



preliminary

HiPerFRED

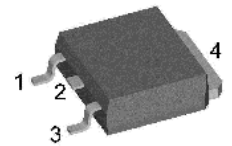
| | | |
|-----------|---|--------------|
| V_{RRM} | = | 600 V |
| I_{FAV} | = | 6 A |
| t_{rr} | = | 15 ns |

High Performance Fast Recovery Diode
Low Loss and Soft Recovery
Single Diode

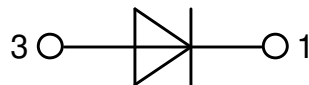
Part number

DSEP6-06BS

Marking on Product: P6QGUI



Backside: cathode



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
- 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

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: TO-252 (DPak)

- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

Disclaimer Notice

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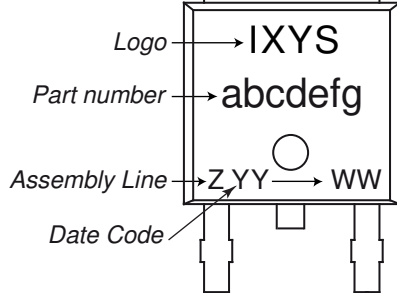


| Fast Diode | | | | Ratings | | | |
|------------|--|--|-------------------------|---------|------|------------|--|
| Symbol | Definition | Conditions | min. | typ. | max. | Unit | |
| V_{RSM} | max. non-repetitive reverse blocking voltage | $T_{VJ} = 25^{\circ}C$ | | | 600 | V | |
| V_{RRM} | max. repetitive reverse blocking voltage | $T_{VJ} = 25^{\circ}C$ | | | 600 | V | |
| I_R | reverse current, drain current | $V_R = 600 V$ | $T_{VJ} = 25^{\circ}C$ | | 50 | μA | |
| | | $V_R = 600 V$ | $T_{VJ} = 150^{\circ}C$ | | 0.2 | mA | |
| V_F | forward voltage drop | $I_F = 6 A$ | $T_{VJ} = 25^{\circ}C$ | | 2.66 | V | |
| | | $I_F = 12 A$ | | | 3.30 | V | |
| | | $I_F = 6 A$ | $T_{VJ} = 150^{\circ}C$ | | 1.77 | V | |
| | | $I_F = 12 A$ | | | 2.29 | V | |
| I_{FAV} | average forward current | $T_C = 140^{\circ}C$ rectangular $d = 0.5$ | $T_{VJ} = 175^{\circ}C$ | | 6 | A | |
| V_{FO} | threshold voltage | } for power loss calculation only | $T_{VJ} = 175^{\circ}C$ | | 1.13 | V | |
| r_F | slope resistance | | | | 76 | m Ω | |
| R_{thJC} | thermal resistance junction to case | | | | 2.8 | K/W | |
| R_{thCH} | thermal resistance case to heatsink | | | 0.50 | | K/W | |
| P_{tot} | total power dissipation | | $T_C = 25^{\circ}C$ | | 55 | W | |
| I_{FSM} | max. forward surge current | $t = 10 ms; (50 Hz), sine; V_R = 0 V$ | $T_{VJ} = 45^{\circ}C$ | | 40 | A | |
| C_J | junction capacitance | $V_R = 400 V f = 1 MHz$ | $T_{VJ} = 25^{\circ}C$ | | 5 | pF | |
| I_{RM} | max. reverse recovery current | } $I_F = 6 A; V_R = 300 V$ $-di_F / dt = 200 A/\mu s$ | $T_{VJ} = 25^{\circ}C$ | | 1.5 | A | |
| | | | $T_{VJ} = 100^{\circ}C$ | | 3 | A | |
| t_{rr} | reverse recovery time | | $T_{VJ} = 25^{\circ}C$ | | 15 | ns | |
| | | | $T_{VJ} = 100^{\circ}C$ | | 60 | ns | |



preliminary

| Package TO-252 (DPak) | | | Ratings | | | |
|-----------------------|------------------------------|--------------|---------|------|------|------|
| Symbol | Definition | Conditions | min. | typ. | max. | Unit |
| I_{RMS} | RMS current | per terminal | | | 20 | A |
| T_{VJ} | virtual junction temperature | | -55 | | 175 | °C |
| T_{op} | operation temperature | | -55 | | 150 | °C |
| T_{stg} | storage temperature | | -55 | | 150 | °C |
| Weight | Product Marking | | | 0.3 | | g |
| F_c | mounting force with clip | | 20 | | 60 | N |



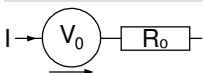
| Ordering | Ordering Number | Marking on Product | Delivery Mode | Quantity | Code No. |
|-------------|-----------------|--------------------|---------------|----------|----------|
| Standard | DSEP6-06BS-TRL | P6QGUI | Tape & Reel | 2500 | 502162 |
| Alternative | DSEP6-06BS-TUB | P6QGUI | Tube | 70 | 525000 |

| Similar Part | Package | Voltage class |
|--------------|-----------------|---------------|
| DSEP6-06AS | TO-252AA (DPak) | 600 |

Equivalent Circuits for Simulation

* on die level

$T_{VJ} = 175\text{°C}$

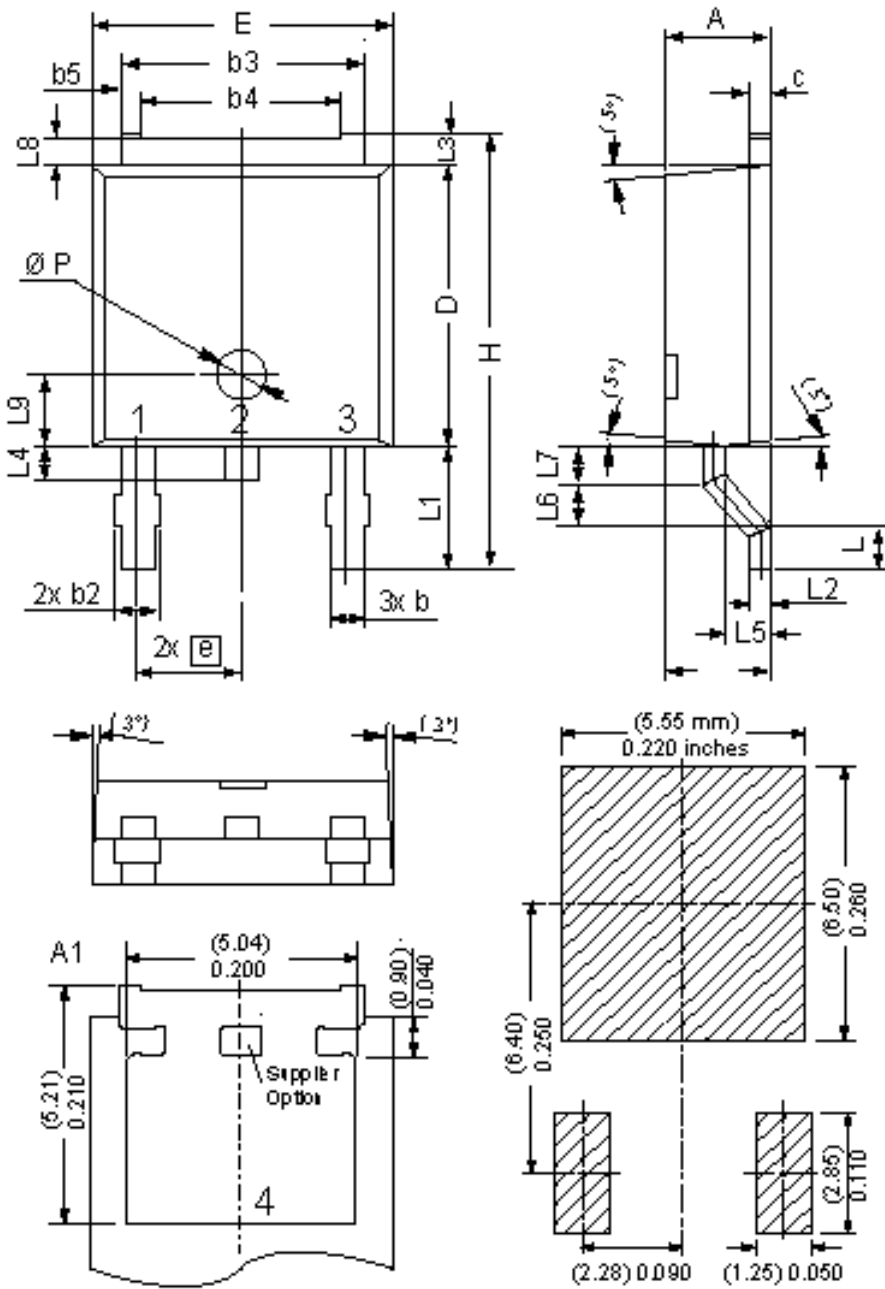


Fast Diode

| | | | |
|--------------|--------------------|------|----|
| $V_{0\ max}$ | threshold voltage | 1.13 | V |
| $R_{0\ max}$ | slope resistance * | 73 | mΩ |



Outlines TO-252 (DPak)



| Dim | Millimeters | | Inches | |
|-----|-------------|-------|--------|-------|
| | min | max | min | max |
| A | 2.20 | 2.40 | 0.087 | 0.094 |
| A1 | 2.10 | 2.50 | 0.083 | 0.098 |
| b | 0.66 | 0.86 | 0.026 | 0.034 |
| b2 | - | 0.96 | - | 0.038 |
| b3 | 5.04 | 5.64 | 0.198 | 0.222 |
| b4 | 4.34 | BSC | 0.171 | BSC |
| b5 | 0.50 | BSC | 0.020 | BSC |
| c | 0.40 | 0.86 | 0.016 | 0.034 |
| D | 5.90 | 6.30 | 0.232 | 0.248 |
| E | 6.40 | 6.80 | 0.252 | 0.268 |
| e | 2.10 | 2.50 | 0.083 | 0.098 |
| H | 9.20 | 10.10 | 0.362 | 0.398 |
| L | 0.55 | 1.28 | 0.022 | 0.050 |
| L1 | 2.50 | 2.90 | 0.098 | 0.114 |
| L2 | 0.40 | 0.60 | 0.016 | 0.024 |
| L3 | 0.50 | 0.90 | 0.020 | 0.035 |
| L4 | 0.60 | 1.00 | 0.024 | 0.039 |
| L5 | 0.82 | 1.22 | 0.032 | 0.048 |
| L6 | 0.79 | 0.99 | 0.031 | 0.039 |
| L7 | 0.81 | 1.01 | 0.032 | 0.040 |
| L8 | 0.40 | 0.80 | 0.016 | 0.031 |
| L9 | 1.50 | BSC | 0.059 | BSC |
| Ø P | 1.00 | BSC | 0.039 | BSC |

Recommended
min. foot print

