



5SDA 06D5007

Old part no. DA 807-590-50

Avalanche Diode

Properties

- low on-state voltage
- avalanche reverse characteristics
- high operational reliability
- suitable for parallel operation

Key Parameters

V_{RRM}	=	5 000	V
I_{FAVm}	=	690	A
I_{FSM}	=	7 000	A
V_{TO}	=	1.100	V
r_T	=	1.010	mΩ

Types

	V_{RRM}
5SDA 06D5007	5 000 V
Conditions:	$T_j = -40 \div 160\text{ }^{\circ}\text{C}$, half sine waveform, $f = 50\text{ Hz}$

Mechanical Data

F_m	Mounting force	$11 \pm 1\text{ kN}$
m	Weight	0.23 kg
D_s	Surface creepage distance	30 mm
D_a	Air strike distance	20.5 mm

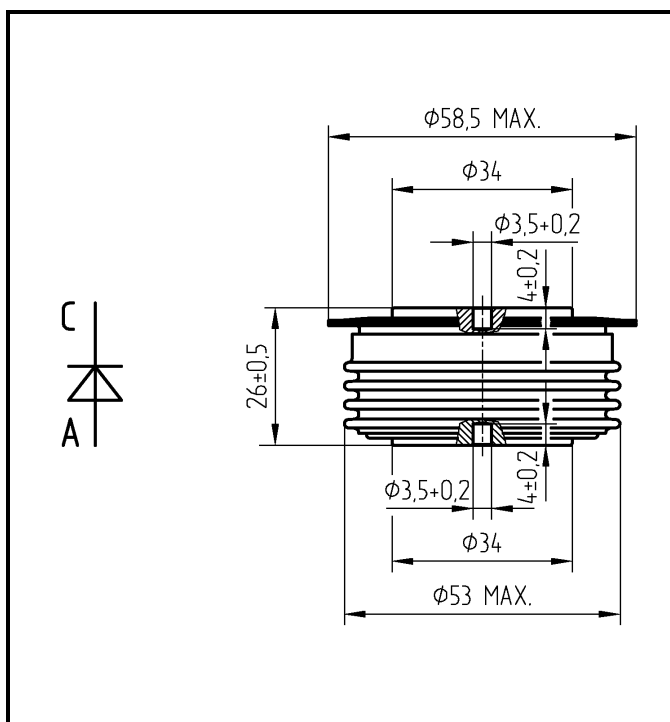


Fig. 1 Case



ABB s.r.o.

Novodvorska 1768/138a, 142 21 Praha 4, Czech Republic

tel.: +420 261 306 250, <http://www.abb.com/semiconductors>

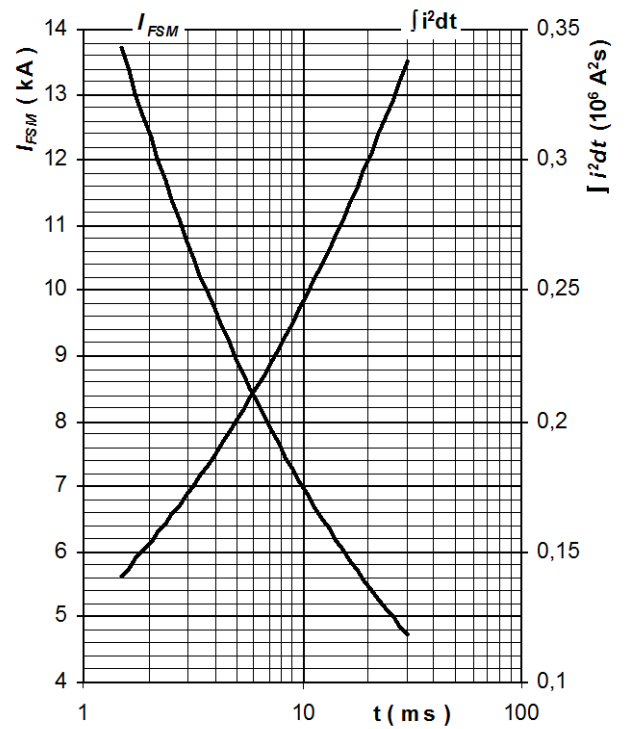
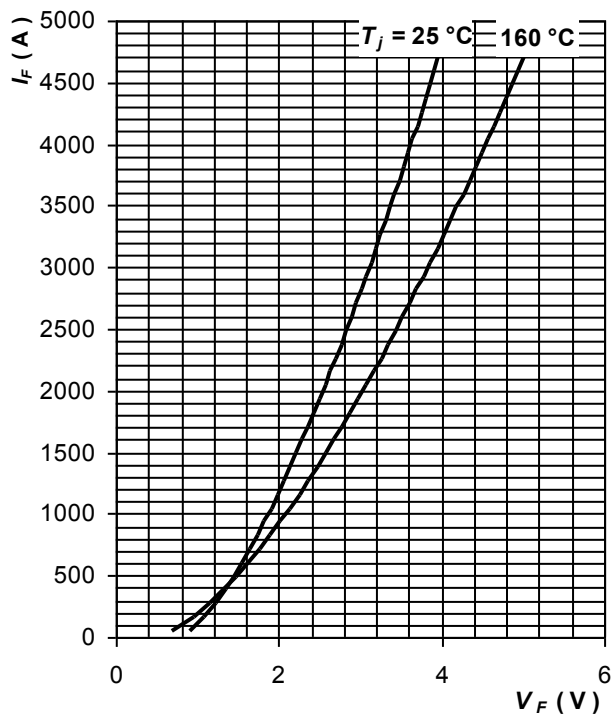
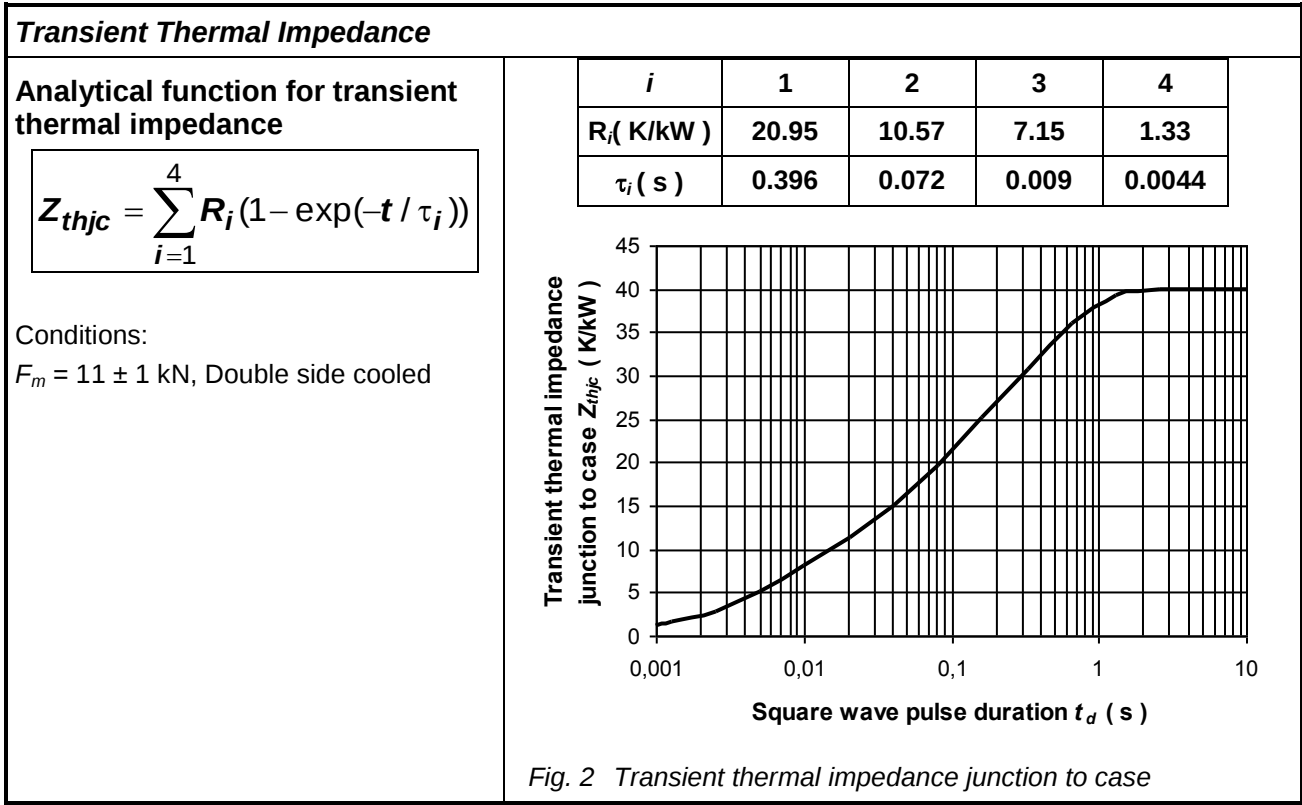
Maximum Ratings			Maximum Limits	Unit
V_{RRM}	Repetitive peak reverse voltage $T_j = -40 \div 160\text{ }^{\circ}\text{C}$		5 000	V
I_{FAVm}	Average forward current $T_c = 85\text{ }^{\circ}\text{C}$		690	A
I_{FRMS}	RMS forward current $T_c = 85\text{ }^{\circ}\text{C}$		1 080	A
I_{RRM}	Repetitive reverse current $V_R = V_{RRM}, T_j = 160\text{ }^{\circ}\text{C},$		50	mA
I_{FSM}	Non repetitive peak surge current $V_R = 0\text{ V}, \text{ half sine pulse}$	$t_p = 8.3\text{ ms}$	7 500	A
		$t_p = 10\text{ ms}$	7 000	A
I^2t	Limiting load integral $V_R = 0\text{ V}, \text{ half sine pulse}$	$t_p = 8.3\text{ ms}$	230 000	A ² s
		$t_p = 10\text{ ms}$	245 000	A ² s
P_{RSM}	Maximum avalanche power dissipation rectangular pulse 20 μ s		50	kW
$T_{jmin} - T_{jmax}$	Operating temperature range		-40 $\div$ 160	$^{\circ}\text{C}$
T_{STG}	Storage temperature range		-40 $\div$ 160	$^{\circ}\text{C}$

Unless otherwise specified $T_j = 160\text{ }^{\circ}\text{C}$

Characteristics		Value			Unit
		min	typ	max	
V_{T0}	Threshold voltage			1.100	V
r_T	Forward slope resistance $I_F = 700 \div 2000\text{ A}$			1.010	m Ω
V_{FM}	Maximum forward voltage $I_{FM} = 1\text{ 800 A}$			2.860	V
Q_{rr}	Recovered charge $V_R = 100\text{ V}, I_{FM} = 1\text{ 000 A}, di_F/dt = -5\text{ A}/\mu\text{s}$		1 620		μC

Unless otherwise specified $T_j = 160\text{ }^{\circ}\text{C}$

Thermal Parameters			Value	Unit
R_{thjc}	Thermal resistance junction to case	double side cooling	40	K/kW
		anode side cooling	65	
		cathode side cooling	104	
R_{thch}	Thermal resistance case to heatsink	double side cooling	10	K/kW
		single side cooling	20	



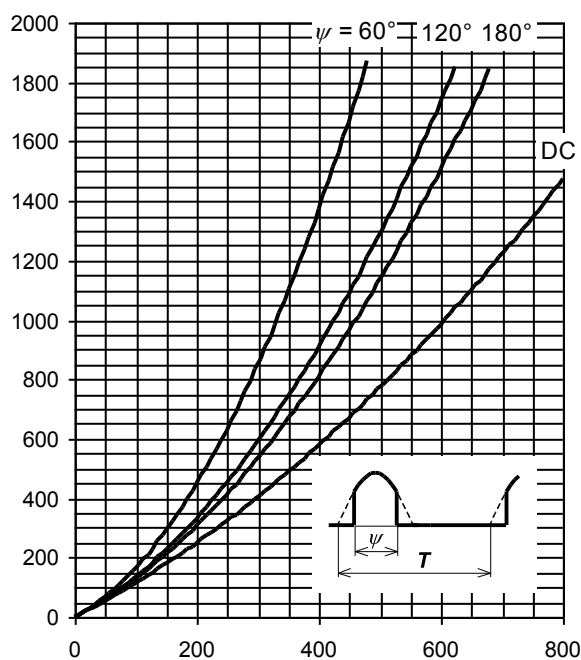


Fig. 5 Forward power loss vs. average forward current, sine waveform, $f = 50$ Hz, $T = 1/f$

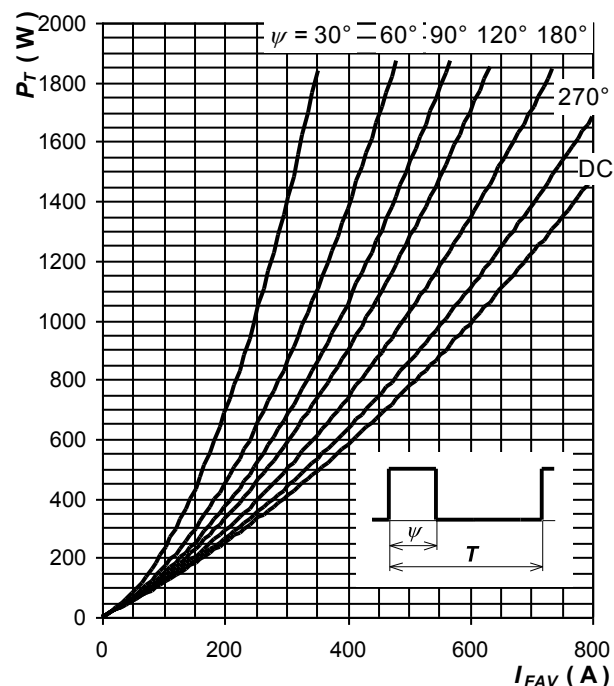


Fig. 6 Forward power loss vs. average forward current, square waveform, $f = 50$ Hz, $T = 1/f$

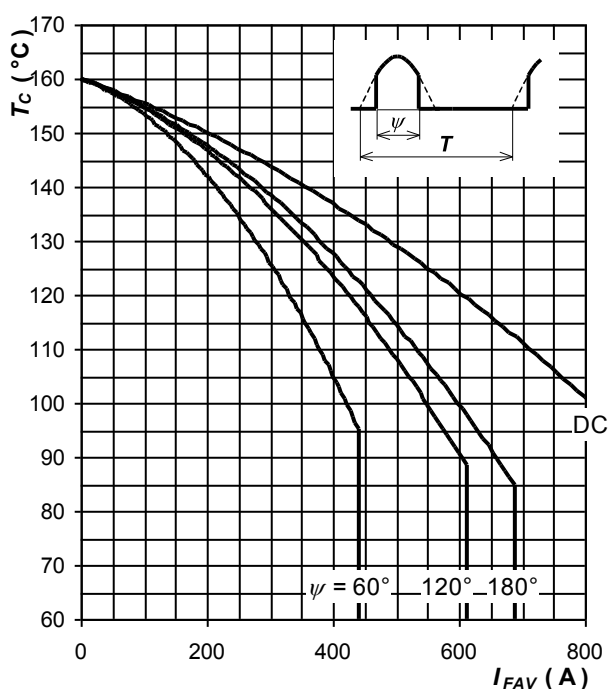


Fig. 7 Max. case temperature vs. aver. forward current, sine waveform, $f = 50$ Hz, $T = 1/f$

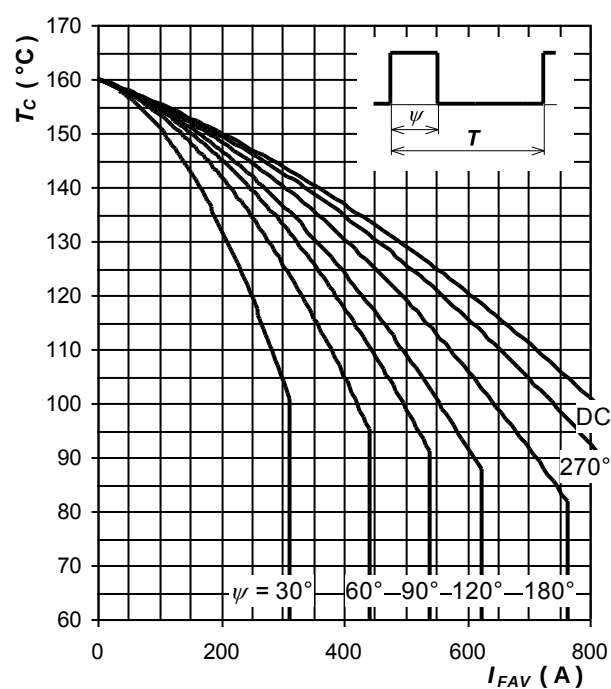


Fig. 8 Max. case temperature vs. aver. forward current, square waveform, $f = 50$ Hz, $T = 1/f$

Notes: