

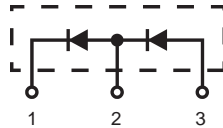
# HiPerFRED™ Epitaxial Diode

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

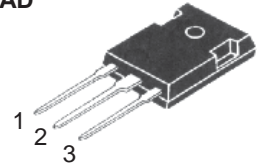
$$V_{RRM} = 1200 \text{ V}^{\textcircled{1}}$$

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

$V_{RRM}^{\textcircled{1}}$	$V_{RRM}$	Type
V	V	
1200	600	DSEE30-12A



TO-247 AD



Symbol	Conditions	Maximum Ratings	
$I_{FRMS}$		60	A
$I_{FAVM}^{\textcircled{1}}$	$T_C = 90^\circ\text{C}$ ; rectangular, $d = 0.5$	30	A
$I_{FSM}$	$T_{VJ} = 45^\circ\text{C}$ ; $t_p = 10 \text{ ms}$ (50 Hz), sine	200	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	$^\circ\text{C}$
$T_{VJM}$		175	$^\circ\text{C}$
$T_{stg}$		-55...+150	$^\circ\text{C}$
$T_L$	1.6 mm (0.063 in) from case for 10 s	260	$^\circ\text{C}$
$P_{tot}$	$T_C = 25^\circ\text{C}$	165	W
$M_d$	Mounting Torque	0.9/6	Nm/lb.in.
Weight	typical	2	g

## Features

- 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

## Notes

- Please see DSEP 30-06A Data Sheet for characteristic curves.

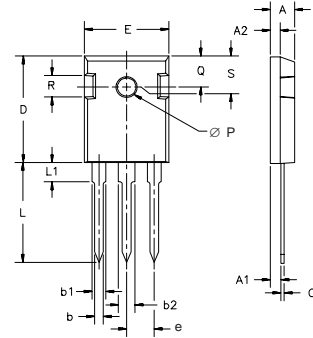
Symbol	Conditions	Characteristic Values	
		typ.	max.
$I_R^{\textcircled{1}\textcircled{2}}$	$T_{VJ} = 25^\circ\text{C}$ $V_R = V_{RRM}$ $T_{VJ} = 150^\circ\text{C}$ $V_R = V_{RRM}$	200	$\mu\text{A}$
		2	mA
$V_F^{\textcircled{3}}$	$I_F = 30 \text{ A}$ ; $T_{VJ} = 125^\circ\text{C}$ $T_{VJ} = 25^\circ\text{C}$	1.75	V
		2.5	V
$R_{thJC}$		0.9	K/W
$R_{thCH}$	0.25		K/W
$t_{rr}$	$I_F = 1 \text{ A}$ ; $-di/dt = 200 \text{ A}/\mu\text{s}$ ; $V_R = 30 \text{ V}$	30	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

Notes: Data given for  $T_{VJ} = 25^\circ\text{C}$  and per diode unless otherwise specified

<sup>①</sup> Diodes connected in series

<sup>②</sup> Pulse test: pulse Width = 5 ms, Duty Cycle < 2.0 %

<sup>③</sup> Pulse test: pulse Width = 300  $\mu\text{s}$ , Duty Cycle < 2.0 %

**TO-247 AD Outline**


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.7	5.3	.185	.209
A <sub>1</sub>	2.2	2.54	.087	.102
A <sub>2</sub>	2.2	2.6	.059	.098
b	1.0	1.4	.040	.055
b <sub>1</sub>	1.65	2.13	.065	.084
b <sub>2</sub>	2.87	3.12	.113	.123
C	.4	.8	.016	.031
D	20.80	21.46	.819	.845
E	15.75	16.26	.610	.640
e	5.20	5.72	0.205	0.225
L	19.81	20.32	.780	.800
L <sub>1</sub>		4.50		.177
∅P	3.55	3.65	.140	.144
Q	5.89	6.40	0.232	0.252
R	4.32	5.49	.170	.216
S	6.15	BSC	.242	BSC

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

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4,835,592	4,881,106	5,017,508	5,049,961	5,187,117	5,486,715	6,306,728B1
4,850,072	4,931,844	5,034,796	5,063,307	5,237,481	5,381,025	