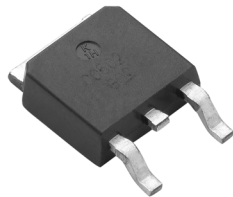


EREC0502K

Hyperfast soft recovery rectifier



Product features

- Plastic package UL 94V-0
- Low reverse leakage current
- Hyperfast recovery time and soft recovery characteristics
- Low recovery loss

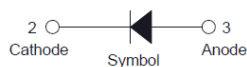
Mechanical data

- Case: TO-252 molded plastic
- Terminals: Tin plated
- Weight: 0.329 grams typical

Package diagram/size and schematic



TO-252



| | |
|---|---------------|
| 1 | No connection |
| 2 | Cathode |
| 3 | Anode |

Applications

- Switching mode power supplies (SMPS)
- Inverters
- Freewheeling diodes
- DC/DC converters
- Other power switching application

Environmental data



Part numbering system

| | | | | | | |
|---|---|---|---|----|----|---|
| E | R | E | C | 05 | 02 | K |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | |
|---|-----------------------|
| 1 | E=Eaton |
| 2 | R=Rectifier |
| 3 | E=Epitaxial process |
| 4 | C=Hyperfast |
| 5 | 05= $I_{F(AV)}$: 5 A |
| 6 | 02= V_{RRM} : 200 V |
| 7 | K=Package: TO-252 |

Absolute maximum rating

(Rating at +25 °C ambient temperature unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|--|----------------|-------------|------|
| Maximum repetitive peak reverse voltage | V_{RRM} | 200 | V |
| Maximum RMS voltage | V_{RMS} | 140 | V |
| Maximum DC blocking voltage | V_{DC} | 200 | V |
| Average forward current at $T_c = +120$ °C | $I_{F(AV)}$ | 5 | A |
| Peak forward surge current: 8.3 ms single half sinewave superimposed on rated load | I_{FSM} | 65 | A |
| Operating junction and storage temperature range | T_j, T_{stg} | -55 to +150 | °C |

Electrical characteristics

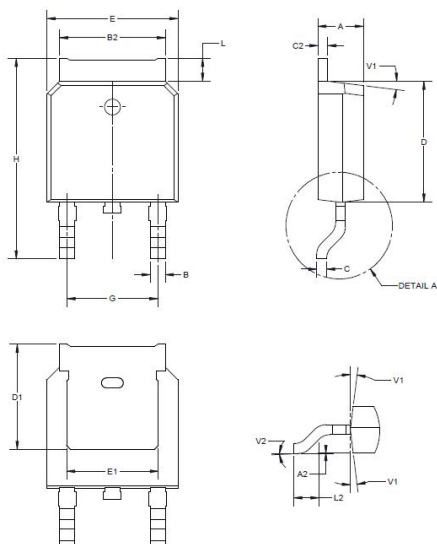
(Rating at +25 °C ambient temperature unless otherwise specified)

| Parameter | Test condition | Symbol | min | typ | max | Unit |
|--|---|----------|-----|-----|------|------|
| Forward voltage @ $I_F=5$ A | $T_j=25$ °C | V_F | - | - | 0.95 | V |
| Reverse current at rated DC blocking voltage | $T_j=25$ °C | I_R | - | - | 5 | μA |
| | $T_j=125$ °C | I_R | - | - | 200 | μA |
| Reverse recovery time | $I_F=0.5$ A, $I_R=1.0$ A, $IRR=0.25$ A, $T_j=25$ °C | t_{rr} | - | - | 25 | ns |

Thermal resistances

| Symbol | Parameter | min | typ | max | Unit |
|---------------|--|-----|-----|-----|-------|
| $R_{th(j-c)}$ | Thermal resistance from junction to case | - | - | 14 | °C /W |

Mechanical drawing, pad layout, marking-mm



| Dimension | min | typ | max |
|-----------|------|---------|-------|
| A | 2.10 | | 2.50 |
| A2 | - | | 0.10 |
| B | 0.66 | | 0.86 |
| B2 | 5.18 | | 5.48 |
| C | 0.40 | | 0.60 |
| C2 | 0.44 | | 0.58 |
| D | 5.90 | | 6.30 |
| D1 | - | 5.30REF | - |
| E | 6.40 | | 6.80 |
| E1 | 4.63 | | - |
| G | 4.47 | | 4.67 |
| H | 9.50 | | 10.70 |
| L | 1.09 | | 1.21 |
| L2 | 1.35 | | 1.65 |
| V1 | - | 7° | - |
| V2 | - | | 6° |

Marking

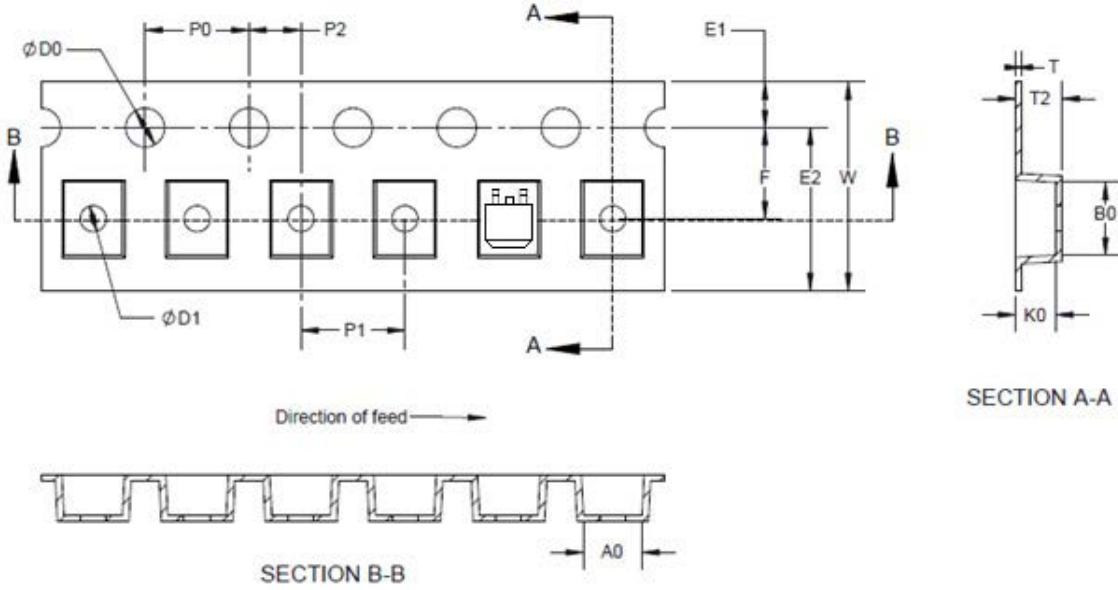


Product information

| | |
|-----|-------------------|
| C | Hyperfast |
| 05 | $I_{F(AV)}$: 5 A |
| 02 | V_{RRM} : 200 V |
| K | Package: TO-252 |
| F35 | Date code |

Packaging information-mm (EIA-481 compliant)

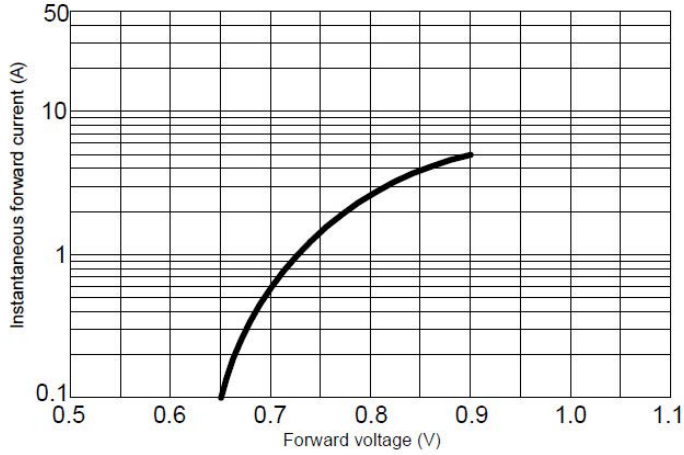
| Unit weight (g/pcs) typ. | Reel (pcs) | Per carton (pcs) | Reel diameters (mm) |
|--------------------------|------------|------------------|---------------------|
| 0.329 | 2,500 | 25,000 | 330 |



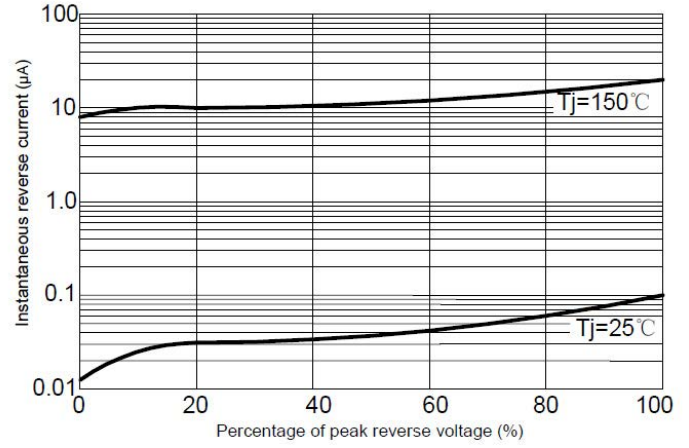
| Dimension | Tolerance | Value |
|-----------|------------|-------|
| W | ± 0.20 | 16 |
| F | ± 0.10 | 7.5 |
| E1 | ± 0.10 | 1.75 |
| P0 | ± 0.10 | 4 |
| P1 | ± 0.10 | 8 |
| P2 | ± 0.10 | 2 |
| D0 | $+0.1/-0$ | 1.5 |
| D1 | $+0.1/-0$ | 1.5 |
| A0 | ± 0.10 | 6.9 |
| B0 | ± 0.10 | 10.5 |
| K0 | ± 0.10 | 2.7 |
| T | ± 0.10 | 0.3 |
| T2 | ± 0.20 | 3 |

Typical characteristics

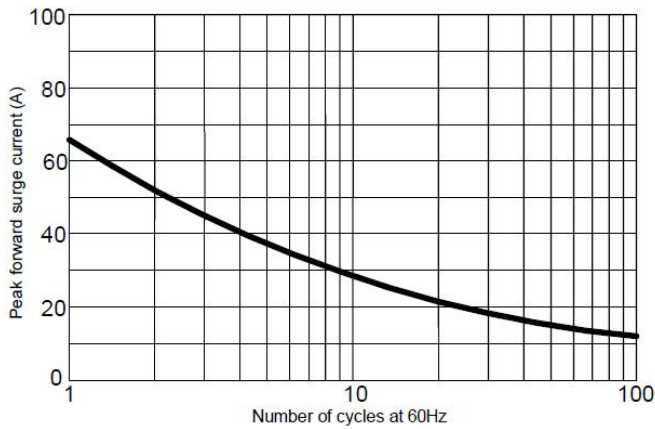
Typical forward characteristics (+25 °C)



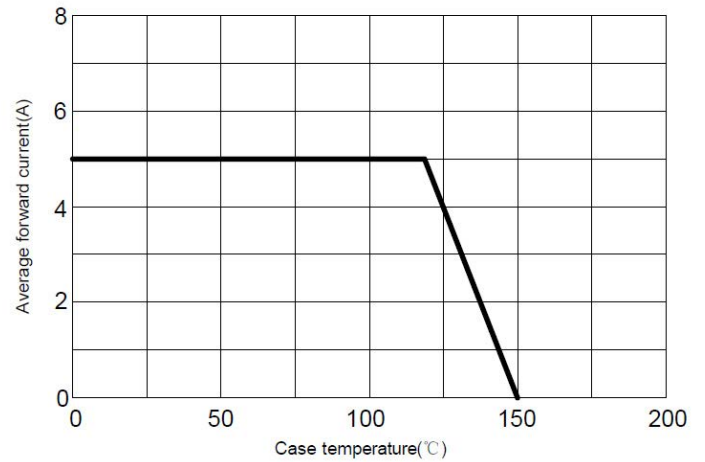
Typical reverse characteristics



Maximum non-repetitive peak forward surge current (8.3ms single half sine-wave) (+25 °C)



Forward current derating curve



Solder reflow profile

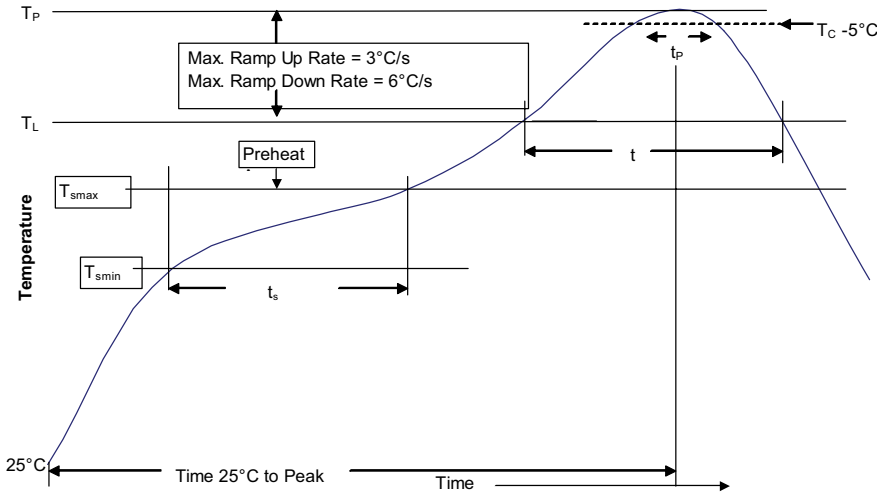


Table 1 - Standard SnPb solder (T_C)

| Package thickness | Volume mm ³ <350 | Volume mm ³ ≥350 |
|-------------------|-----------------------------|-----------------------------|
| <2.5 mm | 235 °C | 220 °C |
| ≥2.5 mm | 220 °C | 220 °C |

Table 2 - Lead (Pb) free solder (T_C)

| Package thickness | Volume mm ³ <350 | Volume mm ³ 350 - 2000 | Volume mm ³ >2000 |
|-------------------|-----------------------------|-----------------------------------|------------------------------|
| <1.6 mm | 260 °C | 260 °C | 260 °C |
| 1.6 – 2.5 mm | 260 °C | 250 °C | 245 °C |
| >2.5 mm | 250 °C | 245 °C | 245 °C |

Reference J-STD-020

| Profile feature | Standard SnPb solder | Lead (Pb) free solder |
|---|--|--|
| Preheat and soak | <ul style="list-style-type: none"> Temperature min. (T_{smin}) Temperature max. (T_{smax}) Time (T_{smin} to T_{smax}) (t_s) | <ul style="list-style-type: none"> 100 °C 150 °C 60-120 seconds |
| Ramp up rate T_L to T_p | 3 °C/ second max. | 3 °C/ second max. |
| Liquidous temperature (T_L) Time (t_L) maintained above T_L | <ul style="list-style-type: none"> 183 °C 60-150 seconds | <ul style="list-style-type: none"> 217 °C 60-150 seconds |
| Peak package body temperature (T_p)* | Table 1 | Table 2 |
| Time (t_p)* within 5 °C of the specified classification temperature (T_C) | 20 seconds* | 30 seconds* |
| Ramp-down rate (T_p to T_L) | 6 °C/ second max. | 6 °C/ second max. |
| Time 25 °C to peak temperature | 6 minutes max. | 8 minutes max. |

* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

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Printed in USA
Publication No. ELX1292 BU-ELX22155
March 2023

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