HiPerDynFRED™ Epitaxial Diode

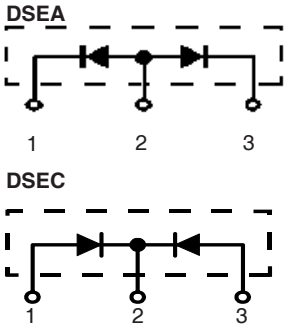
ISOPLUS220™

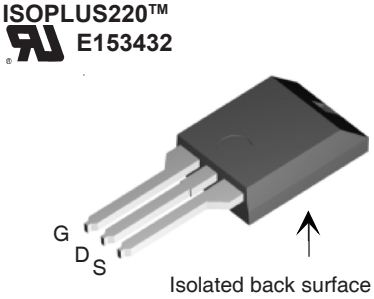
Electrically Isolated Back Surface

I_{FAV} = 2x8 A
V_{RRM} = 600 V
t_{rr} = 30 ns

Preliminary Data Sheet

V_{RSM} V	V_{RRM} V	Type
600	600	DSEA 16-06BC
600	600	DSEC 16-06BC





Symbol	Conditions	Maximum Ratings	
I_{FRMS}		19	A
I_{FAVM}	T_C = 110°C; rectangular, d = 0.5	8	A
I_{FSM}	T_{VJ} = 45°C; t_p = 10 ms (50 Hz), sine	50	A
E_{AS}	T_{VJ} = 25°C; non-repetitive I_{AS} = 0.9 A; L = 180 µH	0.1	mJ
I_{AR}	$V_A = 1.5 \cdot V_R$ typ.; f = 10 kHz; repetitive	0.1	A
T_{VJ}		-55...+175	°C
T_{VJM}		175	°C
T_{stg}		-55...+150	°C
T_L	1.6 mm (0.063 in) from case for 10 s	260	°C
P_{tot}	T_C = 25°C	60	W
V_{ISOL}	50/60 Hz RMS; $I_{ISOL} \leq$ 1 mA	2500	V~
F_C	mounting force with clip	11...65 / 2.5...15	N / lb
Weight		2	g

Symbol	Conditions	Characteristic Values typ.	max.	
I_R ①	T_{VJ} = 25°C $V_R = V_{RRM}$		60	µA
	T_{VJ} = 150°C $V_R = V_{RRM}$		0.25	mA
V_F ②	I_F = 8 A; T_{VJ} = 150°C	1.65		V
	T_{VJ} = 25°C		3.0	V
R_{thJC}			2.5	K/W
R_{thCH}		0.4		K/W
t_{rr}	I_F = 1 A; -di/dt = 50 A/µs; V_R = 30 V; T_{VJ} = 25°C	30		ns
I_{RM}	V_R = 100 V; I_F = 12 A; $-di_F/dt$ = 100 A/µs T_{VJ} = 100°C	1.4	1.9	A

Notes: Data given for T_{VJ} = 25°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 %

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

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

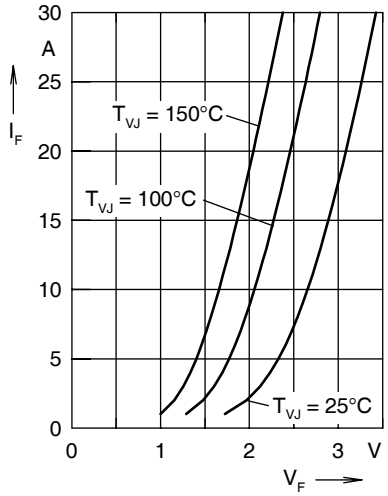


Fig. 1. Forward current I_F versus V_F

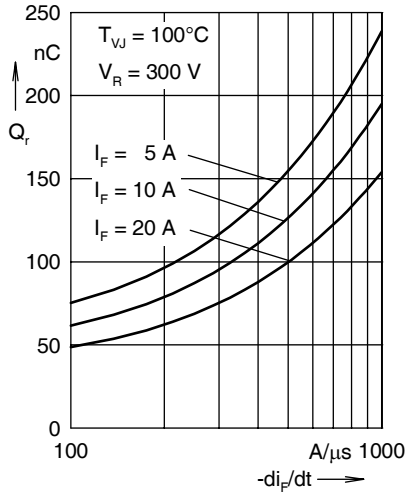


Fig. 2. Reverse recovery charge Q_r versus $-di_F/dt$

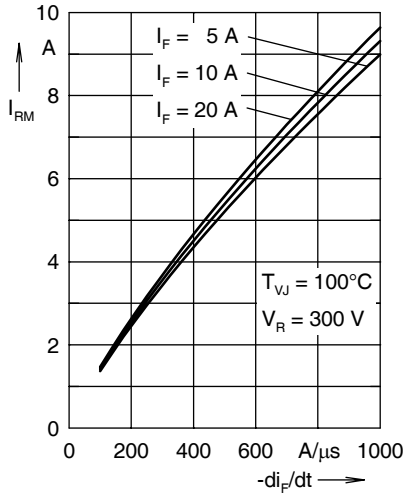


Fig. 3. Peak reverse current I_{RM} versus $-di_F/dt$

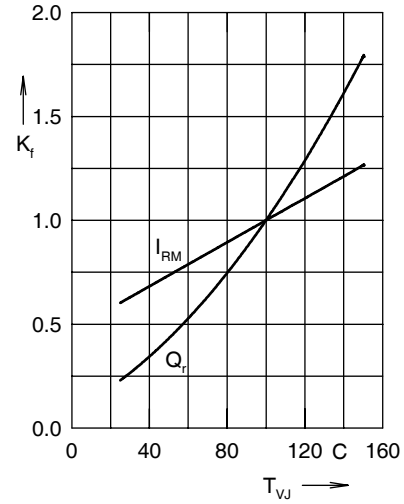


Fig. 4. Dynamic parameters Q_r, I_{RM} versus T_{VJ}

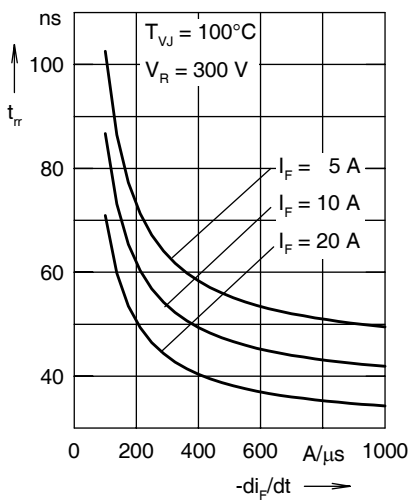


Fig. 5. Recovery time t_{rr} versus $-di_F/dt$

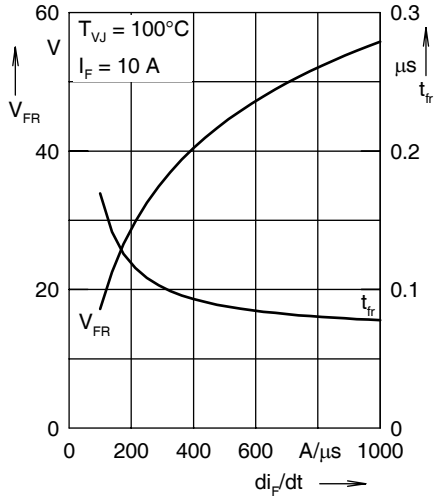


Fig. 6. Peak forward voltage V_{FR} and t_{fr} versus di_F/dt

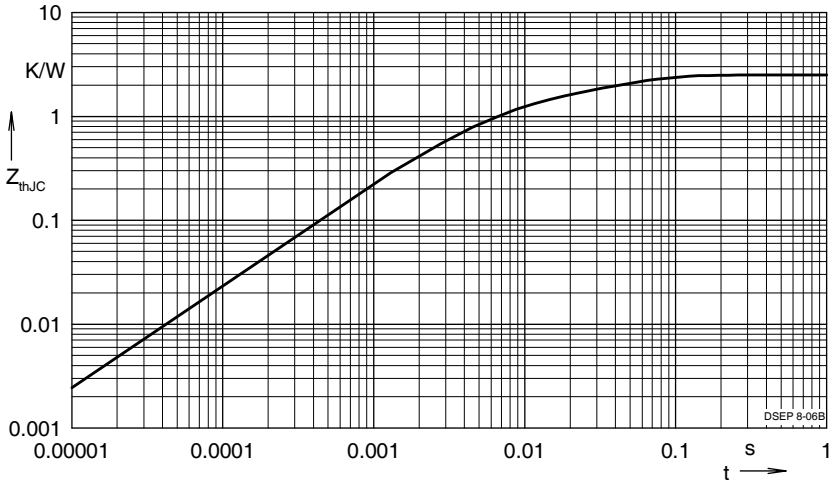


Fig. 7. Transient thermal resistance junction-to-case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	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

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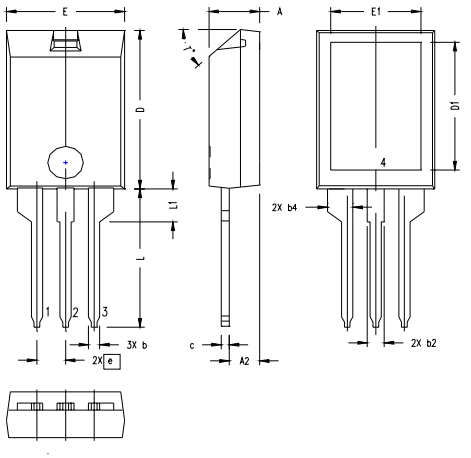

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.157	.197	4.00	5.00
A2	.098	.118	2.50	3.00
b	.035	.051	0.90	1.30
b2	.049	.065	1.25	1.65
b4	.093	.100	2.35	2.55
c	.028	.039	0.70	1.00
D	.591	.630	15.00	16.00
D1	.472	.512	12.00	13.00
E	.394	.433	10.00	11.00
E1	.295	.335	7.50	8.50
e	.100 BASIC		2.55 BASIC	
L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

Notes:

1. All terminals are tin plated.
2. Back surface (4) is electrically isolated from pins 1,2 and 3.

Pin connections:

DSEA: 1 - Cathode
2 - Anode
3 - Cathode

DSEC: 1 -Anode
2 - Cathode
3 - Anode