

HiPerFRED™ Epitaxial Diode

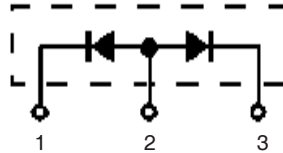
ISOPLUS220™

Electrically Isolated Back Surface

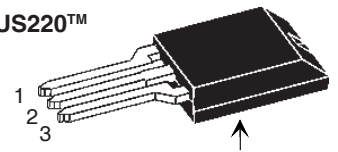
$I_{FAV} = 2x8\text{ A}$
 $V_{RRM} = 600\text{ V}$
 $t_{rr} = 35\text{ ns}$

Preliminary Data Sheet

V_{RSM}	V_{RRM}	Type
V	V	
600	600	DSEA16-06AC



ISOPLUS220™



Isolated back surface *

* Patent pending

Symbol	Conditions	Maximum Ratings	
I_{FRMS}		35	A
I_{FAVM}	$T_C = 145^\circ\text{C}$; rectangular, $d = 0.5$	8	A
I_{FSM}	$T_{VJ} = 45^\circ\text{C}$; $t_p = 10\text{ ms}$ (50 Hz), sine	50	A
E_{AS}	$T_{VJ} = 25^\circ\text{C}$; non-repetitive $I_{AS} = 0.9\text{ A}$; $L = 180\text{ }\mu\text{H}$	0.1	mJ
I_{AR}	$V_A = 1.5 \cdot V_R$ typ.; $f = 10\text{ kHz}$; repetitive	0.1	A
T_{VJ}		-55...+175	$^\circ\text{C}$
T_{VJM}		175	$^\circ\text{C}$
T_{stg}		-55...+150	$^\circ\text{C}$
P_{tot}	$T_C = 25^\circ\text{C}$	60	W
V_{ISOL}	50/60 Hz RMS; $I_{ISOL} \leq 1\text{ mA}$	2500	V~
F_C	Mounting force	11...65 / 2.4...11	N / lb
Weight	typical	3	g

Features

- Silicon chip on Direct-Copper-Bond substrate
- High power dissipation
- Isolated mounting surface
- 2500V electrical isolation
- Low cathode to tab capacitance (<15pF)
- 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

See DSEC 16-06A data sheet for characteristic curves

Symbol	Conditions	Characteristic Values	
		typ.	max.
I_R ①	$T_{VJ} = 25^\circ\text{C}$ $V_R = V_{RRM}$ $T_{VJ} = 150^\circ\text{C}$ $V_R = V_{RRM}$		60 μA 0.25 mA
V_F ②	$I_F = 10\text{ A}$; $T_{VJ} = 125^\circ\text{C}$ $T_{VJ} = 25^\circ\text{C}$		1.42 V 2.50 V
R_{thJC} R_{thCH}		0.6	2.5 K/W K/W
t_{rr}	$I_F = 1\text{ A}$; $-di/dt = 50\text{ A}/\mu\text{s}$; $V_R = 30\text{ V}$; $T_{VJ} = 25^\circ\text{C}$	35	ns
I_{RM}	$V_R = 100\text{ V}$; $I_F = 12\text{ A}$; $-di_F/dt = 100\text{ A}/\mu\text{s}$ $T_{VJ} = 100^\circ\text{C}$	3.5	4.4 A

Notes: Data given for $T_{VJ} = 25^\circ\text{C}$ and per diode unless otherwise specified

② Pulse test: pulse Width = 5 ms, Duty Cycle < 2.0 %

③ Pulse test: pulse Width = 300 μs , Duty Cycle < 2.0 %

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

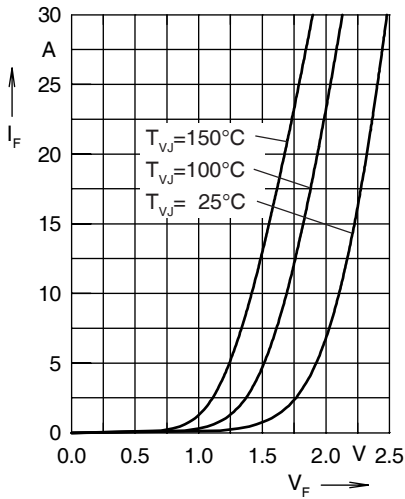


Fig. 1 Forward current I_F versus V_F

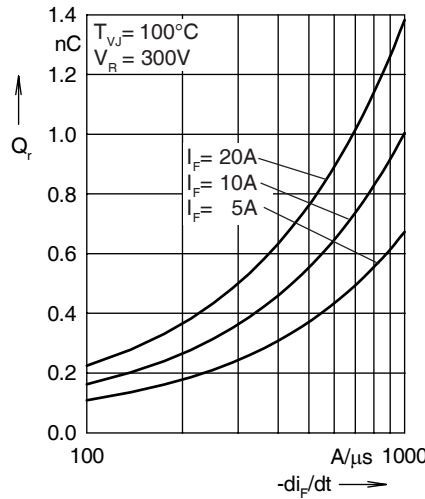


Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

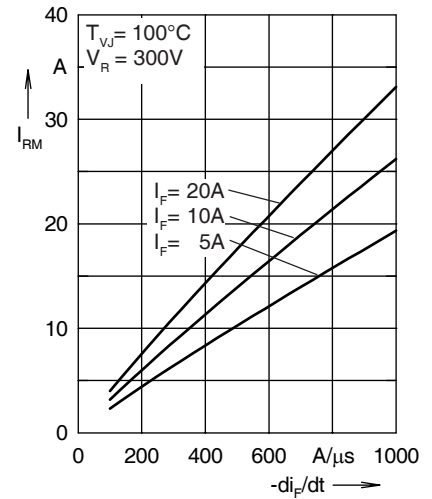


Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

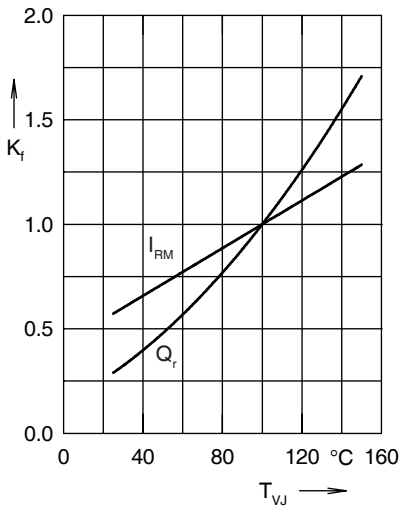


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

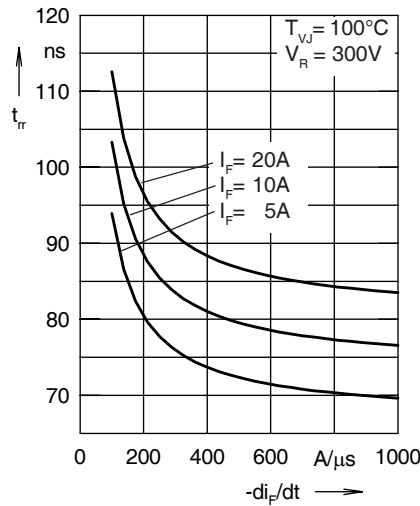


Fig. 5 Recovery time t_{tr} versus $-di_F/dt$

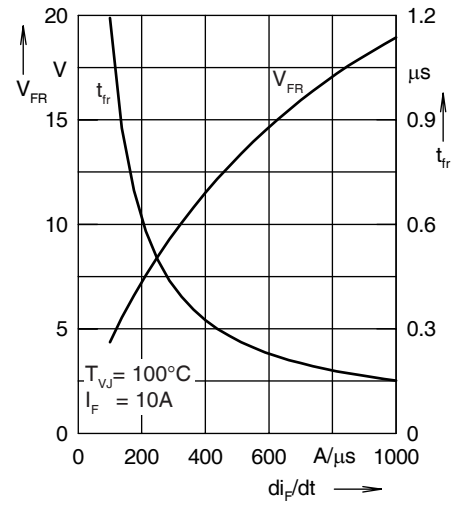


Fig. 6 Peak forward voltage V_{FR} and t_{tr} versus di_F/dt

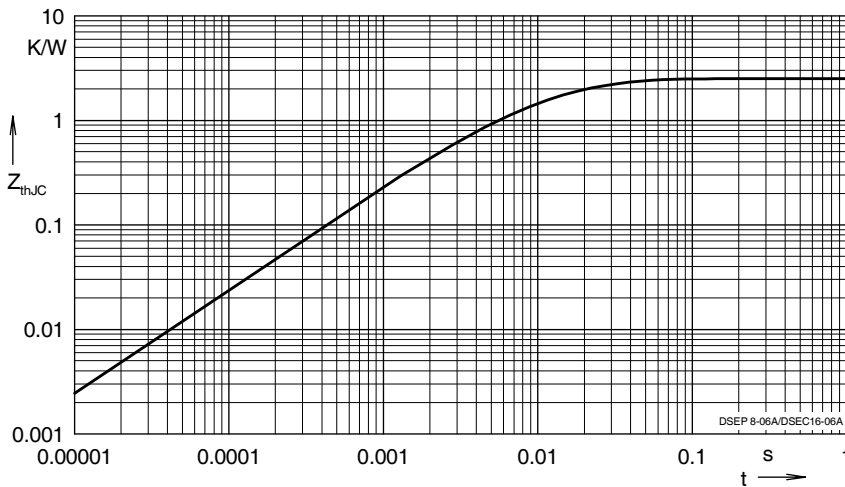
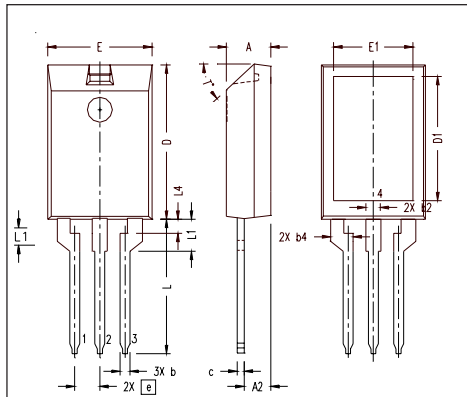


Fig. 7 Transient thermal resistance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	1.449	0.0052
2	0.5578	0.0003
3	0.4931	0.0169

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

ISOPLUS220 OUTLINE


SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.157	.197	4.00	5.00
A2	.098	.118	2.50	3.00
b	.035	.051	0.90	1.30
b2	.049	.065	1.25	1.65
b4	.093	.100	2.35	2.55
c	.028	.039	0.70	1.00
D	.591	.630	15.00	16.00
D1	.472	.512	12.00	13.00
E	.394	.433	10.00	11.00
E1	.295	.335	7.50	8.50
e	.100 BASIC		2.55 BASIC	
L	.512	.571	13.00	14.50
L1	.118	.138	3.00	3.50
L4	.039	.059	1.00	1.50
T*			42.5°	47.5°

Note: All terminals are solder plated.

- 1 - Cathode
- 2 - Common anode
- 3 - Cathode