

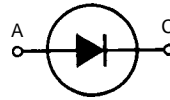
HiPerFRED™ Epitaxial Diode

with soft recovery

$I_{FAVM} = 6 \text{ A}$
 $V_{RRM} = 600 \text{ V}$
 $t_{rr} = 20 \text{ ns}$

Preliminary Data

V_{RSM} V	V_{RRM} V	Type	Marking on product
600	600	DSEP 6-06AS	6P060AS



TO-252AA (DPAK)



Symbol	Conditions	Maximum Ratings	
I_{FRMS}	$T_{VJ} = T_{VJM}$	26	A
I_{FAVM} ①	$T_C = 152^\circ\text{C}$; rectangular, $d = 0.5$	6	A
I_{FRM}	$t_P < 10 \mu\text{s}$; rep. rating, pulse width limited by T_{VJM}	12	A
I_{FSM} A	$T_{VJ} = 45^\circ\text{C}$; $t = 10 \text{ ms}$	(50 Hz), sine	40
E_{AS}	$T_{VJ} = 25^\circ\text{C}$; non-repetitive $I_{AS} = 0.8 \text{ A}$; $L = 180 \mu\text{H}$	0.1	mJ
I_{AR}	$V_A = 1.5 \cdot V_R$ typ.; $f = 10 \text{ kHz}$; repetitive	0.1	A
T_{VJ}		-40...+175	$^\circ\text{C}$
T_{VJM}		175	$^\circ\text{C}$
T_{stg}		-40...+150	$^\circ\text{C}$
P_{tot}	$T_C = 25^\circ\text{C}$	55	W
Weight	typ.	0.3	g

Features

- Planar passivated chips
- Very short recovery time
- Extremely low switching losses
- Low I_{RM} -values
- Soft recovery behaviour

Applications

- Anti saturation diode
- Snubber diode
- Free wheeling diode in converters and motor control circuits
- Rectifiers in switch mode power supplies (SMPS)
- Inductive heating and melting
- Uninterruptible power supplies (UPS)
- Ultrasonic cleaners and welders

Advantages

- High reliability circuit operation
- Low voltage peaks for reduced protection circuits
- Low noise switching
- Low losses
- Operating at lower temperature or space saving by reduced cooling

Symbol	Conditions	Characteristic Values	
		typ.	max.
I_R	$T_{VJ} = 25^\circ\text{C}$ $V_R = V_{RRM}$		50 μA
	$T_{VJ} = 150^\circ\text{C}$ $V_R = V_{RRM}$		0.2 mA
V_F	$I_F = 6 \text{ A}$; $T_{VJ} = 150^\circ\text{C}$ $T_{VJ} = 25^\circ\text{C}$		1.33 V
			2.02 V
R_{thJC}		2.8	K/W
t_{rr}	$I_F = 1 \text{ A}$; $-di/dt = 200 \text{ A}/\mu\text{s}$; $V_R = 30 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$	20	tbd ns
I_{RM}	$V_R = 100 \text{ V}$; $I_F = 10 \text{ A}$; $-di_F/dt = 100 \text{ A}/\mu\text{s}$ $T_{VJ} = 100^\circ\text{C}$	3.5	4.4 A

① I_{FAVM} rating includes reverse blocking losses at T_{VJM} , $V_R = 0.6 V_{RRM}$, duty cycle $d = 0.5$

Data according to IEC 60747

Dimensions see outlines.pdf

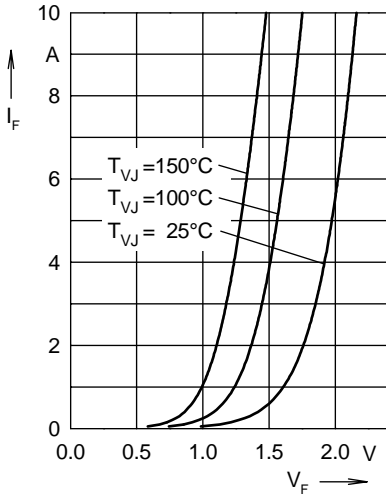


Fig. 1 Forward current I_F versus V_F

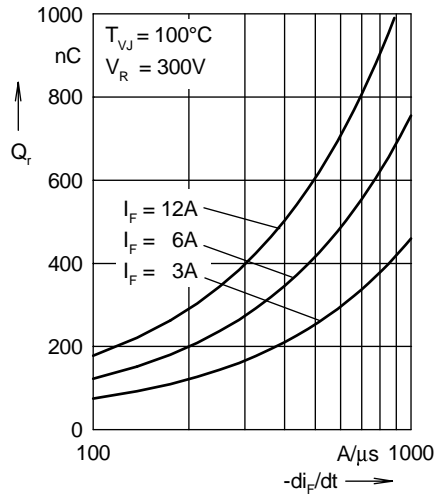


Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

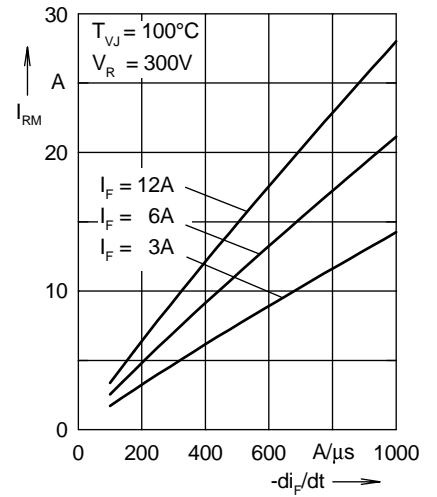


Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

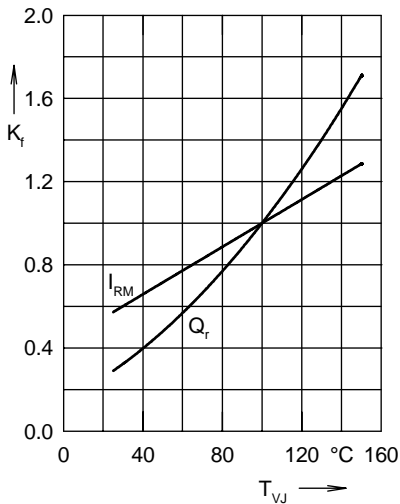


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

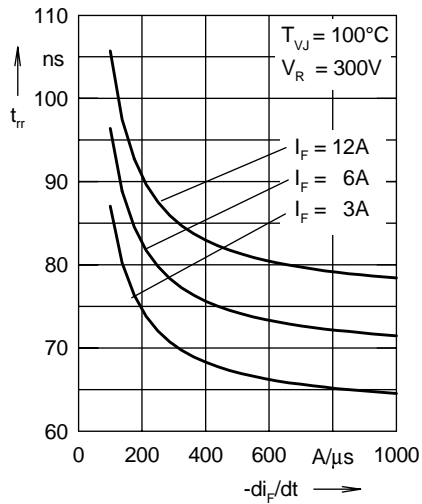


Fig. 5 Recovery time t_{rr} versus $-di_F/dt$

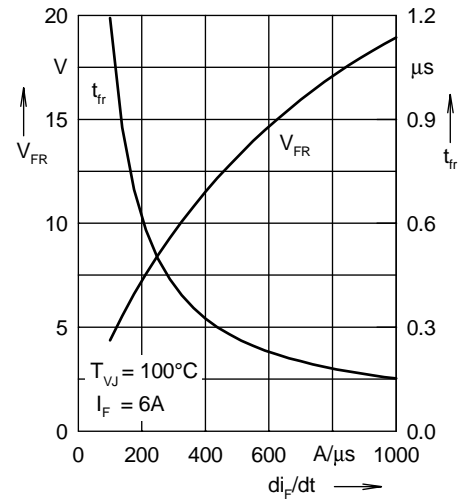


Fig. 6 Peak forward voltage V_{FR} and t_{fr} versus di_F/dt

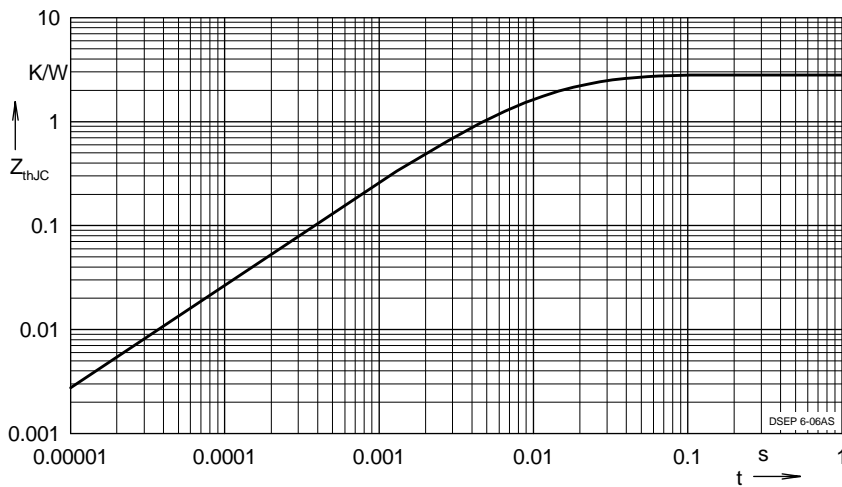


Fig. 7 Transient thermal resistance junction to case

NOTE: Fig. 2 to Fig. 6 shows typical values