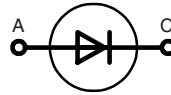
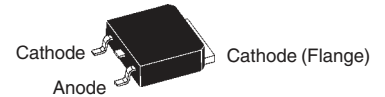


# HiPerFRED™ Epitaxial Diode

## with soft recovery

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

$V_{RSM}$ 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	$\mu\text{A}$	
	$T_{VJ} = 150^\circ\text{C}$ $V_R = V_{RRM}$	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	A	
		4.4	A	

**Dimensions see pages D4 - 85-86**

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

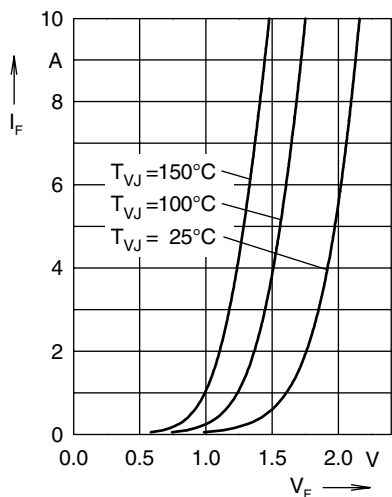


Fig. 1 Forward current  $I_F$  versus  $V_F$

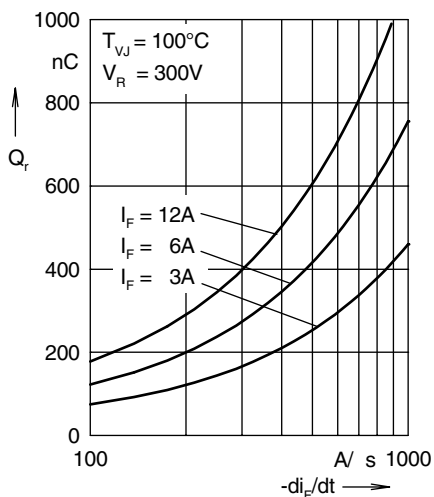


Fig. 2 Reverse recovery charge  $Q_r$  versus  $-di_F/dt$

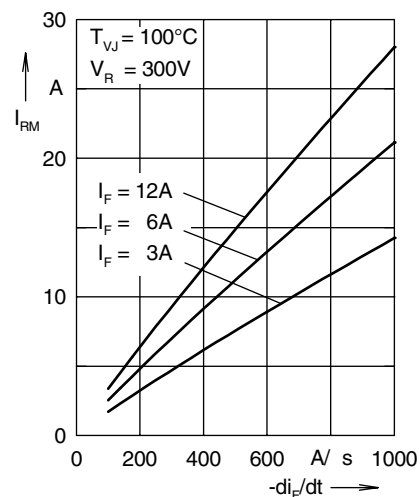


Fig. 3 Peak reverse current  $I_{RM}$  versus  $-di_F/dt$

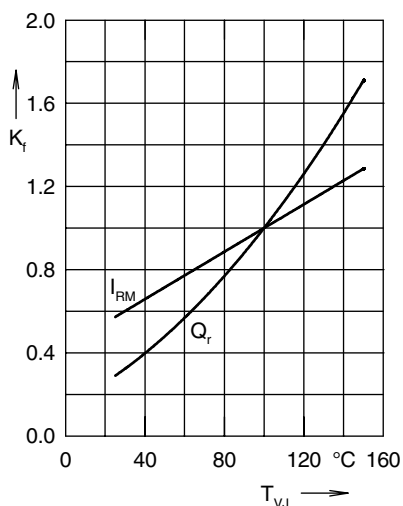


Fig. 4 Dynamic parameters  $Q_r$ ,  $I_{RM}$  versus  $T_{VJ}$

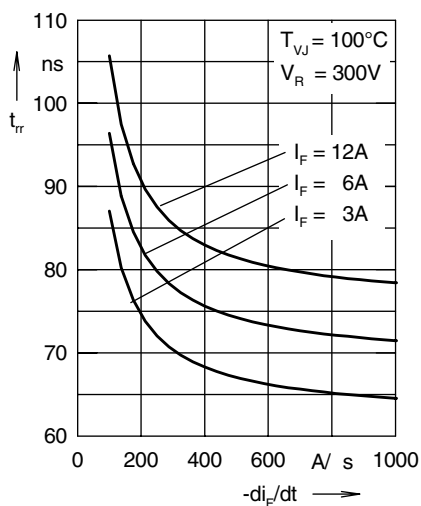


Fig. 5 Recovery time  $t_{tr}$  versus  $-di_F/dt$

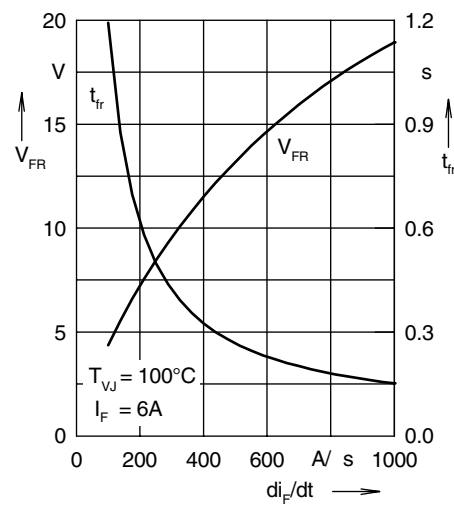


Fig. 6 Peak forward voltage  $V_{FR} + t_{tr}$  versus  $di_F/dt$

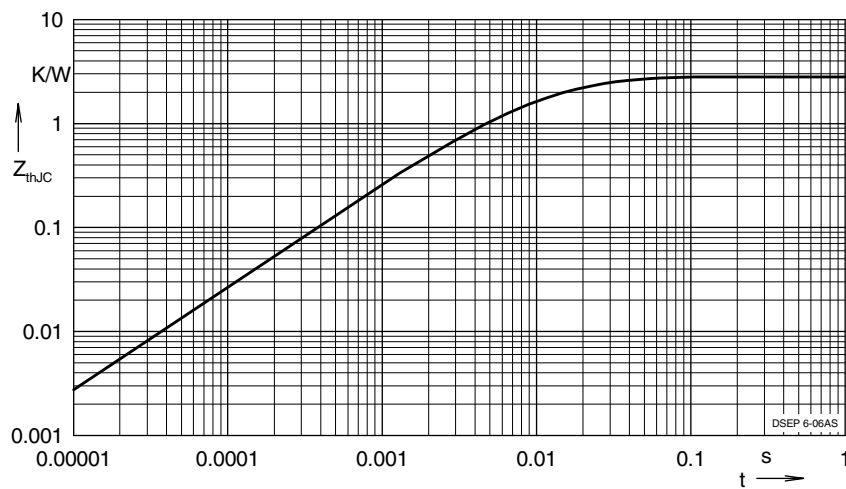


Fig. 7 Transient thermal resistance junction to case

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