mounting surfaces smooth, flat and greased
Mounting force	**F**	40	60		kN	
Weight	**W**		100		g	

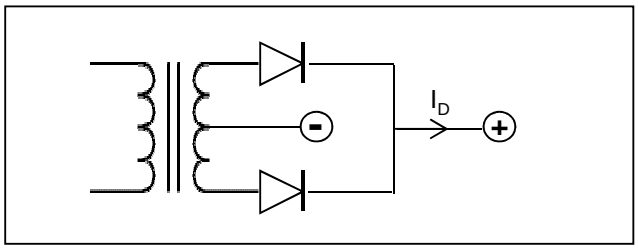


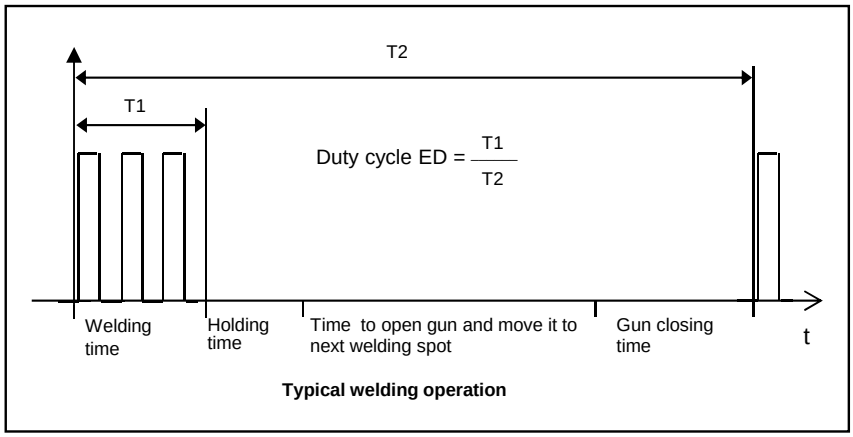
Analytical expression for Zth(j-c)				
$Z_{th(j-c)}(t) = \Sigma_i A_i \cdot (1 - \exp(-t/\tau_i))$				
i	1	2	3	
A_i	1.0E-03	3.7E-03	1.7E-06	[°C/W]
τ_i	2.0E-03	3.8E-02	8.0E-01	[s]

PST 53DN04

HIGH POWER DIODE FOR MEDIUM FREQUENCY WELDING

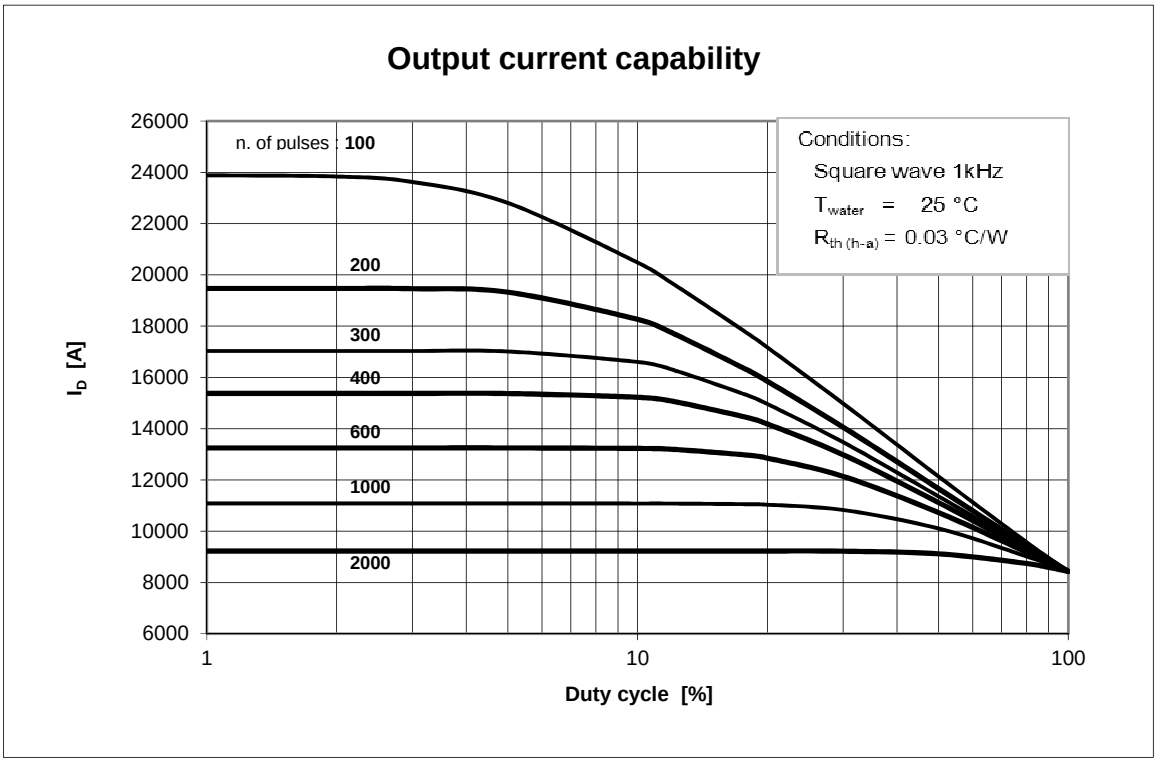
Output current (I_D) capability for center tap configuration





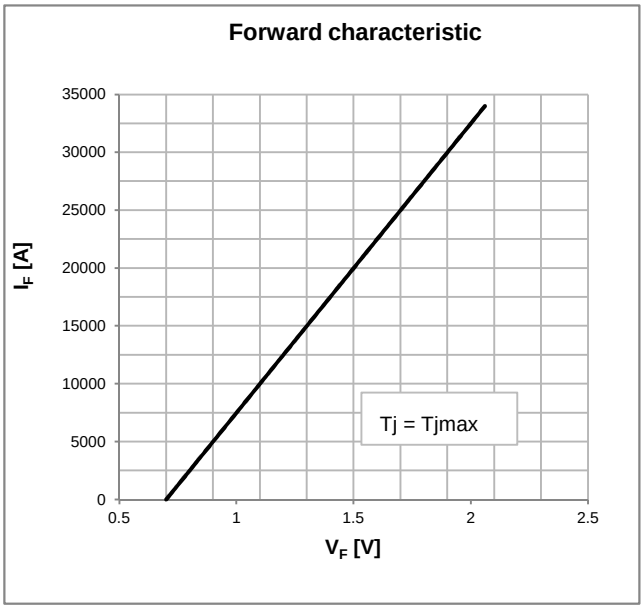
Typical welding operation

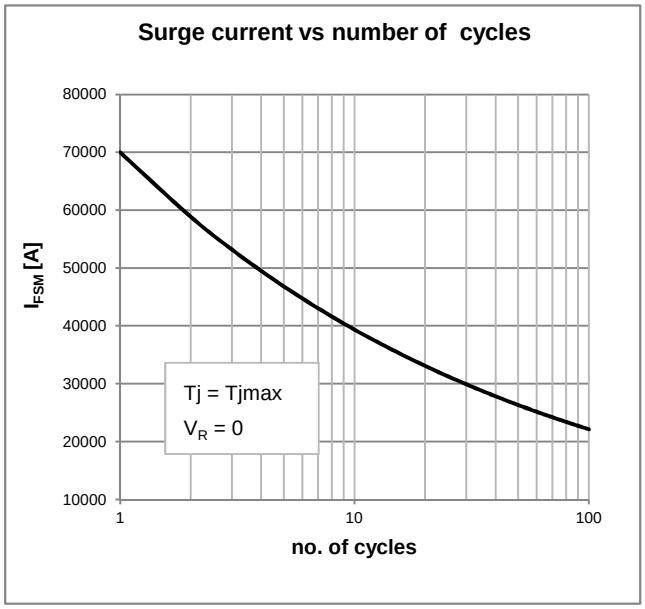
Output current capability



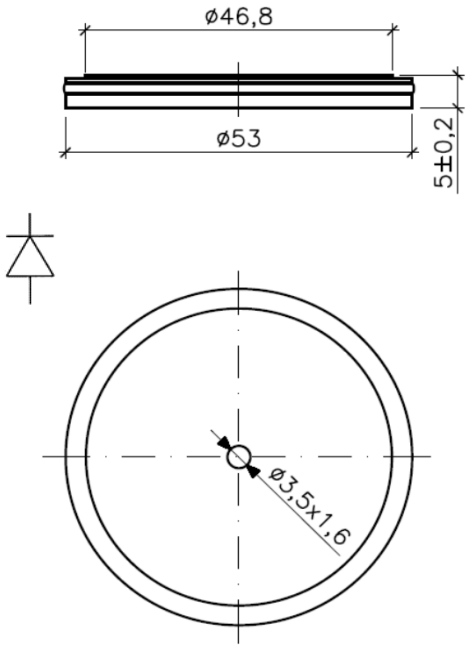
PST 53DN04

HIGH POWER DIODE FOR MEDIUM FREQUENCY WELDING





OUTLINE AND DIMENSIONS



Notice

- We recommend to protect the diode with a temperature resistant O-Ring.

- All the characteristics given in this data sheet are guaranteed only with uniform clamping force, cleaned and lubricated heatsink surfaces with flatness < 0.03 mm and roughness < 2µm