Welding Diode
ADW65DN06B02

Key Parameters

$I_{F(AV)M}$	=	15130	A
V_{RRM}	=	600	V
I_{FSM}	=	103.0	kA
V_{T0}	=	0.76	V
r_T	=	0.018	mΩ
R_{thJC}	=	4.7	K/kW

Properties

- International standard package
- High power cycling capability
- High current capability
- Low on-state losses

Applications

- Resistance welding
- Rectifiers for galvanic applications
- Low voltage high current rectifier

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters			Maximum Limits	Unit
V_{RRM}	Repetitive peak reverse voltage	T_j = -40 ÷ T_{jmax}	600	V
I_{FAVM}	Average on-state current	T_C = 78°C T_C = 110°C T_C = 55°C	15130 12810 17370	A A
I_{FRMS}	RMS on-state current	T_C = 110°C T_C = 55°C	20120 27280	A A
I_{FRMSM}	Maximum RMS on-state current	tp ≥ 5ms	23750	A
I_{FSM}	Surge current	T_j = 25°C, t_P = 10 ms T_j = T_{jmax}, t_P = 10 ms	103000 95000	A A
I^2t	I^2t-value	T_j = 25°C, t_P = 10 ms T_j = T_{jmax}, t_P = 10 ms	53000 45100	kA^2s kA^2s

CHARACTERISTICS

Symbols and parameters			Value			Unit
			min	typ	max	
v_F	On-state voltage	$T_j = T_{jmax}$, I_F = 8000A			0.89	V
$V_{(TO)}$	Threshold voltage	$T_j = T_{jmax}$ I_F=10000A…37000A			0.76	V
r_T	Slope resistance				0.018	mΩ
$V_{(TO)}$	Threshold voltage	$T_j = T_{jmax}$ I_F=10000A…8000A			0.66	V
r_T	Slope resistance				0.028	mΩ
I_R	Reverse current	$T_j = T_{j\,max}$, $v_R = V_{RRM}$			100	mA

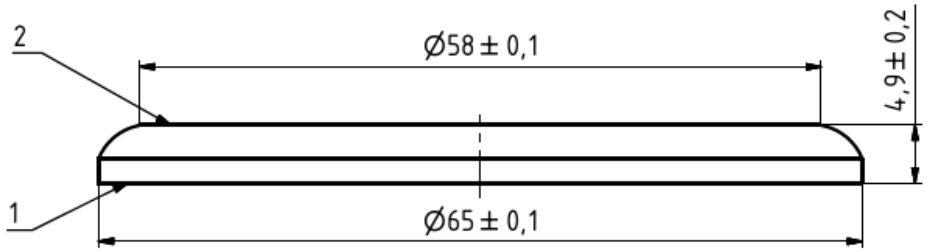
THERMAL PARAMETERS

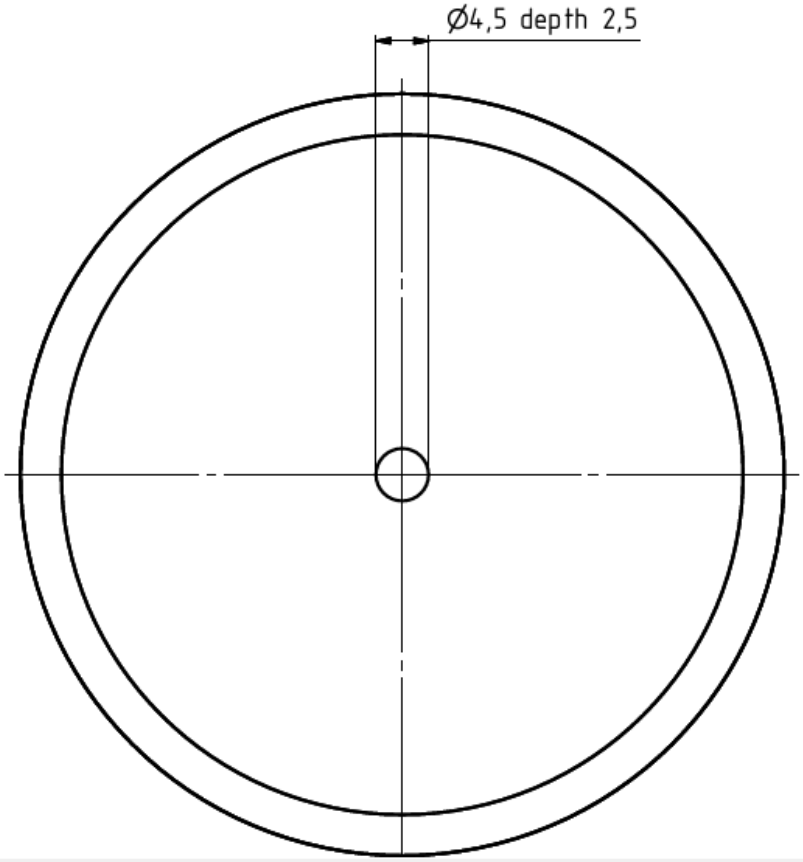
Symbols and parameters			Value	Unit
$R_{th(j-c)}$	Thermal resistance, junction to case	Double side cooled, θ = 180°sin	4.7	K/kW
		Double side cooled, DC	4.0	K/kW
$R_{th(c-h)}$	Thermal resistance, case to heatsink	Double side cooled	2.5	K/kW
$T_{j\,max}$	Maximum junction temperature		+180	°C
$T_{C\,op}$	Operating temperature range		-40…+180	°C
T_{stg}	Storage temperature range		-40…+180	°C

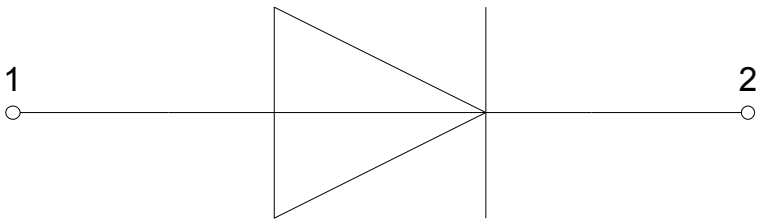
MECHANICAL PARAMETERS

Symbols and parameters			Value	Unit
F_m	Clamping force		40 – 80	kN
W	Weight		0.155	kg
a	Vibration resistance	f = 50 Hz	50	m/s²

DIMENSIONS

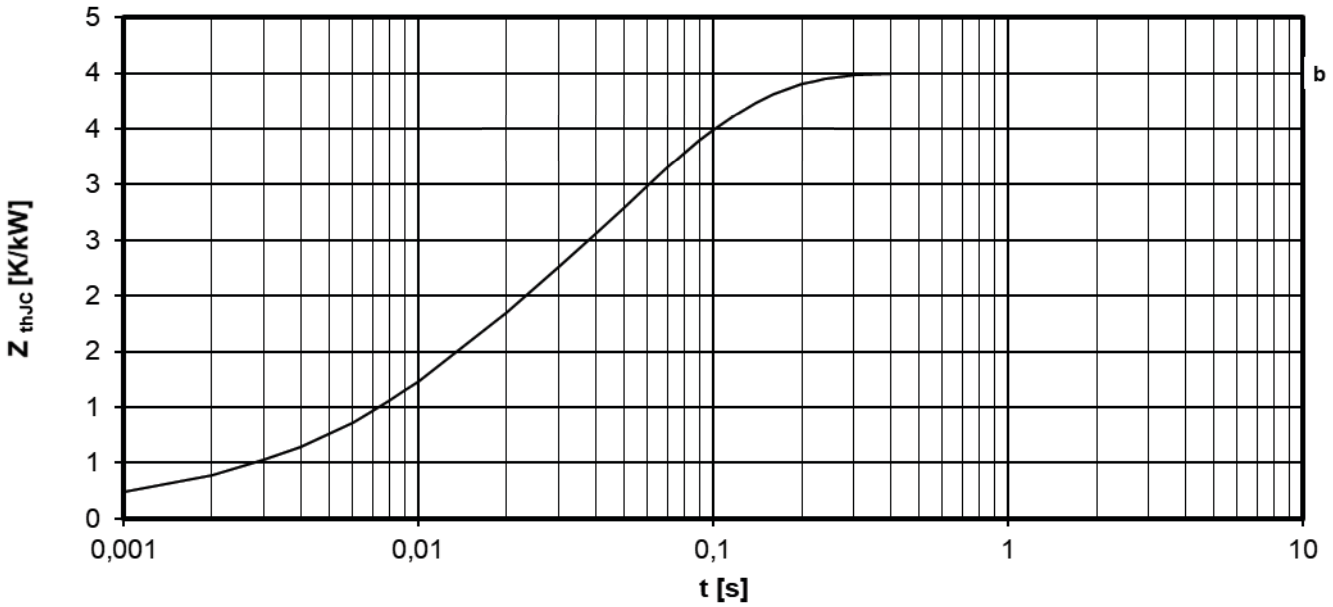






1: Anode

2: Cathode

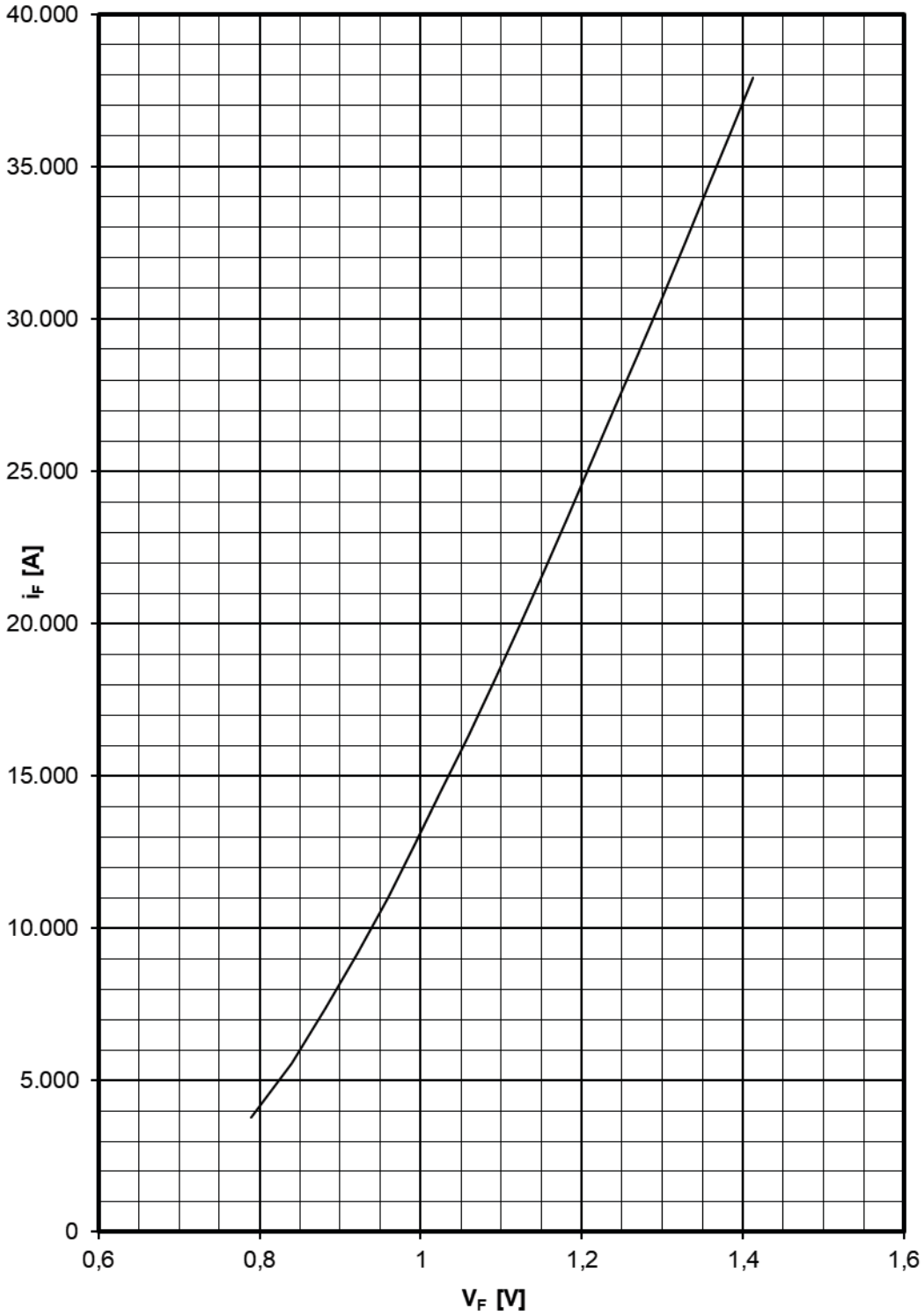


Transient thermal impedance for DC $Z_{thJC} = f(t)$

a - Anode-sided cooling
b - Two-sided cooling
c - Cathode-sided cooling

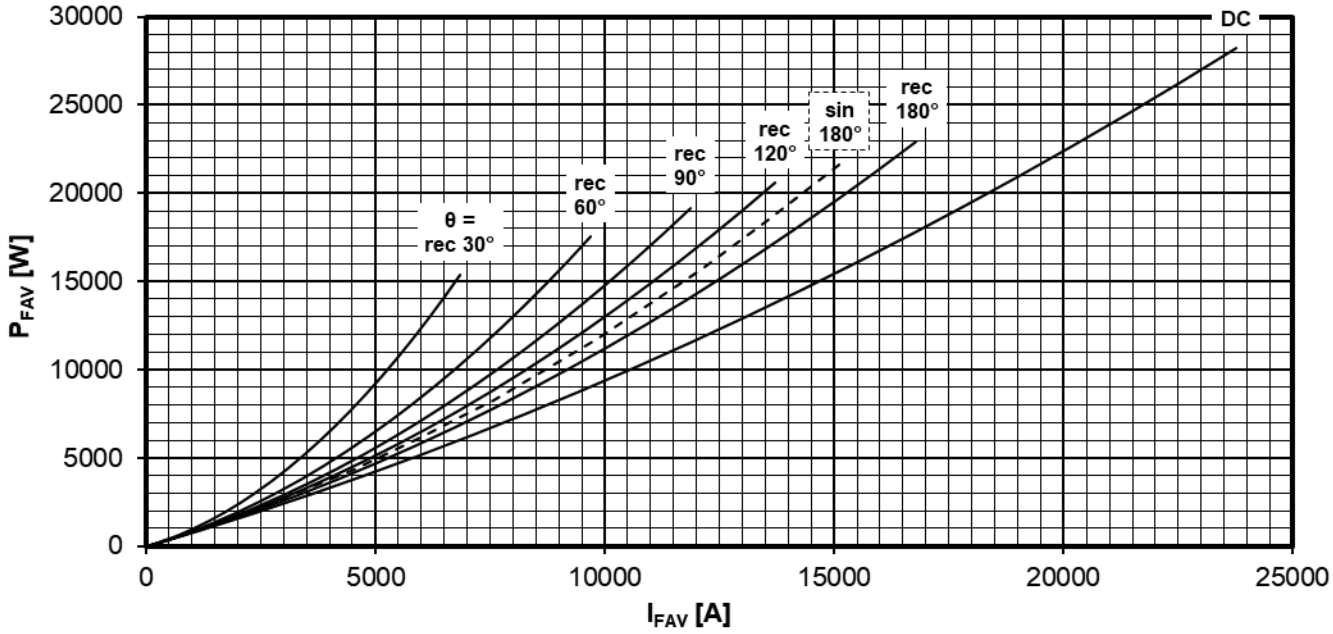
Rise of $Z_{th\ DC}$ for sinewave and rectangular current for different current conduction angles Θ $\Delta Z_{th\ \Theta\ rec}$ / $\Delta Z_{th\ \Theta\ sin}$						
Cooling	$\Delta Z_{th\ \Theta\ sin180°}$ [K/kW]	$\Delta Z_{th\ \Theta\ rec\ 180°}$ [K/kW]	$\Delta Z_{th\ \Theta\ rec\ 120°}$ [K/kW]	$\Delta Z_{th\ \Theta\ rec\ 90°}$ [K/kW]	$\Delta Z_{th\ \Theta\ rec\ 60°}$ [K/kW]	$\Delta Z_{th\ \Theta\ rec\ 30°}$ [K/kW]
two-sided	0,6630	0,8465	1,2829	1,5710	1,9736	2,7543

$$Z_{th\ \Theta\ rec} = Z_{th\ DC} + \Delta Z_{th\ \Theta\ rec}$$
$$Z_{th\ \Theta\ sin} = Z_{th\ DC} + \Delta Z_{th\ \Theta\ sin}$$

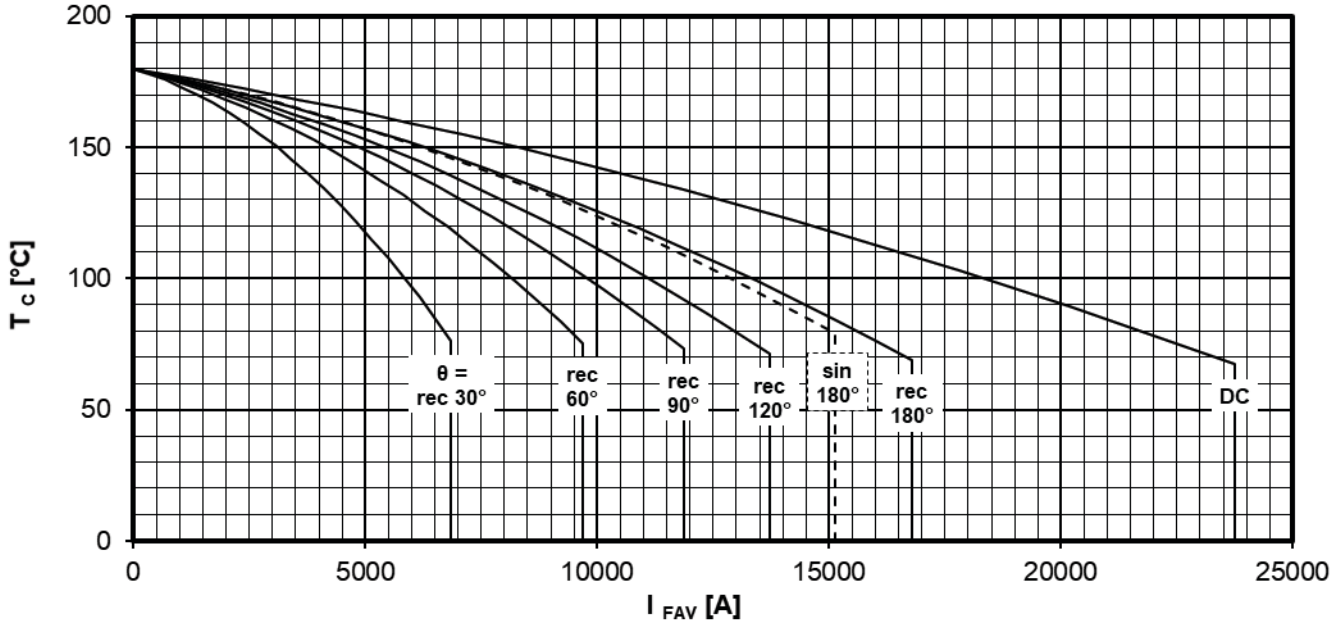


Limiting on-state characteristic $i_F = f(v_F)$

$T_{vj} = T_{vj\ max}$



On-state power loss $P_{FAV} = f(I_{FAV})$



Maximum allowable case temperature $T_C = f(I_{FAVM})$

Two-sided cooling