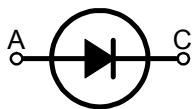


# HUR830S

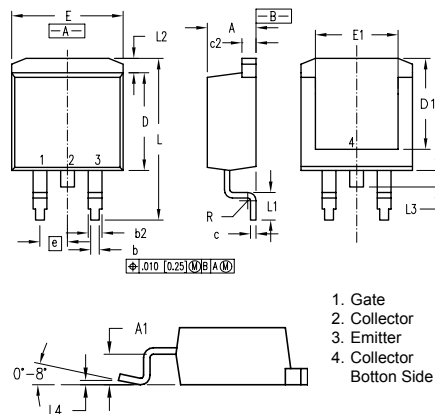
Soft Recovery Behaviour High-Performance Wide Temperature Range Ultra Fast Recovery Epitaxial Diodes

C(TAB)



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

Dimensions TO-263(D<sup>2</sup>PAK)



| Dim. | Millimeter |       | Inches   |      |
|------|------------|-------|----------|------|
|      | Min.       | Max.  | Min.     | Max. |
| A    | 4.06       | 4.83  | .160     | .190 |
| A1   | 2.03       | 2.79  | .080     | .110 |
| b    | 0.51       | 0.99  | .020     | .039 |
| b2   | 1.14       | 1.40  | .045     | .055 |
| c    | 0.46       | 0.74  | .018     | .029 |
| c2   | 1.14       | 1.40  | .045     | .055 |
| D    | 8.64       | 9.65  | .340     | .380 |
| D1   | 8.00       | 8.89  | .315     | .350 |
| E    | 9.65       | 10.29 | .380     | .405 |
| E1   | 6.22       | 8.13  | .245     | .320 |
| e    | 2.54 BSC   |       | .100 BSC |      |
| L    | 14.61      | 15.88 | .575     | .625 |
| L1   | 2.29       | 2.79  | .090     | .110 |
| L2   | 1.02       | 1.40  | .040     | .055 |
| L3   | 1.27       | 1.78  | .050     | .070 |
| L4   | 0          | 0.20  | 0        | .008 |
| R    | 0.46       | 0.74  | .018     | .029 |

1. Gate
2. Collector
3. Emitter
4. Collector Bottom Side

|                | V <sub>RSM</sub> | V <sub>RSM</sub> |
|----------------|------------------|------------------|
|                | V                | V                |
| <b>HUR830S</b> | 300              | 300              |

| Symbol            | Test Conditions                                                     | Maximum Ratings | Unit |
|-------------------|---------------------------------------------------------------------|-----------------|------|
| I <sub>FRMS</sub> | T <sub>C</sub> =130°C; rectangular, d=0.5                           | 35              | A    |
| I <sub>FAVM</sub> |                                                                     | 10              |      |
| I <sub>FSM</sub>  | T <sub>VJ</sub> =45°C; t <sub>p</sub> =10ms (50Hz), sine            | 60              | A    |
| E <sub>AS</sub>   | T <sub>VJ</sub> =25°C; non-repetitive; I <sub>AS</sub> =2A; L=180uH | 0.5             | mJ   |
| I <sub>AR</sub>   | V <sub>A</sub> =1.5·V <sub>R</sub> typ.; f=10kHz; repetitive        | 0.2             | A    |
| T <sub>VJ</sub>   |                                                                     | -55...+175      | °C   |
| T <sub>VJM</sub>  |                                                                     | 175             |      |
| T <sub>stg</sub>  |                                                                     | -55...+150      |      |
| P <sub>tot</sub>  | T <sub>C</sub> =25°C                                                | 60              | W    |
| M <sub>d</sub>    | mounting torque                                                     | 0.4...0.6       | Nm   |
| Weight            | typical                                                             | 2               | g    |

**Sirectifier®**

# HUR830S

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| Symbol                                             | Test Conditions                                                                                                     | Characteristic Values |      | Unit |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-----------------------|------|------|
|                                                    |                                                                                                                     | typ.                  | max. |      |
| <b>I<sub>R</sub></b>                               | T <sub>VJ</sub> =25°C; V <sub>R</sub> =V <sub>RRM</sub><br>T <sub>VJ</sub> =150°C; V <sub>R</sub> =V <sub>RRM</sub> |                       | 60   | uA   |
|                                                    |                                                                                                                     |                       | 0.25 | mA   |
| <b>V<sub>F</sub></b>                               | I <sub>F</sub> =10A; T <sub>VJ</sub> =150°C<br>T <sub>VJ</sub> =25°C                                                |                       | 1.29 | V    |
|                                                    |                                                                                                                     |                       | 1.75 |      |
| <b>R<sub>thJC</sub></b><br><b>R<sub>thCH</sub></b> |                                                                                                                     | 0.5                   | 2.5  | K/W  |
| <b>t<sub>rr</sub></b>                              | I <sub>F</sub> =1A; -di/dt=50A/us; V <sub>R</sub> =30V; T <sub>VJ</sub> =25°C                                       | 30                    |      | ns   |
| <b>I<sub>RM</sub></b>                              | V <sub>R</sub> =100V; I <sub>F</sub> =12A; -di <sub>F</sub> /dt=100A/us; T <sub>VJ</sub> =100°C                     |                       | 2.4  | A    |

## FEATURES

- \* International standard package
- \* Glass passivated chips
- \* Very short recovery time
- \* Extremely low switching losses
- \* Low I<sub>RM</sub>-values
- \* Soft recovery behaviour
- \* RoHS compliant

## 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<sub>RM</sub> reduces:
  - Power dissipation within the diode
  - Turn-on loss in the commutating switch

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# HUR830S

Soft Recovery Behaviour High-Performance Wide Temperature Range Ultra Fast Recovery Epitaxial Diodes

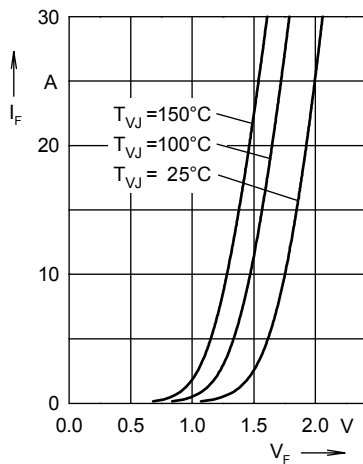


Fig. 1 Forward current  $I_F$  versus  $V_F$

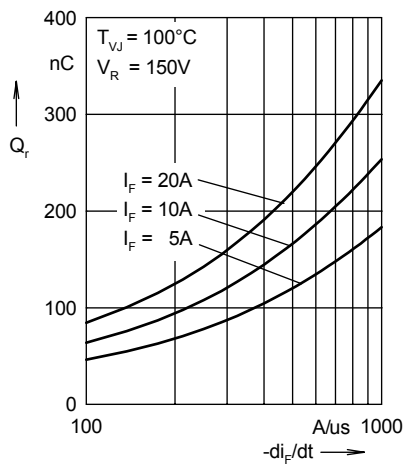


Fig. 2 Reverse recovery charge  $Q_r$  versus  $-di_F/dt$

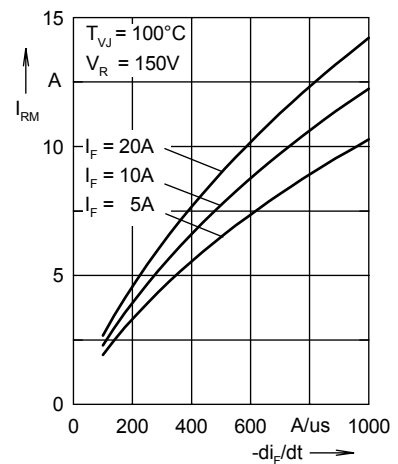


Fig. 3 Peak reverse current  $I_{RM}$  versus  $-di_F/dt$

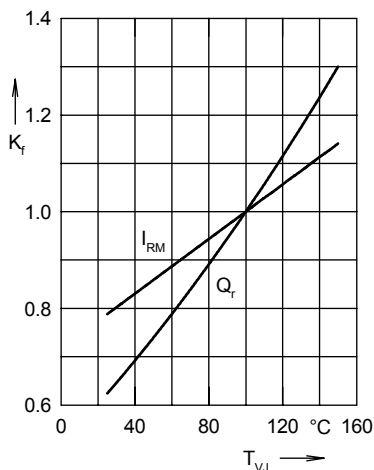


Fig. 4 Dynamic parameters  $Q_r$ ,  $I_{RM}$  versus  $T_{VJ}$

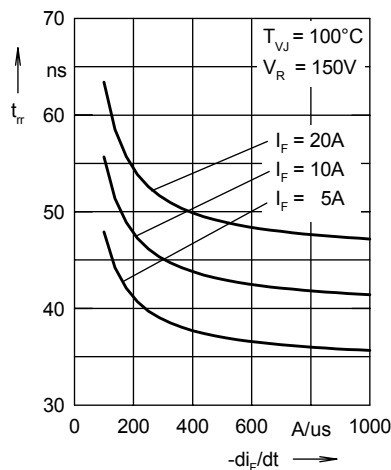


Fig. 5 Recovery time  $t_{tr}$  versus  $-di_F/dt$

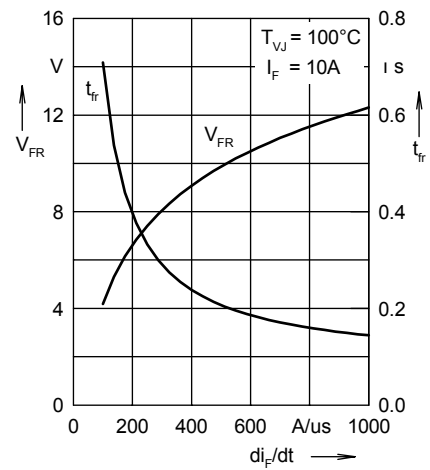


Fig. 6 Peak forward voltage  $V_{FR}$  and  $t_{tr}$  versus  $di_F/dt$

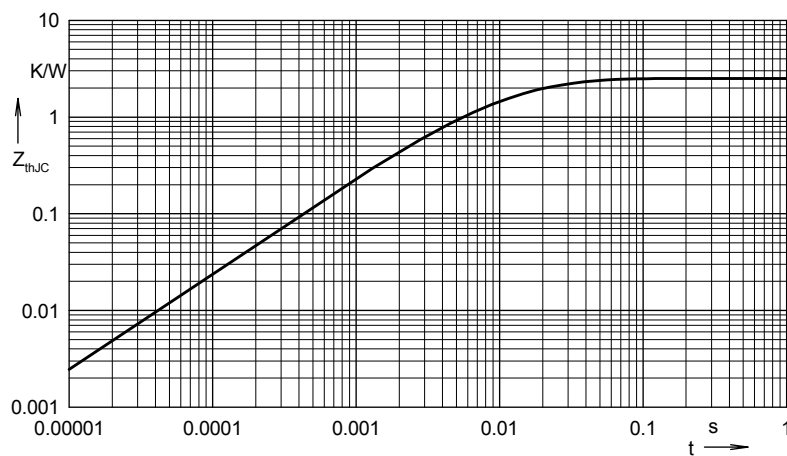


Fig. 7 Transient thermal resistance junction to case

Constants for  $Z_{thJC}$  calculation:

| i | $R_{thi}$ (K/W) | $t_i$ (s) |
|---|-----------------|-----------|
| 1 | 1.449           | 0.005     |
| 2 | 0.558           | 0.0003    |
| 3 | 0.493           | 0.017     |