



## QR1506/QR1506F/QR1506D

### PLANAR STRUCTURED SUPERFAST RECOVERY RECTIFIERS

**VOLTAGE** 600 Volt **CURRENT** 15 Ampere

#### 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
- 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: Lead 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

QR1506 TO-220AC



QR1506F ITO-220AC



QR1506D TO-263



#### 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	$I_{F(AV)}$	15	A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load	$I_{FSM}$	200	A
Typical thermal resistance TO-220AC(Note 1) ITO-220AC(Note 1) TO-263 (Note 1)	$R_{\theta JC}$	2 5.5 2	°C/W
Operating junction temperature range	$T_J$	-55 to + 175	°C
Storage temperature range	$T_{STG}$	-55 to + 175	°C

#### NOTE :

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



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### ELECTRICAL CHARACTERISTICS( $T_A=25^\circ C$ unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Breakdown voltage	$V_{BR}$	$I_R=100\mu A$	600	-	-	V
Instantaneous forward voltage	$V_F$	$I_F=1A$ $I_F=5A$ $I_F=15A$ $T_J=25^\circ C$	-	0.86 1.13 1.37	- - 1.65	V
		$I_F=1A$ $I_F=5A$ $I_F=15A$ $T_J=125^\circ C$	-	0.62 0.86 1.13	- - 1.35	V
		$V_R=600V$ $T_J=25^\circ C$ $T_J=125^\circ C$	- -	- -	3 100	$\mu A$
	TRR	$I_F=0.5A$ $I_R=1A$ $I_{RR}=0.25A$ $T_J=25^\circ C$	-	-	45	ns
		$I_F=1A$ $V_R=30V$ $di/dt=100A/\mu s$ $T_J=25^\circ C$	-	-	35	ns
		$I_F=15A$ $V_R=400V$ $di/dt=200A/\mu s$ $T_J=25^\circ C$	-	50	-	ns
Peak recovery current	$I_{RRM}$	$I_F=15A$ $V_R=400V$ $di/dt=200A/\mu s$ $T_J=25^\circ C$	-	3.5	-	A
Reverse recovery charge	$Q_{RR}$	$I_F=15A$ $V_R=400V$ $di/dt=200A/\mu s$ $T_J=25^\circ C$	-	85	-	nC
Softness factor = $t_b/t_a$	$S$	$I_F=15A$ $V_R=400V$ $di/dt=200A/\mu s$ $T_J=25^\circ C$	-	0.93	-	-
Softness factor = $t_b/t_a$	$S$	$I_F=15A$ $V_R=400V$ $di/dt=200A/\mu s$ $T_J=125^\circ C$	-	0.42	-	-



## QR1506/QR1506F/QR1506D

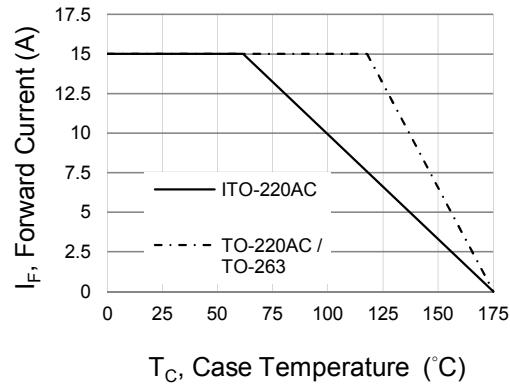


Fig.1 Forward Current Derating Curve

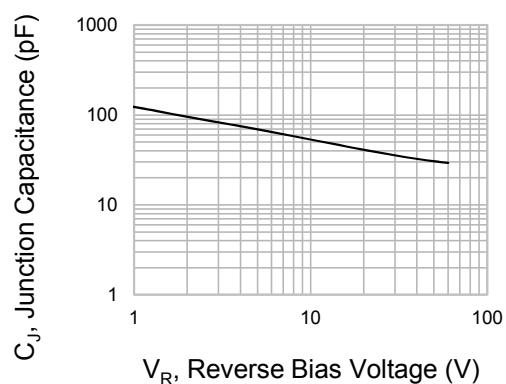


Fig.2 Typical Junction Capacitance

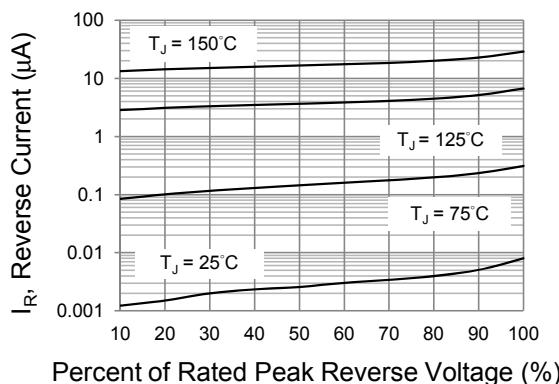


Fig.3 Typical Reverse Characteristics

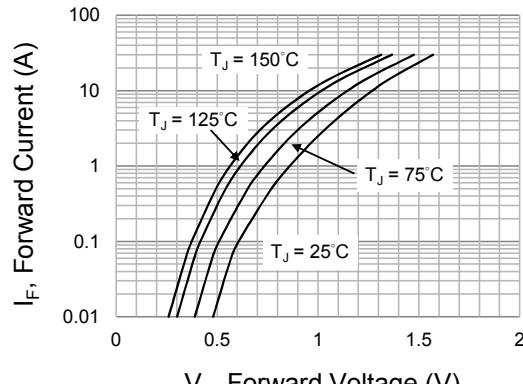


Fig.4 Typical Forward Characteristics

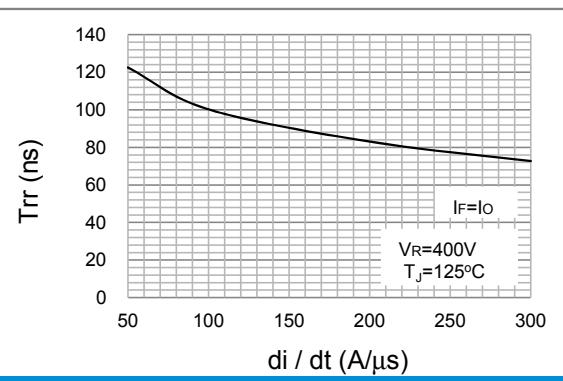


Fig.5 Typical Reverse recovery time versus  $di/dt$

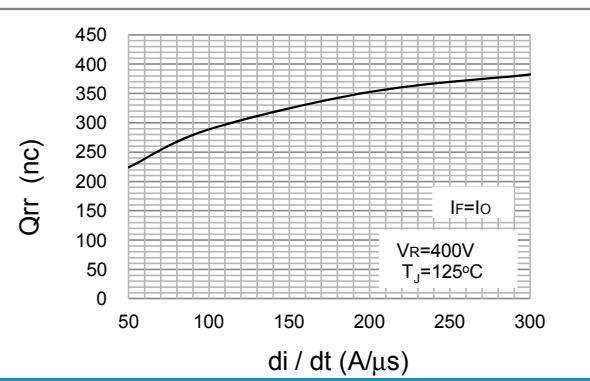
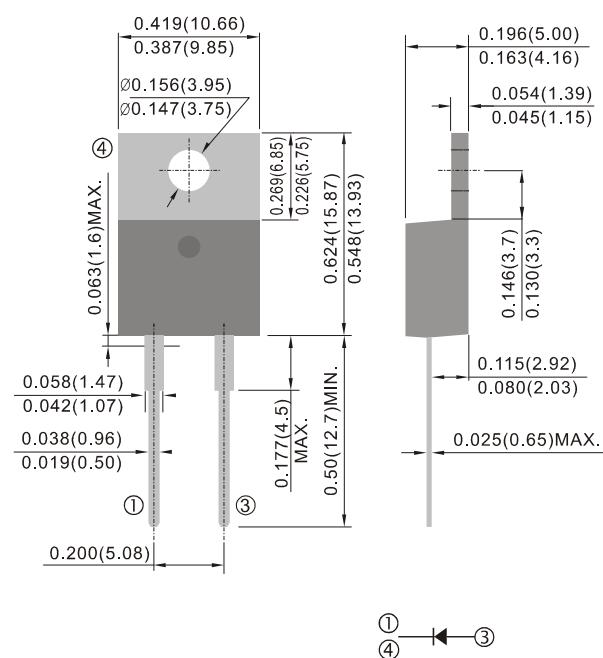


Fig.6 Typical Reverse recovery charges versus  $di/dt$

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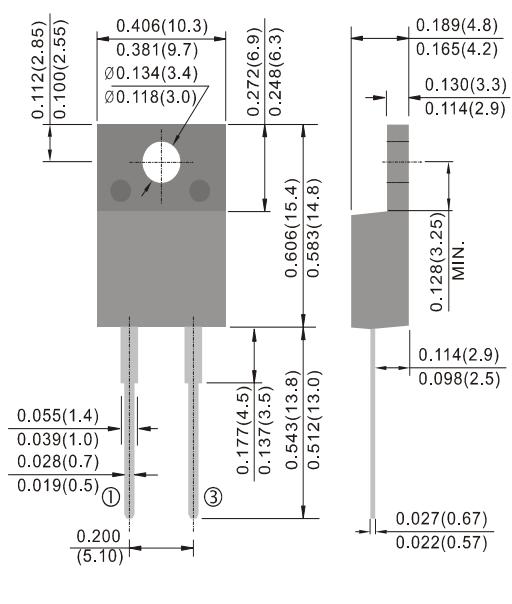
## TO-220AC

Unit : inch(mm)



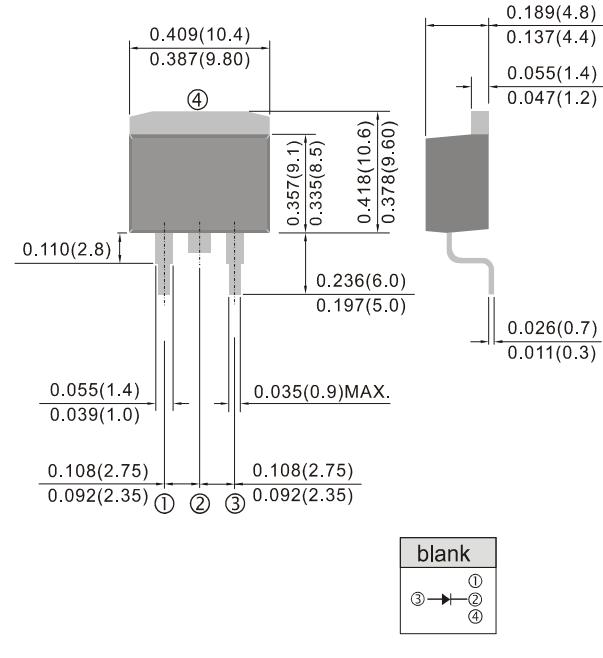
## ITO-220AC

Unit : inch(mm)



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

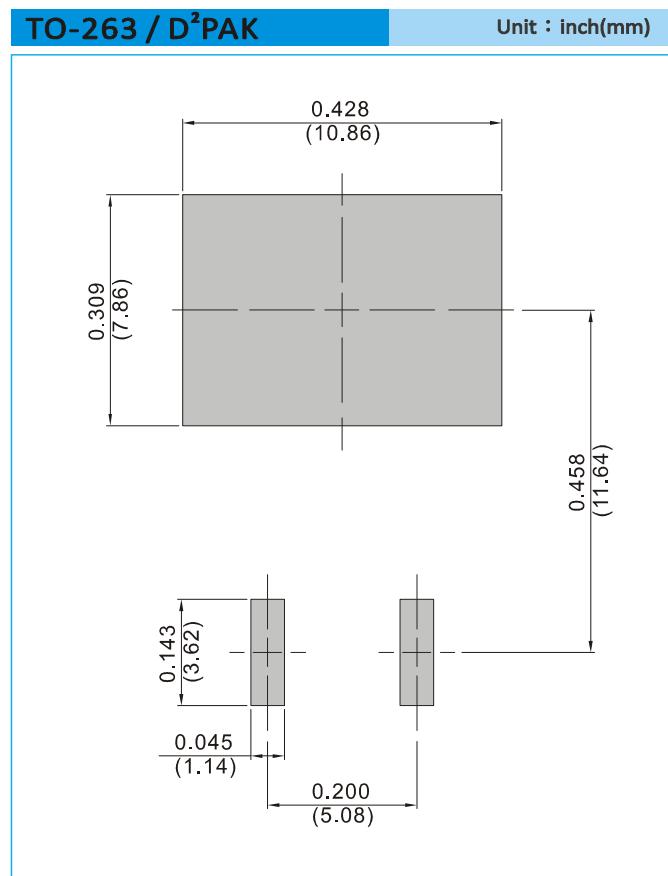
Unit : inch(mm)





## QR1506/QR1506F/QR1506D

### MOUNTING PAD LAYOUT



### ORDER INFORMATION

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



## QR1506/QR1506F/QR1506D

### Part No\_packing code\_Version

QR1506\_T0\_00001

QR1506F\_T0\_00001

QR1506D\_R2\_00001

For example :

**RB500V-40\_R2\_00001**



Packing Code XX				Version Code XXXXX		
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)	A	N/A	0	HF	0	serial number
Tape and Reel (T/R)	R	7"	1	RoHS	1	serial number
Bulk Packing (B/P)	B	13"	2			
Tube Packing (T/P)	T	26mm	X			
Tape and Reel (Right Oriented) (TRR)	S	52mm	Y			
Tape and Reel (Left Oriented) (TRL)	L	PANASERT T/B CATHODE UP (PBCU)	U			
FORMING	F	PANASERT T/B CATHODE DOWN (PBCD)	D			



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