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Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

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Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





RHRA1560CC Hyperfast Rectifier

Features

- High Speed Switching ($t_{rr} < 35\text{ns}$)
- High Reverse Voltage and High Reliability
- Avalanche Energy Rated
- High Operating Temperature

Applications

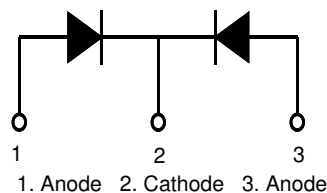
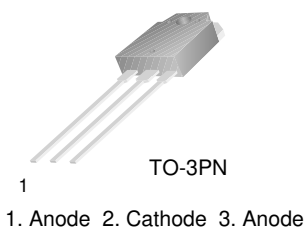
- General Purpose
- Switching Mode Power Supply
- Free-wheeling diode for motor application
- Power switching circuits

15A, 600V Hyperfast Rectifier

The RHRA1560CC is a hyperfast rectifier ($t_{rr} < 35\text{ns}$) with soft recovery characteristics. It has half the recovery time of ultrafast diodes and is silicon nitride passivated ion-implanted epitaxial planar construction.

This device is intended for use as freewheeling/clamping diodes and rectifier in a variety of switching power supplies and other power switching applications. Its low stored charge and hyperfast soft recovery minimize ringing and electrical noise in many power switching circuits reducing power loss in the switching transistors.

Pin Assignments



Absolute Maximum Ratings $T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{RRM}	Peak Repetitive Reverse Voltage	600	V
V_{RWM}	Working Peak Reverse Voltage	600	V
V_R	DC Blocking Voltage	600	V
$I_{F(AV)}$	Average Rectified Forward Current @ $T_C = 140^\circ\text{C}$	15	A
I_{FSM}	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	200	A
T_J, T_{STG}	Operating Junction and Storage Temperature	- 65 to +175	$^\circ\text{C}$

Thermal Characteristics $T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Maximum Thermal Resistance, Junction to Case	1.5	$^\circ\text{C}/\text{W}$

Package Marking and Ordering Information

Device Marking	Device	Package	Reel Size	Tape Width	Quantity
RHRA1560CC	RHRA1560CCCTU	TO-3PN	-	-	30

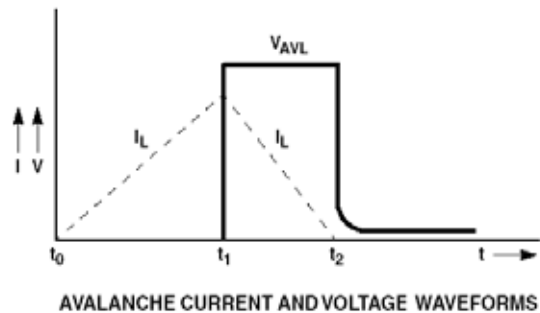
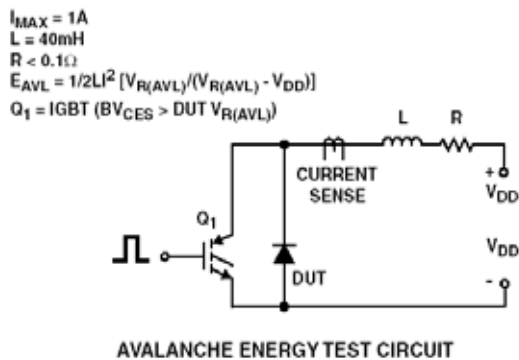
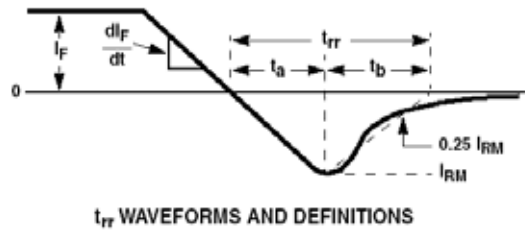
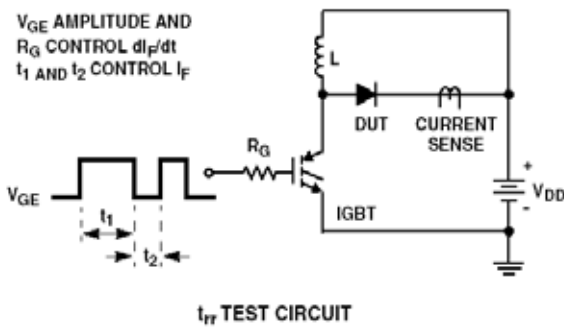
Electrical Characteristics T_C = 25°C unless otherwise noted

Parameter	Conditions	Min.	Typ.	Max	Units	
V _{FM} ¹	I _F = 15A	T _C = 25 °C	-	-	2.1	V
	I _F = 15A	T _C = 150 °C	-	-	1.7	V
I _{RM} ¹	V _R = 600V	T _C = 25 °C	-	-	100	μA
	V _R = 600V	T _C = 150 °C	-	-	500	μA
t _{rr}	I _F = 1A, di/dt = 100A/μs, V _{CC} = 30V	T _C = 25 °C	-	-	35	ns
	I _F = 15A, di/dt = 100A/μs, V _{CC} = 390V	T _C = 25 °C	-	-	40	ns
t _a t _b Q _{rr}	I _F = 15A, di/dt = 100A/μs, V _{CC} = 390V	T _C = 25 °C	-	20	-	ns
		T _C = 25 °C	-	15	-	ns
		T _C = 25 °C	-	40	-	nC
C _J	V _R = 10V, I _F = 0A	-	60	-	pF	
W _{AVL}	Avalanche Energy (L = 40mH)	20	-	-	mJ	

Notes:

1. Pulse : Test Pulse width = 300μs, Duty Cycle = 2%

Test Circuit and Waveforms



Typical Performance Characteristics $T_C = 25^\circ\text{C}$ unless otherwise noted

Figure 1. Typical Forward Voltage Drop

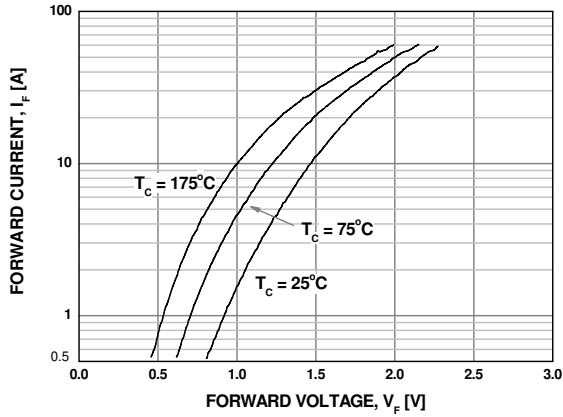


Figure 2. Typical Reverse Current

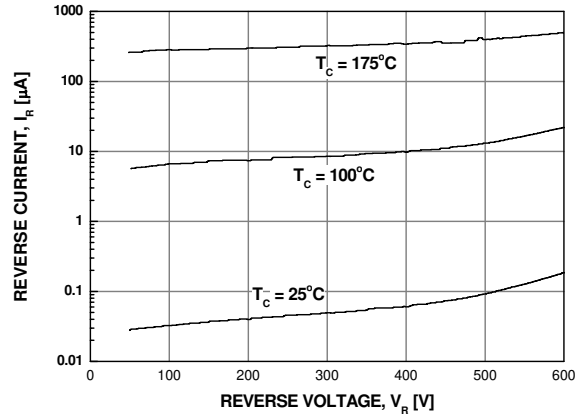


Figure 3. Typical Junction Capacitance

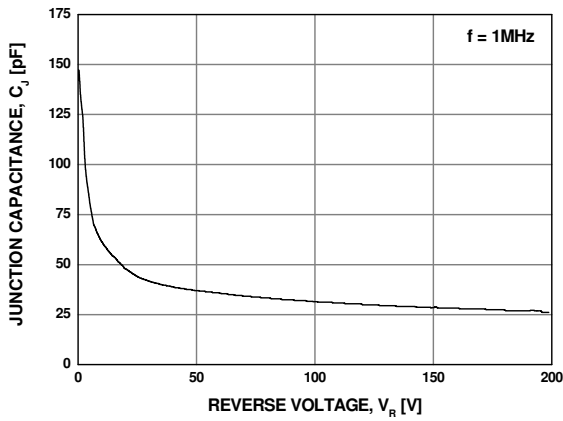


Figure 4. Recovery Time vs. Forward Current

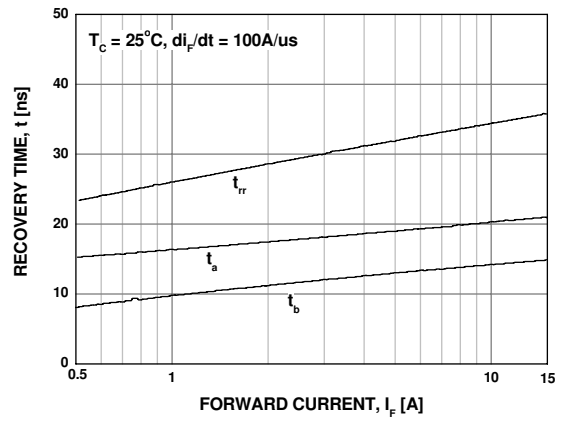


Figure 5. Recovery Time vs. Forward Current

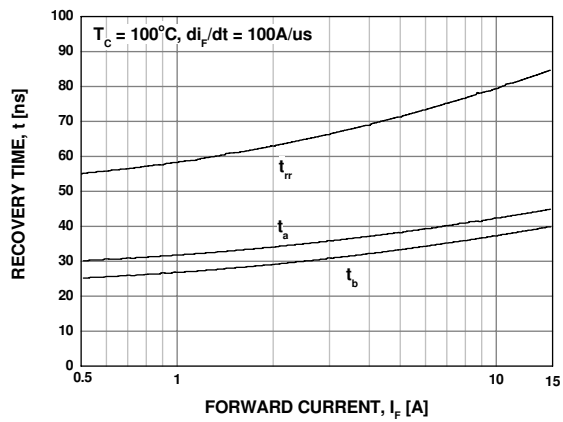
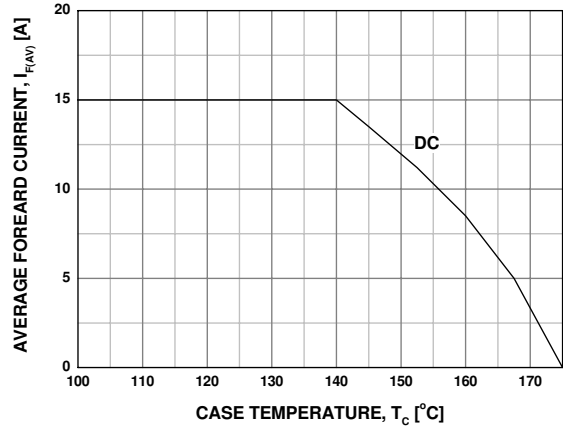
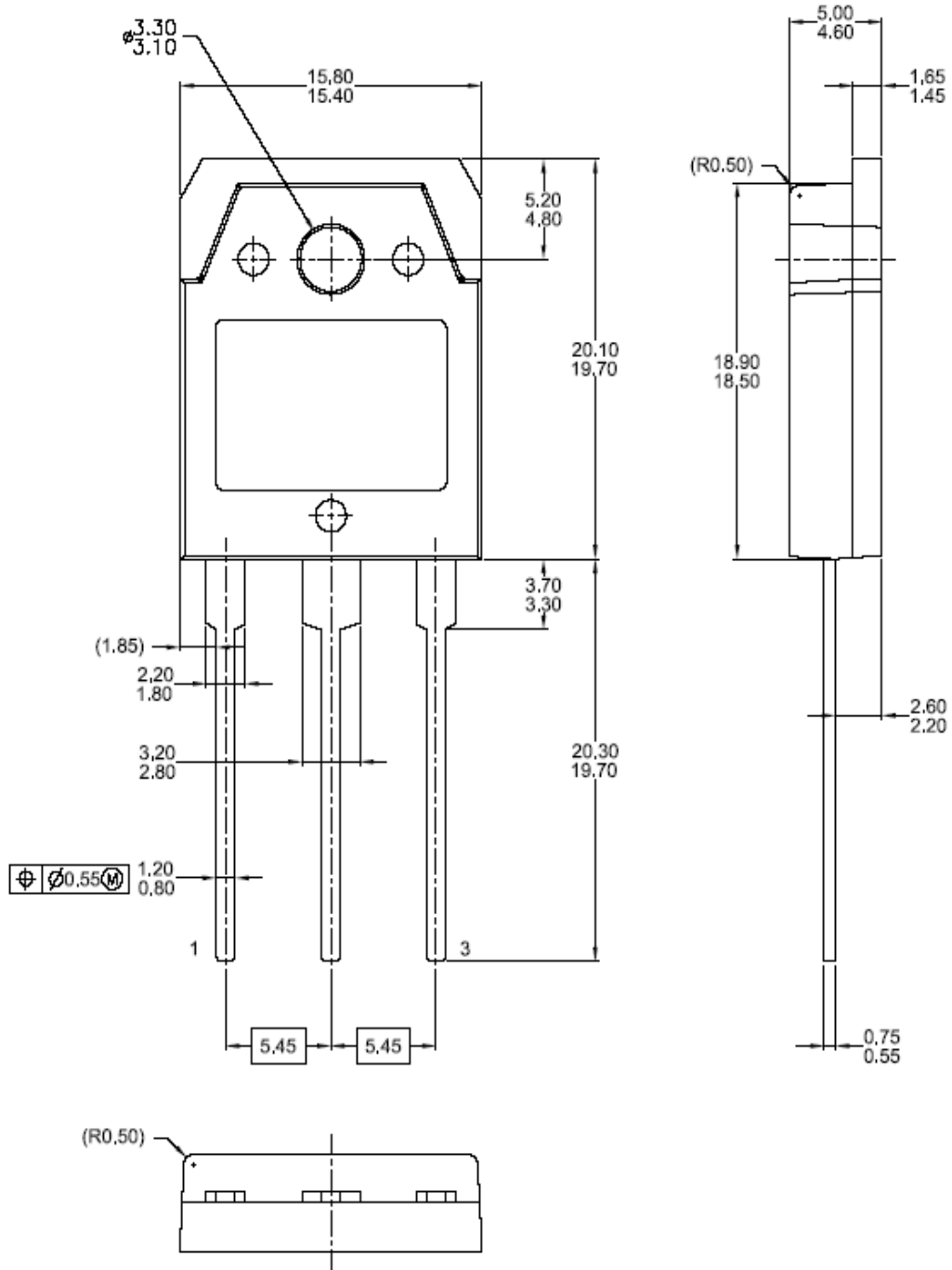


Figure 6. Forward Current Deration Curve



Mechanical Dimensions


TO-3PN





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