

HiPerDynFRED™ Epitaxial Diode

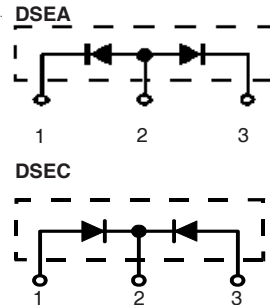
ISOPLUS220™

Electrically Isolated Back Surface

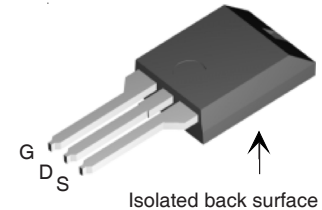
$I_{FAV} = 2 \times 8 \text{ A}$
 $V_{RRM} = 600 \text{ V}$
 $t_{rr} = 30 \text{ ns}$

Preliminary Data Sheet

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



ISOPLUS220™
 E153432



| Symbol | Conditions | Maximum Ratings | |
|---------------|--|--------------------|------------------|
| I_{FRMS} | | 19 | A |
| I_{FAVM} | $T_C = 110^\circ\text{C}$; 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 $I_{AS} = 0.9 \text{ A}$; $L = 180 \mu\text{H}$ | 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 | $^\circ\text{C}$ |
| T_L | 1.6 mm (0.063 in) from case for 10 s | 260 | $^\circ\text{C}$ |
| 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 with clip | 11...65 / 2.5...15 | N / lb |
| Weight | | 2 | 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

| 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 | $I_F = 8 \text{ A}$; $T_{VJ} = 150^\circ\text{C}$ $T_{VJ} = 25^\circ\text{C}$ | 1.65 | V 3.0 V |
| R_{thJC} R_{thCH} | | 0.4 | 2.5 K/W K/W |
| t_{rr} | $I_F = 1 \text{ A}$; $-di/dt = 50 \text{ A}/\mu\text{s}$; $V_R = 30 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$ | 30 | ns |
| I_{RM} | $V_R = 100 \text{ V}$; $I_F = 12 \text{ A}$; $-di_p/dt = 100 \text{ A}/\mu\text{s}$ $T_{VJ} = 100^\circ\text{C}$ | 1.4 | 1.9 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.

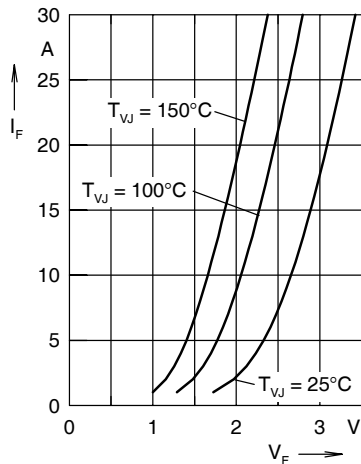


Fig. 1. Forward current I_F versus V_F

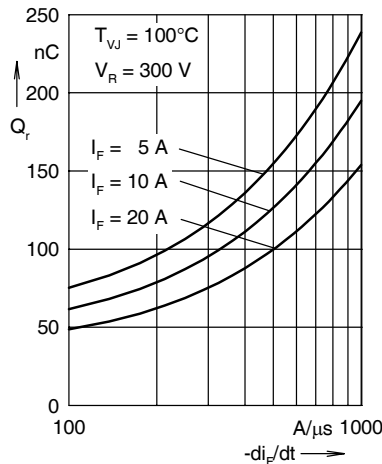


Fig. 2. Reverse recovery charge Q_r versus $-di_F/dt$

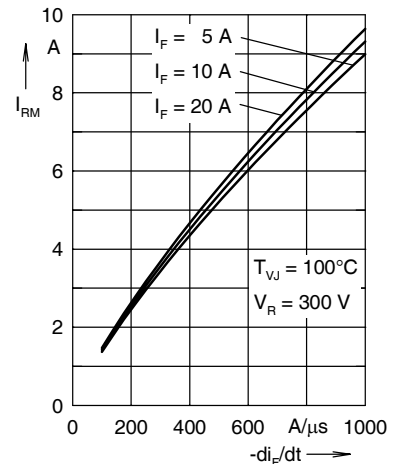


Fig. 3. Peak reverse current I_{RM} versus $-di_F/dt$

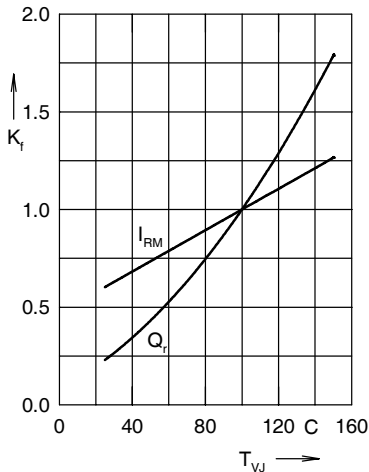


Fig. 4. Dynamic parameters Q_r , I_{RM} versus T_{VJ}

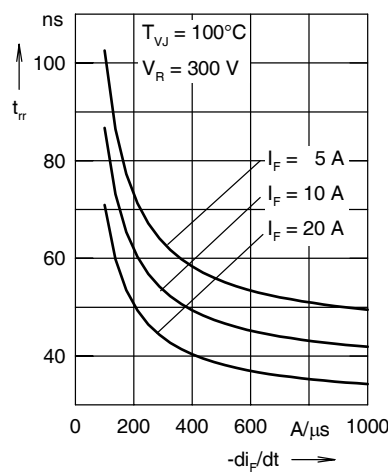


Fig. 5. Recovery time t_{rr} versus $-di_F/dt$

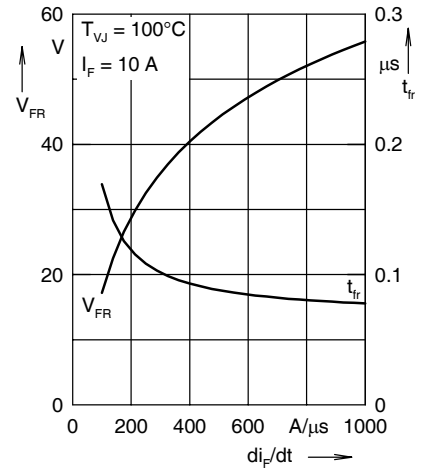


Fig. 6. Peak forward voltage V_{FR} and t_{fr} versus di_F/dt

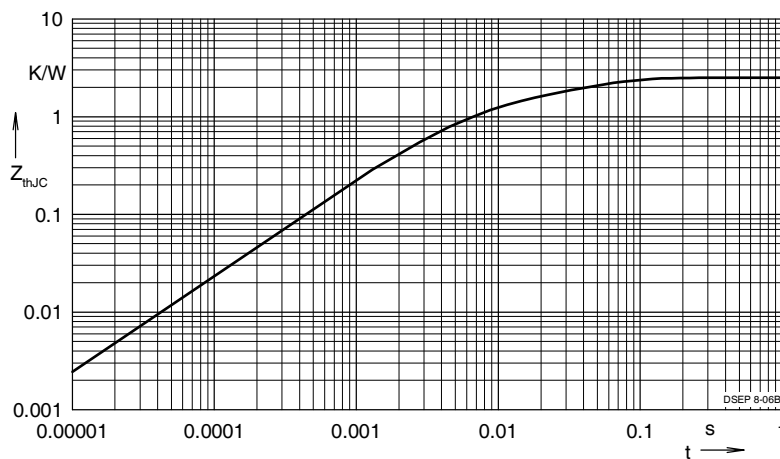


Fig. 7. Transient thermal resistance junction-to-case

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

