# Super Fast Recovery Diode

RFUH20TJ6S Data Sheet

#### Serise

Standard Fast Recovery

# Application

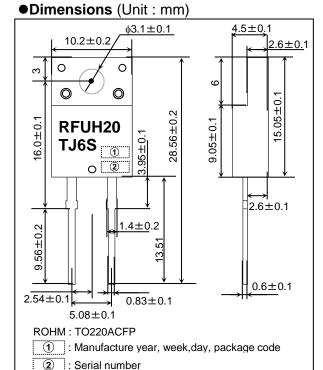
General rectification

## Features

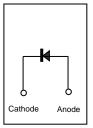
- 1) Super fast recovery / Soft recovery type
- 2) Ultra low switching loss
- 3) High current overload capacity

#### Construction

Silicon epitaxial planar type



## Structure



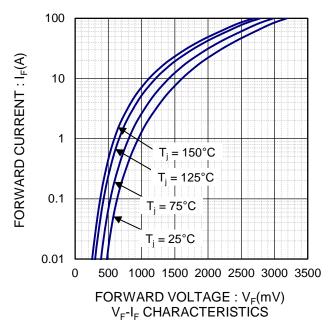
# ● Absolute Maximum Ratings (T<sub>c</sub>= 25°C)

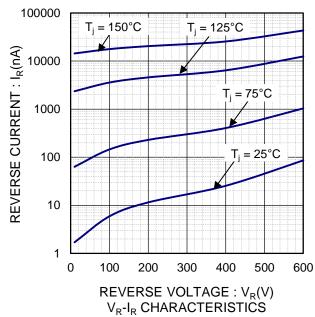
Parameter	Symbol	Conditions		Limits	Unit
Repetitive peak reverse voltage	$V_{RM}$	Duty≦0.5		600	V
Reverse voltage	$V_R$	Direct reverse voltage		600	V
Average current	I <sub>o</sub>	60Hz half sin wave , resistive load	T <sub>c</sub> =30°C	20	Α
Non-repetitive forward surge current	I <sub>FSM</sub>	60Hz half sin wave, one cycle, non-repetitive at $T_j\!\!=\!\!25^{\circ}\text{C}$		120	Α
Operating junction temperature	Tj	-		150	°C
Storage temperature	T <sub>stg</sub>	-		-55 to +150	°C

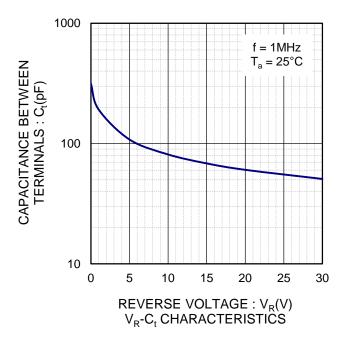
# ●Electrical Characteristics (T<sub>j</sub> = 25°C)

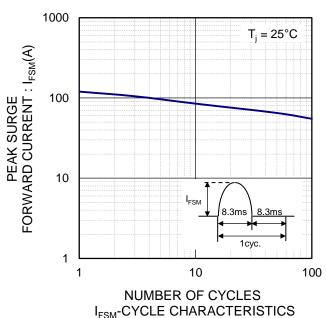
Parameter	Symbol	Conditions		Min.	Тур.	Max.	Unit
Forward voltage	V <sub>F</sub>	I <sub>F</sub> =20A	T <sub>j</sub> =25°C	1.4	1.9	2.8	V
			T <sub>j</sub> =125°C	-	1.5	-	V
Reverse current	I <sub>R</sub>	V <sub>R</sub> =600V	T <sub>j</sub> =25°C	-	0.1	10	μΑ
			T <sub>j</sub> =125°C	-	15	200	μΑ
Reverse recovery time	trr	I <sub>F</sub> =0.5A, I <sub>R</sub> =1A, Irr=0.25×I <sub>R</sub>		-	18	35	ns
		$I_F$ =20A, $V_R$ =400V, $dI_F/dt$ =-200A/ $\mu$ s		-	40	80	ns
Reverse recovery current	I <sub>Rp</sub>	I <sub>F</sub> =20A, V <sub>R</sub> =400V	T <sub>i</sub> =125°C	-	5.7	-	Α
Reverse recovery charges	Qrr	dI <sub>F</sub> /dt=-200A/μs	1 <sub>j</sub> =125 C	-	340	-	nC
Forward recovery time	tfr	I <sub>F</sub> =20A, dI <sub>F</sub> /dt=200A/μs,		-	220	-	ns
Forward recovery voltage	$V_{Fp}$	$V_{FR}=1.1xV_{Fmax}$		-	4.1	-	V
Thermal resistance	R <sub>th</sub> (j-a)	Junction to ambient		-	-	7.5	°C/W
	R <sub>th</sub> (j-c)	Junction to case		-	-	2.5	°C/W

# **•**Electrical Characteristic Curves

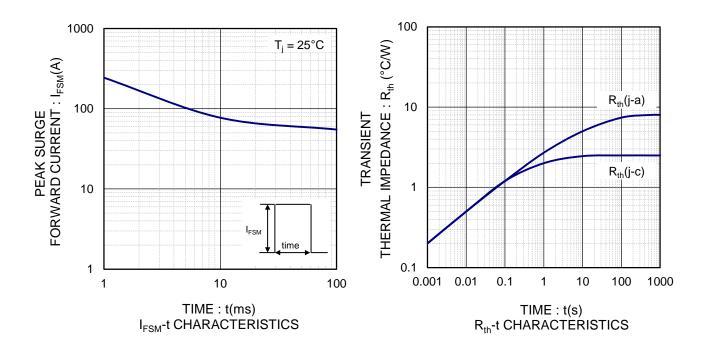


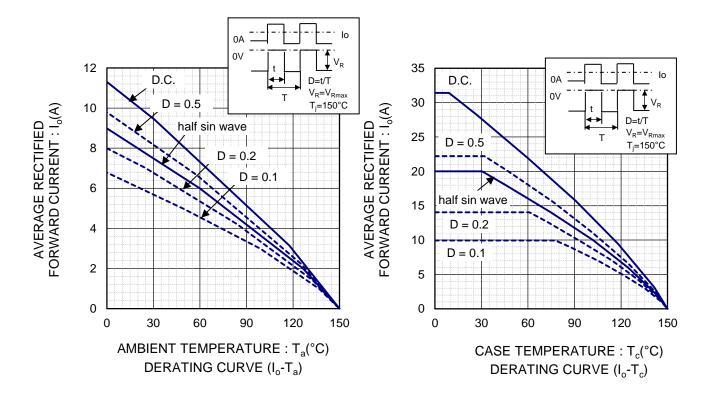




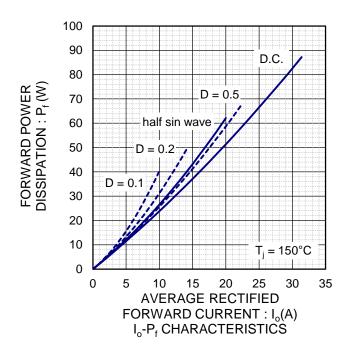


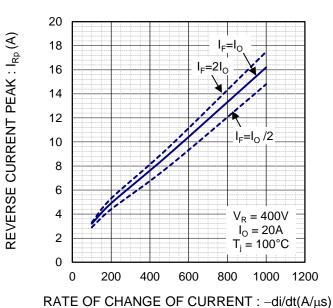
## •Electrical characteristic curves





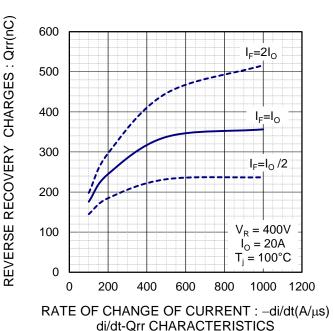
# •Electrical characteristic curves



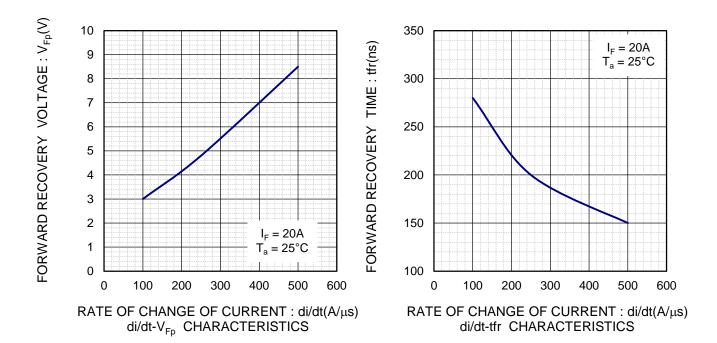


di/dt-I<sub>Rp</sub> CHARACTERISTICS

160 REVERSE RECOVERY TIME: trr(ns) V<sub>R</sub> = 400V 140 I<sub>O</sub> = 20A  $T_i = 100^{\circ}C$ 120 100  $I_F=2I_O$ 80 60 40  $I_F = I_O / 2$ 20 0 0 200 400 600 800 1000 1200 RATE OF CHANGE OF CURRENT : -di/dt(A/µs) di/dt-trr CHARACTERISTICS



# •Electrical characteristic curves



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JAPAN	USA	EU	CHINA
CLASSⅢ	CLASSⅢ	CLASS II b	CL ACCIII
CLASSIV	CLASSIII	CLASSⅢ	CLASSⅢ

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  - [c] Use of our Products in places where the Products are exposed to sea wind or corrosive gases, including Cl<sub>2</sub>, H<sub>2</sub>S, NH<sub>3</sub>, SO<sub>2</sub>, and NO<sub>2</sub>
  - [d] Use of our Products in places where the Products are exposed to static electricity or electromagnetic waves
  - [e] Use of our Products in proximity to heat-producing components, plastic cords, or other flammable items
  - [f] Sealing or coating our Products with resin or other coating materials
  - [g] Use of our Products without cleaning residue of flux (even if you use no-clean type fluxes, cleaning residue of flux is recommended); or Washing our Products by using water or water-soluble cleaning agents for cleaning residue after soldering
  - [h] Use of the Products in places subject to dew condensation
- 4. The Products are not subject to radiation-proof design.
- 5. Please verify and confirm characteristics of the final or mounted products in using the Products.
- 6. In particular, if a transient load (a large amount of load applied in a short period of time, such as pulse. is applied, confirmation of performance characteristics after on-board mounting is strongly recommended. Avoid applying power exceeding normal rated power; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.
- 7. De-rate Power Dissipation (Pd) depending on Ambient temperature (Ta). When used in sealed area, confirm the actual ambient temperature.
- 8. Confirm that operation temperature is within the specified range described in the product specification.
- 9. ROHM shall not be in any way responsible or liable for failure induced under deviant condition from what is defined in this document.

#### Precaution for Mounting / Circuit board design

- 1. When a highly active halogenous (chlorine, bromine, etc.) flux is used, the residue of flux may negatively affect product performance and reliability.
- 2. In principle, the reflow soldering method must be used on a surface-mount products, the flow soldering method must be used on a through hole mount products. If the flow soldering method is preferred on a surface-mount products, please consult with the ROHM representative in advance.

For details, please refer to ROHM Mounting specification

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- 1. If change is made to the constant of an external circuit, please allow a sufficient margin considering variations of the characteristics of the Products and external components, including transient characteristics, as well as static characteristics.
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#### **Precaution for Electrostatic**

This Product is electrostatic sensitive product, which may be damaged due to electrostatic discharge. Please take proper caution in your manufacturing process and storage so that voltage exceeding the Products maximum rating will not be applied to Products. Please take special care under dry condition (e.g. Grounding of human body / equipment / solder iron, isolation from charged objects, setting of lonizer, friction prevention and temperature / humidity control).

#### **Precaution for Storage / Transportation**

- 1. Product performance and soldered connections may deteriorate if the Products are stored in the places where:
  - [a] the Products are exposed to sea winds or corrosive gases, including Cl2, H2S, NH3, SO2, and NO2
  - [b] the temperature or humidity exceeds those recommended by ROHM
  - [c] the Products are exposed to direct sunshine or condensation
  - [d] the Products are exposed to high Electrostatic
- 2. Even under ROHM recommended storage condition, solderability of products out of recommended storage time period may be degraded. It is strongly recommended to confirm solderability before using Products of which storage time is exceeding the recommended storage time period.
- 3. Store / transport cartons in the correct direction, which is indicated on a carton with a symbol. Otherwise bent leads may occur due to excessive stress applied when dropping of a carton.
- 4. Use Products within the specified time after opening a humidity barrier bag. Baking is required before using Products of which storage time is exceeding the recommended storage time period.

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QR code printed on ROHM Products label is for ROHM's internal use only.

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