

# HiPerFRED™ Epitaxial Diode

## with common cathode and soft recovery

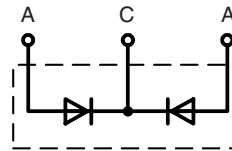
$$I_{FAV} = 2 \times 30 \text{ A}$$

$$V_{RRM} = 200 \text{ V}$$

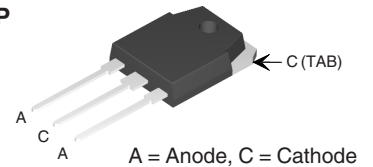
$$t_{rr} = 25 \text{ ns}$$

### Preliminary Data

$V_{RSM}$	$V_{RRM}$	Type
V	V	
200	200	DSEC 60-02AQ



TO-3 P



Symbol	Conditions	Maximum Ratings	
$I_{FRMS}$		70	A
$I_{FAVM}$	$T_C = 145^\circ\text{C}$ ; rectangular, $d = 0.5$	30	A
$I_{FSM}$	$T_{VJ} = 45^\circ\text{C}$ ; $t_p = 10 \text{ ms}$ (50 Hz), sine	325	A
$E_{AS}$	$T_{VJ} = 25^\circ\text{C}$ ; non-repetitive $I_{AS} = 3 \text{ A}$ ; $L = 180 \mu\text{H}$	1.2	mJ
$I_{AR}$	$V_A = 1.5 \cdot V_R$ typ.; $f = 10 \text{ kHz}$ ; repetitive	0.3	A
$T_{VJ}$		-55...+175	$^\circ\text{C}$
$T_{VJM}$		175	$^\circ\text{C}$
$T_{stg}$		-55...+150	$^\circ\text{C}$
$P_{tot}$	$T_C = 25^\circ\text{C}$	165	W
$M_d$	mounting torque	0.8...1.2	Nm
$F_c$	mounting force with clip	20...120	N
<b>Weight</b>	typical	6	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

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Symbol	Conditions	Characteristic Values	
		typ.	max.
$I_R$ ①	$V_R = V_{RRM}$ ; $T_{VJ} = 25^\circ\text{C}$		10 $\mu\text{A}$
	$V_R = V_{RRM}$ ; $T_{VJ} = 150^\circ\text{C}$		200 $\mu\text{A}$
$V_F$ ②	$I_F = 30 \text{ A}$ ; $T_{VJ} = 150^\circ\text{C}$ $T_{VJ} = 25^\circ\text{C}$		0.95 V
			1.20 V
$R_{thJC}$			0.9 K/W
$R_{thCH}$		0.25	K/W
$t_{rr}$	$I_F = 1 \text{ A}$ ; $-di/dt = 200 \text{ A}/\mu\text{s}$ ; $V_R = 30 \text{ V}$ ; $T_{VJ} = 25^\circ\text{C}$	25	ns
$I_{RM}$	$V_R = 100 \text{ V}$ ; $I_F = 50 \text{ A}$ ; $-di_F/dt = 100 \text{ A}/\mu\text{s}$ ; $T_{VJ} = 100^\circ\text{C}$		4 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.

IXYS reserves the right to change limits, test conditions and dimensions.

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