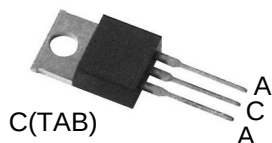


# HUR1630CT

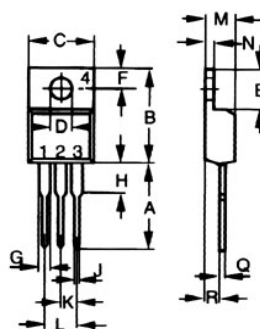
High-Performance Wide Temperature Range Ultra Fast Recovery Epitaxial Diode



A=Anode, C=Cathode, TAB=Cathode

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Dimensions TO-220AB



| Dim. | Inches |       | Milimeter |       |
|------|--------|-------|-----------|-------|
|      | Min.   | Max.  | Min.      | Max.  |
| A    | 0.500  | 0.550 | 12.70     | 13.97 |
| B    | 0.580  | 0.630 | 14.73     | 16.00 |
| C    | 0.390  | 0.420 | 9.91      | 10.66 |
| D    | 0.139  | 0.161 | 3.54      | 4.08  |
| E    | 0.230  | 0.270 | 5.85      | 6.85  |
| F    | 0.100  | 0.125 | 2.54      | 3.18  |
| G    | 0.045  | 0.065 | 1.15      | 1.65  |
| H    | 0.110  | 0.230 | 2.79      | 5.84  |
| J    | 0.025  | 0.040 | 0.64      | 1.01  |
| K    | 0.100  | BSC   | 2.54      | BSC   |
| M    | 0.170  | 0.190 | 4.32      | 4.82  |
| N    | 0.045  | 0.055 | 1.14      | 1.39  |
| Q    | 0.014  | 0.022 | 0.35      | 0.56  |
| R    | 0.090  | 0.110 | 2.29      | 2.79  |

|           | $V_{RSM}$ | $V_{RRM}$ |
|-----------|-----------|-----------|
|           | V         | V         |
| HUR1630CT | 300       | 300       |

| Symbol                             | Test Conditions                                                   | Maximum Ratings                 | Unit        |
|------------------------------------|-------------------------------------------------------------------|---------------------------------|-------------|
| $I_{FRMS}$<br>$I_{FAVM}$           | $T_C=130^{\circ}C$ ; rectangular, $d=0.5$                         | 35<br>2 x 8                     | A           |
| $I_{FSM}$                          | $T_{VJ}=45^{\circ}C$ ; $t_p=10ms$ (50Hz), sine                    | 60                              | A           |
| $E_{AS}$                           | $T_{VJ}=25^{\circ}C$ ; non-repetitive; $I_{AS}=2A$ ; $L=180\mu H$ | 0.5                             | mJ          |
| $I_{AR}$                           | $V_A=1.5 \cdot V_R$ typ.; $f=10kHz$ ; repetitive                  | 0.2                             | A           |
| $T_{VJ}$<br>$T_{VJM}$<br>$T_{stg}$ |                                                                   | -55...+175<br>175<br>-55...+150 | $^{\circ}C$ |
| $P_{tot}$                          | $T_C=25^{\circ}C$                                                 | 60                              | W           |
| $M_d$                              | mounting torque                                                   | 0.4...0.6                       | Nm          |
| Weight                             | typical                                                           | 2                               | g           |

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High-Performance Wide Temperature Range Ultra Fast Recovery Epitaxial Diode

| 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
- \* Planar passivated chips
- \* Very short recovery time
- \* Extremely low switching losses
- \* Low I<sub>RM</sub>-values
- \* Soft recovery behaviour

## 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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# HUR1630CT

## High-Performance Wide Temperature Range Ultra Fast Recovery Epitaxial Diode

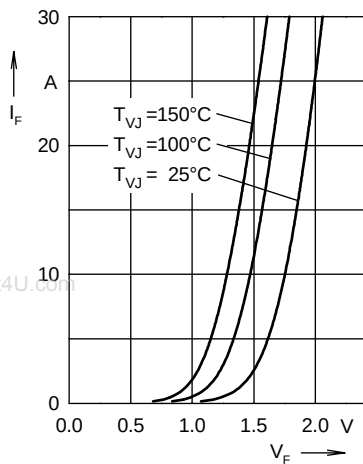


Fig. 1 Forward current  $I_F$  versus  $V_F$

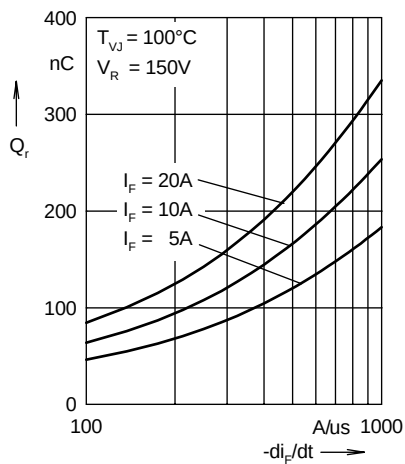


Fig. 2 Reverse recovery charge  $Q_r$  versus  $-di_F/dt$

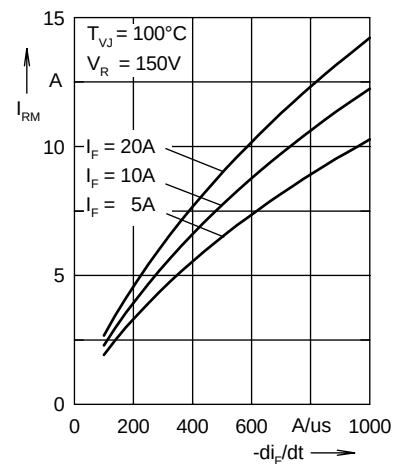


Fig. 3 Peak reverse current  $I_{RM}$  versus  $-di_F/dt$

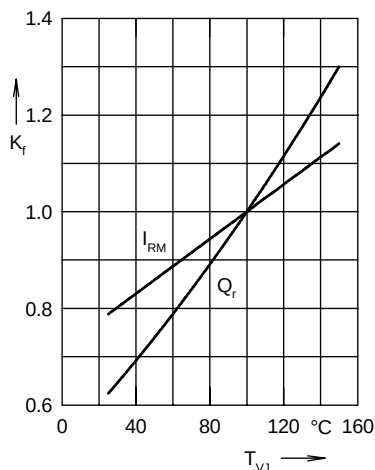


Fig. 4 Dynamic parameters  $Q_r$ ,  $I_{RM}$  versus  $T_{VJ}$

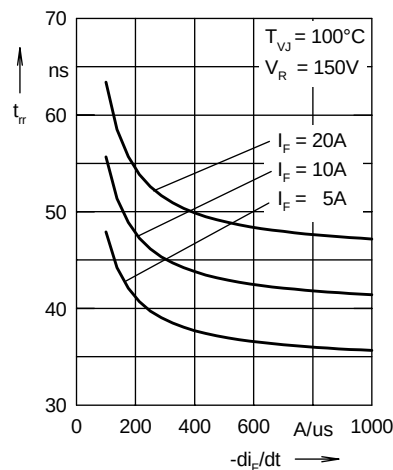


Fig. 5 Recovery time  $t_{rr}$  versus  $-di_F/dt$

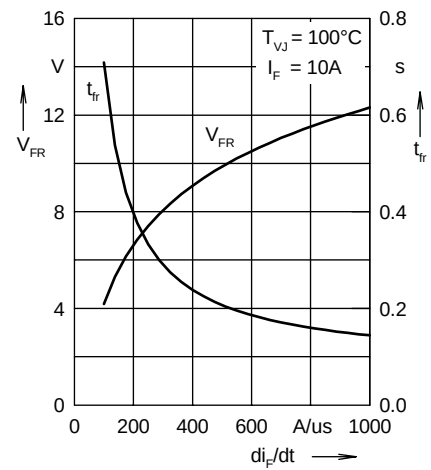


Fig. 6 Peak forward voltage  $V_{FR}$  and  $t_{fr}$  versus  $di_F/dt$

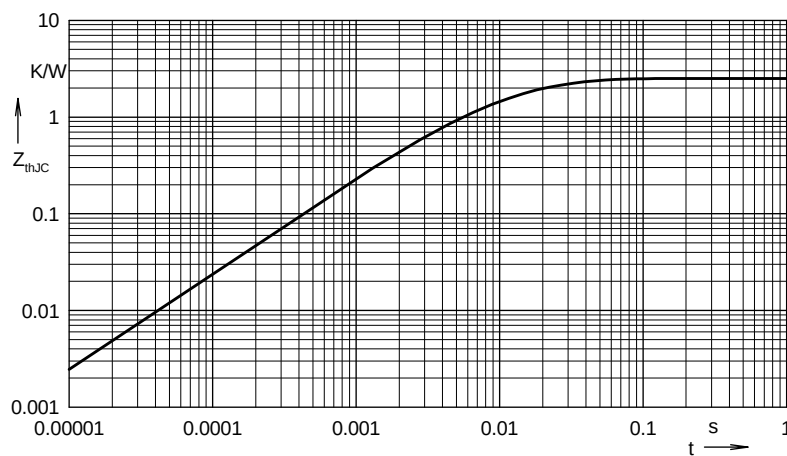


Fig. 7 Transient thermal resistance junction to case

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     |

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