

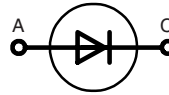
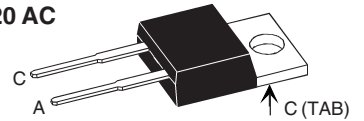
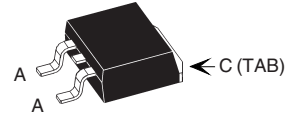
HiPerFRED™ Epitaxial Diode with soft recovery

$$I_{FAV} = 30 \text{ A}$$

$$V_{RRM} = 600 \text{ V}$$

$$t_{rr} = 30/35 \text{ ns}$$

V_{RSM} V	V_{RRM} V	Type
600	600	DSEP 29-06A
600	600	DSEP 29-06AS
600	600	DSEP 29-06B


TO-220 AC

TO-263


A = Anode, C = Cathode, TAB = Cathode

Symbol	Conditions	Maximum Ratings	
I_{FRMS}		35	A
I_{FAVM}	rect., d = 0.5; T_C (Version A, AS) = 135°C T_C (Version B) = 125°C	30 30	A A
I_{FSM}	$T_{VJ} = 45^\circ\text{C}$; $t_p = 10 \text{ ms}$ (50 Hz), sine; (Version A, AS) (Version B)	250 200	A A
E_{AS}	$T_{VJ} = 25^\circ\text{C}$; non-repetitive $I_{AS} = 1.3 \text{ A}$; $L = 180 \mu\text{H}$	0.2	mJ
I_{AR}	$V_A = 1.5 \cdot V_R$ typ.; $f = 10 \text{ kHz}$; repetitive	0.1	A
T_{VJ}		-55...+175	°C
T_{VJM}		175	°C
T_{stg}		-55...+150	°C
P_{tot}	$T_C = 25^\circ\text{C}$	165	W
M_d	mounting torque (Version A, B)	0.4...0.6	Nm
Weight	typical	2	g

Features

- International standard package
- Planar passivated chips
- Very short recovery time
- Extremely low switching losses
- Low I_{RM} -values
- Soft recovery behaviour
- Epoxy meets UL 94V-0

Applications

- Antiparallel diode for high frequency switching devices
- Antisaturation diode
- Snubber diode
- Free wheeling diode in converters and motor control circuits
- Rectifiers in switch mode power supplies (SMPS)
- Inductive heating
- Uninterruptible power supplies (UPS)
- Ultrasonic cleaners and welders

Advantages

- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low I_{RM} reduces:
 - Power dissipation within the diode
 - Turn-on loss in the commutating switch

Dimensions see Outlines.pdf

Symbol	Conditions	Characteristic max. Values		
		Version A	Version B	
I_R ①	$T_{VJ} = 25^\circ\text{C}$; $V_R = V_{RRM}$ $T_{VJ} = 150^\circ\text{C}$; $V_R = V_{RRM}$	250 1	250 2	μA mA
V_F ②	$I_F = 30 \text{ A}$; $T_{VJ} = 150^\circ\text{C}$ $T_{VJ} = 25^\circ\text{C}$	1.26 1.61	1.58 2.52	V V
R_{thJC} R_{thCH}	typ.	0.9 0.5	0.9 0.5	K/W K/W
t_{rr} typ.	$I_F = 1 \text{ A}$; $-di/dt = 200 \text{ A}/\mu\text{s}$; $V_R = 30 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$	35	30	ns
I_{RM} typ.	$V_R = 100 \text{ V}$; $I_F = 50 \text{ A}$; $-di_F/dt = 100 \text{ A}/\mu\text{s}$; $T_{VJ} = 100^\circ\text{C}$	6	4	A

Pulse test: ① Pulse Width = 5 ms, Duty Cycle < 2.0 %
② Pulse Width = 300 μs , Duty Cycle < 2.0 %

Data according to IEC 60747 and per diode unless otherwise specified.

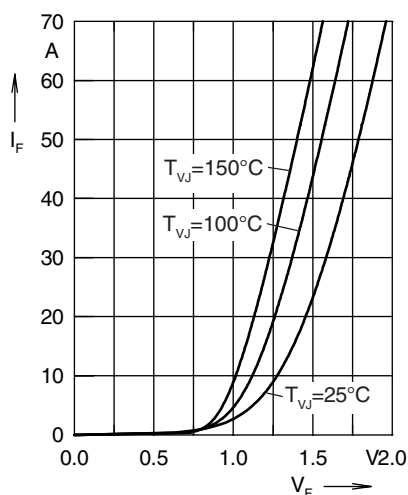


Fig. 1 Forward current I_F versus V_F

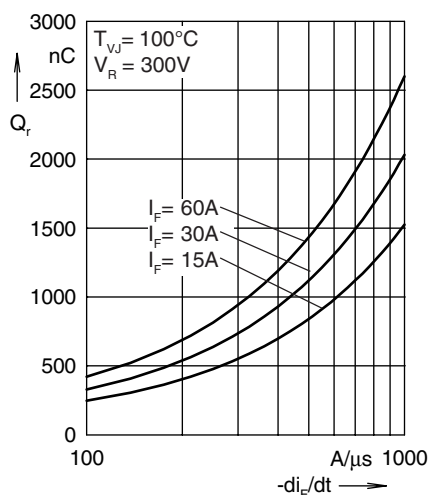


Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

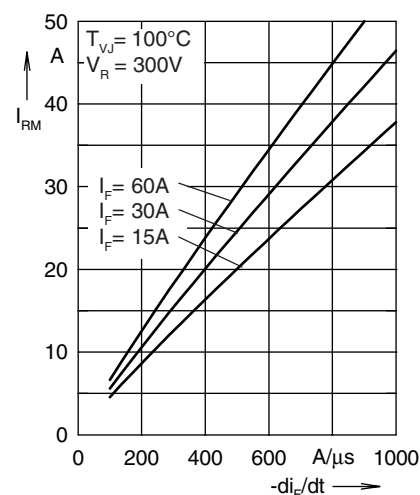


Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

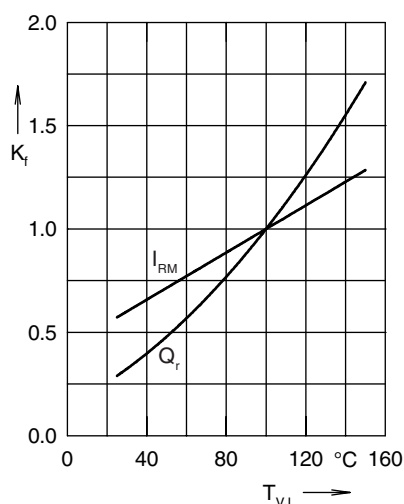


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

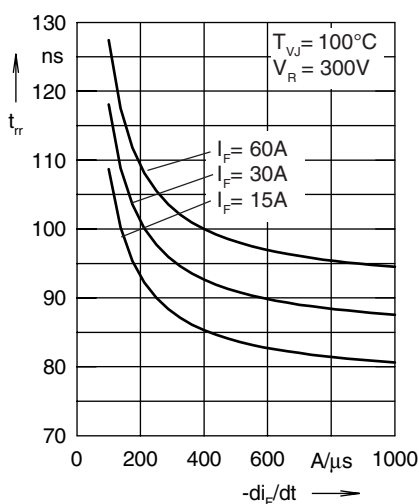


Fig. 5 Recovery time t_{rr} versus $-di_F/dt$

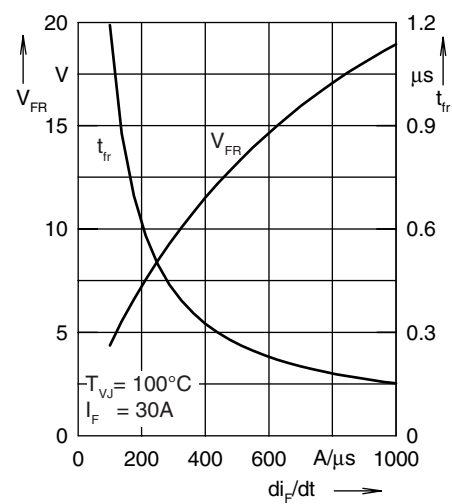


Fig. 6 Peak forward voltage V_{FR} and t_{fr} versus di_F/dt

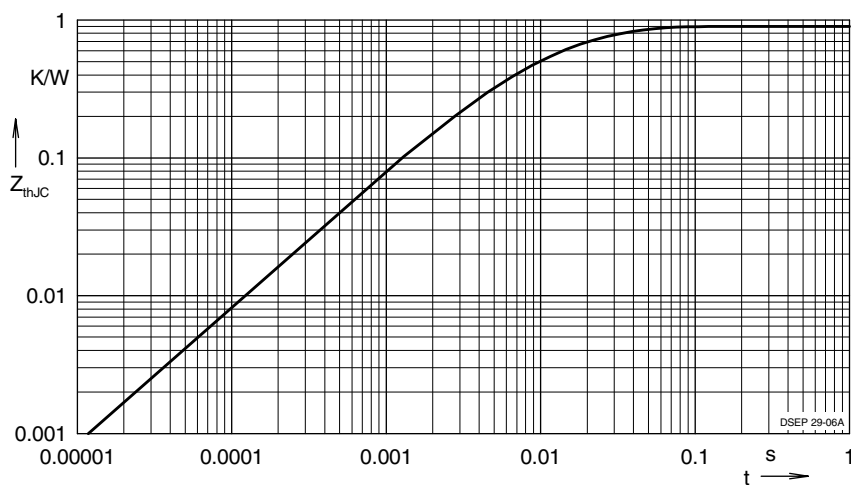


Fig. 7 Transient thermal resistance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.502	0.0052
2	0.193	0.0003
3	0.205	0.0162

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

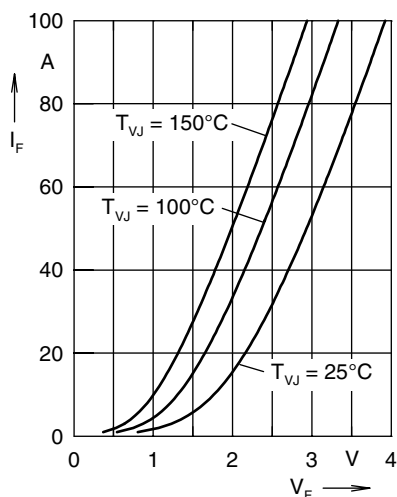


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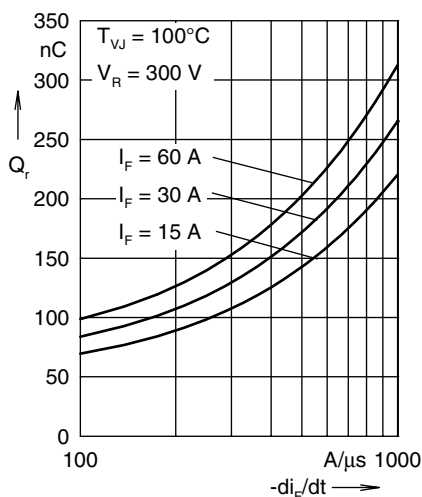


Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

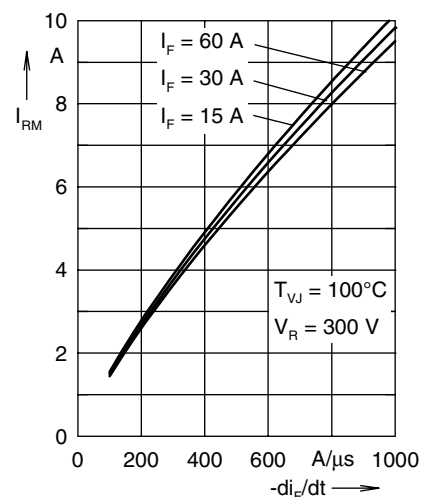


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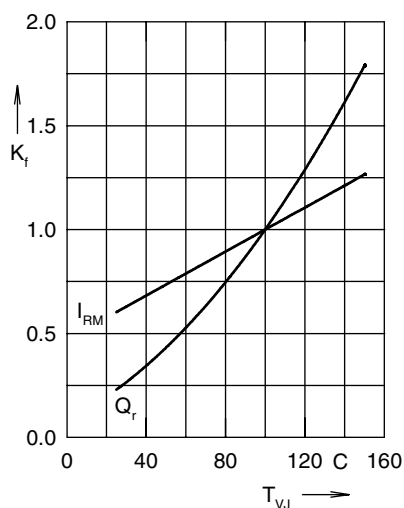


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

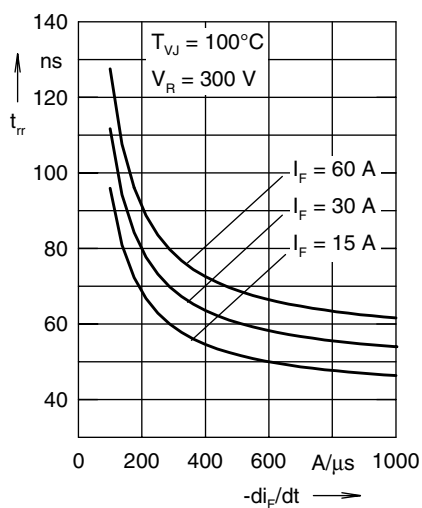


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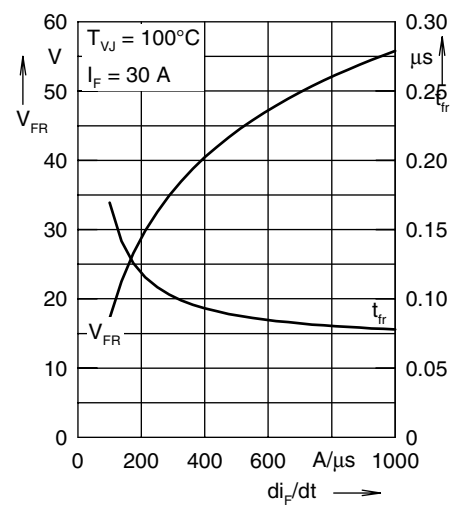


Fig. 6 Peak forward voltage V_{FR} and t_{rr} versus di_F/dt

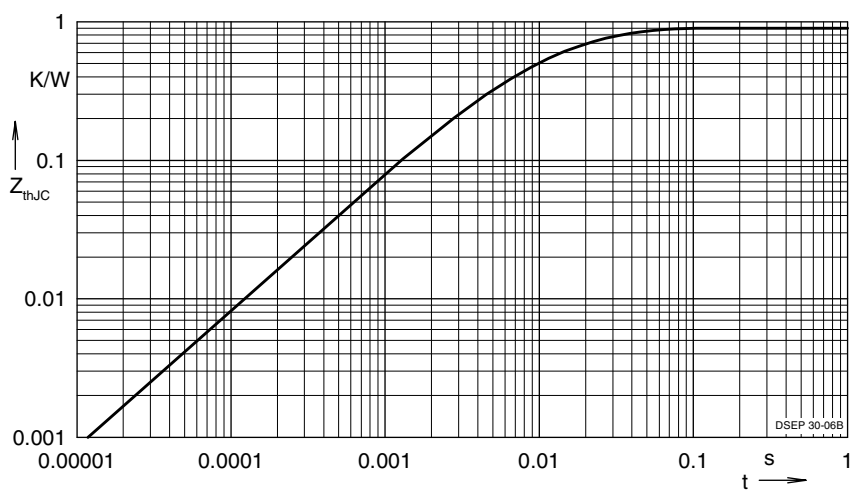


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