

## QRT10A06 \ QRT10A06F \ QRT10A06D

### PLANAR STRUCTURED SUPERFAST RECOVERY RECTIFIERS

**Voltage** **600 V** **Current** **10 A**

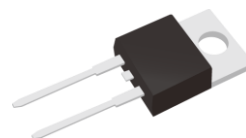
#### Features

- Planar structure with EPI wafer
- Hyperfast recovery time, reduced Qrr and soft recovery
- For PFC CCM operation
- Low leakage current
- Plastic package has Underwriters Laboratory  
Flammability Classification 94V-O  
Flame Retardant Epoxy Molding Compound
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

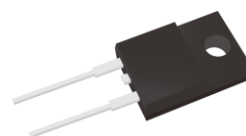
#### Mechanical Data

- Case: TO-220AC, ITO-220AC, TO-263 package
- Terminals: solder plated, solderable per MIL-STD-750, Method 2026
- TO-220AC Weight: 0.067 ounces, 1.89 grams
- ITO-220AC Weight: 0.055 ounces, 1.56 grams.
- TO-263 Weight: 0.049 ounces, 1.38 grams.
- Marking: Part number

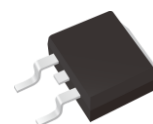
QRT10A06 TO-220AC



QRT10A06F ITO-220AC



QRT10A06D TO-263



### Maximum Ratings And Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

PARAMETER		SYMBOL	VALUE	UNIT
Maximum repetitive peak reverse voltage		V <sub>RRM</sub>	600	V
Maximum rms voltage		V <sub>RMS</sub>	420	V
Maximum dc blocking voltage		V <sub>R</sub>	600	V
Maximum average forward rectified current		I <sub>F(AV)</sub>	10	A
Peak forward surge current : 8.3ms single half sine-wave superimposed on rated load		I <sub>FSM</sub>	75	A
Typical thermal resistance	TO-220AC (Note 1)	R <sub>θJC</sub>	3	°C/W
	ITO-220AB (Note 1)		7	
	TO-263 (Note 2)		4	
Operating junction temperature range		T <sub>J</sub>	-55 to +175	°C
Storage temperature range		T <sub>STG</sub>	-55 to +175	°C

Note : 1. Device mounted on a infinite heatsink , then measured the center of the marking side.

2. Device mounted on a 10cm\*10cm\*1mm copper pad area, then measured the center of the marking side.

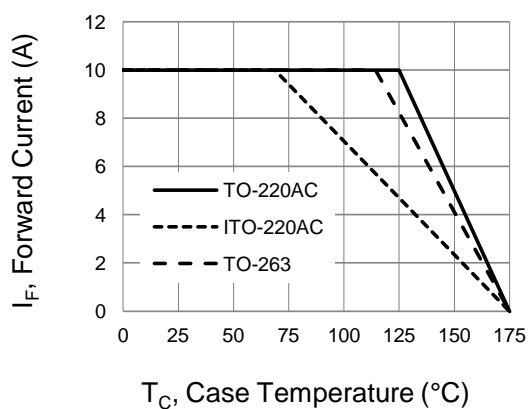


## QRT10A06 \ QRT10A06F \ QRT10A06D

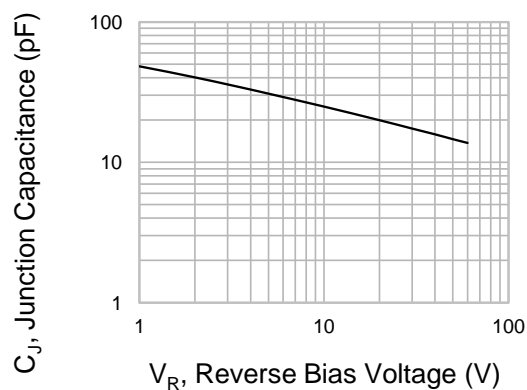
Electrical Characteristics ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION		MIN.	TYP.	MAX.	UNITS
Breakdown voltage	$V_{BR}$	$I_R=100\mu\text{A}$	$T_J=25^{\circ}\text{C}$	600	-	-	V
Instantaneous forward voltage	$V_F$	$I_F=1\text{A}$	$T_J=25^{\circ}\text{C}$	-	1.17	-	V
		$I_F=5\text{A}$		-	1.84	-	
		$I_F=10\text{A}$		-	2.25	2.4	
		$I_F=1\text{A}$	$T_J=125^{\circ}\text{C}$	-	0.83	-	V
		$I_F=5\text{A}$		-	1.36	-	
		$I_F=10\text{A}$		-	1.74	-	
Reverse current	$I_R$	$V_R=600\text{V}$	$T_J=25^{\circ}\text{C}$	-	-	1	$\mu\text{A}$
Reverse recovery time	$T_{RR}$	$I_F=0.5\text{A}$ $I_R=1\text{A}$ $I_{rr}=0.25\text{A}$	$T_J=25^{\circ}\text{C}$	-	-	25	ns
		$I_F=1\text{A}$ $V_R=30\text{V}$ $di/dt=100\text{A}/\mu\text{s}$	$T_J=25^{\circ}\text{C}$	-	-	20	ns
		$I_F=10\text{A}$ $V_R=400\text{V}$ $di/dt=200\text{A}/\mu\text{s}$	$T_J=25^{\circ}\text{C}$	-	32	-	ns
Peak recovery current	$I_{RRM}$	$I_F=10\text{A}$ $V_R=400\text{V}$ $di/dt=200\text{A}/\mu\text{s}$	$T_J=25^{\circ}\text{C}$	-	2	-	A
Reverse recovery charge	$Q_{RR}$	$I_F=10\text{A}$ $V_R=400\text{V}$ $di/dt=200\text{A}/\mu\text{s}$	$T_J=25^{\circ}\text{C}$	-	32	-	nC
Softness factor = $t_b/t_a$	S	$I_F=10\text{A}$ $V_R=400\text{V}$ $di/dt=200\text{A}/\mu\text{s}$	$T_J=25^{\circ}\text{C}$	-	3.77	-	-
Softness factor = $t_b/t_a$	S	$I_F=10\text{A}$ $V_R=400\text{V}$ $di/dt=200\text{A}/\mu\text{s}$	$T_J=125^{\circ}\text{C}$	-	0.85	-	-

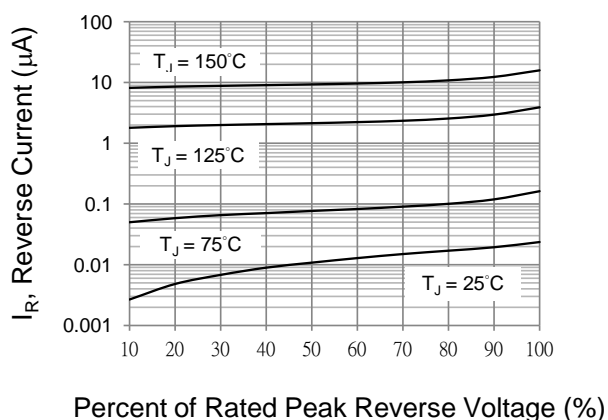
# QRT10A06 \ QRT10A06F \ QRT10A06D



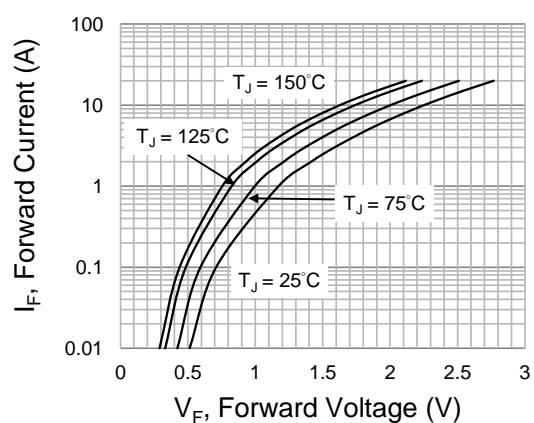
**Fig.1 Forward Current Derating Curve**



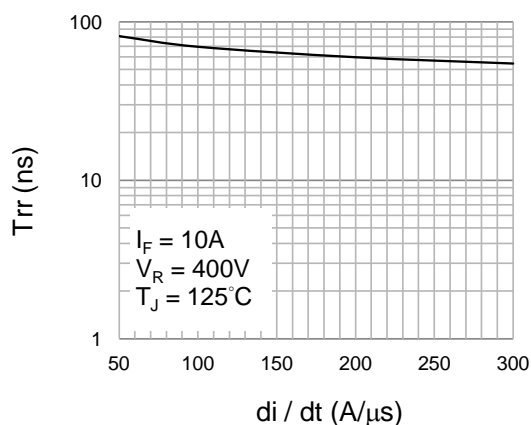
**Fig.2 Typical Junction Capacitance**



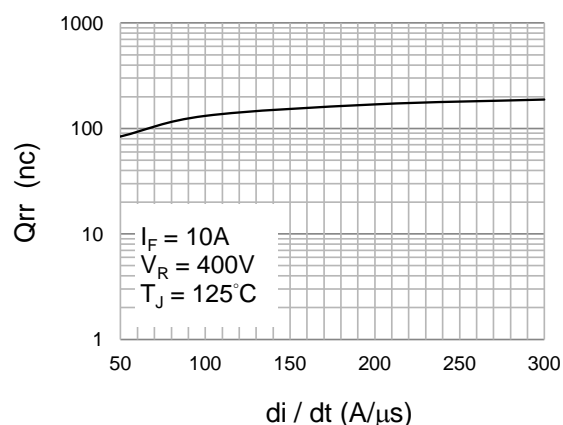
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



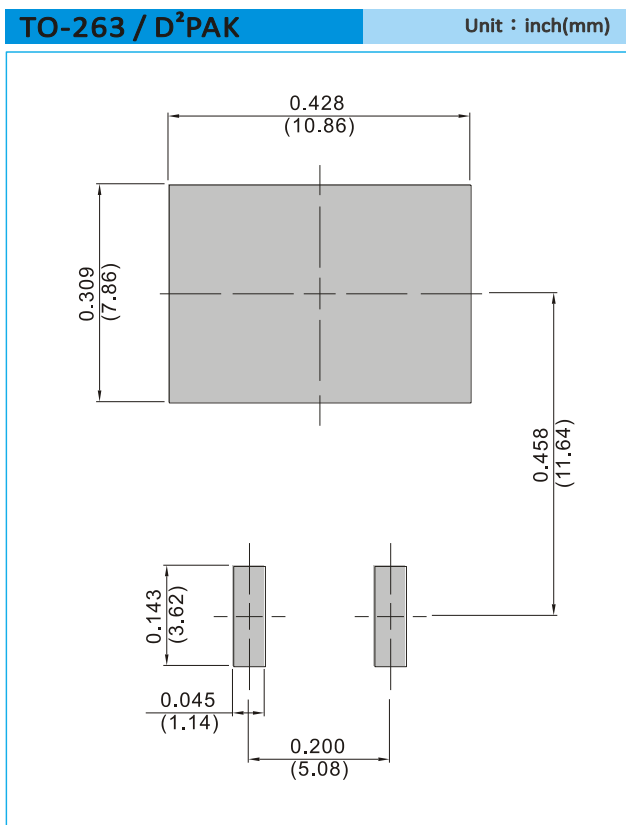
**Fig.5 Typical Reverse recovery time versus di/dt**



**Fig.6 Typical Reverse recovery charges versus di/dt**

## QRT10A06 \ QRT10A06F \ QRT10A06D

### MOUNTING PAD LAYOUT



### ORDER INFORMATION

- Packing information  
T/R – 0.8K per 13" plastic Reel

## TO-220AC

Technical drawing of a mechanical part with dimensions in mm and inches. The drawing shows a cross-section of a component with a central hole and a vertical slot. Dimensions are provided for various features, including diameters, radii, and distances. A legend at the bottom right shows symbols for different materials or finishes: ① (hatched), ② (dotted), and ③ (solid).

**Dimensions (mm / inches):**

- Top horizontal dimensions: 0.419 (10.66), 0.387 (9.85)
- Top hole diameters:  $\varnothing 0.156 (3.95)$ ,  $\varnothing 0.147 (3.75)$
- Right side vertical dimensions: 0.269 (6.85), 0.226 (5.75), 0.624 (15.87), 0.548 (13.93)
- Left side vertical dimensions: 0.063 (1.6) MAX., 0.058 (1.47), 0.042 (1.07), 0.038 (0.96), 0.019 (0.50)
- Bottom horizontal dimensions: 0.200 (5.08), 0.177 (4.5) MAX., 0.50 (12.7) MIN.
- Right side hole diameters: 0.196 (5.00), 0.163 (4.16), 0.054 (1.39), 0.045 (1.15)
- Right side vertical dimensions: 0.146 (3.7), 0.130 (3.3), 0.115 (2.92), 0.080 (2.03)
- Bottom right horizontal dimensions: 0.025 (0.65) MAX.

**Legend:**

- ① (Hatched area)
- ② (Dotted area)
- ③ (Solid area)

## ITO-220AC

Technical drawing of a 1/2" NPT female adapter. The drawing shows a side view and a cross-sectional view. Dimensions are provided in inches (top) and millimeters (bottom).

**Side View Dimensions:**

- Overall height: 0.112 (2.85) / 0.100 (2.55)
- Top flange width: 0.406 (10.3)
- Top flange hole diameter: 0.381 (9.7) / Ø0.134 (3.4) / Ø0.118 (3.0)
- Top flange thickness: 0.272 (6.9) / 0.248 (6.3)
- Thread length: 0.606 (15.4) / 0.583 (14.8)
- Bottom flange thickness: 0.177 (4.5) / 0.137 (3.5)
- Bottom flange hole diameter: 0.543 (13.8) / 0.512 (13.0)
- Bottom flange width: 0.055 (1.4) / 0.039 (1.0) / 0.028 (0.7) / 0.019 (0.5)
- Bottom flange hole diameter: 0.200 (5.10)

**Cross-sectional View Dimensions:**

- Top flange thickness: 0.189 (4.8) / 0.165 (4.2)
- Top flange hole diameter: 0.130 (3.3) / 0.114 (2.9)
- Thread length: 0.128 (3.25) MIN.
- Bottom flange thickness: 0.114 (2.9) / 0.098 (2.5)
- Bottom flange hole diameter: 0.027 (0.67) / 0.022 (0.57)

**Legend:**

- ①: Threaded section
- ②: Unthreaded section
- ③: Flange section

TO-263 / D<sup>2</sup>PAK

## QRT10A06 \ QRT10A06F \ QRT10A06D

### Part No\_packing code\_Version

QRT10A06\_T0\_00001

QRT10A06\_T0\_10001

QRT10A06F\_T0\_00001

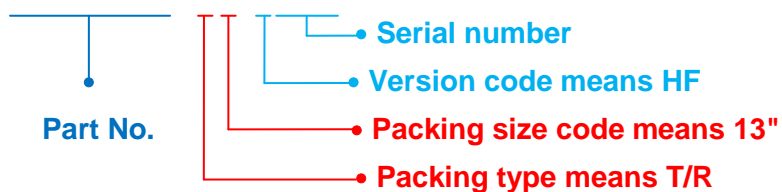
QRT10A06F\_T0\_10001

QRT10A06D\_R2\_00001

QRT10A06D\_R2\_10001

### For example :

**RB500V-40\_R2\_00001**



Packing Code <b>XX</b>				Version Code <b>XXXXXX</b>		
Packing type	1 <sup>st</sup> Code	Packing size code	2 <sup>nd</sup> Code	HF or RoHS	1 <sup>st</sup> Code	2 <sup>nd</sup> ~5 <sup>th</sup> Code
Tape and Ammunition Box (T/B)	<b>A</b>	N/A	<b>0</b>	<b>HF</b>	<b>0</b>	serial number
Tape and Reel (T/R)	<b>R</b>	7"	<b>1</b>	<b>RoHS</b>	<b>1</b>	serial number
Bulk Packing (B/P)	<b>B</b>	13"	<b>2</b>			
Tube Packing (T/P)	<b>T</b>	26mm	<b>X</b>			
Tape and Reel (Right Oriented) (TRR)	<b>S</b>	52mm	<b>Y</b>			
Tape and Reel (Left Oriented) (TRL)	<b>L</b>	PANASERT T/B CATHODE UP (PBCU)	<b>U</b>			
FORMING	<b>F</b>	PANASERT T/B CATHODE DOWN (PBCD)	<b>D</b>			



## **QRT10A06 \ QRT10A06F \ QRT10A06D**

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