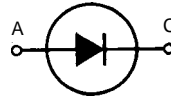


Fast Recovery Epitaxial Diode (FRED)

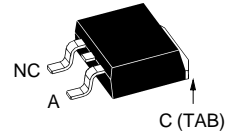
DSEI 8

$I_{FAVM} = 8\text{ A}$
 $V_{RRM} = 600\text{ V}$
 $t_{rr} = 35\text{ ns}$

| V_{RSM} | V_{RRM} | Type |
|-----------|-----------|-------------|
| V | V | |
| 640 | 600 | DSEI 8-06A |
| 640 | 600 | DSEI 8-06AS |

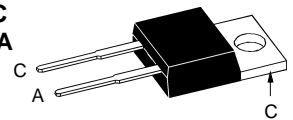


TO-263 AA
DSEI 8-06AS



| Symbol | Test Conditions | Maximum Ratings | |
|--------------|--|-----------------|----------------------|
| I_{FRMS} | $T_{VJ} = T_{VJM}$ | 16 | A |
| I_{FAVM} ① | $T_C = 115^\circ\text{C}$; rectangular, $d = 0.5$ | 8 | A |
| I_{FRM} | $t_p < 10\ \mu\text{s}$; rep. rating, pulse width limited by T_{VJM} | 130 | A |
| I_{FSM} | $T_{VJ} = 45^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine $t = 8.3\text{ ms}$ (60 Hz), sine | 100 | A |
| | | 110 | A |
| | $T_{VJ} = 150^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine $t = 8.3\text{ ms}$ (60 Hz), sine | 85 | A |
| | | 95 | A |
| I^2t | $T_{VJ} = 45^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine $t = 8.3\text{ ms}$ (60 Hz), sine | 50 | A^2s |
| | | 50 | A^2s |
| | $T_{VJ} = 150^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine $t = 8.3\text{ ms}$ (60 Hz), sine | 36 | A^2s |
| | | 37 | A^2s |
| T_{VJ} | | -40...+150 | $^\circ\text{C}$ |
| T_{VJM} | | 150 | $^\circ\text{C}$ |
| T_{stg} | | -40...+150 | $^\circ\text{C}$ |
| P_{tot} | $T_C = 25^\circ\text{C}$ | 50 | W |
| M_d | Mounting torque | 0.4...0.6 | Nm |
| Weight | | 2 | g |

TO-220 AC
DSEI 8-06A



A = Anode, C = Cathode, NC = No connection
 TAB = Cathode

Features

- International standard package JEDEC TO-220 AC & TO-263 AB
- 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
- Anti saturation diode
- Snubber diode
- Free wheeling diode in converters and motor control circuits
- Rectifiers in switch mode power supplies (SMPS)
- Inductive heating and melting
- Uninterruptible power supplies (UPS)
- Ultrasonic cleaners and welders

Advantages

- High reliability circuit operation
- Low voltage peaks for reduced protection circuits
- Low noise switching
- Low losses
- Operating at lower temperature or space saving by reduced cooling

| Symbol | Test Conditions | Characteristic Values | |
|------------|---|---------------------------|-----------------------|
| | | typ. | max. |
| I_R | $T_{VJ} = 25^\circ\text{C}$ | $V_R = V_{RRM}$ | 20 μA |
| | $T_{VJ} = 25^\circ\text{C}$ | $V_R = 0.8 \cdot V_{RRM}$ | 10 μA |
| | $T_{VJ} = 125^\circ\text{C}$ | $V_R = 0.8 \cdot V_{RRM}$ | 1.5 mA |
| V_F | $I_F = 8\text{ A}$; $T_{VJ} = 150^\circ\text{C}$ $T_{VJ} = 25^\circ\text{C}$ | | 1.3 V |
| | | | 1.5 V |
| V_{T0} | For power-loss calculations only | | 0.98 V |
| r_T | $T_{VJ} = T_{VJM}$ | | 28.7 $\text{m}\Omega$ |
| R_{thJC} | 0.5 | | 2.5 K/W |
| R_{thCK} | | | K/W |
| R_{thJA} | | | 60 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 | 50 ns |
| I_{RM} | $V_R = 350\text{ V}$; $I_F = 8\text{ A}$; $-di_F/dt = 64\text{ A}/\mu\text{s}$ $L \leq 0.05\ \mu\text{H}$; $T_{VJ} = 100^\circ\text{C}$ | 2.5 | 2.8 A |

① I_{FAVM} rating includes reverse blocking losses at T_{VJM} , $V_R = 0.8 V_{RRM}$, duty cycle $d = 0.5$
 Data according to IEC 60747

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

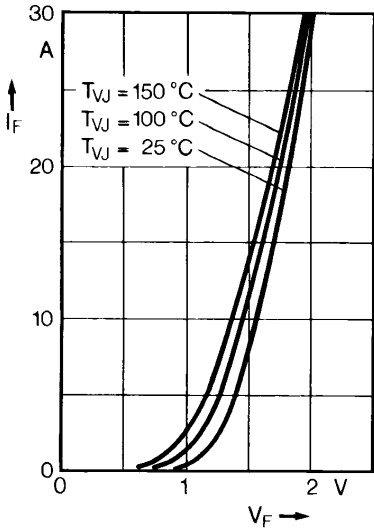


Fig. 1 Forward current versus voltage drop.

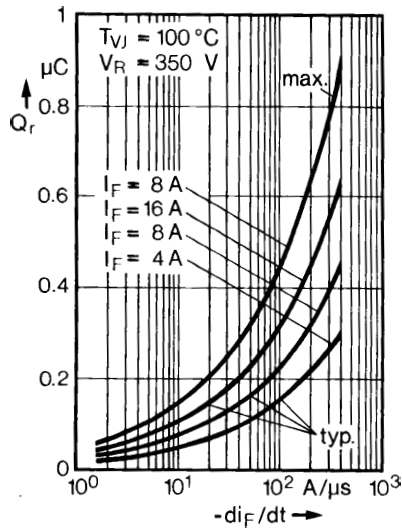


Fig. 2 Recovery charge versus $-di_F/dt$.

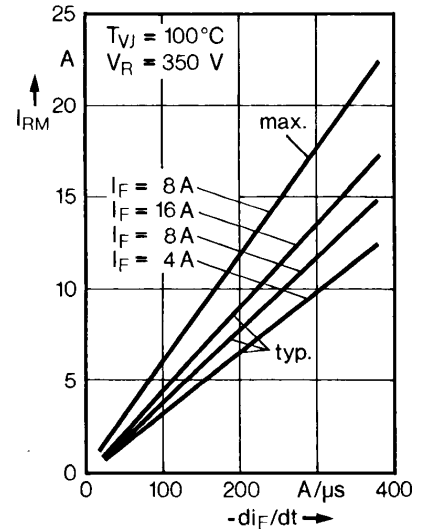


Fig. 3 Peak reverse current versus $-di_F/dt$.

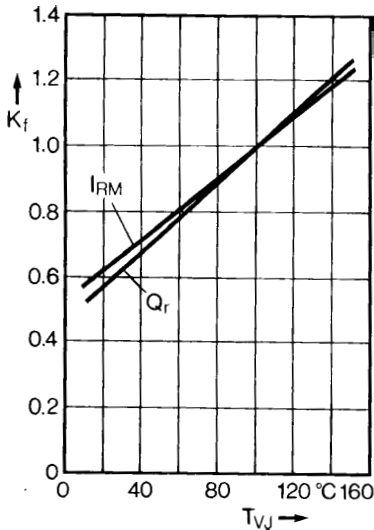


Fig. 4 Dynamic parameters versus junction temperature.

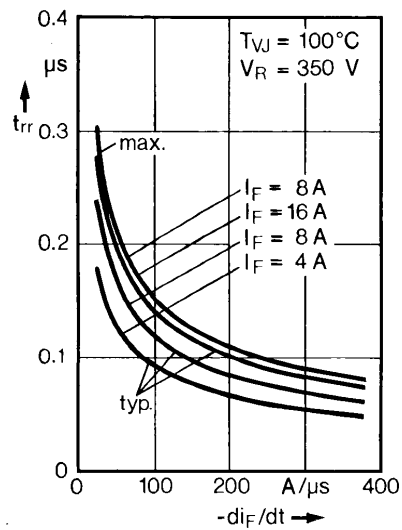


Fig. 5 Recovery time versus $-di_F/dt$.

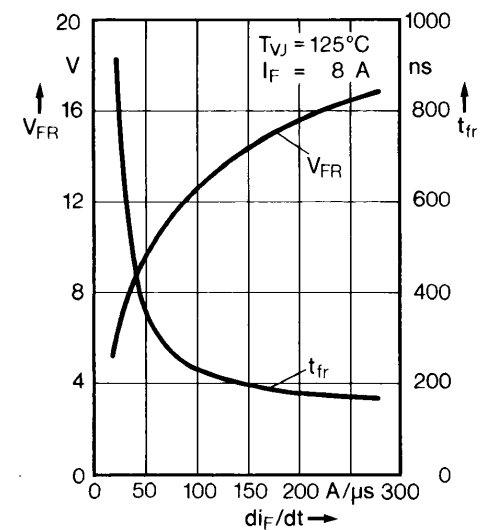


Fig. 6 Peak forward voltage versus di_F/dt .

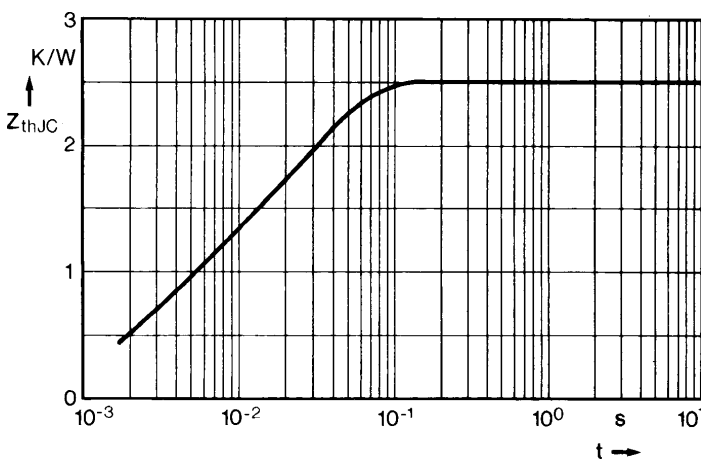
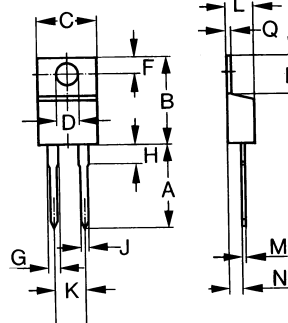


Fig. 7 Transient thermal impedance junction to case.

Dimensions TO-220 AC



| Dim. | Millimeter | | Inches | |
|------|------------|-------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 12.70 | 14.73 | 0.500 | 0.580 |
| B | 14.23 | 16.51 | 0.560 | 0.650 |
| C | 9.66 | 10.66 | 0.380 | 0.420 |
| D | 3.54 | 4.08 | 0.139 | 0.161 |
| E | 5.85 | 6.85 | 0.230 | 0.420 |
| F | 2.54 | 3.42 | 0.100 | 0.135 |
| G | 1.15 | 1.77 | 0.045 | 0.070 |
| H | - | 6.35 | - | 0.250 |
| J | 0.64 | 0.89 | 0.025 | 0.035 |
| K | 4.83 | 5.33 | 0.190 | 0.210 |
| L | 3.56 | 4.82 | 0.140 | 0.190 |
| M | 0.38 | 0.56 | 0.015 | 0.022 |
| N | 2.04 | 2.49 | 0.080 | 0.115 |
| Q | 0.64 | 1.39 | 0.025 | 0.055 |

Dimension TO-263 AA see DSEI 19