FRED

V_{RRM}	=	**600 V**
I_{FAV}	=	**30 A**
t_{rr}	=	**35 ns**

Fast Recovery Epitaxial Diode
Single Diode

Part number

DSEI30-06A

1
3

Backside: cathode

3 ○—▷|—○ 1

Features / Advantages:

● Planar passivated chips
● 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

Disclaimer Notice
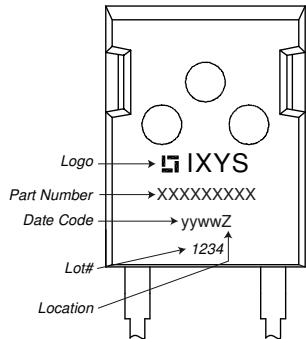
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Fast Diode

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	$V_R = 600\ V$	$T_{VJ} = 25°C$			100	µA
		$V_R = 480\ V$	$T_{VJ} = 125°C$			7	mA
V_F	forward voltage drop	$I_F = 30\ A$	$T_{VJ} = 25°C$			1.52	V
		$I_F = 60\ A$				1.71	V
		$I_F = 30\ A$	$T_{VJ} = 150°C$			1.36	V
		$I_F = 60\ A$				1.64	V
I_{FAV}	average forward current	$T_C = 110°C$ rectangular d = 0.5	$T_{VJ} = 150°C$			30	A
V_{F0}	threshold voltage $\Big\}$ for power loss calculation only		$T_{VJ} = 150°C$			1.10	V
r_F	slope resistance					8.5	mΩ
R_{thJC}	thermal resistance junction to case					0.8	K/W
R_{thCH}	thermal resistance case to heatsink				0.25		K/W
P_{tot}	total power dissipation		$T_C = 25°C$			155	W
I_{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine; $V_R = 0\ V$	$T_{VJ} = 45°C$			300	A
C_J	junction capacitance	$V_R = 600\ V$ f = 1 MHz	$T_{VJ} = 25°C$		22		pF
I_{RM}	max. reverse recovery current	$I_F = 37\ A;\ V_R = 350\ V$ -$di_F/dt = 200\ A/µs$	$T_{VJ} = 25°C$		5.5		A
			$T_{VJ} = 100°C$		9		A
t_{rr}	reverse recovery time		$T_{VJ} = 25°C$		80		ns
			$T_{VJ} = 100°C$		150		ns

Ratings
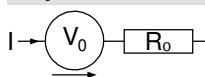
Package	TO-247		Ratings			
Symbol	**Definition**	**Conditions**	**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per terminal			70	A
T_{VJ}	*virtual junction temperature*		-40		150	°C
T_{op}	*operation temperature*		-40		125	°C
T_{stg}	*storage temperature*		-40		150	°C
Weight				6		g
M_D	*mounting torque*		0.8		1.2	Nm
F_C	*mounting force with clip*		20		120	N

Product Marking

Logo → ⌐ IXYS
Part Number → XXXXXXXXX
Date Code → yywwZ
Lot# → 1234
Location
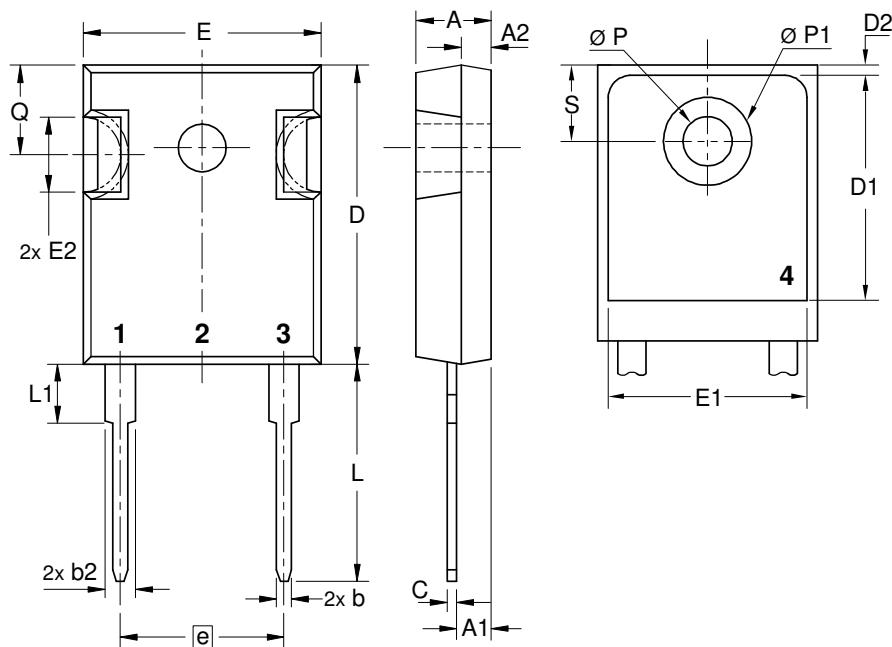
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSEI30-06A	DSEI30-06A	Tube	30	434272
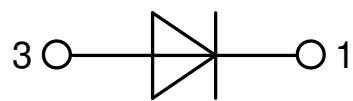
Equivalent Circuits for Simulation   ** on die level* $T_{VJ} = 150°C$

I → V_0 → R_0

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$V_{0\,max}$	*threshold voltage*	1.1		V
$R_{0\,max}$	*slope resistance **	6		mΩ

IXYS reserves the right to change limits, conditions and dimensions.   Data according to IEC 60747and per semiconductor unless otherwise specified   20201009b
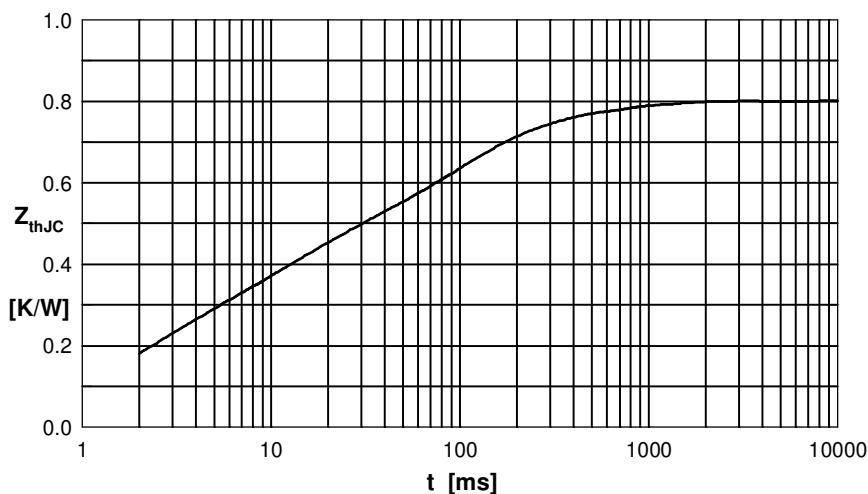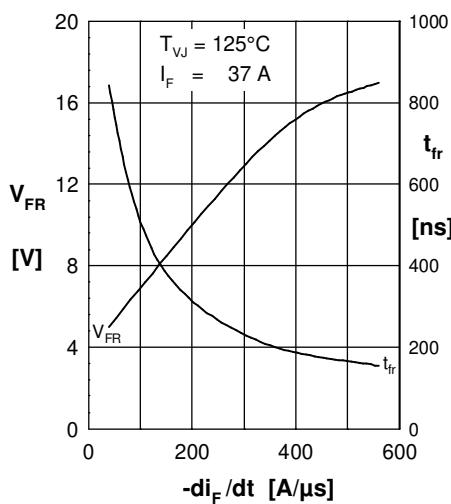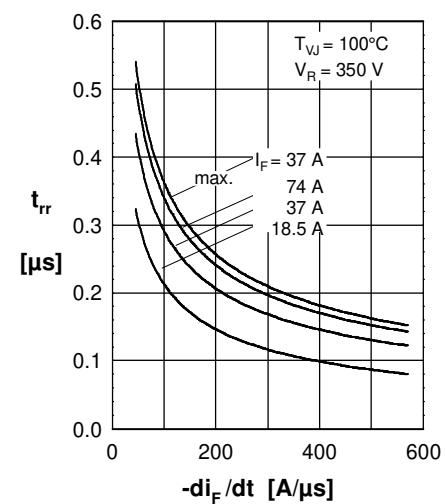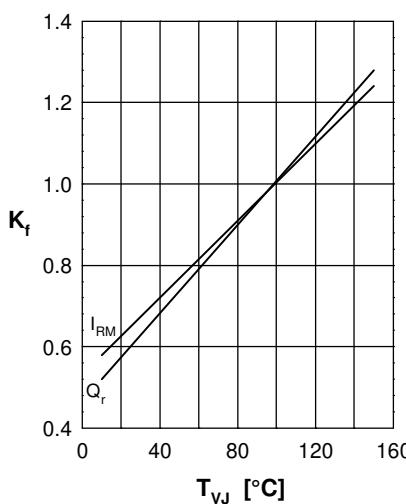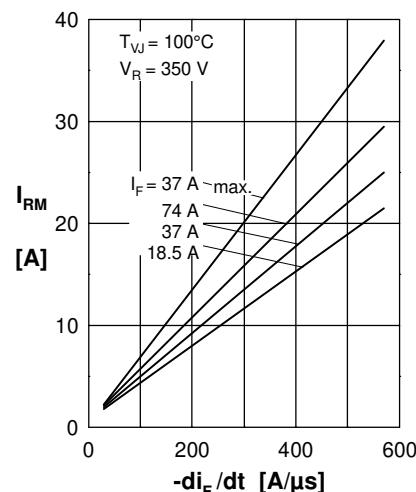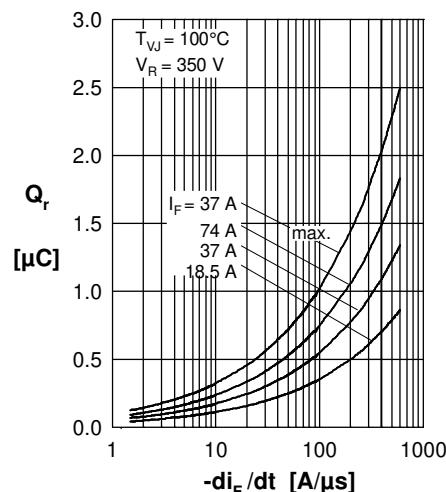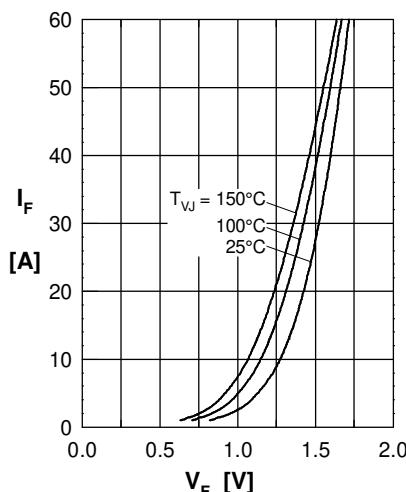
Outlines   TO-247

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	0.430 BSC		10.92 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 max. forward voltage drop 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 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	0.200	0.0018
2	0.220	0.0100
3	0.080	0.5000
4	0.300	0.0900