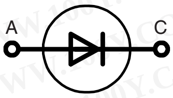
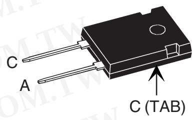
HiPerFRED™ Epitaxial Diode
with soft recovery

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

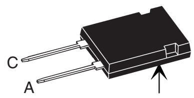
V_{RSM} V	V_{RRM} V	Type
600	600	DSEP 30-06A
600	600	DSEP 30-06B
600	600	DSEP 30-06BR



TO-247 AD
Version A



ISOPLUS 247™
Version BR



A = Anode, C = Cathode

Symbol	Conditions	Maximum Ratings	
I_{FRMS}		70	A
I_{FAVM}	rect., d = 0.5; T_C (Vers. A) = 135°C T_C (Vers. B) = 125°C; T_C (Vers. BR) = 115°C	30	A
I_{FSM}	T_{VJ} = 45°C; t_p = 10 ms (50 Hz), sine	250	A
E_{AS}	T_{VJ} = 25°C; non-repetitive I_{AS} = 1.3 A; L = 180 µH	0.2	mJ
I_{AR}	V_A = 1.5·V_R typ.; f = 10 kHz; repetitive	0.1	A
T_{VJ}		-55...+175	°C
T_{VJM}		175	°C
T_{stg}		-55...+150	°C
P_{tot}	T_C = 25°C	165	W
	(Vers. BR)	135	W
M_d*	mounting torque	0.8...1.2	Nm
F_C	mounting force with clip	20...120	N
V_{ISOL}**	50/60 Hz, RMS, t = 1 minute, leads-to-tab	2500	V~
Weight	typical	6	g

* Verson A only; ** Version BR only

Symbol	Conditions	Characteristic max. Values Vers. A	Vers. B	
I_R ①	T_{VJ} = 25°C V_R = V_{RRM}	250	250	µA
	T_{VJ} = 150°C V_R = V_{RRM}	1	2	mA
V_F ②	I_F = 30 A; T_{VJ} = 150°C	1.25	1.56	V
	T_{VJ} = 25°C	1.60	2.51	V
R_{thJC}		0.9	0.9	K/W
R_{thJC}	Version BR		1.1	K/W
R_{thCH}	typ.	0.25	0.25	K/W
t_{rr} typ.	I_F = 1 A; -di/dt = 200 A/µs; V_R = 30 V; T_{VJ} = 25°C	35	30	ns
I_{RM} typ.	V_R = 100 V; I_F = 50 A; -di_F/dt = 100 A/µs T_{VJ} = 100°C	6	4	A

Pulse test: ① Pulse Width = 5 ms, Duty Cycle < 2.0 %
② Pulse Width = 300 µs, Duty Cycle < 2.0 %

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

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

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
- Version ..R isolated and UL registered E153432

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

Dimensions see Outlines.pdf

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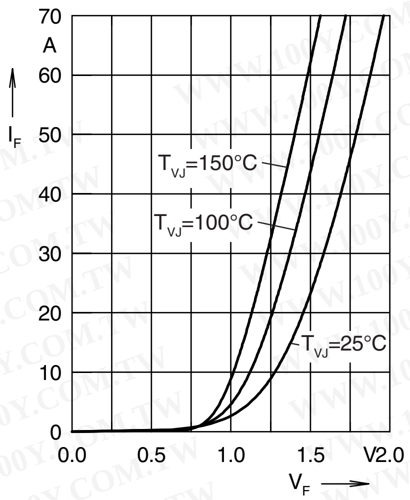

Fig. 1 Forward current I_F versus V_F

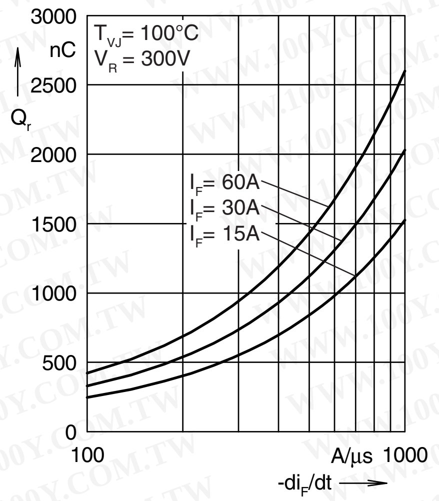

Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

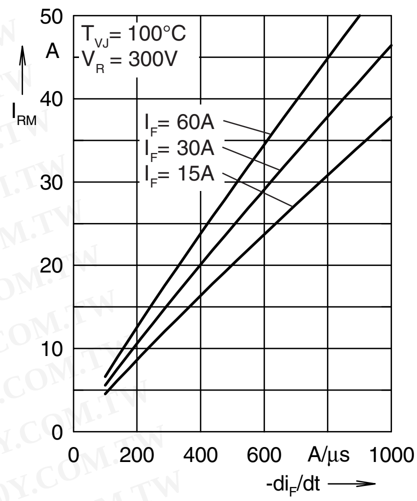

Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

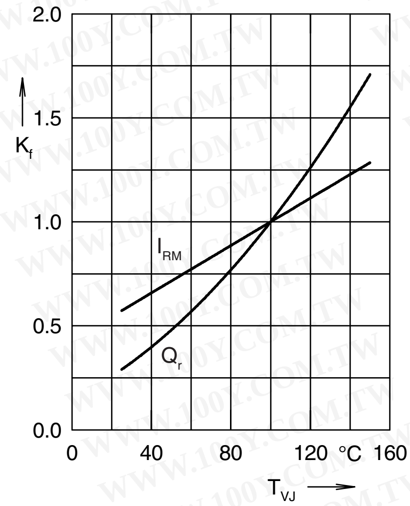

Fig. 4 Dynamic parameters Q_r, I_{RM} versus T_{VJ}

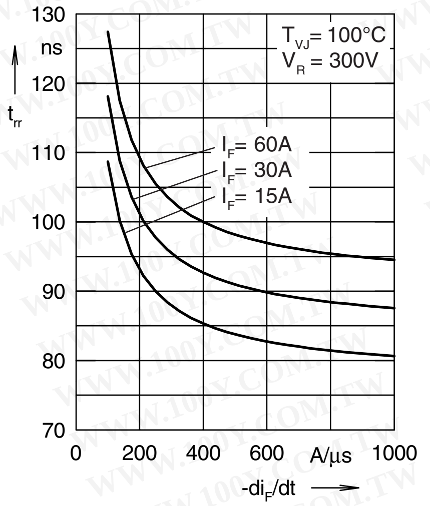

Fig. 5 Recovery time t_{rr} versus $-di_F/dt$

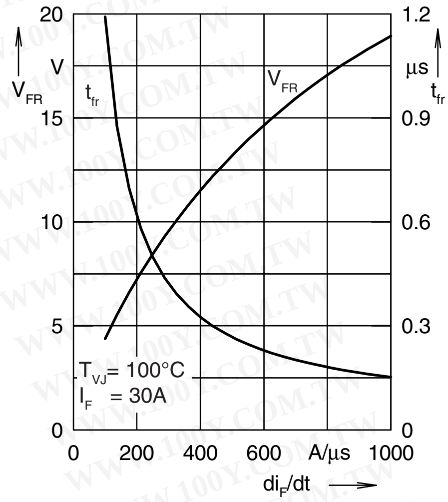

Fig. 6 Peak forward voltage V_{FR} and t_{fr} versus di_F/dt

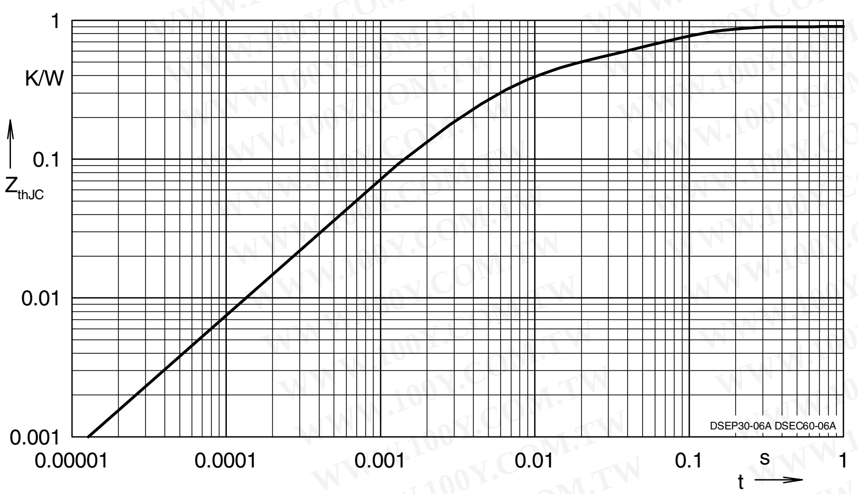

Fig. 7 Transient thermal resistance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.465	0.0052
2	0.179	0.0003
3	0.256	0.0396

NOTE: Fig. 2 to Fig. 6 shows typical values

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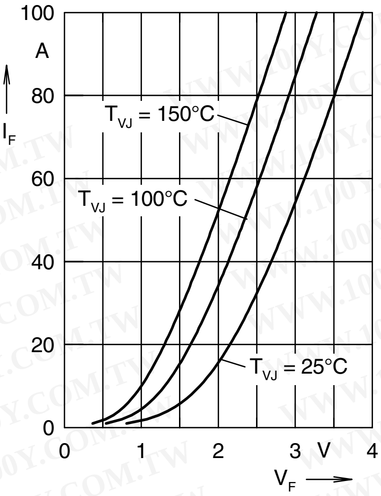

Fig. 1 Forward current I_F versus V_F

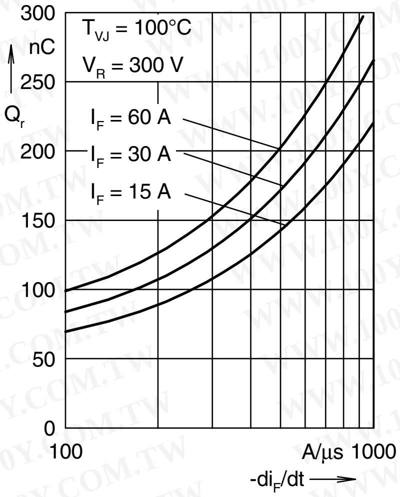

Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

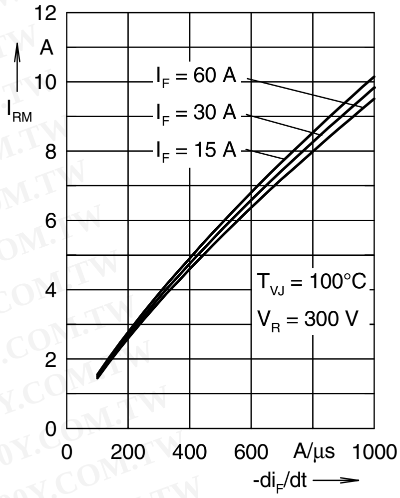

Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

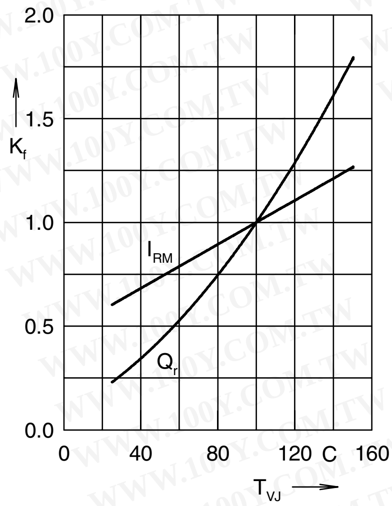

Fig. 4 Dynamic parameters Q_r, I_{RM} versus T_{VJ}

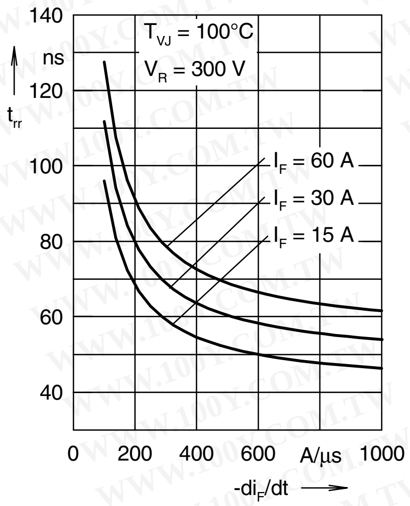

Fig. 5 Recovery time t_{rr} versus $-di_F/dt$

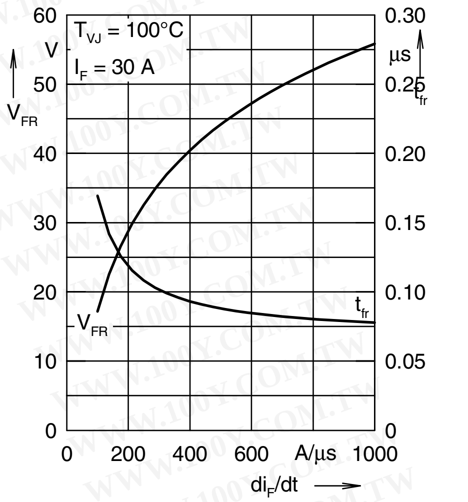

Fig. 6 Peak forward voltage V_{FR} and t_{fr} versus di_F/dt

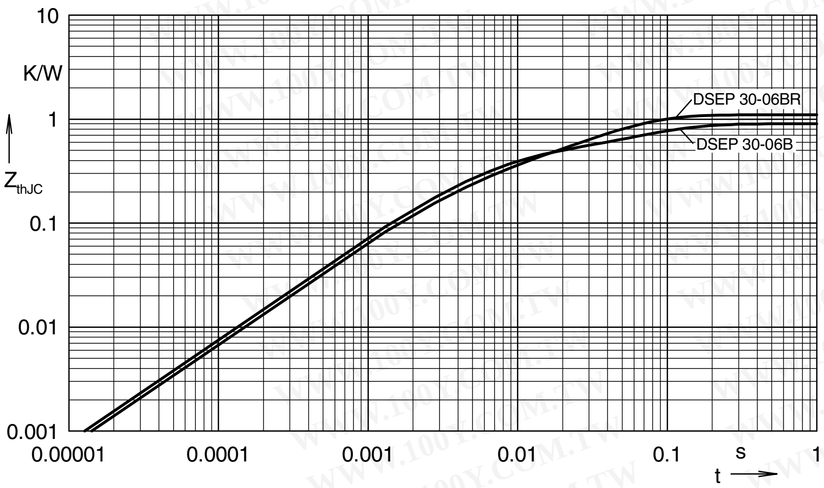

Fig. 7 Transient thermal resistance junction to case

Constants for Z_{thJC} calculation ..B:

i	R_{thi} (K/W)	t_i (s)
1	0.465	0.0052
2	0.179	0.0003
3	0.256	0.0397

Constants for Z_{thJC} calculation ..BR:

i	R_{thi} (K/W)	t_i (s)
1	0.368	0.0052
2	0.1417	0.0003
3	0.0295	0.0004
4	0.5604	0.0092

NOTE: Fig. 2 to Fig. 6 shows typical values

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