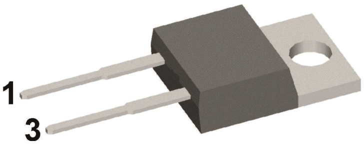
HiPerFRED

V_{RRM} = 600 V
I_{FAV} = 10 A
t_{rr} = 25 ns

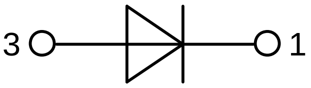
High Performance Fast Recovery Diode
Low Loss and Soft Recovery
Single Diode

Part number

DSEP8-06B



Backside: cathode



Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low Irm-values
- Very soft recovery behaviour
- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low Irm reduces:
  - Power dissipation within the diode
  - Turn-on loss in the commutating switch

Applications:

- Antiparallel diode for high frequency switching devices
- Antisaturation diode
- Snubber diode
- Free wheeling diode
- Rectifiers in switch mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)

Package: TO-220

- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

Terms _Conditions of usage:

The data contained in this product data sheet is exclusively intended for technically trained staff. The user will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to his application. The specifications of our components may not be considered as an assurance of component characteristics. The information in the valid application- and assembly notes must be considered. Should you require product information in excess of the data given in this product data sheet or which concerns the specific application of your product, please contact your local sales office.
Due to technical requirements our product may contain dangerous substances. For information on the types in question please contact your local sales office.
Should you intend to use the product in aviation, in health or life endangering or life support applications, please notify. For any such application we urgently recommend
- to perform joint risk and quality assessments;
- the conclusion of quality agreements;
- to establish joint measures of an ongoing product survey, and that we may make delivery dependent on the realization of any such measures.

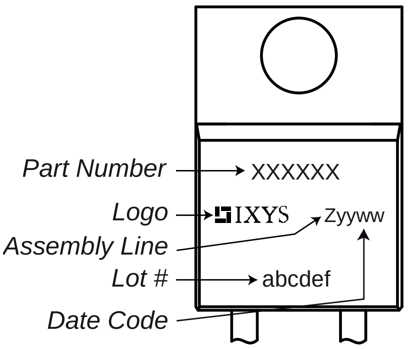
© 2016 IXYS all rights reserved

Fast Diode				Ratings			
Symbol	**Definition**	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
V_{RSM}	*max. non-repetitive reverse blocking voltage*		T_{VJ} = 25°C			600	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			600	V
I_R	*reverse current, drain current*	V_R = 600 V	T_{VJ} = 25°C			60	µA
		V_R = 600 V	T_{VJ} = 150°C			0.25	mA
V_F	*forward voltage drop*	I_F = 10 A	T_{VJ} = 25°C			2.67	V
		I_F = 20 A				3.19	V
		I_F = 10 A	T_{VJ} = 150°C			1.85	V
		I_F = 20 A				2.43	V
I_{FAV}	*average forward current*	T_C = 125°C	T_{VJ} = 175°C			10	A
		rectangular d = 0.5					
V_{F0}	*threshold voltage*	*for power loss calculation only*	T_{VJ} = 175°C			1.12	V
r_F	*slope resistance*					56	mΩ
R_{thJC}	*thermal resistance junction to case*					2.5	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.50		K/W
P_{tot}	*total power dissipation*		T_C = 25°C			60	W
I_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine; V_R = 0 V	T_{VJ} = 45°C			50	A
C_J	*junction capacitance*	V_R = 400 V f = 1 MHz	T_{VJ} = 25°C		6		pF
I_{RM}	*max. reverse recovery current*		T_{VJ} = 25 °C		1.5		A
		I_F = 10 A; V_R = 300 V	T_{VJ} = 100 °C		2.5		A
t_{rr}	*reverse recovery time*	-di_F /dt = 200 A/µs	T_{VJ} = 25 °C		25		ns
			T_{VJ} = 100 °C		60		ns

Data according to IEC 60747and per semiconductor unless otherwise specified

Package TO-220			Ratings			
Symbol	**Definition**	**Conditions**	**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per terminal			35	A
T_{VJ}	*virtual junction temperature*		-55		175	°C
T_{op}	*operation temperature*		-55		150	°C
T_{stg}	*storage temperature*		-55		150	°C
Weight				2		g
M_D	*mounting torque*		0.4		0.6	Nm
F_C	*mounting force with clip*		20		60	N

Product Marking

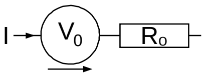


Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSEP8-06B	DSEP8-06B	Tube	50	496219

Similar Part	Package	Voltage class
DSEP8-06A	TO-220AC (2)	600

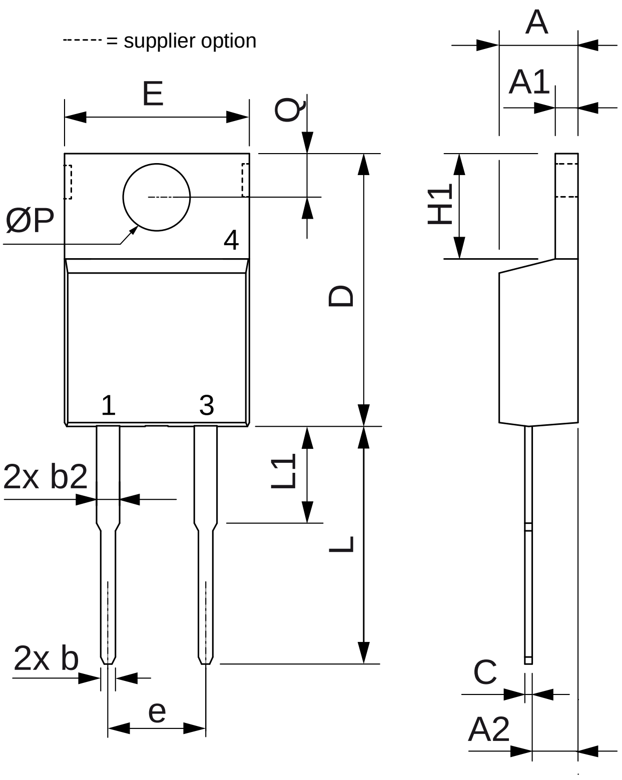
Equivalent Circuits for Simulation

* on die level $T_{VJ} = 175\,°C$

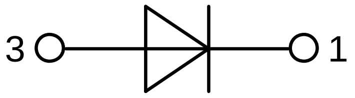


		Fast Diode	
$V_{0\,max}$	*threshold voltage*	1.12	V
$R_{0\,max}$	*slope resistance **	53	mΩ

Outlines TO-220



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.32	4.82	0.170	0.190
A1	1.14	1.39	0.045	0.055
A2	2.29	2.79	0.090	0.110
b	0.64	1.01	0.025	0.040
b2	1.15	1.65	0.045	0.065
C	0.35	0.56	0.014	0.022
D	14.73	16.00	0.580	0.630
E	9.91	10.66	0.390	0.420
e	5.08	BSC	0.200	BSC
H1	5.85	6.85	0.230	0.270
L	12.70	13.97	0.500	0.550
L1	2.79	5.84	0.110	0.230
ØP	3.54	4.08	0.139	0.161
Q	2.54	3.18	0.100	0.125



Fast Diode

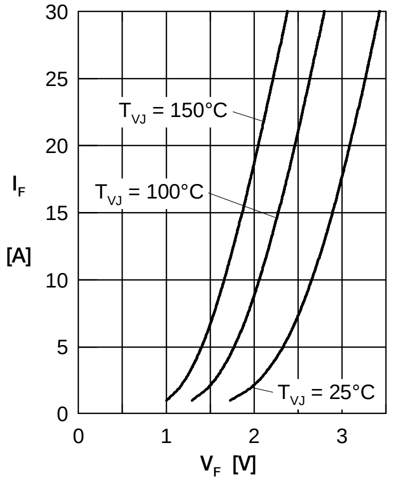


Fig. 1 Forward current
I_F versus V_F

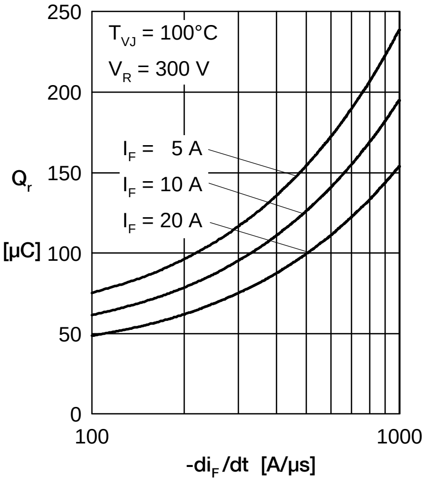


Fig. 2 Typ. reverse recov. charge
Q_r versus $-di_F/dt$

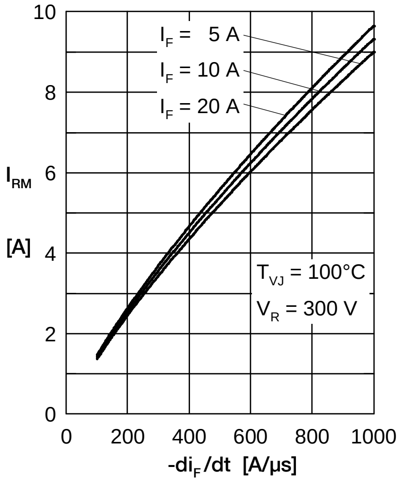


Fig. 3 Typ. peak reverse current
I_{RM} versus $-di_F/dt$

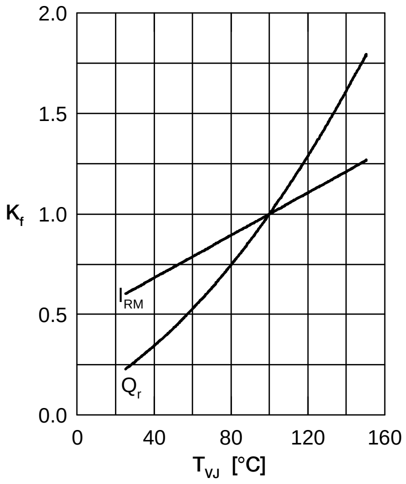


Fig. 4 Typ. dynamic parameters
Q_r, I_{RM} versus T_{VJ}

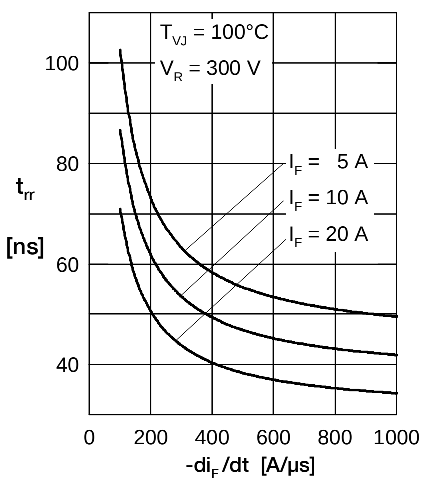


Fig. 5 Typ. recovery time
t_{rr} versus $-di_F/dt$

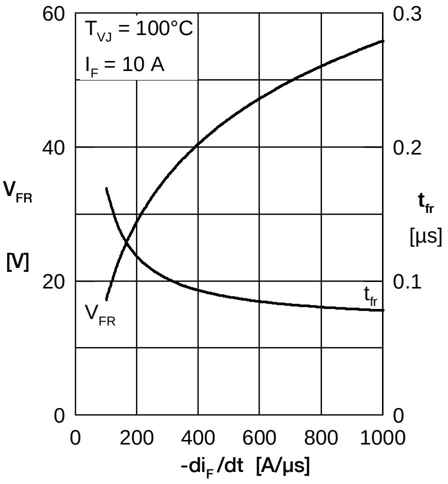


Fig. 6 Typ. peak forward voltage
V_{FR} and t_{fr} versus di_F/dt

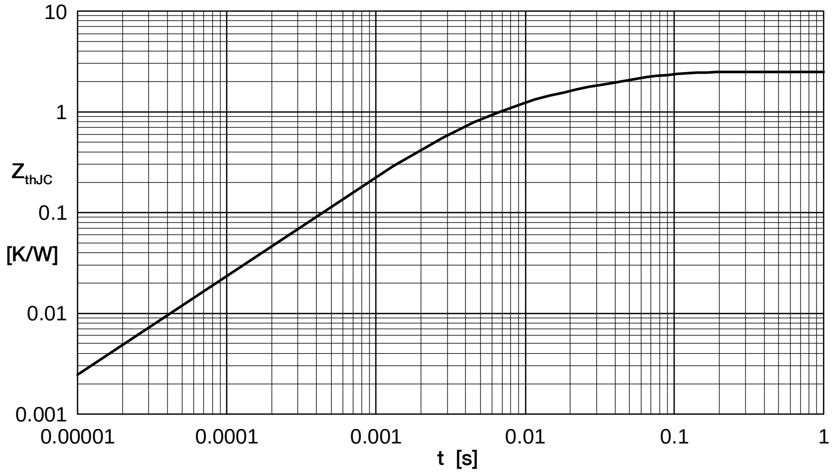


Fig. 7 Transient thermal impedance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} [K/W]	t_i [s]
1	1.449	0.0052
2	0.5578	0.0003
3	0.4931	0.0169