

# HiPerFRED™ Epitaxial Diode

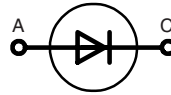
## with soft recovery

$$I_{FAV} = 40 \text{ A}$$

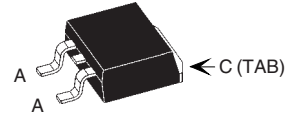
$$V_{RRM} = 300 \text{ V}$$

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

$V_{RSM}$	$V_{RRM}$	Type
V	V	
300	300	DSEP 40-03AS



TO-263



A = Anode, C = Cathode, TAB = Cathode

Symbol	Conditions	Maximum Ratings	
$I_{FRMS}$		35	A
$I_{FAVM}$	rect., $d = 0.5$ ; $T_C = 120^\circ\text{C}$	40	A
$I_{FSM}$	$T_{VJ} = 45^\circ\text{C}$ ; $t_p = 10 \text{ ms}$ (50 Hz), sine	300	A
$E_{AS}$	$T_{VJ} = 25^\circ\text{C}$ ; non-repetitive $I_{AS} = 9 \text{ A}$ ; $L = 100 \mu\text{H}$	4	mJ
$I_{AR}$	$V_A = 1.5 \cdot V_R$ typ.; $f = 10 \text{ kHz}$ ; repetitive	0.9	A
$T_{VJ}$		-40...+175	$^\circ\text{C}$
$T_{VJM}$		175	$^\circ\text{C}$
$T_{stg}$		-40...+150	$^\circ\text{C}$
$P_{tot}$	$T_C = 25^\circ\text{C}$	175	W
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

Symbol	Conditions	Characteristic max. Values	
$I_R$ ①	$V_R = V_{RRM}$ ; $T_{VJ} = 25^\circ\text{C}$	1	$\mu\text{A}$
	$V_R = V_{RRM}$ ; $T_{VJ} = 150^\circ\text{C}$	100	$\mu\text{A}$
$V_F$ ②	$I_F = 40 \text{ A}$ ; $T_{VJ} = 150^\circ\text{C}$	1.11	V
	$T_{VJ} = 25^\circ\text{C}$	1.42	V
$R_{thJC}$		0.85	K/W
$t_{rr}$ typ.	$V_R = 100 \text{ V}$ ; $I_F = 40 \text{ A}$ ; $-di_f/dt = 200 \text{ A}/\mu\text{s}$ ; $T_{VJ} = 25^\circ\text{C}$	35	ns
$I_{RM}$ typ.		3.5	A

Pulse test: ① Pulse Width = 5 ms, Duty Cycle &lt; 2.0%

 ② Pulse Width = 300  $\mu\text{s}$ , Duty Cycle < 2.0%

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

Dimensions see Outlines.pdf