

# HFA08SD60S

 $t_{rr} = 18ns$ 

 $I_{F(AV)} = 8Amp$ 

 $V_{R} = 600V$ 

## Ultrafast, Soft Recovery Diode

#### **Features**

- · Ultrafast Recovery Time
- · Ultrasoft Recovery
- Very Low I<sub>RRM</sub>
- Very Low Q<sub>rr</sub>
- · Guaranteed Avalanche
- · Specified at Operating Temperature

#### **Benefits**

- · Reduced RFI and EMI
- Reduced Power Loss in Diode and Switching Transistor
- · Higher Frequency Operation
- · Reduced Snubbing
- · Reduced Parts Count

#### **Description/ Applications**

These diodes are optimized to reduce losses and EMI/RFI in high frequency power conditioning systems. The softness of the recovery eliminates the need for a snubber in most applications. These devices are ideally suited for freewheeling, flyback, power converters, motor drives, and other applications where high speed and reduced switching losses are design requirements.

#### **Package Outline**



### **Absolute Maximum Ratings**

	Parameters	Max	Units
V <sub>RRM</sub>	Cathode-to-Anode Voltage	600	V
I <sub>F(AV)</sub>	Continuous Forward Current	8	A
	T <sub>C</sub> = 100°C		
I <sub>FSM</sub>	Single Pulse Forward Current	60	
I <sub>FRM</sub>	Peak Repetitive Forward Current	24	
P <sub>D</sub>	Maximum Power Dissipation	14	W
	$T_C = 100^{\circ}C$		
T <sub>J</sub> , T <sub>STG</sub>	Operating Junction and Storage Temperatures	- 55 to 150	°C

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# Electrical Characteristics 0 T<sub>J</sub> = 25°C (unless otherwise specified)

	Parameters	Min	Тур	Max	Units	Test Conditions			
$V_{BR}, V_{r}$	Breakdown Voltage, Blocking Voltage	600	-	-	V	$I_R = 100 \mu A$			
$V_{F}$	Forward Voltage	-	1.4	1.7	V	I <sub>F</sub> = 8A			
	See Fig. 1	-	1.7	2.1	V	I <sub>F</sub> = 16A			
		-	1.4	1.7	V	I <sub>F</sub> = 8A, T <sub>J</sub> = 125°C			
I <sub>R</sub>	Max. Reverse Leakage Current	-	0.3	5.0	μA	$V_R = V_R$ Rated			
		-	100	500	μA	$T_J = 125$ °C, $V_R = 0.8 \times V_R$ Rated			
C <sub>T</sub>	Junction Capacitance	-	10	25	pF	V <sub>R</sub> = 200V			
Ls	Series Inductance	-	8.0	-	nH	Measured lead to lead 5mm from package body			

# Dynamic Recovery Characteristics @ T<sub>J</sub> = 25°C (unless otherwise specified)

	Parameters	Min	Тур	Max	Units	Test Conditions		
t <sub>rr</sub>	Reverse Recovery Time	-	18	-	ns	$I_F = 1.0A$ , $di_F/dt = 200A/\mu A$ , $V_R = 30V$		
		-	37	55		T <sub>J</sub> = 25°C	I <sub>F</sub> = 8A	
		-	55	90		T <sub>J</sub> = 125°C	V <sub>R</sub> = 200V	
I <sub>RRM</sub>	Peak Recovery Current	-	3.5	5.0	Α	T <sub>J</sub> = 25°C	di <sub>F</sub> /dt = 200A/μs	
		-	4.5	8.0		T <sub>J</sub> = 125°C		
Q <sub>rr</sub>	Reverse Recovery Charge	-	65	138	nC	T <sub>J</sub> = 25°C		
		-	124	360		T <sub>J</sub> = 125°C		
di(rec)M/dt	Rate of Fall of recovery Current	-	240	-	A/µs	T <sub>J</sub> = 25°C		
		-	210	-		T <sub>J</sub> = 125°C		

### **Thermal - Mechanical Characteristics**

	Parameters	Min	Тур	Max	Units
TJ	Max. Junction Temperature Range	-	-	- 55 to 150	°C
T <sub>Stg</sub>	Max. Storage Temperature Range	-	-	- 55 to 150	
T <sub>lead</sub>	Lead Temperature	-	-	300	
R <sub>thJC</sub>	Thermal Resistance, Junction to Case	-	-	3.5	°C/ W
R <sub>thJA</sub> ①	Thermal Resistance, Junction to Ambient	-	-	80	
Wt	Weight	-	2.0	-	g
		-	0.07	-	(oz)

① Typical Socket Mount

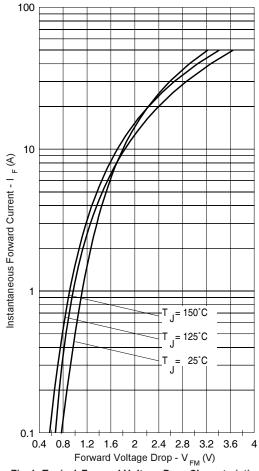


Fig. 1-Typical Forward Voltage Drop Characteristics

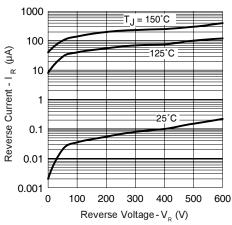


Fig. 2-Typical Values Of Reverse Current Vs. Reverse Voltage

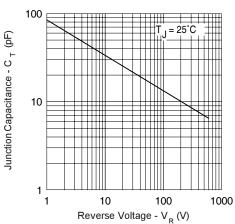


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

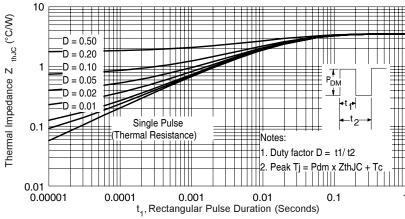


Fig. 4-Max. Thermal Impedance Z thJC Characteristics

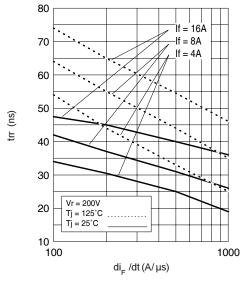


Fig. 5 - Typical Reverse Recovery vs. di  $_{\rm F}/{\rm dt}$ 

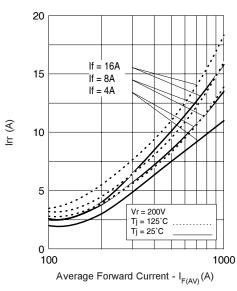


Fig. 6 - Typical Recovery Current vs. di <sub>F</sub>/dt

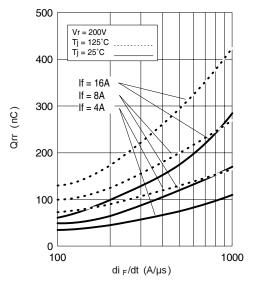


Fig. 7 - Typical Stored Charge vs. di <sub>F</sub>/dt

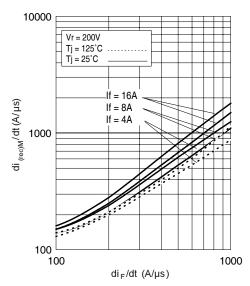


Fig. 8 - Typical di $_{(rec)M}$ /dt vs. di $_F$ /dt

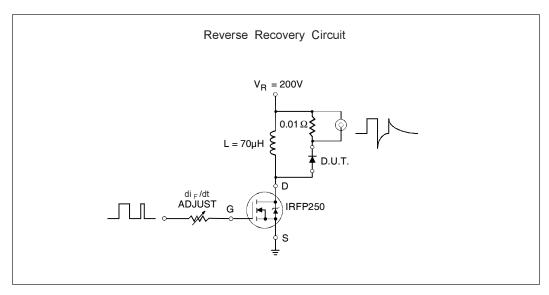


Fig. 9- Reverse Recovery Parameter Test Circuit

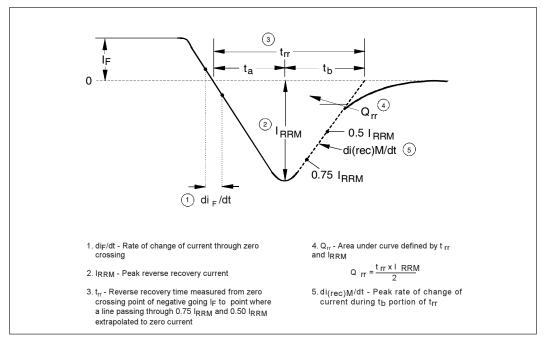
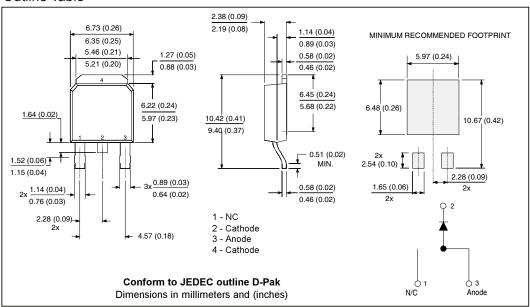


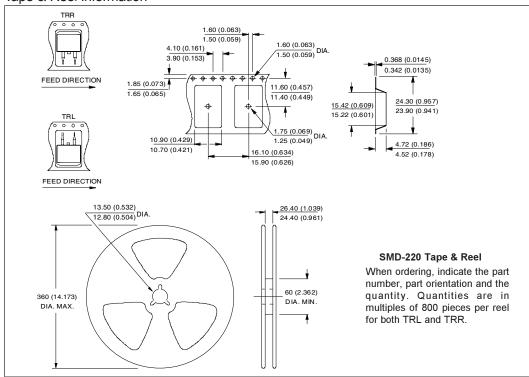
Fig. 10 - Reverse Recovery Waveform and Definitions

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#### **Outline Table**

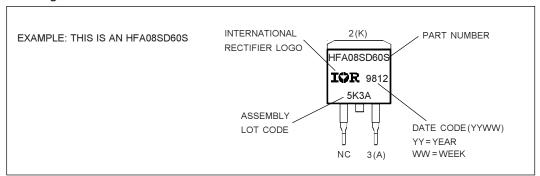


## Tape & Reel Information

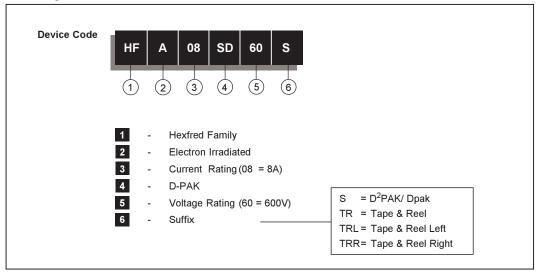


Bulletin PD-20618 rev. D 10/06

### Marking Information



## **Ordering Information Table**



Data and specifications subject to change without notice. This product has been designed and qualified for Industrial Level.

Qualification Standards can be found on IR's Web site.



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