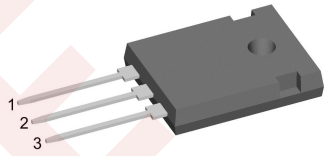
HiPerFRED

V_{RRM} = 1200 V
I_{FAV} = 2x 15 A
t_{rr} = 40 ns

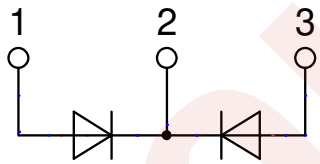
High Performance Fast Recovery Diode
Low Loss and Soft Recovery
Common Cathode

Part number

DSEC30-12A



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-247

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

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Disclaimer Notice

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Fast Diode

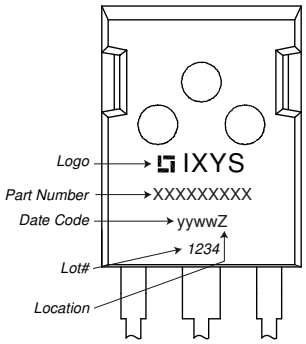
Symbol	Definition	Conditions		Ratings min.	typ.	max.	Unit
V_{RSM}	*max. non-repetitive reverse blocking voltage*		T_{VJ} = 25°C			1200	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			1200	V
I_R	*reverse current, drain current*	V_R = 1200 V	T_{VJ} = 25°C			100	µA
		V_R = 1200 V	T_{VJ} = 150°C			0,5	mA
V_F	*forward voltage drop*	I_F = 15 A	T_{VJ} = 25°C			2,61	V
		I_F = 30 A				3,17	V
		I_F = 15 A	T_{VJ} = 150°C			1,86	V
		I_F = 30 A				2,54	V
I_{FAV}	*average forward current*	T_C = 120°C	T_{VJ} = 175°C			15	A
		rectangular d = 0.5					
V_{F0}	*threshold voltage* } *for power loss calculation only*		T_{VJ} = 175°C			1,03	V
r_F	*slope resistance* }					46	mΩ
R_{thJC}	*thermal resistance junction to case*					1,6	K/W
R_{thCH}	*thermal resistance case to heatsink*				0,25		K/W
P_{tot}	*total power dissipation*		T_C = 25°C			95	W
I_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine; V_R = 0 V	T_{VJ} = 45°C			90	A
C_J	*junction capacitance*	V_R = 600 V f = 1 MHz	T_{VJ} = 25°C		5		pF
I_{RM}	*max. reverse recovery current*		T_{VJ} = 25°C		6		A
		I_F = 15 A; V_R = 600 V	T_{VJ} = 100°C		9		A
t_{rr}	*reverse recovery time*	$-di_F/dt$ = 200 A/µs	T_{VJ} = 25°C		50		ns
			T_{VJ} = 100°C		140		ns

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Package TO-247			Ratings			
Symbol	**Definition**	**Conditions**	**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per terminal [1]			50	A
T_{VJ}	*virtual junction temperature*		-55		175	°C
T_{op}	*operation temperature*		-55		150	°C
T_{stg}	*storage temperature*		-55		150	°C
Weight				6		g
M_D	*mounting torque*		0,8		1,2	Nm
F_C	*mounting force with clip*		20		120	N

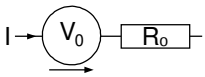
Product Marking



Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSEC30-12A	DSEC30-12A	Tube	30	477117

Equivalent Circuits for Simulation

** on die level* $T_{VJ} = 175°C$

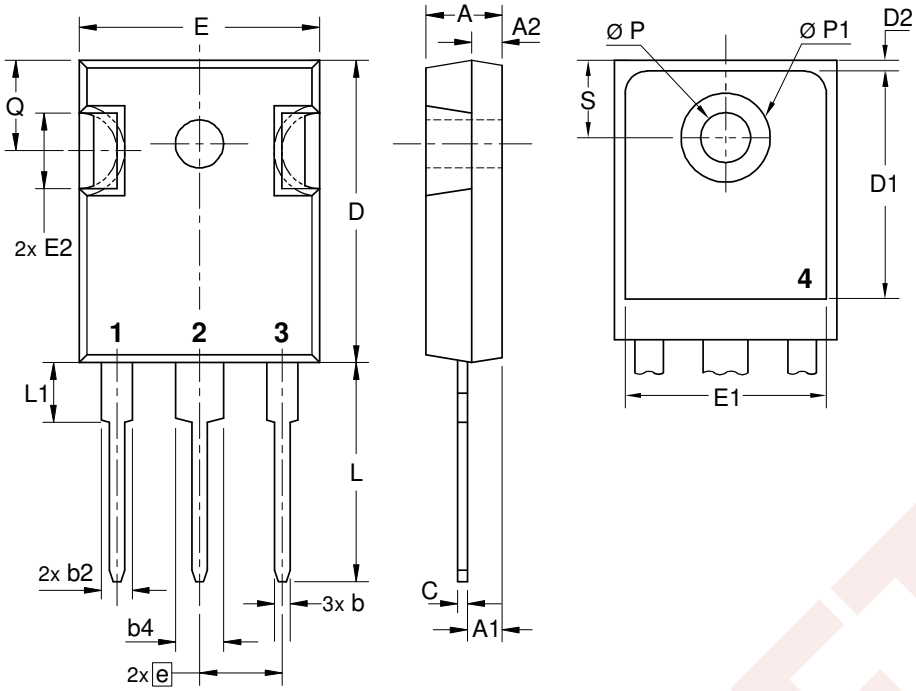


		Fast Diode	
$V_{0\,max}$	*threshold voltage*	1,03	V
$R_{0\,max}$	*slope resistance **	43	mΩ

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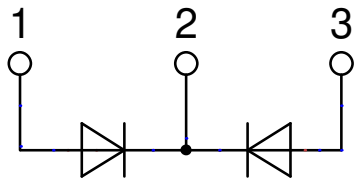
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Outlines TO-247



Sym.	Inches		Millimeter	
	min.	max.	min.	max.
A	0.185	0.209	4.70	5.30
A1	0.087	0.102	2.21	2.59
A2	0.059	0.098	1.50	2.49
D	0.819	0.845	20.79	21.45
E	0.610	0.640	15.48	16.24
E2	0.170	0.216	4.31	5.48
e	0.215 BSC		5.46 BSC	
L	0.780	0.800	19.80	20.30
L1	-	0.177	-	4.49
Ø P	0.140	0.144	3.55	3.65
Q	0.212	0.244	5.38	6.19
S	0.242 BSC		6.14 BSC	
b	0.039	0.055	0.99	1.40
b2	0.065	0.094	1.65	2.39
b4	0.102	0.135	2.59	3.43
c	0.015	0.035	0.38	0.89
D1	0.515	-	13.07	-
D2	0.020	0.053	0.51	1.35
E1	0.530	-	13.45	-
Ø P1	-	0.29	-	7.39

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Fast Diode

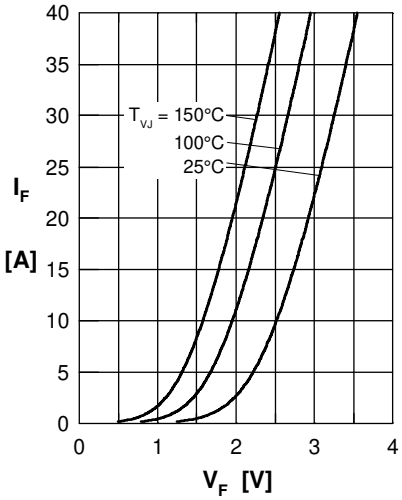


Fig. 1 Forward current I_F versus V_F

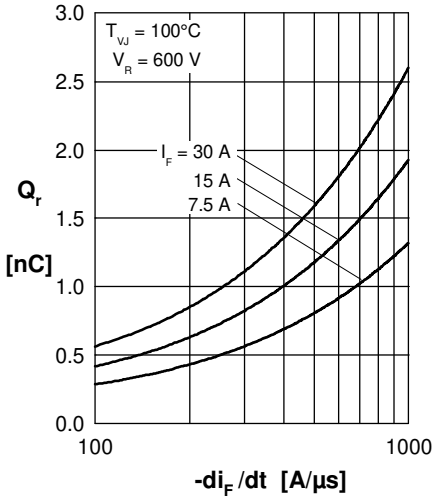


Fig. 2 Typ. reverse recov. charge Q_r versus $-di_F/dt$

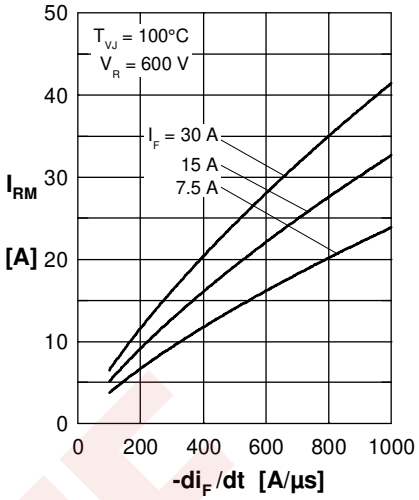


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

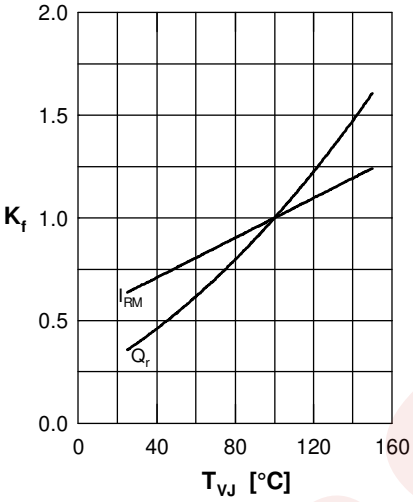


Fig. 4 Typ. dynamic parameters Q_r, I_{RM} versus T_{VJ}

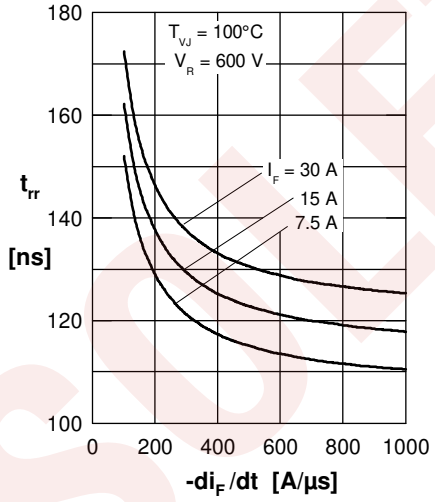


Fig. 5 Typ. recovery time t_{rr} versus $-di_F/dt$

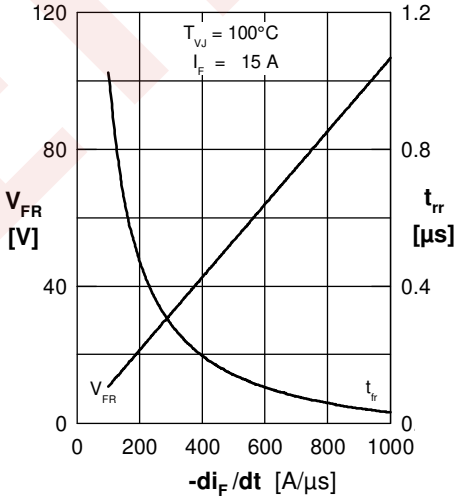


Fig. 6 Typ. peak forward voltage V_{FR} and tfr versus di_F/dt

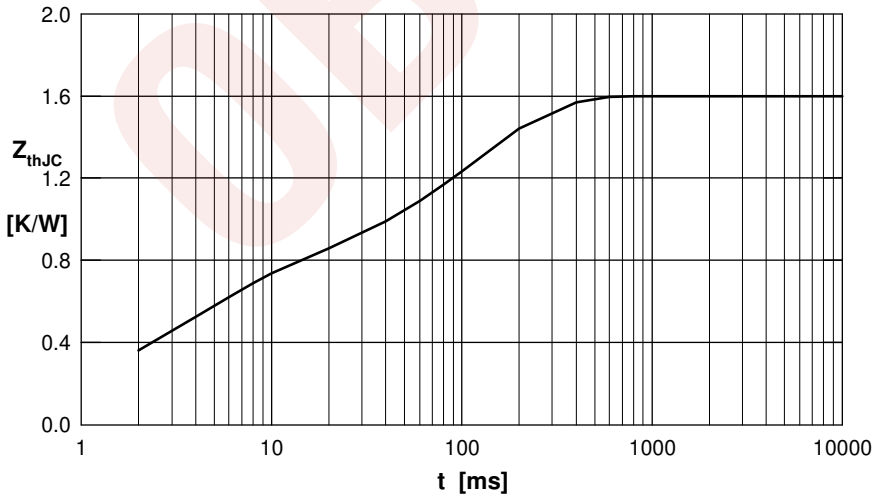


Fig. 7 Transient thermal resistance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.160	0.0010
2	0.100	0.0150
3	0.500	0.0040
4	0.840	0.1200

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