



YENYO

HFR30A12D

Glass Passivated Hyperfast Recovery Rectifier

Features

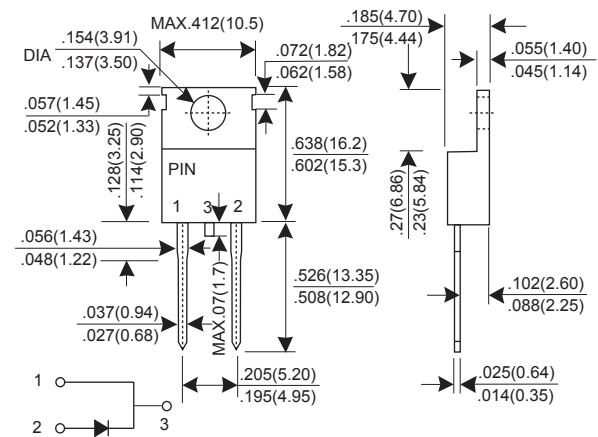
- ★ Fast switching for high efficiency
- ★ Low noise
- ★ $T_{rr} = 25\text{ns}$
- ★ Low reverse leakage current
- ★ High voltage super FRD
- ★ PFC application

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

Voltage Range 1200 V
Current 30.0 Ampere

TO-220AC



Dimensions in inches and (millimeters)

Maximum Ratings $T_c = 25^\circ\text{C}$, 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 $T_c=140^\circ\text{C}$	$I_{F(AV)}$	30.0	A
Peak Forward Surge Current, 8.3ms single Half sine-wave superimposed on rated load (JEDEC method)	I_{FSM}	300	A
Maximum Power Dissipation	P_D	125	W
Pulse energy in avalanche mode, non repetitive (inductive load switch off) $I_{(BR)R} = 1\text{A}$, $T_J = 25^\circ\text{C}$	E_R	30	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-65 ~ +175	$^\circ\text{C}$

Electrical/Thermal Characteristics $T_c = 25^\circ\text{C}$, Unless Otherwise Specified

Item	Symbol	Conditions	Min.	Typ.	Max.	UNIT
Instantaneous Forward Voltage	V_F	$I_F = 30\text{A}$	-	-	5.0	V
DC Reverse Current	I_R	$V_R = 1200\text{V}$	-	-	20.0	μA
At Rated DC Blocking Voltage		$V_R = 1200\text{V}$ $T_J=150^\circ\text{C}$	-	-	500	μA
Maximum Reverse Recovery Time	T_{rr}	$I_F = 0.5\text{A}$, $I_R = 1.0\text{A}$, $I_{rr} = 0.25\text{A}$	-	-	25	nS
		$I_F = 30\text{A}$, $dI_F/dt = 100\text{A}/\mu\text{s}$	-	-	85	nS
Typical junction Capacitance	C_J	$V_R = 10\text{V}$, $I_F = 0\text{A}$	-	25	-	pF
Typical Thermal Resistance	$R_{\theta JC}$	Junction to Case	-	-	2	$^\circ\text{C}/\text{W}$

RATINGS AND CHARACTERISTIC CURVES HFR30A12D

FIG.1 - FORWARD CURRENT DERATING CURVE

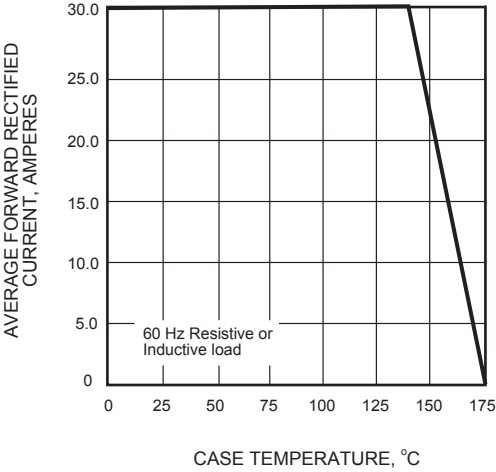


FIG.2 - MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

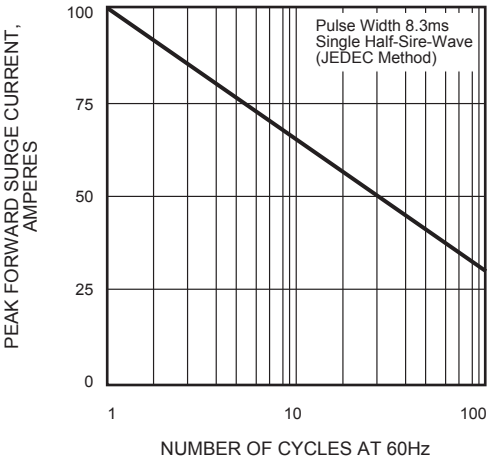


FIG.3 - TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

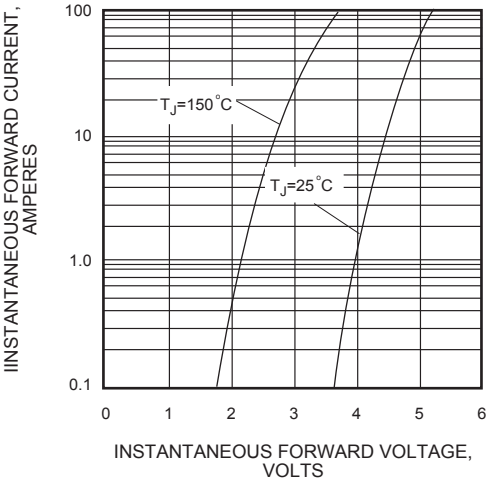


FIG.4 - TYPICAL REVERSE CHARACTERISTICS

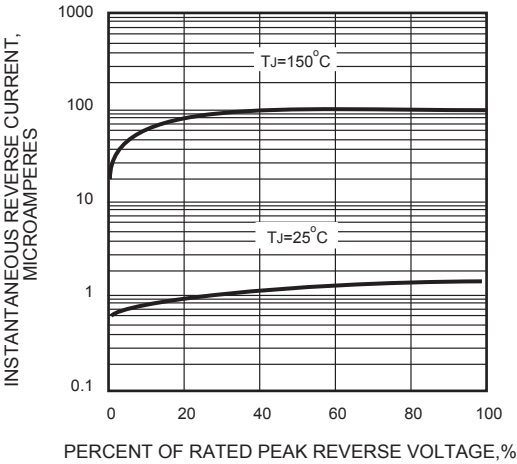
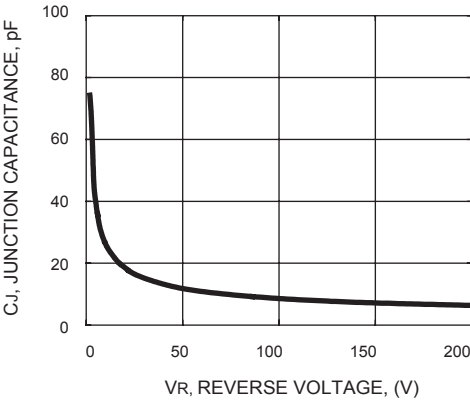


FIG.5 - JUNCTION CAPACITANCE vs REVERSE VOLTAGE



Test Circuits and Waveforms

FIG. 6 - t_{rr} TEST CIRCUIT

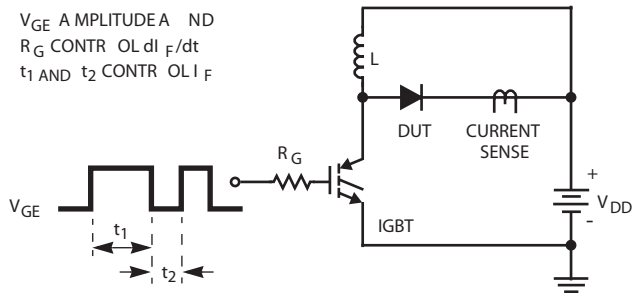


FIG. 7 - t_{rr} WAVEFORMS AND DEFINITIONS

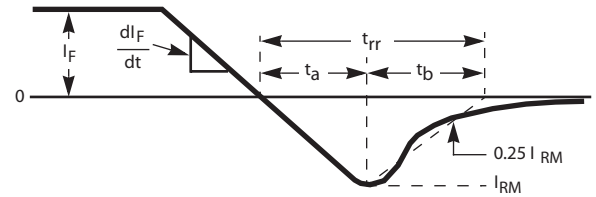


FIG. 8 - AVALANCHE ENERGY TEST CIRCUIT

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

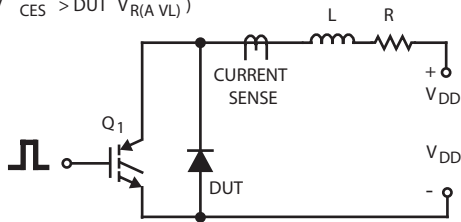


FIG. 9 - AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

