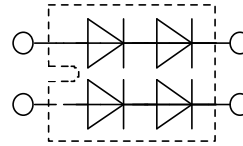


HiPerDynFRED

High Performance Dynamic Fast Recovery Diode
 Extreme Low Loss and Soft Recovery
 Parallel legs with series connected dice

$V_{RRM} = 1200\text{ V}$
 $I_{FAV} = 2 \times 25\text{ A}$
 $t_{rr} = 15\text{ ns}$

Part number
DSEP2x25-12C



Backside: isolated

E72873

Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low I_{RM} -values
- Very soft recovery behaviour
- Soft reverse recovery for low EMI/RFI
- Low I_{RM} reduces:
 - Power dissipation within the diode
 - Turn-on loss in the commutating switch

Applications:

- Antiparallel diode for high frequency switching devices
- Antisaturation diode
- Snubber diode
- Free wheeling diode
- Rectifiers in switch mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)

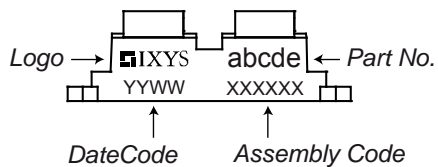
Package:

- Housing: SOT-227B (minibloc)
- Industry standard outline
- Cu base plate internal DCB isolated
- Isolation Voltage 3000 V
- Epoxy meets UL 94V-0
- RoHS compliant

| Symbol | Definition | Conditions | Ratings | | | Unit |
|------------|-------------------------------------|---|---------|------|------|--------------------|
| | | | min. | typ. | max. | |
| V_{RRM} | max. repetitive reverse voltage | | | | 1200 | V |
| I_R | reverse current | $V_R = 1200\text{ V}$ | | | 250 | μA |
| | | $V_R = 1200\text{ V}$ | | | 2 | mA |
| V_F | forward voltage | $I_F = 25\text{ A}$ | | | 4.71 | V |
| | | $I_F = 50\text{ A}$ | | | 5.92 | V |
| | | $I_F = 25\text{ A}$ | | | 2.95 | V |
| | | $I_F = 50\text{ A}$ | | | 4.01 | V |
| I_{FAV} | average forward current | rectangular d = 0.5 | | | 25 | A |
| V_{FO} | threshold voltage | } for power loss calculation only | | | 1.95 | V |
| r_F | slope resistance | | | | 40 | m Ω |
| R_{thJC} | thermal resistance junction to case | | | | 0.60 | K/W |
| T_{VJ} | virtual junction temperature | | -40 | | 150 | $^{\circ}\text{C}$ |
| P_{tot} | total power dissipation | | | | 210 | W |
| I_{FSM} | max. forward surge current | t = 10 ms (50 Hz), sine | | | 250 | A |
| I_{RM} | max. reverse recovery current | | | | 5.5 | A |
| | | $I_F = 30\text{ A}; V_R = 600\text{ V}$ | | | 12.5 | A |
| t_{rr} | reverse recovery time | -di _F /dt = 600 A/ μs | | | 15 | ns |
| | | | | | 70 | ns |
| C_J | junction capacitance | $V_R = 400\text{ V}; f = 1\text{ MHz}$ | | | 18 | pF |

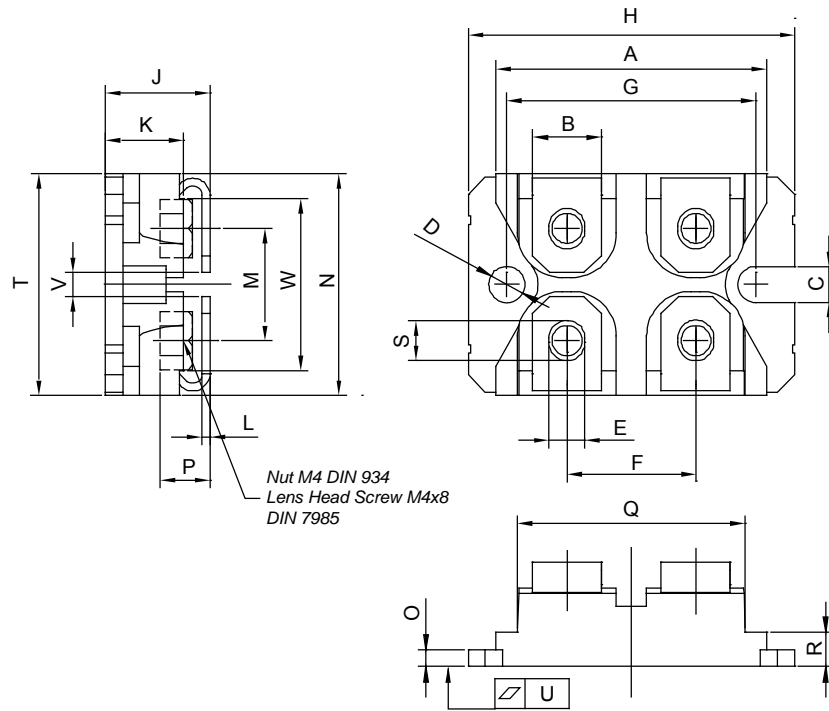
| Symbol | Definition | Conditions | Ratings | | | Unit |
|---------------|---|----------------------|---------|------|------|------|
| | | | min. | typ. | max. | |
| I_{RMS} | RMS current | per terminal | | | 100 | A |
| R_{thCH} | thermal resistance case to heatsink | | | 0.10 | | K/W |
| T_{stg} | storage temperature | | -40 | | 150 | °C |
| Weight | | | | 30 | | g |
| M_D | mounting torque | | 1.1 | | 1.5 | Nm |
| M_T | terminal torque | | 1.1 | | 1.5 | Nm |
| V_{ISOL} | isolation voltage | t = 1 second | 3000 | | | V |
| | | t = 1 minute | 2500 | | | V |
| $d_{Spp/App}$ | creepage striking distance on surface through air | terminal to terminal | 10.5 | 3.3 | | mm |
| $d_{Spb/Apb}$ | creepage striking distance on surface through air | terminal to backside | 8.8 | 6.9 | | mm |

Product Marking



| Ordering | Part Name | Marking on Product | Delivering Mode | Base Qty | Code Key |
|----------|--------------|--------------------|-----------------|----------|----------|
| Standard | DSEP2x25-12C | DSEP2x25-12C | Tube | 10 | 482021 |

Outlines SOT-227B (minibloc)



| SYM | MILLIMETERS | | INCHES | |
|-----|-------------|-------|--------|-------|
| | MIN | MAX | MIN | MAX |
| A | 31.50 | 31.88 | 1.240 | 1.255 |
| B | 7.80 | 8.20 | .307 | .323 |
| C | 4.09 | 4.29 | .161 | .169 |
| D | 4.09 | 4.29 | .161 | .169 |
| E | 4.09 | 4.29 | .161 | .169 |
| F | 14.91 | 15.11 | .587 | .595 |
| G | 30.12 | 30.30 | 1.186 | 1.193 |
| H | 37.80 | 38.23 | 1.489 | 1.505 |
| J | 11.68 | 12.22 | .460 | .481 |
| K | 8.92 | 9.60 | .351 | .378 |
| L | 0.76 | 0.84 | .030 | .033 |
| M | 12.60 | 12.85 | .496 | .506 |
| N | 25.15 | 25.42 | .990 | 1.001 |
| O | 1.98 | 2.13 | .078 | .084 |
| P | 4.95 | 5.97 | .195 | .235 |
| Q | 26.54 | 26.90 | 1.045 | 1.059 |
| R | 3.94 | 4.42 | .155 | .174 |
| S | 4.72 | 4.85 | .186 | .191 |
| T | 24.59 | 25.07 | .968 | .987 |
| U | -.05 | .10 | -.002 | .004 |
| V | 3.30 | 4.57 | .130 | .180 |
| W | 19.81 | 21.08 | .780 | .830 |

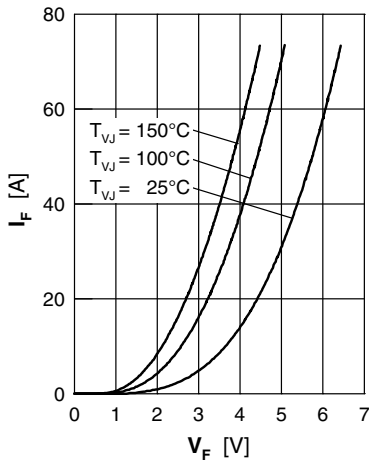


Fig. 1 Forward current I_F vs. V_F

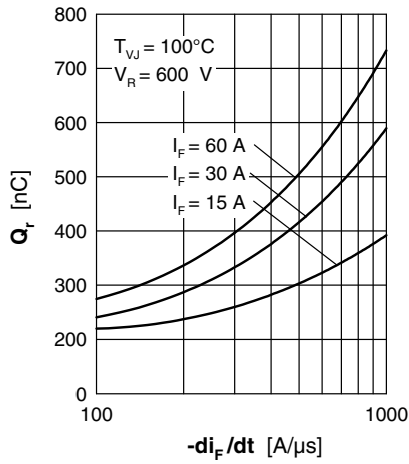


Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

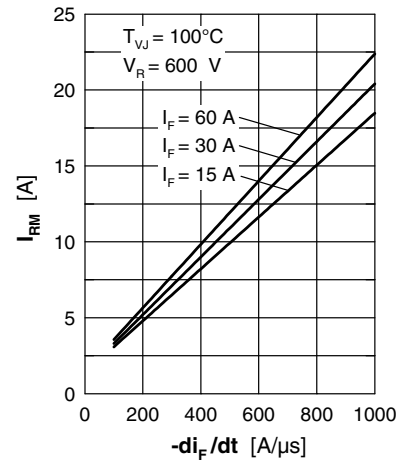


Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

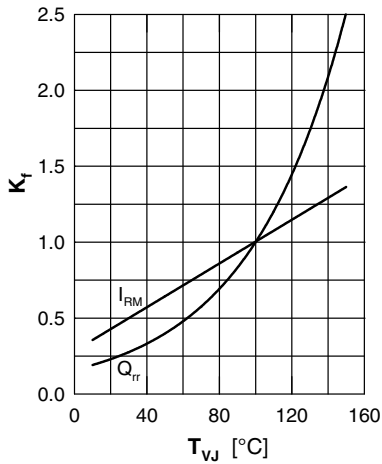


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

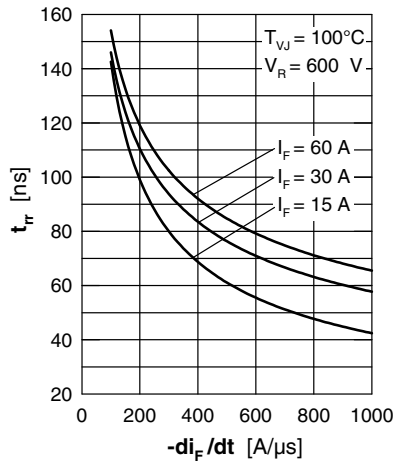


Fig. 5 Recovery time t_{tr} versus $-di_F/dt$

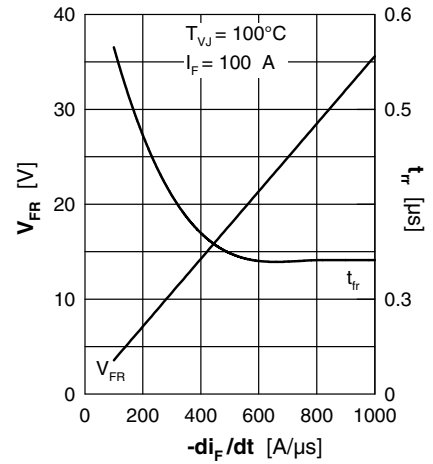


Fig. 6 Peak forward voltage V_{FR} and t_{tr} versus di_F/dt

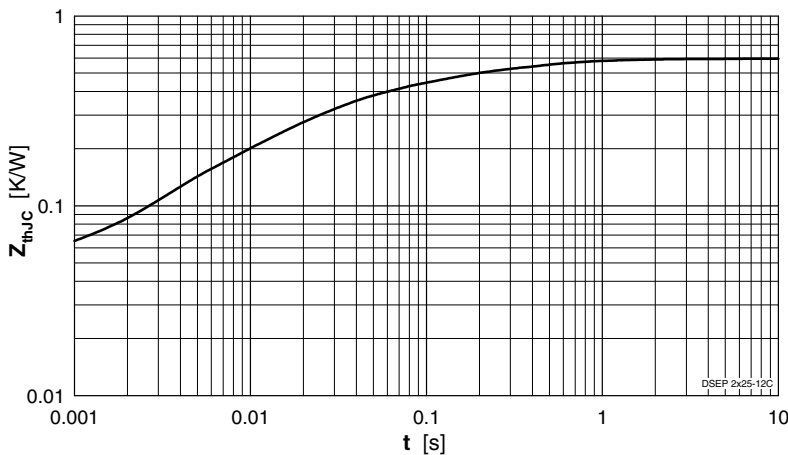


Fig. 7 Transient thermal resistance junction to case

Constants for Z_{thjC} calculation:

| i | R_{thi} (K/W) | t_i (s) |
|---|-----------------|-----------|
| 1 | 0.037 | 0.00024 |
| 2 | 0.07 | 0.0036 |
| 3 | 0.246 | 0.0235 |
| 4 | 0.176 | 0.142 |
| 5 | 0.07 | 0.7 |