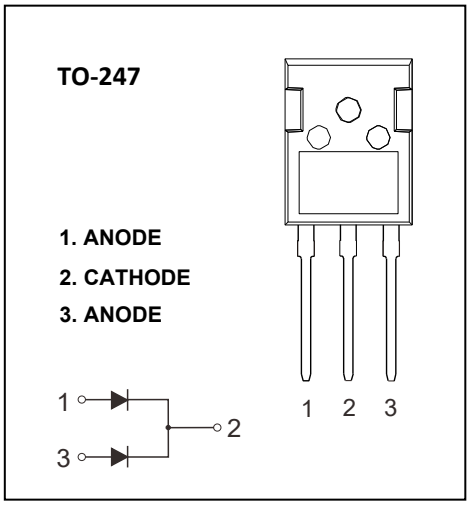
JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.

# TO-247 Plastic-Encapsulate Diode

## MURW30H20CTB HYPERFAST RECTIFIER,FRED




### MAIN CHARACTERISTICS

| | |
|---|---|
| $I_O$ | 30(15×2)A |
| $V_{RRM}$ | 200V |
| $T_{rr}$ | 14ns |
| $T_j$ | 175℃ |
| $V_{F(typ)}$ | 0.75V(@$T_j$=150℃) |

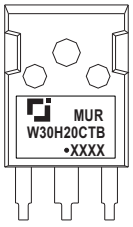
### FEATURES

- Ultrafast Recovery Times and Low Recovery Loss
- Low Forward Voltage
- Low Reverse Leakage Current

### APPLICATIONS

Specifically designed to improve efficiency of PFC and output rectification stages of EV / HEV battery charging stations, booster stage of solar inverters and UPS applications, these devices are perfectly matched to operate with MOSFETs or high speed IGBTs.

### MARKING




MURW30H20CTB = Device code
Solid dot = Green molding compound device
if none, the normal device
XXXX = Code

### MAXIMUM RATINGS ( $T_C$=25℃unless otherwise noted )

| Symbol | Parameter | MURW30H20CTB | Unit |
|---|---|---|---|
| $V_{RRM}$ | Peak Repetitive Reverse Voltage | 200 | V |
| $V_R$ | DC Blocking Voltage | | |
| $I_{F(AV)}$ | Average rectified output current@ Per leg($T_C$=153℃) | 15 | A |
| | Average rectified output current@ Total device($T_C$=153℃) | 30 | |
| $I_{F(RMS)}$ | RMS Forward Curren($T_C$=153℃) | 21 | A |
| $I_{FSM}$ | Non-Repetitive Surge Forward Current (8.3ms) | 250 | A |
| $P_D$ | Power dissipation | 167 | W |
| $R_{\Theta JC}$ | Thermal Resistance From Junction to Case | 0.9 | ℃/W |
| $T_j$ | Operating Junction Temperature Range | -55 ~ +175 | ℃ |
| $T_{stg}$ | Storage Temperature Range | -55 ~ +175 | ℃ |

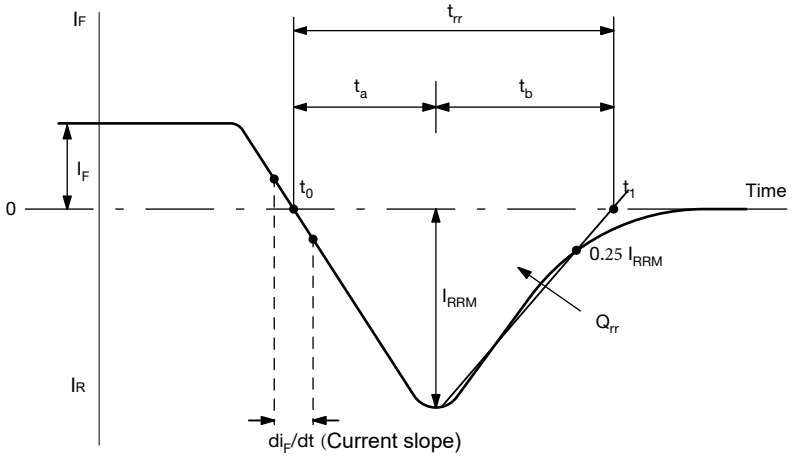
## Typical Characteristics

### ELECTRICAL CHARACTERISTICS ($T_C$=25℃ unless otherwise specified)

| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $V_{(BR)}$ | Reverse Voltage | IR=100μA | | 200 | | | V |
| $I_R$ | Reverse Current | VR=200V | $T_j$=25℃ | | | 1 | μA |
| | | | $T_j$=150℃ | | | 500 | μA |
| $V_F$ | Forward Voltage | IF=15A | $T_j$=25℃ | | 0.93 | 1.0 | V |
| | | | $T_j$=150℃ | | 0.75 | | V |
| $C_{tot}$ | Total Capacitance | VR=200V, f=1MHz | | | 50 | | pF |
| trr | Reverse Recovery time | IF=0.5A, IR=1A,Irr=0.25A | | | 19 | | ns |
| | | IF=1A,VR=30V, $di_F/dt$ =200A/us | | | 14 | | ns |

### ELECTRICAL CHARACTERISTICS ($T_C$=25℃ unless otherwise specified)

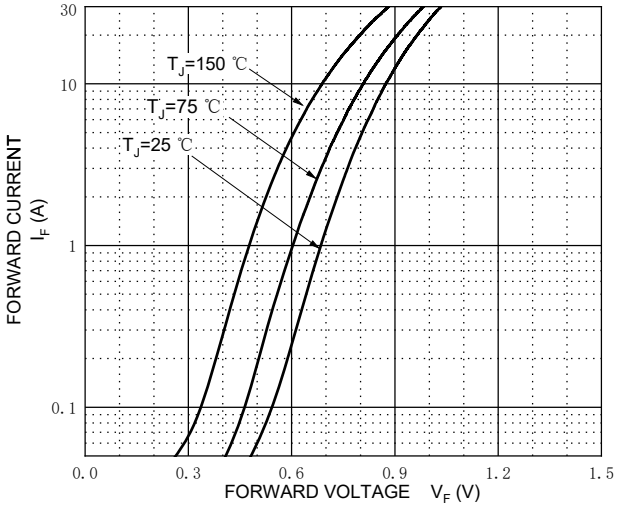
| Symbol | Parameter | Test Comditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| trr | Reverse Recovery Time | IF=15A, VR=100V, $di_F/dt$=200A/μs | | 13 | | ns |
| $I_{RRM}$ | Max. Reverse Recovery Current | | | 2.0 | | A |
| Qrr | Reverse Recovery Charge | | | 13 | | nC |
| trr | Reverse Recovery Time | IF=15A, VR=100V, $di_F/dt$=200A/μs, $T_j$=125℃ | | 27 | | ns |
| $I_{RRM}$ | Max. Reverse Recovery Current | | | 5.0 | | A |
| Qrr | Reverse Recovery Charge | | | 64 | | nC |
| trr | Reverse Recovery Time | IF=15A, VR=100V, $di_F/dt$=600A/μs, $T_j$=125℃ | | 22 | | ns |
| $I_{RRM}$ | Max. Reverse Recovery Current | | | 12 | | A |
| Qrr | Reverse Recovery | | | 141 | | nC |



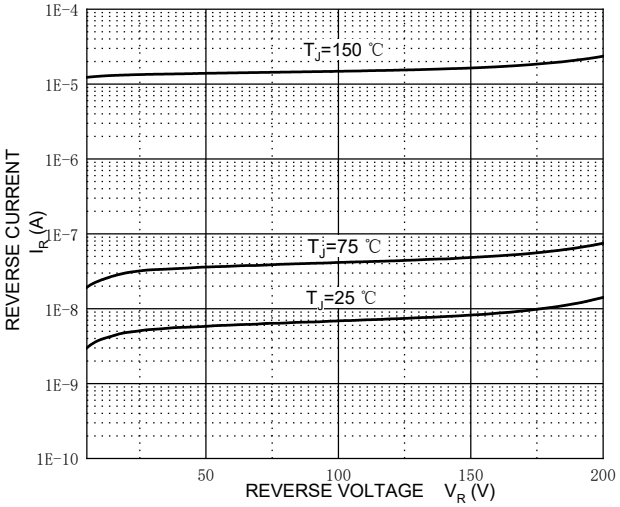

Reverse Recovery Waveform and Definitions

## Typical Characteristics

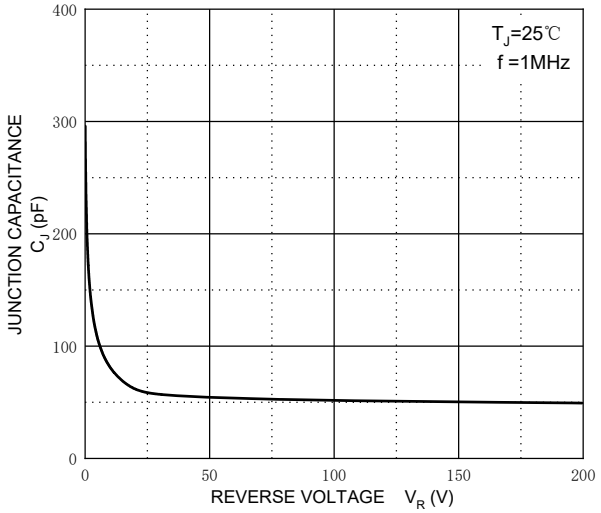
### Forward Characteristics



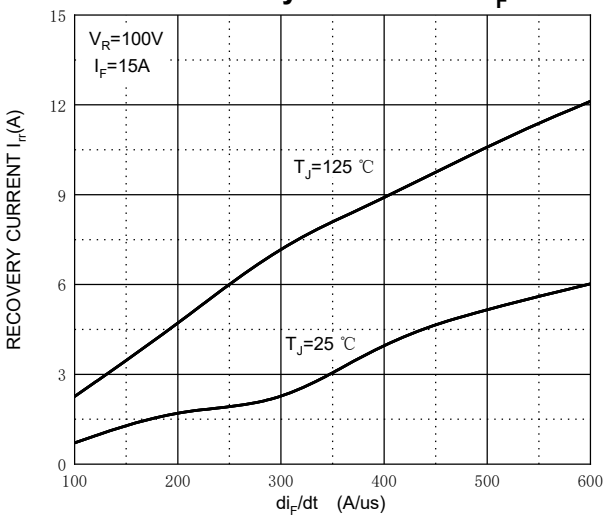

### Reverse Characteristics



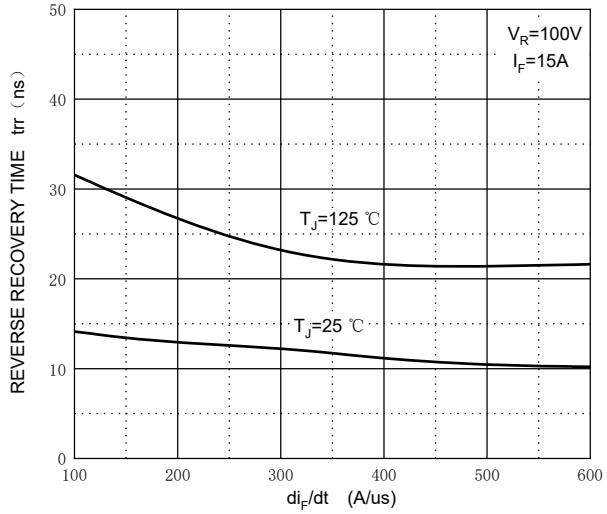

### Capacitance Characteristics Per Diode



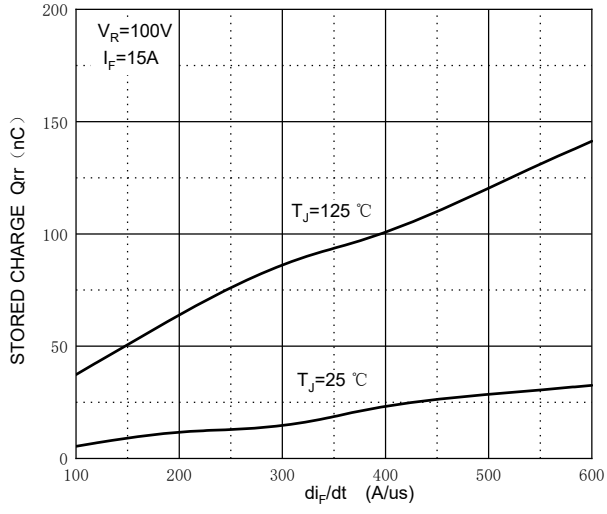

### Recovery Current vs. $di_F/dt$




### Reverse Recovery Time vs. $di_F/dt$

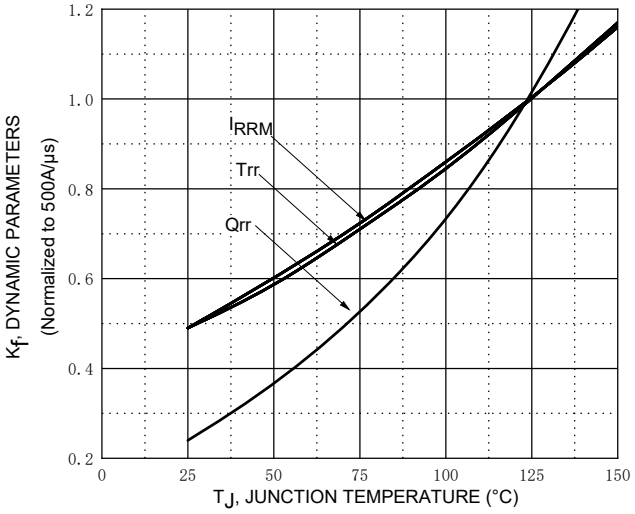



### Stored Charge vs. $di_F/dt$

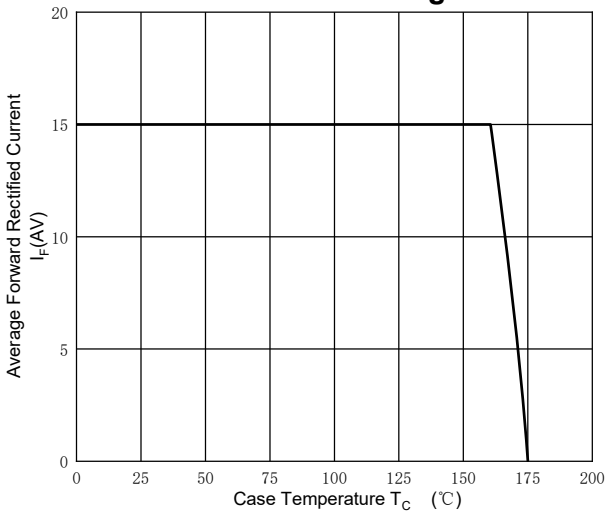


## Typical Characteristics

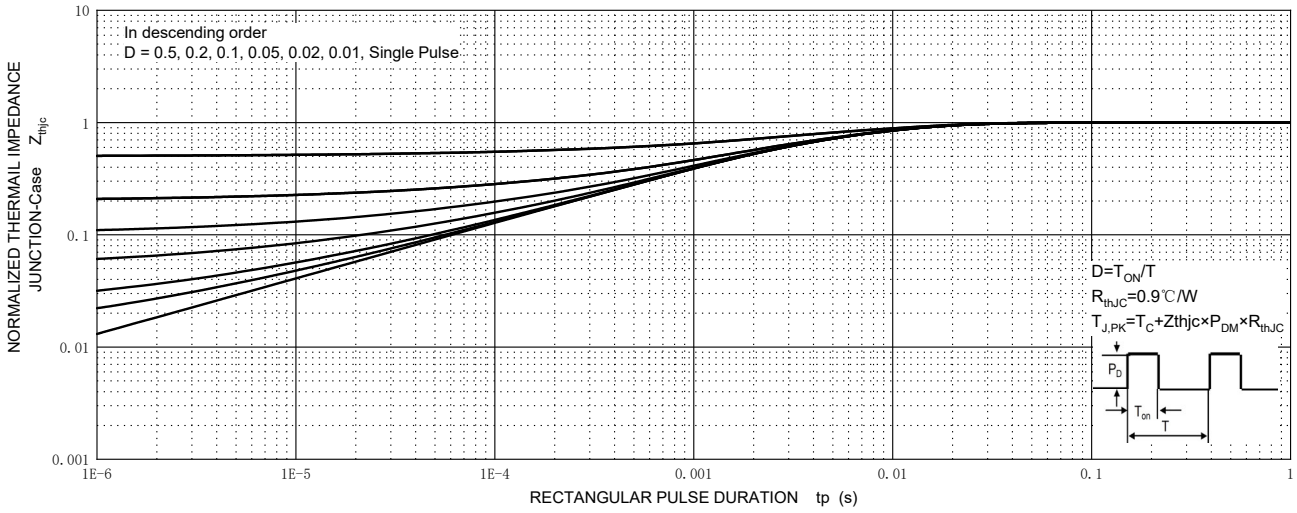
### Dynamic Parameters vs. Junction Temperature



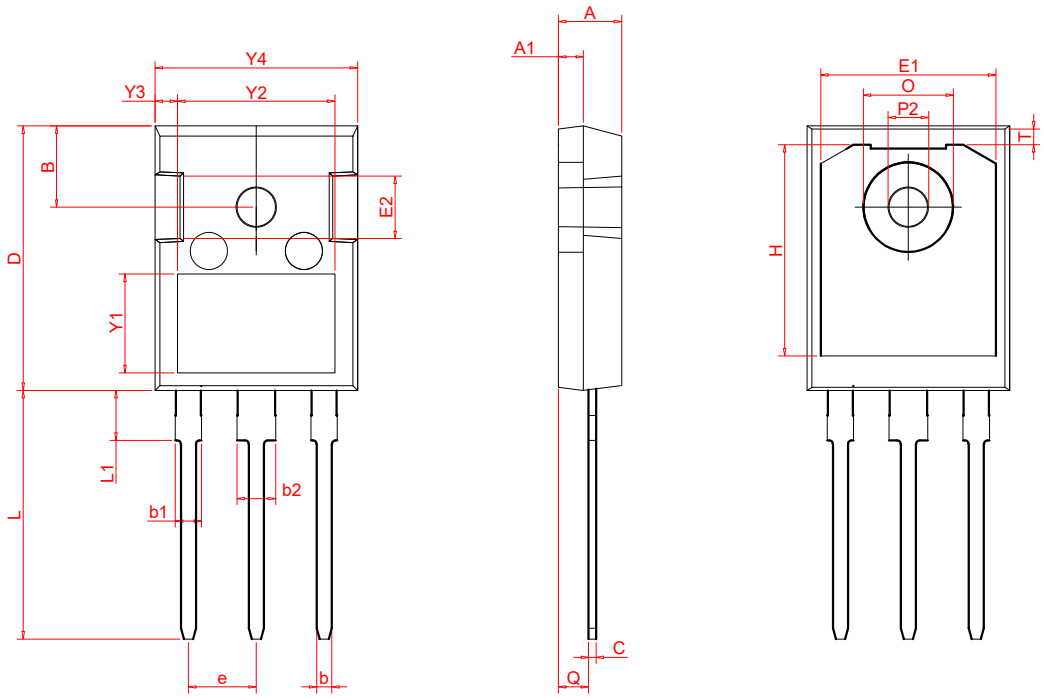

### Current Derating




### MURW30H20CTB Transient Thermal Impedance, Junction-Case



## TO-247 Package Outline Dimensions




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 4.700 | 5.300 | 0.185 | 0.209 |
| A1 | 1.700 | 2.300 | 0.067 | 0.091 |
| C | 0.450 | 0.750 | 0.018 | 0.030 |
| Q | 2.200 | 2.600 | 0.087 | 0.102 |
| O | 7.100 | 7.400 | 0.280 | 0.291 |
| P2 | 3.450 | 3.750 | 0.136 | 0.148 |
| L | 19.000 | 21.000 | 0.748 | 0.827 |
| L1 | 4.2 | 4.5 | 0.165 | 0.177 |
| b | 1.000 | 1.400 | 0.039 | 0.055 |
| b1 | 1.800 | 2.250 | 0.071 | 0.089 |
| b2 | 3.000 | 3.300 | 0.118 | 0.130 |
| e | 5.250 | 5.550 | 0.207 | 0.219 |
| D | 20.950 | 21.350 | 0.825 | 0.841 |
| Y1 | 7.600 | 8.100 | 0.299 | 0.319 |
| Y2 | 11.000 | 13.000 | 0.433 | 0.512 |
| Y3 | 1.750 | 2.250 | 0.069 | 0.089 |
| Y4 | 16.000 | 16.400 | 0.630 | 0.646 |
| E2 | 4.600 | 4.900 | 0.181 | 0.193 |
| T | 1.35REF | | 0.053REF | |
| H | 16.25REF | | 0.639REF | |
| E1 | 14REF | | 0.551REF | |
| B | 6.55REF | | 0.257REF | |