

# Rectifier Diodes

## Avalanche Diodes

$V_{RSM}$	$V_{(BR)min}$ ①	$V_{RRM}$	Anode	Cathode
V	V	V	on stud	on stud
900	-	800	DS	DSI
1300	-	1200	DS	DSI
1300	1300	1200	DSA	DSAI
1700	1750	1600	DSA	DSAI
1900	1950	1800	DSA	DSAI

① Only for Avalanche Diodes

Symbol	Test	Conditions	Maximum	Ratings
$I_{F(RMS)}$	$T_{(vj)} = T_{(vj)m}$		250	A
$I_{F(AV)M}$	$T_{case} = 100^{\circ}C$ ; 180° sine		160	A
$P_{RSM}$	DSA(I) types, $T_{(vj)} = T_{(vj)m}$ , $t_p = 10 \mu s$		35	kW
$I_{FSM}$	$T_{(vj)} = 45^{\circ}C$ ; $V_R = 0$	$t = 10 \text{ ms}$ (50 Hz), sine	3150	A
		$t = 8.3 \text{ ms}$ (60 Hz), sine	3380	A
$I^2 t$	$T_{(vj)} = 45^{\circ}C$ ; $V_R = 0$	$t = 10 \text{ ms}$ (50 Hz), sine	49 600	A <sup>2</sup> s
		$t = 8.3 \text{ ms}$ (60 Hz), sine	48 000	A <sup>2</sup> s
$I^2 t$	$T_{(vj)} = T_{(vj)m}$ ; $V_R = 0$	$t = 10 \text{ ms}$ (50 Hz), sine	39 200	A <sup>2</sup> s
		$t = 8.3 \text{ ms}$ (60 Hz), sine	37 800	A <sup>2</sup> s
$T_{(vj)}$			-40...+180	°C
$T_{(vj)m}$			180	°C
$T_{stg}$			-40...+180	°C
$M_d$	Mounting torque		16-20	Nm
			142-177	lb.in.
Weight			130	g

Symbol	Test	Conditions	Characteristic	Values
$I_R$	$T_{(vj)} = T_{(vj)m}$ ; $V_R = V_{RRM}$		$\leq$	10 mA
$V_F$	$I_F = 500 \text{ A}$ ; $T_{(vj)} = 25^{\circ}C$		$\leq$	1.4 V
$V_{T0}$	For power-loss calculations only			0.85 V
$r_T$	$T_{(vj)} = T_{(vj)m}$			1.1 mΩ
$R_{thJC}$	DC current	180° sine		0.35 K/W
		180° sine		0.39 K/W
$R_{thJH}$	DC current			0.45 K/W
$d_s$	Creepage distance on surface			4.25 mm
$d_A$	Strike distance through air			4.25 mm
$a$	Max. allowable acceleration			100 m/s <sup>2</sup>

Data according to IEC 747-2

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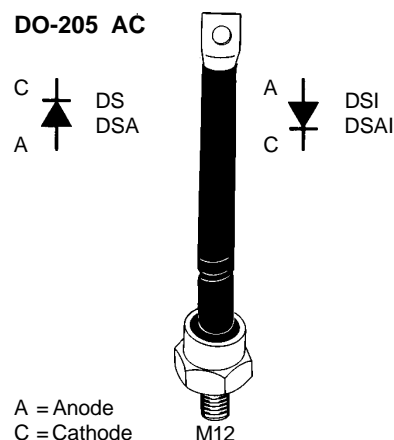
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$V_{RRM} = 800 - 1800 \text{ V}$

$I_{F(RMS)} = 250 \text{ A}$

$I_{F(AV)M} = 160 \text{ A}$

DO-205 AC



A = Anode  
C = Cathode

### Features

- International standard package, JEDEC DO-205 AC (~DO30)
- Planar glassivated chips

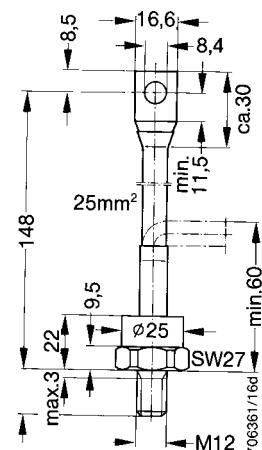
### Applications

- High power rectifiers
- DC supplies
- Field supply for DC motors
- Power supplies

### Advantages

- Space and weight savings
- Simple mounting
- Improved temperature and power cycling
- Reduced protection circuits

Dimensions in mm (1 mm = 0.0394")



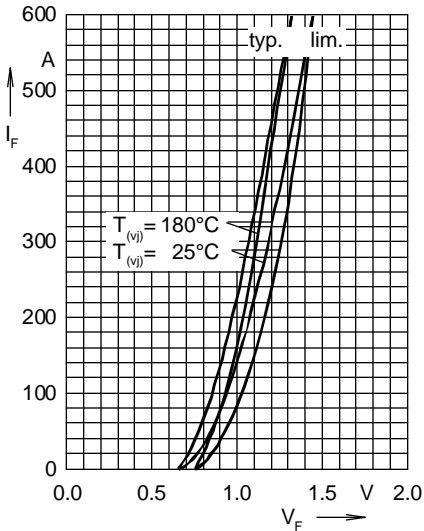


Fig. 1 Forward characteristics

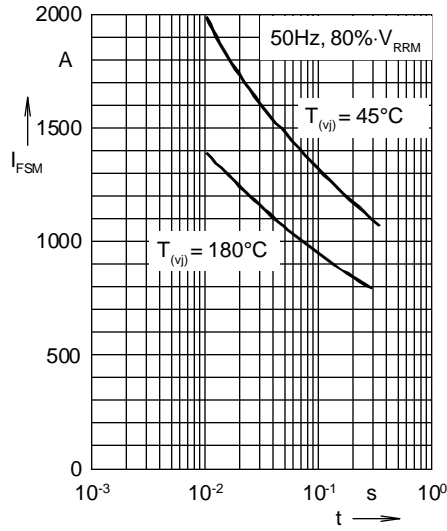


Fig. 2 Surge overload current  
 $I_{FSM}$ : Crest value,  $t$ : duration

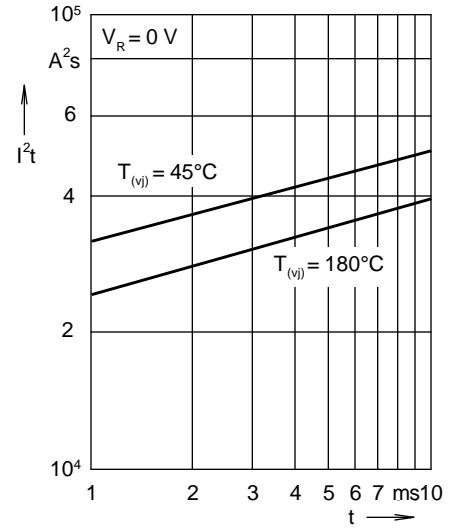


Fig. 3  $I^2t$  versus time (1-10 ms)

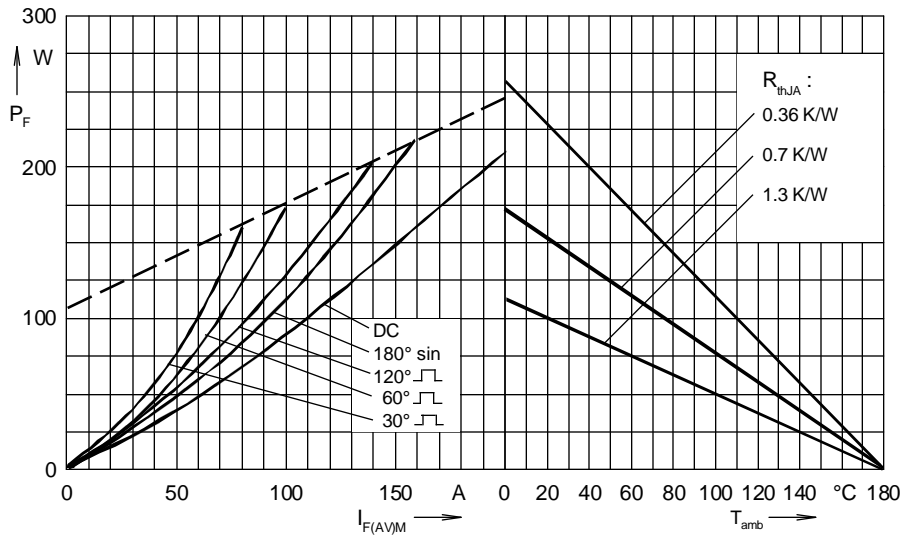


Fig. 4 Power dissipation versus forward current and ambient temperature

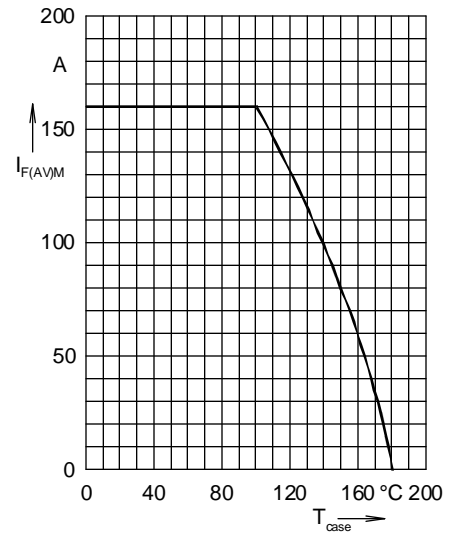


Fig. 5 Max. forward current at case temperature 180° sine

$R_{thJH}$  for various conduction angles  $d$ :

$d$	$R_{thJH}$ (K/W)
DC	0.45
180°	0.516
120°	0.567
60°	0.660
30°	0.733

Constants for  $Z_{thJH}$  calculation:

$i$	$R_{thi}$ (K/W)	$t_i$ (s)
1	0.06713	0.003
2	0.06242	0.094
3	0.22045	3.846
4	0.10	3.2

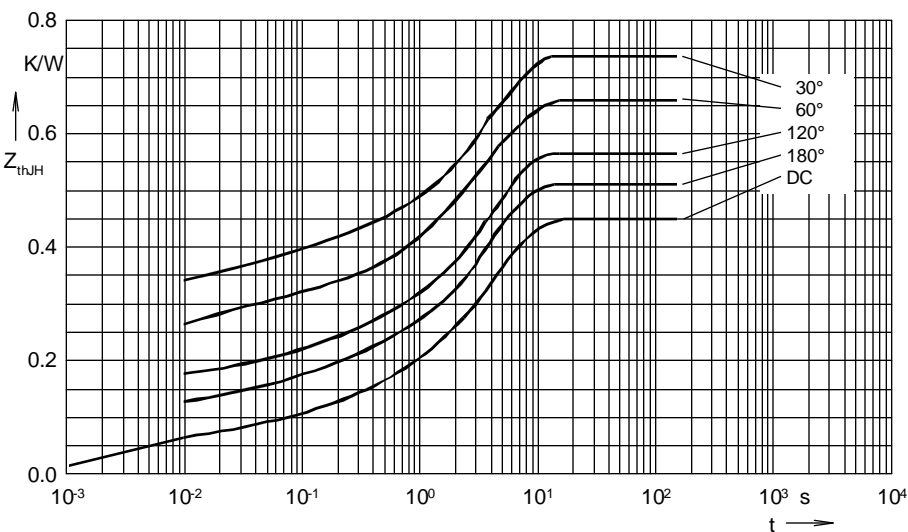


Fig. 6 Transient thermal impedance junction to heatsink