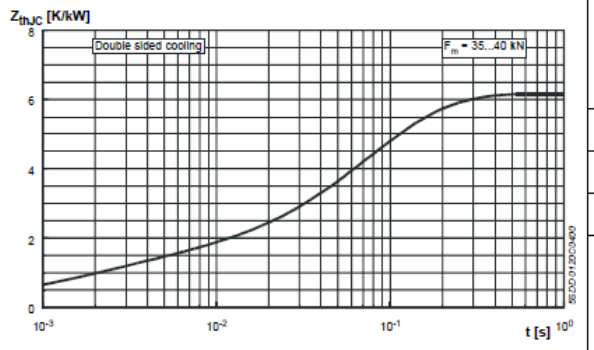
ZP12000A Welding Diode

Feature

- Designed for medium frequency welding equipment and optimized for high current rectifiers
- Proven high reliability in welding equipment with very Low on-state voltage and very low thermal resistance

V_{RRM}	400V
$I_{F(AVM)}$	12000A
V_{FO}	0.74V
r_F	0.018mΩ

SYMBOL	CHARCTERISTIC	TEST CONDITIONS	VALUE	UNIT
V_{RRM}	Repetitive peak reverse voltage	Half sine waveform，50HZ T_Q=10ms	400	V
V_{RSM}	Maximum peak reverse voltage	Half sine waveform， T_Q=10ms	450	
I_{RRM}	Repetitive peak revrse current	V_R=V_{RRM}, T_J=170℃	≤50	mA
$I_{F(AVM)}$	Max.average on-current	T_C=85℃,Half sine pulse	12000	A
$I_{F(RMS)}$	Max.surge current integral	T_C=85℃， Half sine pulse	17800	A
I_{FSM}	Max.peak non-repertitive surge current	T_Q=8.3ms， V_R=0V， Half sine pulse	85000	A
		T_Q=10ms， V_R=0V， Half sine pulse	92500	
$\int I^2dt$	Max.surge current integral	T_Q=8.3ms， V_R=0V， Half sine pulse	36100	KA^2S
		T_Q=10ms， V_R=0V， Half sine pulse	35700	
V_F	Max.on-state voltage	I_F=5000A	≥0.83	V
V_{FO}	Max.Threshold voltage		≤0.88	V
r_F	Max.Slope resistance	I_F=5-15KA	0.74	mΩ
T_j	Operating junction temperature range	-40-170℃		
T_{stg}	Storage temperature range	-40-170℃		
$R_{th(j-h)}$	Thermal resistance junction to case	Anode side cooled	12	K/kw
		Cathode side cooled	12	
		Double side cooled	6	
$R_{th(c-h)}$	Thermal resistance case to heatsink	Anode side cooled	6	K/kw
		Cathode side cooled	3	
F_M	Max.on-state voltage		35	KN
W_t	Weight		0.22	kg
D_S	Surface creepage distance		4	mm
D_a	Air strike distance		4	mm
Outline				



$$Z_{th(j-c)}(t) = \sum_{i=1}^{4} R_i(1 - e^{-t/\tau_i})$$

i	1	2	3	4
R_i (K/kW)	3.37	1.50	0.63	0.67
τ_i (s)	0.095	0.048	0.0035	0.001

F_M = 35…40 kN

Double side cooled

Fig. 2 Transient thermal impedance (junction-to-case) vs. time in analytical and graphical forms.

On-state characteristics

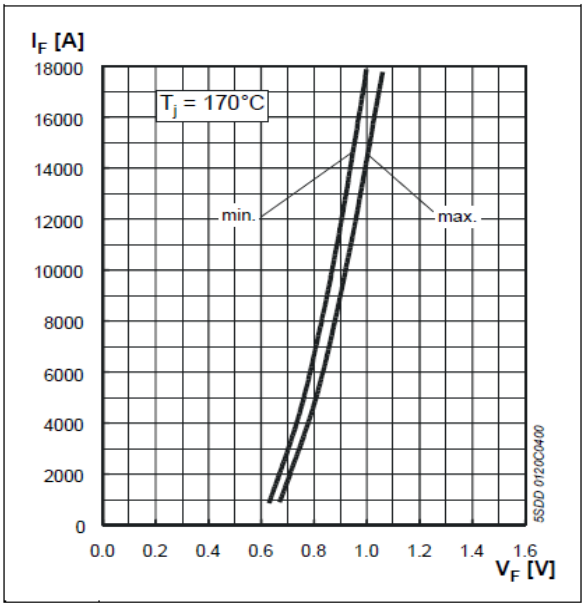


Fig. 3 Forward current vs. forward voltage (min. and max. values).

Surge current characteristics

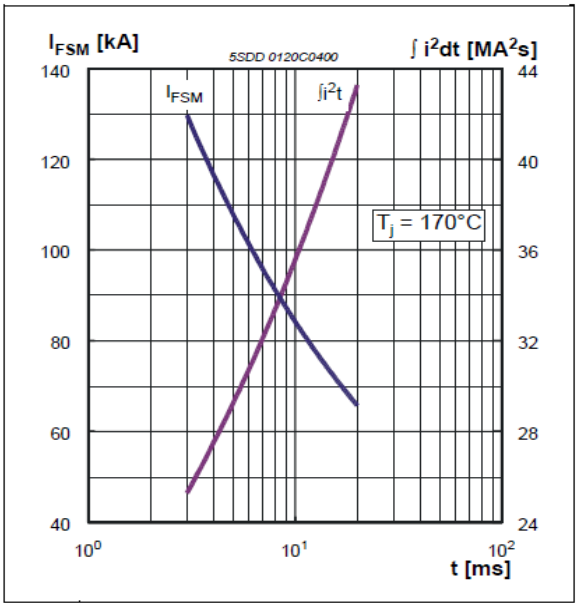


Fig. 4 Surge current and fusing integral vs. pulse width (max. values) for non-repetitive, half-sinusoidal surge current pulses.

Current load capability

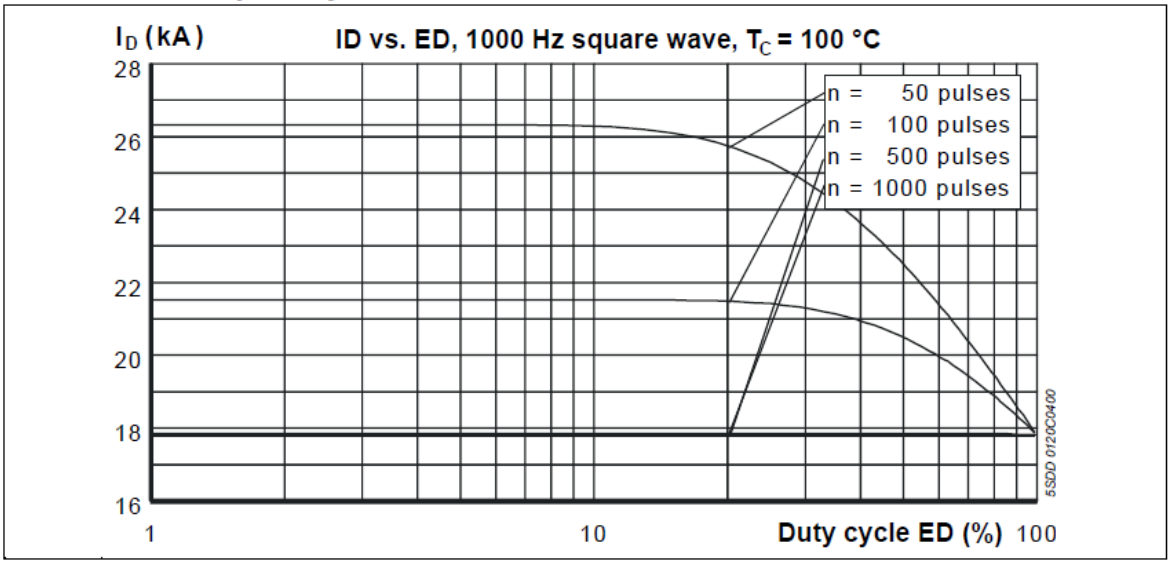


Fig. 5 DC-output current with single-phase centre tap

Current load capacity, cont.

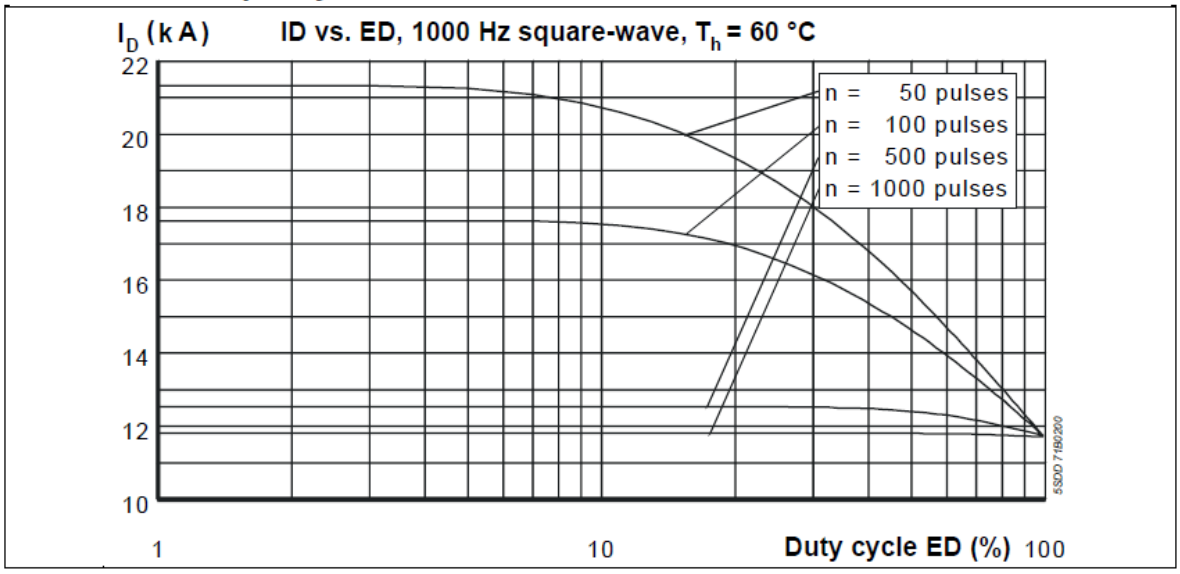


Fig. 6 DC-output current with single-phase centre tap

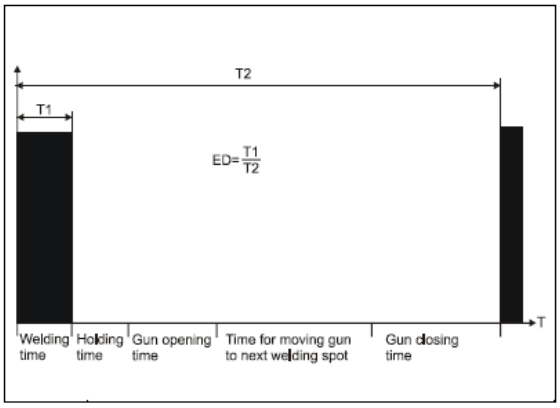


Fig. 7 Definition of ED for typical welding sequence

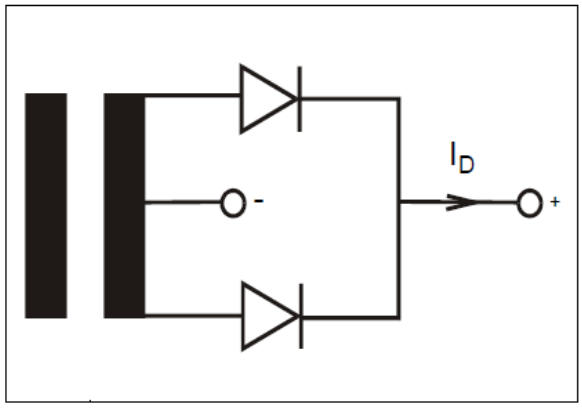


Fig. 8 Definition of ID for single-phase centre tap

Outline: