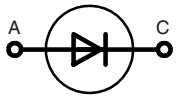
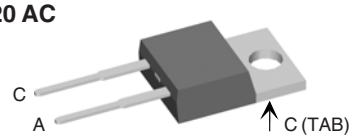
HiPerFRED™ Epitaxial Diode
with soft recovery

I_{FAV} = 30 A
V_{RRM} = 1200 V
t_{rr} = 40 ns

V_{RSM} V	V_{RRM} V	Type
1200	1200	DSEP 29-12A



TO-220 AC



A = Anode, C = Cathode, TAB = Cathode

Symbol	Conditions	Maximum Ratings	
I_{FRMS}		35	A
I_{FAVM}	T_C = 115°C; rectangular, d = 0.5	30	A
I_{FSM}	T_{VJ} = 45°C; t_p = 10 ms (50 Hz), sine	200	A
E_{AS}	T_{VJ} = 25°C; non-repetitive I_{AS} = 11.5 A; L = 180 µH	14	mJ
I_{AR}	V_A = 1.25·V_R typ.; f = 10 kHz; repetitive	1.2	A
T_{VJ}		-55...+175	°C
T_{VJM}		175	°C
T_{stg}		-55...+150	°C
P_{tot}	T_C = 25°C	165	W
M_d	mounting torque	0.4...0.6	Nm
Weight	typical	2	g

Symbol	Conditions	Characteristic Values typ.	max.	
I_R ⋆	V_R = V_{RRM}; T_{VJ} = 25°C		250	µA
	T_{VJ} = 150°C		1	mA
V_F ⋆	I_F = 30 A; T_{VJ} = 150°C		1.81	V
	T_{VJ} = 25°C		2.75	V
R_{thJC}			0.9	K/W
R_{thCH}		0.5		K/W
t_{rr}	I_F = 1 A; -di/dt = 200 A/µs; V_R = 30 V; T_{VJ} = 25°C	40		ns
I_{RM}	V_R = 100 V; I_F = 50 A; -di_F/dt = 100 A/µs T_{VJ} = 100°C	8.5	11.4	A

Pulse test: ⋆ Pulse Width = 5 ms, Duty Cycle < 2.0%
⋆ Pulse Width = 300 µs, Duty Cycle < 2.0%

Data according to IEC 60747 and per diode unless otherwise specified.

Features
- International standard package
- 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

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

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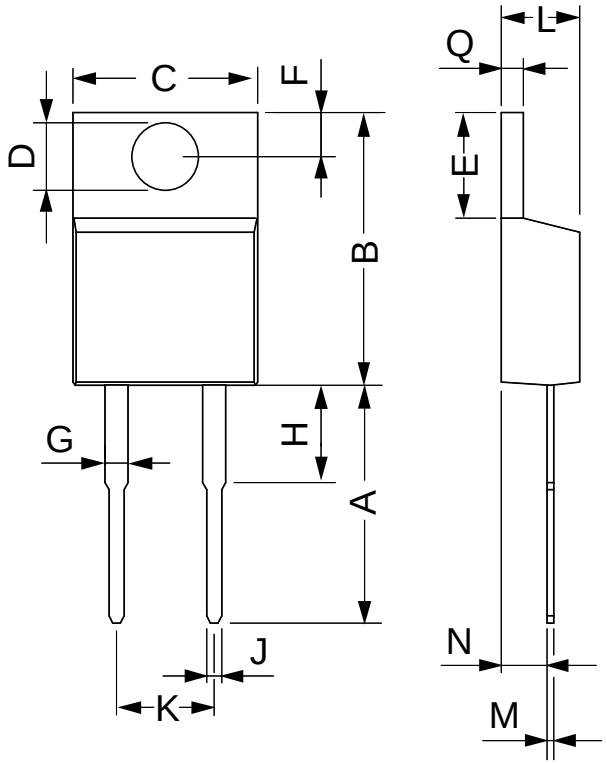

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	12.7	14.73	0.5	0.58
B	14.23	16.51	0.56	0.65
C	9.66	10.66	0.38	0.42
D	3.54	4.08	0.139	0.161
E	5.85	6.85	2.3	0.42
F	2.54	3.42	0.1	0.135
G	1.15	1.77	0.045	0.07
H	-	6.35	-	0.25
J	0.64	0.89	0.025	0.035
K	4.83	5.33	0.19	0.21
L	3.56	4.82	0.14	0.19
M	0.51	0.76	0.02	0.03
N	2.04	2.49	0.08	0.115
Q	0.64	1.39	0.025	0.055

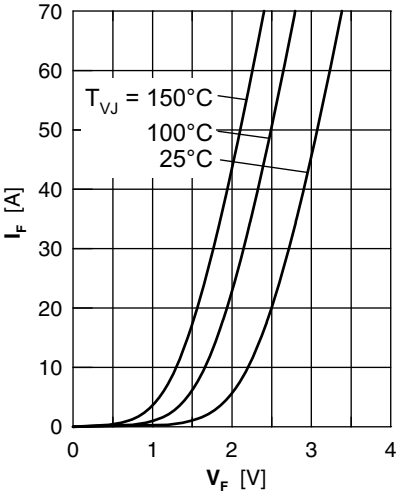

Fig. 1 Forward current I_F vs. V_F

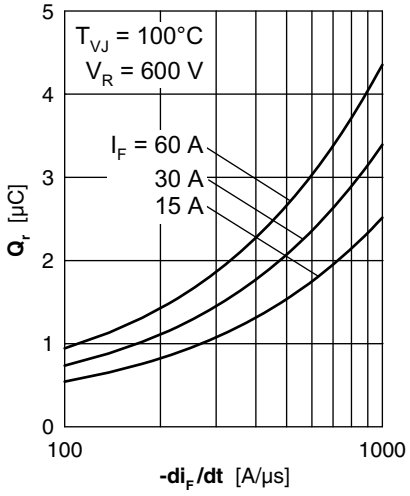

Fig. 2 Typ. reverse recovery charge Q_r versus $-di_F/dt$

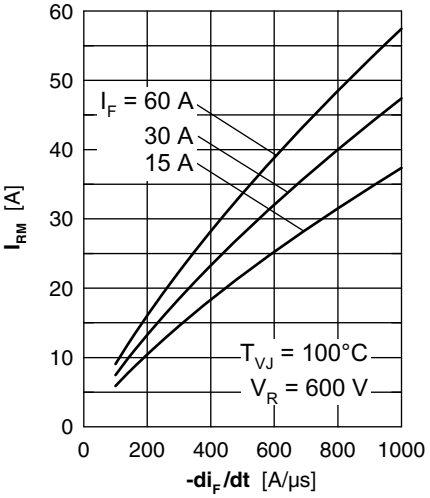

Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

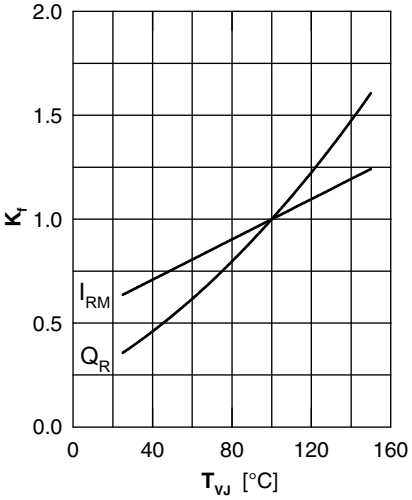

Fig. 4 Dynamic parameters Q_r, I_{RM} versus T_{VJ}

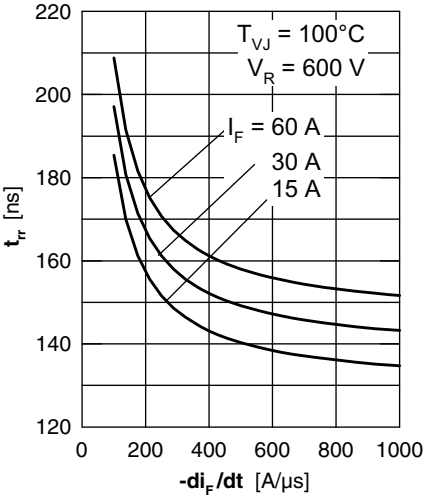

Fig. 5 Typ. recovery time t_{rr} vs. $-di_F/dt$

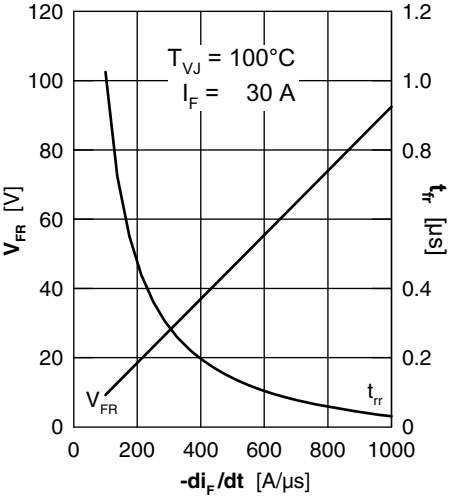

Fig. 6 Typ. peak forward voltage V_{FR} and t_{fr} versus di_F/dt

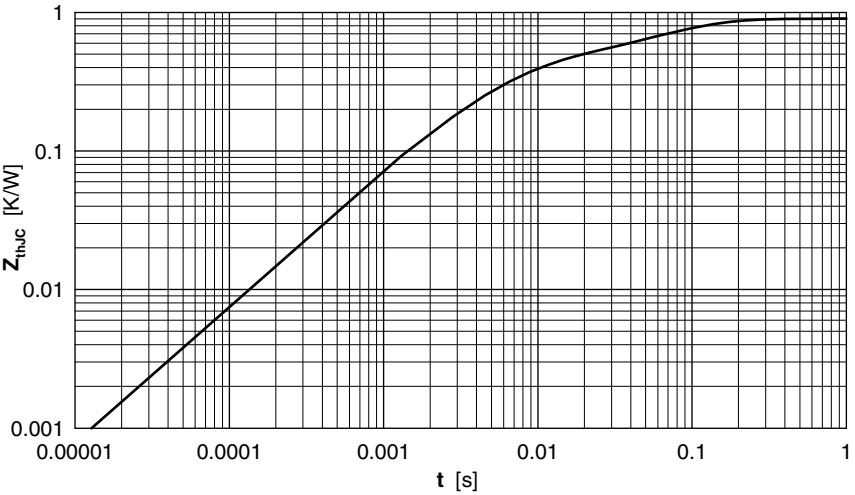

Fig. 7 Transient thermal impedance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.502	0.0052
2	0.193	0.0003
3	0.205	0.0162