



# QRT2003DC SERIES

## SUPERFAST RECOVERY RECTIFIERS

**VOLTAGE** 300~400 Volts **CURRENT** 20 Amperes

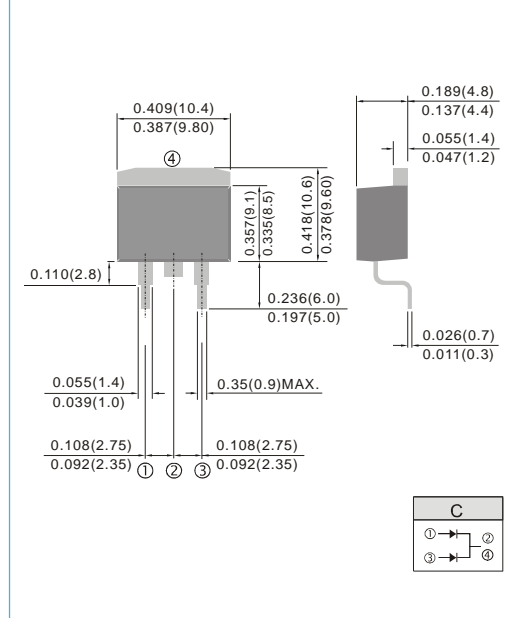
**TO-263 / D<sup>2</sup>PAK** Unit : inch(mm)

### FEATURES

- Plastic package has Underwriters Laboratory Flammability Classification 94V-O Flame Retardant Epoxy Molding Compound
- Exceeds environmental standards of MIL-S-19500/228
- Super fast recovery times, high voltage
- Lead free in comply with EU RoHS 2002/95/EC directives

### MECHANICAL DATA

- Case: TO-263/D<sup>2</sup>PAK Molded plastic package
- Terminals: Lead solderable per MIL-STD-750, Method 2026
- Polarity: As marked
- Standard packaging: Any
- Weight: 0.0514 ounces, 1.46 grams.



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

PARAMETER	SYMBOL	QRT2003DC	QRT2003ADC	QRT2004DC	UNIT
Maximum recurrent peak reverse voltage	V <sub>RRM</sub>	300	350	400	V
Maximum rms voltage	V <sub>RMS</sub>	210	245	280	V
Maximum dc blocking voltage	V <sub>R</sub>	300	350	400	V
Maximum average forward rectified current	I <sub>F(AV)</sub>		20 10		A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>		120		A
Typical thermal resistance (Note 1)	R <sub>θJC</sub>		3.5		°C/W
Operating junction temperature range	T <sub>J</sub>		-55 to + 150		°C
Storage temperature range	T <sub>STG</sub>		-55 to + 150		°C

Note : 1. Mounted on infinite heatsink.



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

QRT2003DC							
PARAMETER	SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT
Breakdown voltage per diode	V <sub>BR</sub>	I <sub>R</sub> =0.5mA	T <sub>J</sub> =25°C	300	-	-	V
Instantaneous forward voltage per diode	V <sub>F</sub>	I <sub>F</sub> =1A	T <sub>J</sub> =25°C	-	0.88	-	V
		I <sub>F</sub> =5A		-	1.14	-	
		I <sub>F</sub> =10A		-	1.3	1.35	
		I <sub>F</sub> =1A	T <sub>J</sub> =125°C	-	0.66	-	V
I <sub>F</sub> =5A	-	0.93		-			
I <sub>F</sub> =10A	-	1.09		-			
Reverse current per diode	I <sub>R</sub>	V <sub>R</sub> =240V	T <sub>J</sub> =25°C	-	0.04	-	μA
		V <sub>R</sub> =300V	T <sub>J</sub> =25°C T <sub>J</sub> =125°C	- -	- 5.4	1 -	μA
Reverse recovery time per diode	T <sub>RR</sub>	I <sub>F</sub> =0.5A I <sub>R</sub> =1A I <sub>RR</sub> =0.25A		-	24	30	ns
		I <sub>F</sub> =1A V <sub>R</sub> =30V di/dt=100A/μs		-	17	20	ns
		I <sub>F</sub> =10A V <sub>R</sub> =300V di/dt=200A/μs		-	20	-	ns
Peak recovery current per diode	I <sub>RRM</sub>	I <sub>F</sub> =10A V <sub>R</sub> =300V di/dt=200A/μs		-	3.5	-	A
Reverse recovery charge per diode	Q <sub>RR</sub>	I <sub>F</sub> =10A V <sub>R</sub> =300V di/dt=200A/μs		-	36	-	nC

QRT2003ADC							
PARAMETER	SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT
Breakdown voltage per diode	V <sub>BR</sub>	I <sub>R</sub> =0.5mA	T <sub>J</sub> =25°C	350	-	-	V
Instantaneous forward voltage per diode	V <sub>F</sub>	I <sub>F</sub> =1A	T <sub>J</sub> =25°C	-	0.88	-	V
		I <sub>F</sub> =5A		-	1.14	-	
		I <sub>F</sub> =10A		-	1.3	1.35	
		I <sub>F</sub> =1A	T <sub>J</sub> =125°C	-	0.66	-	V
I <sub>F</sub> =5A	-	0.93		-			
I <sub>F</sub> =10A	-	1.09		-			
Reverse current per diode	I <sub>R</sub>	V <sub>R</sub> =280V	T <sub>J</sub> =25°C	-	0.04	-	μA
		V <sub>R</sub> =350V	T <sub>J</sub> =25°C T <sub>J</sub> =125°C	- -	- 6.5	1 -	μA
Reverse recovery time per diode	T <sub>RR</sub>	I <sub>F</sub> =0.5A I <sub>R</sub> =1A I <sub>RR</sub> =0.25A		-	24	30	ns
		I <sub>F</sub> =1A V <sub>R</sub> =30V di/dt=100A/μs		-	17	20	ns
		I <sub>F</sub> =10A V <sub>R</sub> =350V di/dt=200A/μs		-	20	-	ns
Peak recovery current per diode	I <sub>RRM</sub>	I <sub>F</sub> =10A V <sub>R</sub> =350V di/dt=200A/μs		-	3.5	-	A
Reverse recovery charge per diode	Q <sub>RR</sub>	I <sub>F</sub> =10A V <sub>R</sub> =350V di/dt=200A/μs		-	36	-	nC

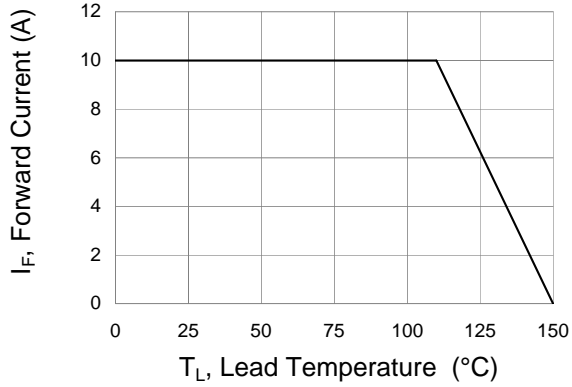


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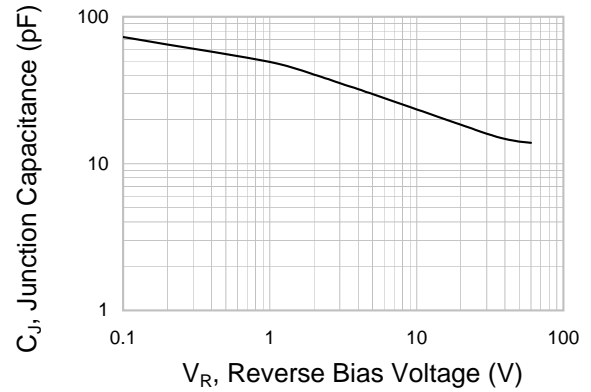
QRT2004DC						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Breakdown voltage per diode	V <sub>BR</sub>	I <sub>R</sub> =0.5mA    T <sub>J</sub> =25°C	400	-	-	V
Instantaneous forward voltage per diode	V <sub>F</sub>	I <sub>F</sub> =1A    T <sub>J</sub> =25°C	-	0.88	-	V
		I <sub>F</sub> =5A    T <sub>J</sub> =25°C	-	1.14	-	
		I <sub>F</sub> =10A    T <sub>J</sub> =25°C	-	1.3	1.35	
		I <sub>F</sub> =1A    T <sub>J</sub> =125°C	-	0.66	-	V
I <sub>F</sub> =5A    T <sub>J</sub> =125°C	-	0.93	-			
I <sub>F</sub> =10A    T <sub>J</sub> =125°C	-	1.09	-			
Reverse current per diode	I <sub>R</sub>	V <sub>R</sub> =320V    T <sub>J</sub> =25°C	-	0.05	-	μA
		V <sub>R</sub> =400V    T <sub>J</sub> =25°C T <sub>J</sub> =125°C	- -	- 9.2	1 -	μA
Reverse recovery time per diode	T <sub>RR</sub>	I <sub>F</sub> =0.5A I <sub>R</sub> =1A I <sub>RR</sub> =0.25A	-	24	30	ns
		I <sub>F</sub> =1A V <sub>R</sub> =30V di/dt=100A/μs	-	17	20	ns
		I <sub>F</sub> =10A V <sub>R</sub> =390V di/dt=200A/μs	-	20	-	ns
Peak recovery current per diode	I <sub>RRM</sub>	I <sub>F</sub> =10A V <sub>R</sub> =390V di/dt=200A/μs	-	3.5	-	A
Reverse recovery charge per diode	Q <sub>RR</sub>	I <sub>F</sub> =10A V <sub>R</sub> =390V di/dt=200A/μs	-	36	-	nC



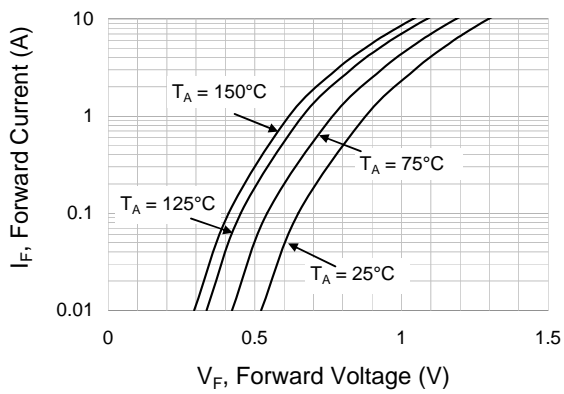
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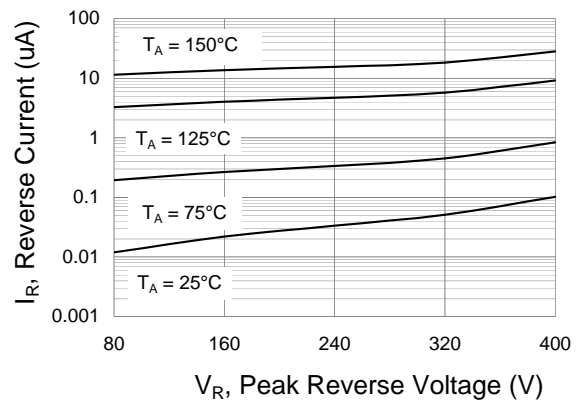
**Fig.1 Forward Current Derating Curve**



**Fig.2 Typical Junction Capacitance**



**Fig.3 Typical Forward Characteristics**

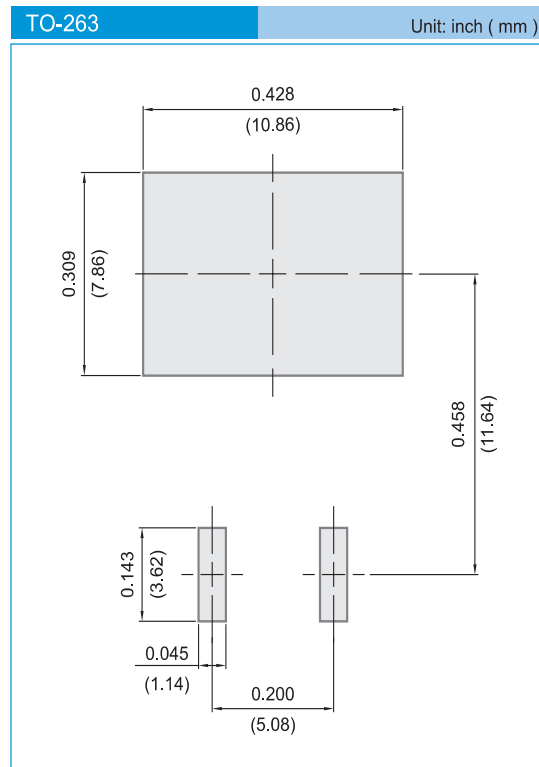


**Fig.4 Typical Reverse Characteristics**



## QRT2003DC SERIES

### MOUNTING PAD LAYOUT



### ORDER INFORMATION

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



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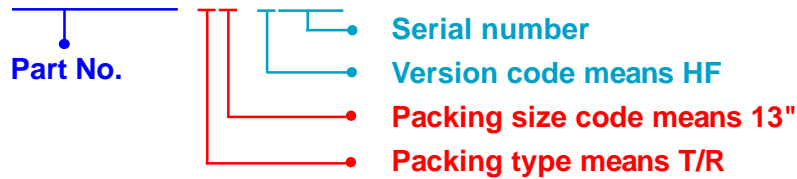
### Part No\_packing code\_Version

QRT2003DC\_R2\_00001

QRT2003DC\_R2\_10001

For example :

**RB500V-40\_R2\_00001**



Packing Code <b>XX</b>				Version Code <b>XXXXX</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>			



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