YENYO

# HFR15A12D

Glass Passivated Hyperfast Recovery Rectifier

**Voltage Range 1200 V**
**Current 15.0 Ampere**

## Features

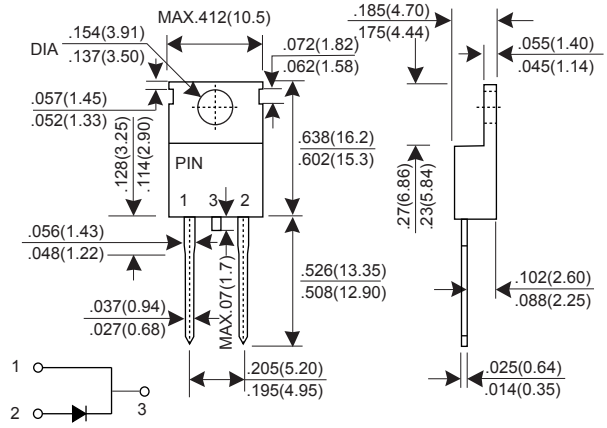
- ✶ Fast switching for high efficiency
- ✶ Low noise
- ✶ Trr = 25ns
- ✶ Low reverse leakage current
- ✶ High voltage super FRD
- ✶ PFC application



## Mechanical Data

- ✶ Case: Molded plastic TO-220AC
- ✶ Epoxy: UL 94V-0 rate flame retardant
- ✶ Terminals: Solderable per MIL-STD-202 method 208
- ✶ Mounting position: Any
- ✶ Weight: 2.07 grams

**TO-220AC**




Dimensions in inches and (millimeters)

## Maximum Ratings $T_C = 25^\circ C$ , Unless Otherwise Specified

| Item | Symbol | Conditions | UNIT |
|---|---|---|---|
| Recurrent Peak Reverse Voltage | $V_{RRM}$ | 1200 | V |
| RMS Voltage | $V_{RMS}$ | 840 | V |
| DC Blocking Voltage | $V_{DC}$ | 1200 | V |
| Average Forward Rectified Current $T_C$=140°C | $I_{F(AV)}$ | 15.0 | A |
| Peak Forward Surge Current, 8.3ms single Half sine-wave superimposed on rated load (JEDEC method) | $I_{FSM}$ | 200 | A |
| Pulse energy in avalanche mode, non repetitive (inductive load switch off) $I_{(BR)R}$ = 1A, $T_J$ = 25 °C | $E_R$ | 20 | mJ |
| Operating Junction and Storage Temperature Range | $T_J$, $T_{STG}$ | -65 ~ +175 | °C |

## Electrical/Thermal Characteristics $T_C = 25^\circ C$ , Unless Otherwise Specified

| Item | Symbol | Conditions | Min. | Typ. | Max. | UNIT |
|---|---|---|---|---|---|---|
| Instantaneous Forward Voltage | $V_F$ | $I_F$ = 15A | - | - | 4.5 | V |
| DC Reverse Current<br>At Rated DC Blocking Voltage | $I_R$ | $V_R$ = 1200V<br>$V_R$ = 1200V $T_J$=150°C | - | - | 10.0<br>500 | uA<br>uA |
| Maximum Reverse Recovery Time | Trr | $I_F$ = 0.5A, $I_R$ = 1.0A, Irr = 0.25A | - | - | 25 | nS |
| | | $I_F$ = 15A, $dI_F/dt$ = 100A/us | - | - | 70 | nS |
| Typical junction Capacitance | $C_J$ | $V_R$ = 10V, $I_F$ = 0A | - | 55 | - | pF |
| Typical Thermal Resistance | $R_{\theta JC}$ | Junction to Case | - | - | 1.5 | °CW |

FIG.1 - FORWARD CURRENT DERATING CURVE

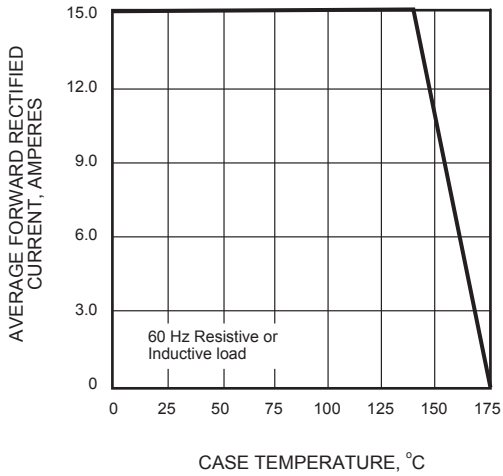



FIG.2 - MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

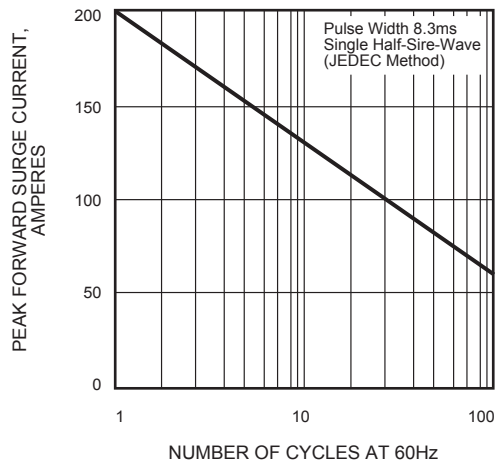



FIG.3 - TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

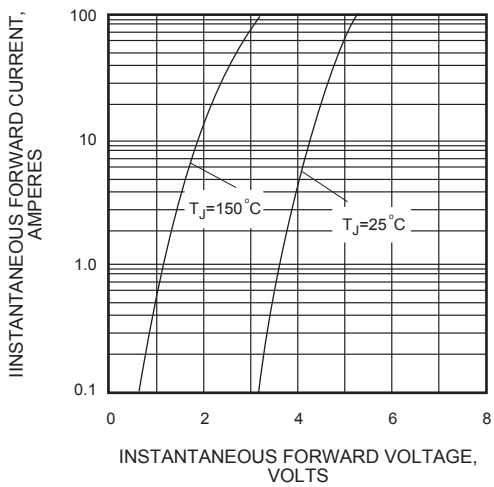



FIG.4 - TYPICAL REVERSE CHARACTERISTICS

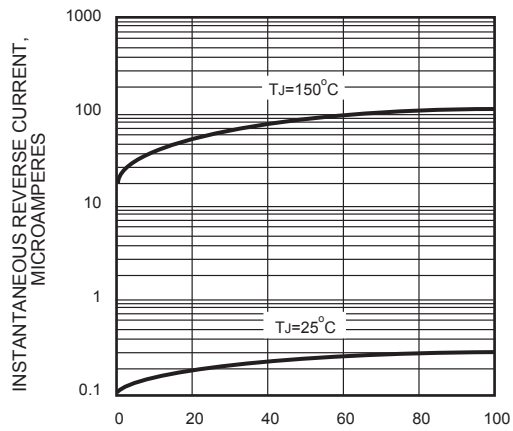



FIG.5 - JUNCTION CAPACITANCE VS REVERSE VOLTAGE

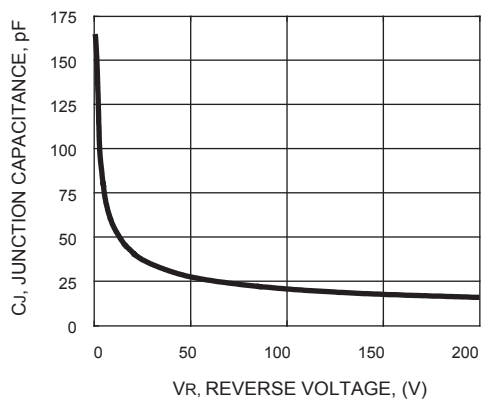


FIG.6 - $t_{rr}$ TEST CIRCUIT

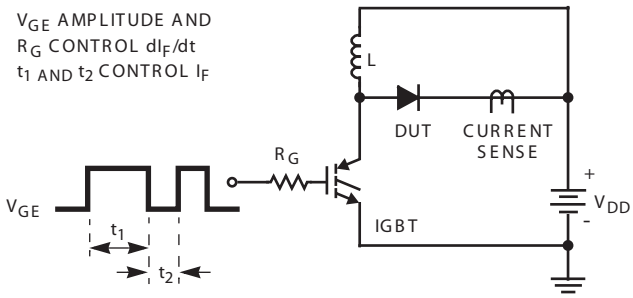



FIG. 7 - $t_{rr}$ WAVEFORMS AND DEFINITIONS

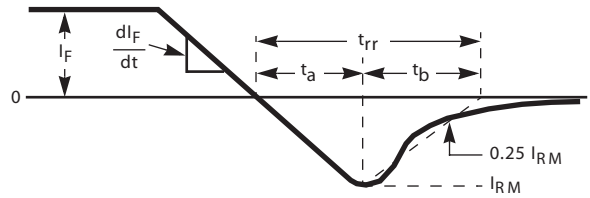



FIG. 8 - AVALANCHE ENERGY TEST CIRCUIT

$I_{MAX}$ = 1A
L = 40mH
R < 0.1
$E_{AVL} = 1/2LI^2 [V_{R(AVL)}/(V_{R(AVL)} - V_{DD})]$
$Q_1$ = IGBT ($BV_{CES}$ > DUT $V_{R(AVL)}$)

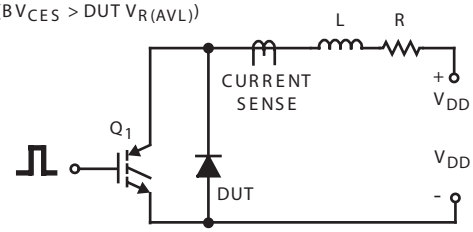



FIG.9 - AVALANCHE CURRENT AND VOLTAGE WAVEFORMS