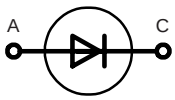
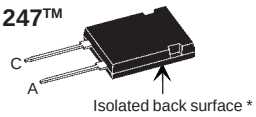
HiPerDynFRED™ Epitaxial Diode
with soft recovery
(Electrically Isolated Back Surface)

I_{FAV} = 30 A
V_{RRM} = 600 V
t_{rr} = 20 ns

V_{RSM} V	V_{RRM} V	Type
600	600	DSEP 30-06CR



ISOPLUS 247™



A = Anode, C = Cathode

* Patent pending

Symbol	Conditions	Maximum Ratings	
I_{FRMS}		70	A
I_{FAVM}	T_C = 135°C; rectangular, d = 0.5	30	A
I_{FRM}	t_P < 10 µs; rep. rating, pulse width limited by T_{VJM}	tbd	A
I_{FSM}	T_{VJ} = 45°C; t_p = 10 ms (50 Hz), sine	300	A
E_{AS}	T_{VJ} = 25°C; non-repetitive I_{AS} = 3 A; L = 180 µH	1.2	mJ
I_{AR}	V_A = 1.5·V_R typ.; f = 10 kHz; repetitive	0.3	A
T_{VJ}		-55...+175	°C
T_{VJM}		175	°C
T_{stg}		-55...+150	°C
P_{tot}	T_C = 25°C	250	W
V_{ISOL}	50/60 Hz RMS; I_{ISOL} ≤ 1 mA	2500	V~
F_C	mounting force with clip	20...120	N
Weight	typical	6	g

Symbol	Conditions	Characteristic Values typ.	max.	
I_R ①	T_{VJ} = 25°C V_R = V_{RRM}		250	µA
	T_{VJ} = 150°C V_R = V_{RRM}		1	mA
V_F ②	I_F = 30 A; T_{VJ} = 150°C		1.79	V
	T_{VJ} = 25°C		2.46	V
R_{thJC}			0.6	K/W
R_{thCH}	with heatsink compound	0.25		K/W
t_{rr}	I_F = 1 A; -di/dt = 200 A/µs; V_R = 30 V; T_{VJ} = 25°C	20		ns
I_{RM}	V_R = 100 V; I_F = 50 A; -di_F/dt = 100 A/µs T_{VJ} = 100°C	4.5	7.0	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

Features

- Silicon chip on **D**irect-**C**opper-**B**ond substrates
  - High power dissipation
  - Isolated mounting surface
  - 2500 V electrical isolation
- Low cathode to tab capacitance (< 25 pF)
- 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
- 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 and **PFC** 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

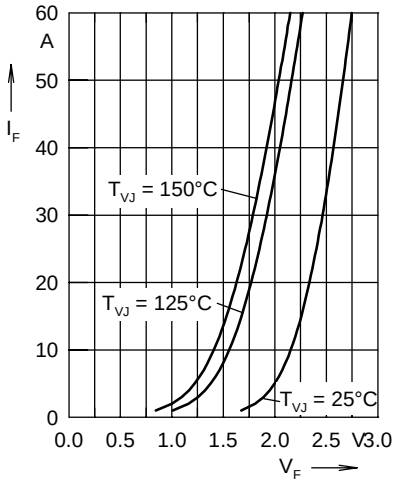


Fig. 1 Forward current I_F versus V_F

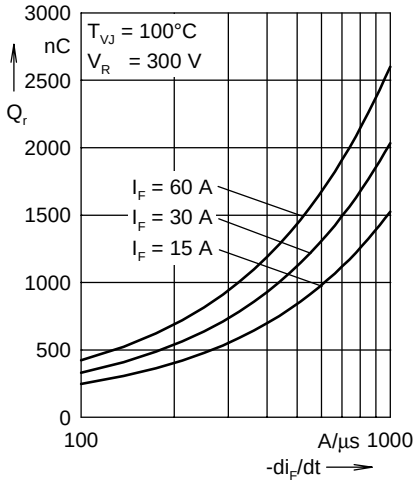


Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

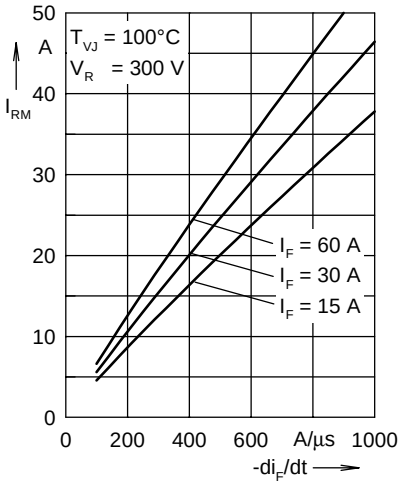


Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

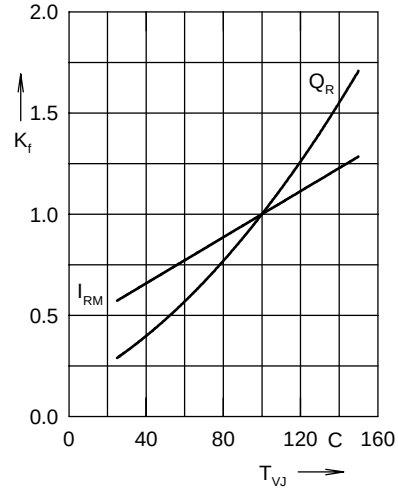


Fig. 4 Dynamic parameters Q_r, I_{RM} versus T_{VJ}

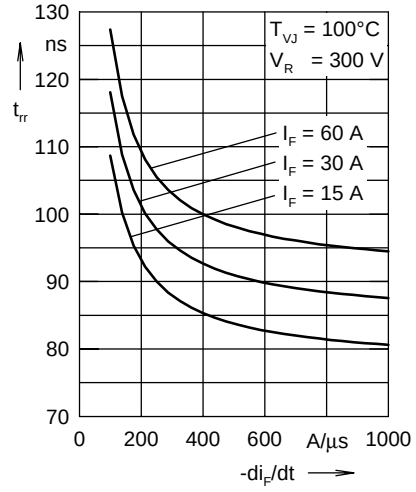


Fig. 5 Recovery time t_{rr} versus $-di_F/dt$

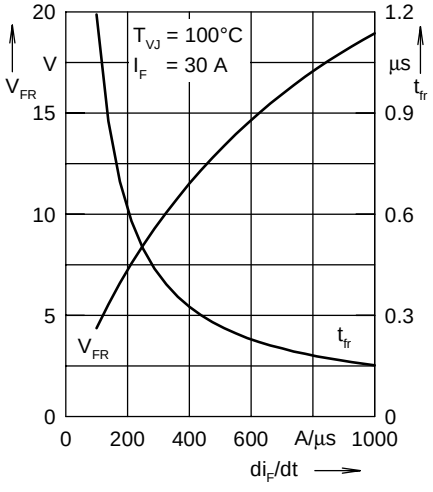


Fig. 6 Peak forward voltage V_{FR} and t_{fr} versus di_F/dt

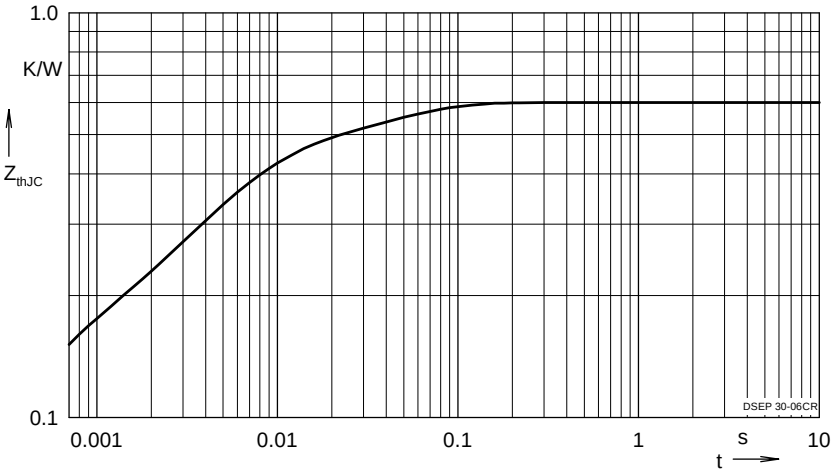


Fig. 7 Transient thermal resistance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.31	0.005
2	0.1193	0.0003
3	0.1707	0.04