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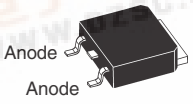
HiPerFRED™ Epitaxial Diode
with soft recovery

I_{FAVM} = 8 A
V_{RRM} = 300 V
t_{rr} = 30 ns

V_{RSM} V	V_{RRM} V	Type	Marking on product
300	300	DSEP 8-03AS	8P030AS

TO-252AA (DPAK)



Symbol	Conditions	Maximum Ratings	
I_{FRMS}	$T_{VJ} = T_{VJM}$	20	A
I_{FAVM} ①	T_C = 152°C; rectangular, d = 0.5	8	A
I_{FRM}	t_P < 10 µs; rep. rating, pulse width limited by T_{VJM}	12	A
I_{FSM}	T_{VJ} = 45°C; t = 10 ms (50 Hz), sine	60	A
E_{AS}	T_{VJ} = 25°C; non-repetitive I_{AS} = 2 A; L = 180 µH	0.5	mJ
I_{AR}	$V_A = 1.5 \cdot V_R$ typ.; f = 10 kHz; repetitive	0.2	A
T_{VJ}		-40...+175	°C
T_{VJM}		175	°C
T_{stg}		-40...+150	°C
P_{tot}	T_C = 25°C	60	W
Weight	typ.	0.3	g

Symbol	Conditions	Characteristic Values typ.	max.	
I_R	$V_R = V_{RRM}$; T_{VJ} = 25°C		60	µA
	$V_R = V_{RRM}$; T_{VJ} = 150°C		0.25	mA
V_F	I_F = 8 A; T_{VJ} = 150°C		1.13	V
	T_{VJ} = 25°C		1.69	V
R_{thJC}			2.5	K/W
t_{rr}	I_F = 1 A; -di/dt = 50 A/µs; V_R = 30 V; T_{VJ} = 25°C	30		ns
I_{RM}	V_R = 100 V; I_F = 12 A; $-di_F/dt$ = 100 A/µs T_{VJ} = 100°C	2	2.4	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

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

Dimensions see Outlines.pdf

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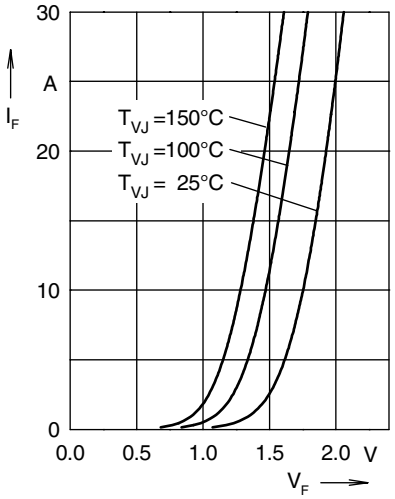

Fig. 1 Forward current I_F versus V_F

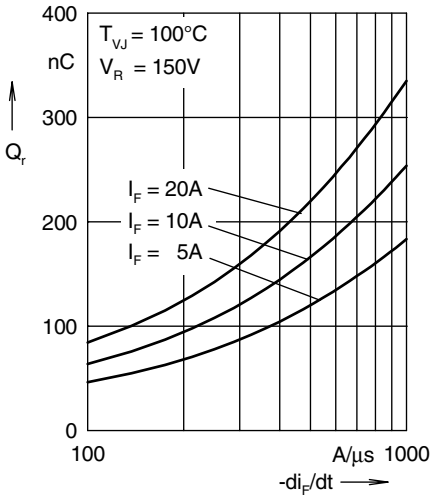

Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

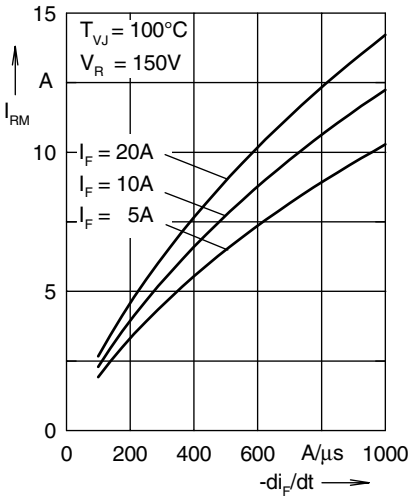

Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

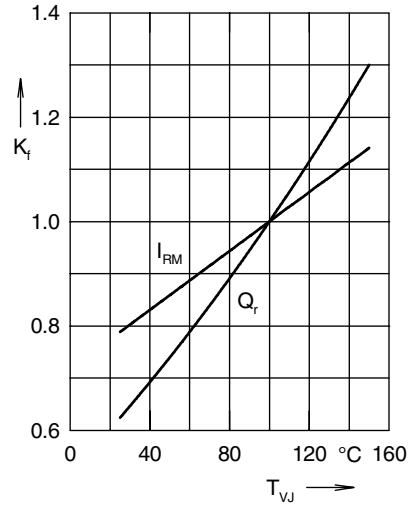

Fig. 4 Dynamic parameters Q_r, I_{RM} versus T_{VJ}

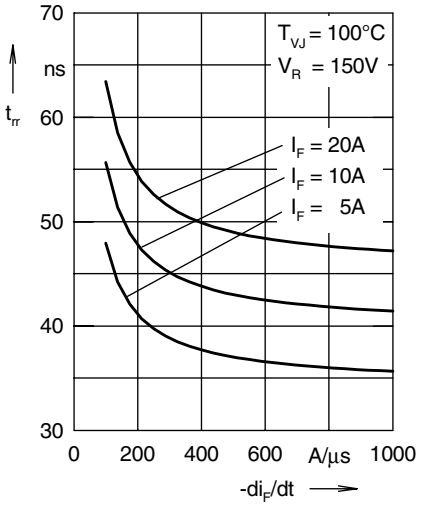

Fig. 5 Recovery time t_{rr} versus $-di_F/dt$

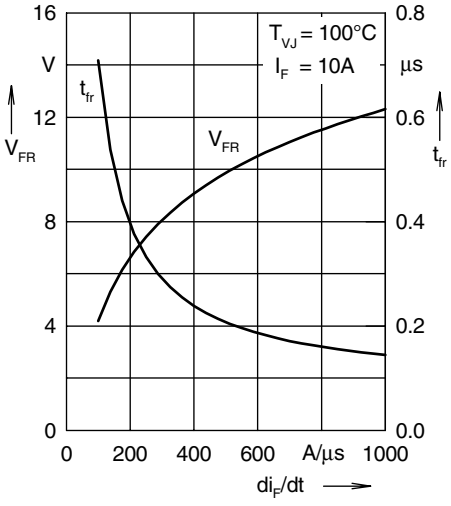

Fig. 6 Peak forward voltage V_{FR} and t_{fr} versus di_F/dt

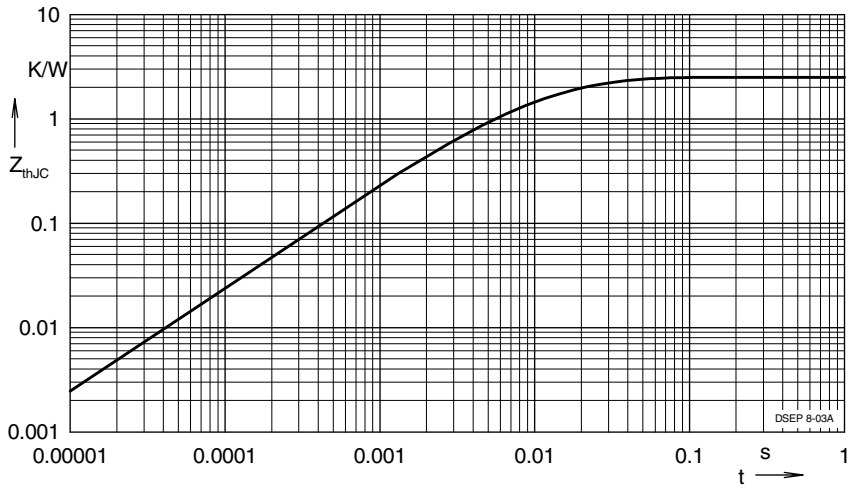

Fig. 7 Transient thermal resistance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	1.449	0.005
2	0.558	0.0003
3	0.493	0.017

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