



# QR3006RT

## PLANAR STRUCTURED SUPERFAST RECOVERY RECTIFIERS

**VOLTAGE** 600 Volt **CURRENT** 30 Ampere

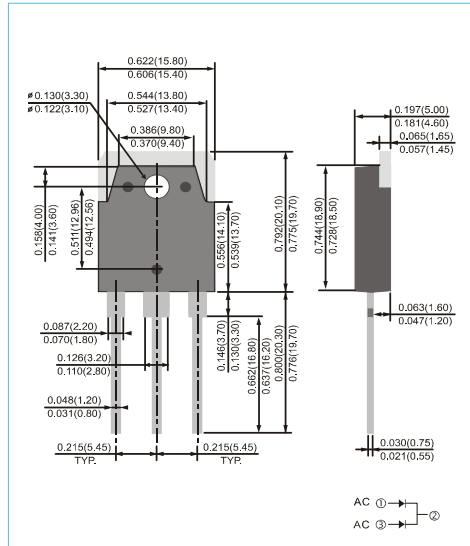
**TO-3PL** Unit : inch(mm)

### FEATURES

- Planar structure with EPI wafer
- Ultrafast recovery time, low  $V_F$  and soft recovery
- For PFC (DCM/CCM) operation
- Low leakage current
- Plastic package has Underwriters Laboratory Flammability Classification 94V-O Flame Retardant Epoxy Molding Compound
- Exceeds environmental standards of MIL-S-19500/228
- Lead free in compliance with EU RoHS 2011/65/EU directive

### MECHANICAL DATA

- Case: TO-3PL package
- Terminals: Lead solderable per MIL-STD-750, Method 2026
- Weight: 0.182 ounces, 5.174 grams



### MAXIMUM RATINGS( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Maximum recurrent peak reverse voltage	$V_{RRM}$	600	V
Maximum rms voltage	$V_{RMS}$	420	V
Maximum dc blocking voltage	$V_R$	600	V
Maximum average forward rectified current per diode per device	$I_{F(AV)}$	15 30	A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	200	A
Typical thermal resistance (Note 1)	$R_{\theta JC}$	2	$^{\circ}\text{C}/\text{W}$
Operating junction temperature range	$T_J$	-55 to + 150	$^{\circ}\text{C}$
Storage temperature range	$T_{STG}$	-55 to + 150	$^{\circ}\text{C}$

**NOTE :**

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



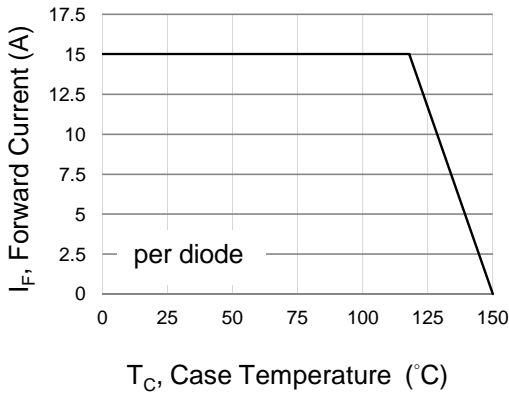
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### ELECTRICAL CHARACTERISTICS(T<sub>A</sub>=25°C unless otherwise noted)

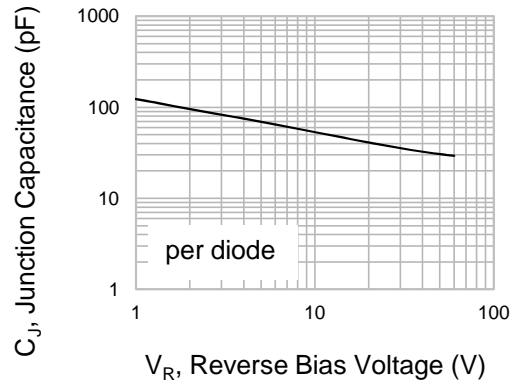
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Breakdown voltage	V <sub>BR</sub>	I <sub>R</sub> =100μA	600	-	-	V
Instantaneous forward voltage	V <sub>F</sub>	I <sub>F</sub> =1A	-	0.86	-	V
		I <sub>F</sub> =5A	-	1.13	-	
		I <sub>F</sub> =15A	-	1.37	1.65	
		T <sub>J</sub> =25°C				
		I <sub>F</sub> =1A	-	0.62	-	V
		I <sub>F</sub> =5A	-	0.86	-	
		I <sub>F</sub> =15A	-	1.13	1.35	
		T <sub>J</sub> =125°C				
Reverse leakage current	I <sub>R</sub>	V <sub>R</sub> =600V	-	-	3	μA
		T <sub>J</sub> =25°C	-	-	100	
		T <sub>J</sub> =125°C	-	-		
Reverse recovery time	T <sub>RR</sub>	I <sub>F</sub> =0.5A	-	-	45	ns
		I <sub>R</sub> =1A	-	-		
		I <sub>RR</sub> =0.25A	-	-		
		T <sub>J</sub> =25°C				
		I <sub>F</sub> =1A	-	-	35	ns
		V <sub>R</sub> =30V	-	-		
		di/dt=100A/μs	-	-		
		T <sub>J</sub> =25°C				
Peak recovery current	I <sub>RRM</sub>	I <sub>F</sub> =15A	-	3.5	-	A
		V <sub>R</sub> =400V	-			
		di/dt=200A/μs	-			
		T <sub>J</sub> =25°C				
Reverse recovery charge	Q <sub>RR</sub>	I <sub>F</sub> =15A	-	85	-	nC
		V <sub>R</sub> =400V	-			
		di/dt=200A/μs	-			
		T <sub>J</sub> =25°C				



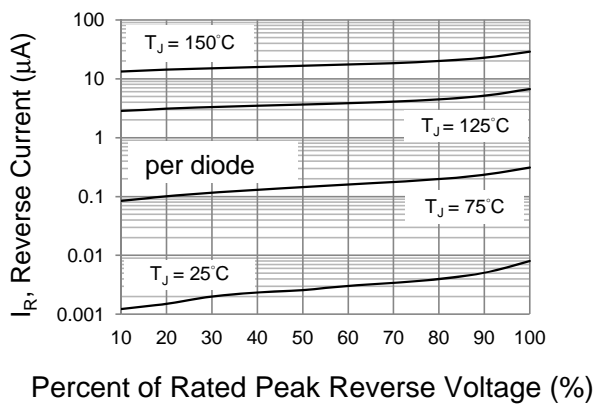
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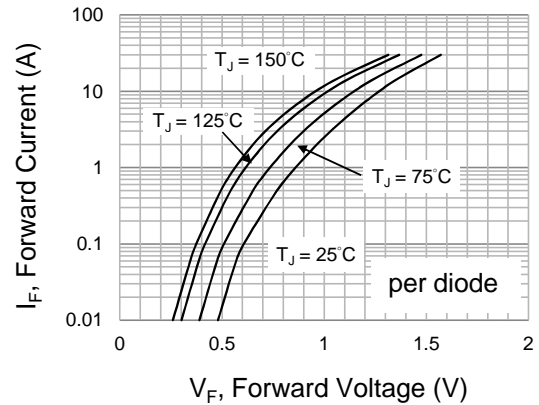
**Fig.1 Forward Current Derating Curve**



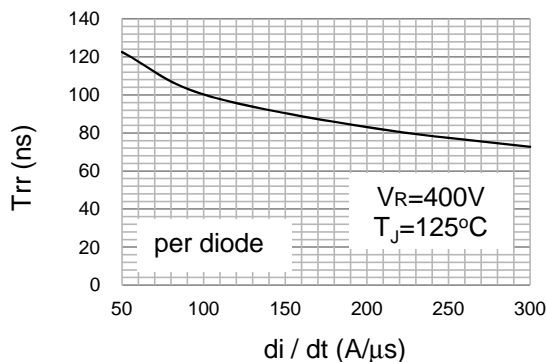
**Fig.1 Typical Junction Capacitance**



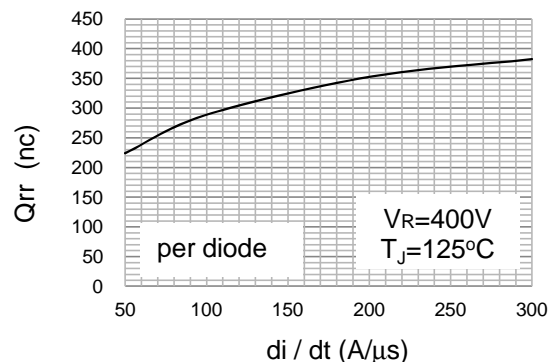
**Fig.2 Typical Reverse Characteristics**



**Fig.3 Typical Forward Characteristics**



**Fig.4 Typical Reverse recovery time versus di/dt**



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



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