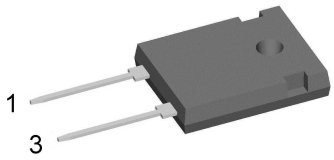
Sonic Fast Recovery Diode

V_{RRM}	=	1800 V
I_{FAV}	=	60 A
t_{rr}	=	230 ns

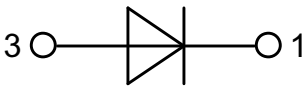
High Performance Fast Recovery Diode
Low Loss and Soft Recovery
Single Diode

Part number

DH60-18A



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

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.

IXYS reserves the right to change limits, conditions and dimensions. Data according to IEC 60747and per semiconductor unless otherwise specified 20160916c

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Fast Diode				Ratings			
Symbol	**Definition**	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
V_{RSM}	*max. non-repetitive reverse blocking voltage*		T_{VJ} = 25°C			1800	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			1800	V
I_R	*reverse current, drain current*	V_R = 1800 V	T_{VJ} = 25°C			200	µA
		V_R = 1800 V	T_{VJ} = 125°C			2	mA
V_F	*forward voltage drop*	I_F = 60 A	T_{VJ} = 25°C			2.04	V
		I_F = 120 A				2.57	V
		I_F = 60 A	T_{VJ} = 125°C			2.03	V
		I_F = 120 A				2.73	V
I_{FAV}	*average forward current*	T_C = 100°C	T_{VJ} = 150°C			60	A
		rectangular d = 0.5					
V_{F0}	*threshold voltage* } *for power loss calculation only*		T_{VJ} = 150°C			1.28	V
r_F	*slope resistance* }					12	mΩ
R_{thJC}	*thermal resistance junction to case*					0.3	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.25		K/W
P_{tot}	*total power dissipation*		T_C = 25°C			415	W
I_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine; V_R = 0 V	T_{VJ} = 45°C			700	A
C_J	*junction capacitance*	V_R = 1200 V f = 1 MHz	T_{VJ} = 25°C		32		pF
I_{RM}	*max. reverse recovery current*		T_{VJ} = 25°C		60		A
		I_F = 60 A; V_R = 1200 V	T_{VJ} = 100°C		70		A
t_{rr}	*reverse recovery time*	$-di_F/dt$ = 800 A/µs	T_{VJ} = 25°C		230		ns
			T_{VJ} = 100°C		350		ns

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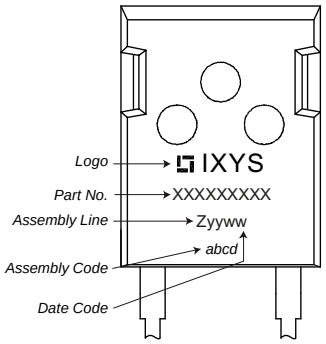
Package TO-247			Ratings			
Symbol	**Definition**	**Conditions**	**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per terminal			70	A
T_{VJ}	*virtual junction temperature*		-55		150	°C
T_{op}	*operation temperature*		-55		125	°C
T_{stg}	*storage temperature*		-55		150	°C
Weight				6		g
M_D	*mounting torque*		0.8		1.2	Nm
F_C	*mounting force with clip*		20		120	N

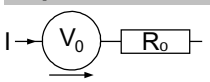
Product Marking



Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DH60-18A	DH60-18A	Tube	30	496553

Similar Part	Package	Voltage class
DH60-14A	TO-247AD (2)	1400
DH60-16A	TO-247AD (2)	1600

Equivalent Circuits for Simulation ** on die level* T_{VJ} = 150 °C



		Fast Diode	
$V_{0\ max}$	*threshold voltage*	1.28	V
$R_{0\ max}$	*slope resistance **	9.5	mΩ

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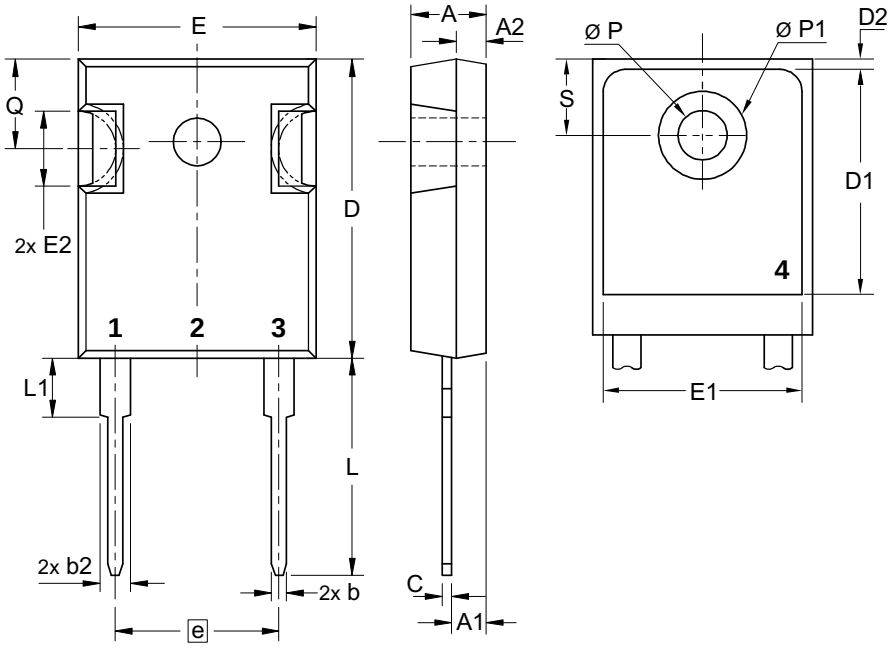
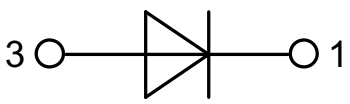
Outlines TO-247



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	0.430 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

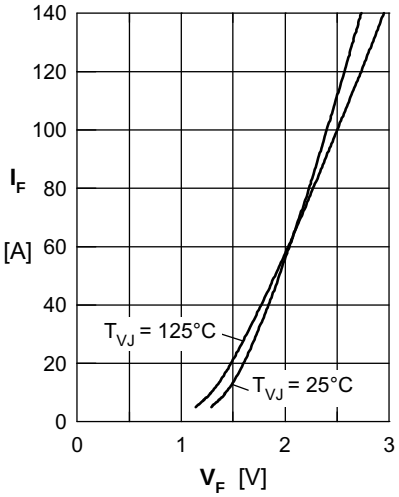


Fig. 1 Typ. forrward current I_F versus V_F

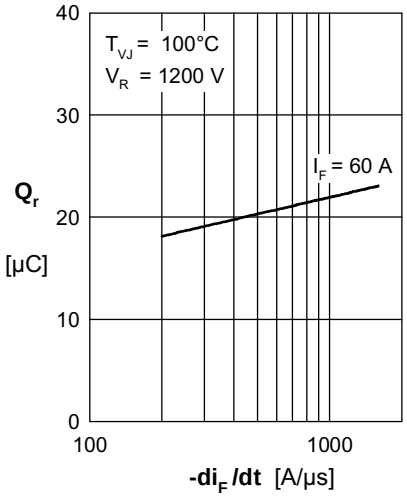


Fig. 2 Typ. reverse recovery charge Q_r versus $-di_F/dt$

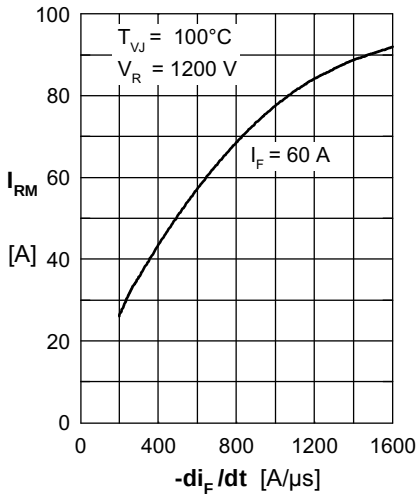


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

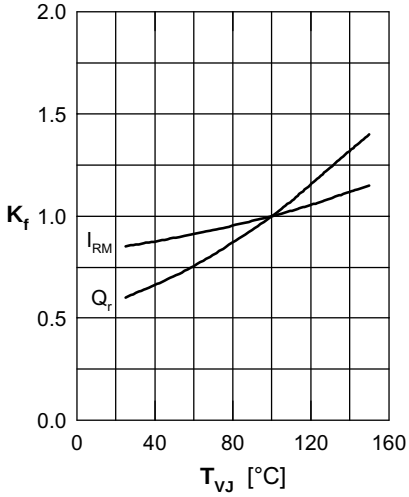


Fig. 4 Dynamic parameters Q_r, I_{RM} versus T_{VJ}

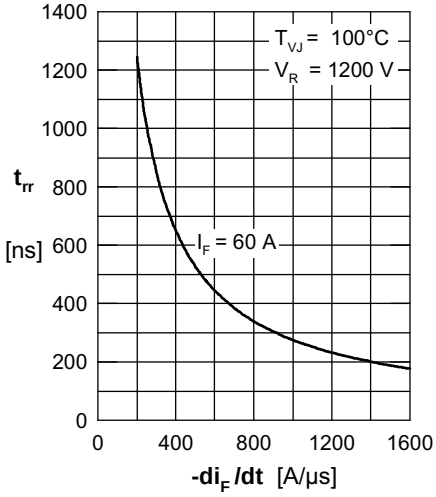


Fig. 5 Typ. recovery time t_{rr} versus $-di_F/dt$

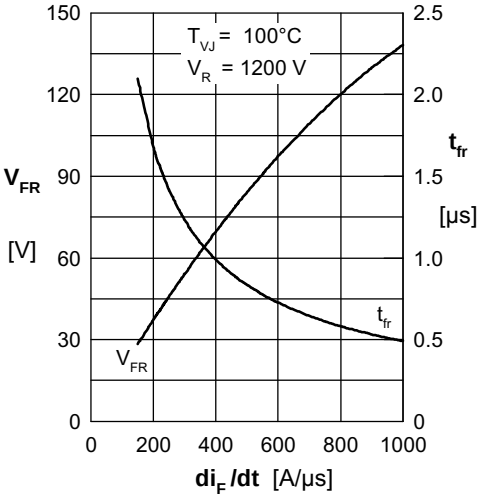
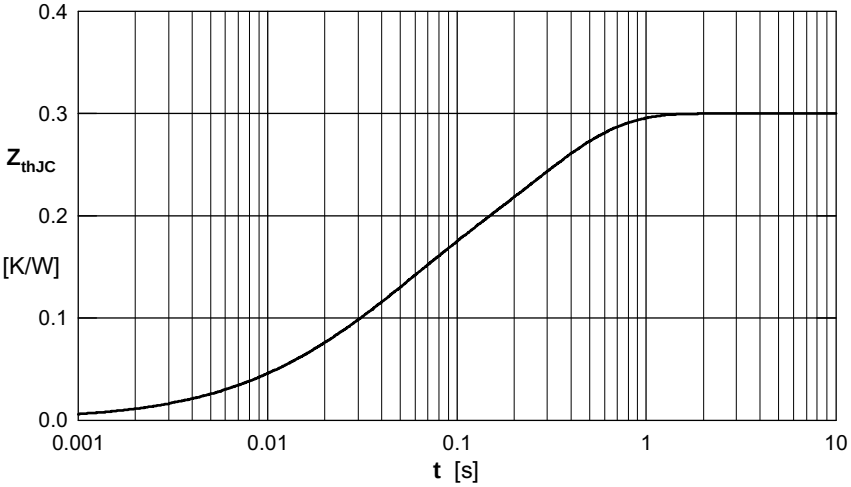


Fig. 6 Typ. peak forward voltage V_{FR} & typ. forward recovery time t_{fr} versus di_F/dt



i	R_i	τ_i
1	0.021	0.0093
2	0.11	0.038
3	0.169	0.274

Fig. 7 Transient thermal resistance junction to case

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