

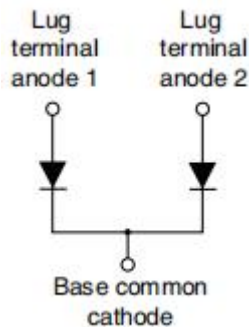
503CNQ600 ULTRAFAST RECTIFIER



Features

- 175 °C T_J operation
- Center tap module
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Base plate: Nickel plated; Terminals: Nickel plated
- The terminal hardware is supplied with the module.
- The mounting hardware is not supplied. Recommended is the use of ¼-20 or M6 screws with spring washer.
- This is a Pb – Free Device
- All SMC parts are traceable to the wafer lot
- Additional testing can be offered upon request

Circuit Diagram



Applications

- High current switching power supply
- Plating power supply
- Free-Wheeling diodes
- Reverse battery protection
- Converters
- UPS System
- Welding

Maximum Ratings(limiting values, at 25 °C unless otherwise specified)

Characteristics	Symbol	Condition	Max.	Units
Peak Repetitive Reverse Voltage	V _{RRM}	-	600	V
Working Peak Reverse Voltage	V _{RWM}			
DC Blocking Voltage	V _R			
Average Rectified Forward Current	I _{F(AV)}	50% duty cycle @T _C =117°C, rectangular wave form	250(Per leg)	A
			500(Per device)	
Peak One Cycle Non-Repetitive Surge Current	I _{FSM}	8.3 ms, half Sine pulse	2000	A

Electrical Characteristics:

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V_{F1}	@ 250A, Pulse, $T_J = 25\text{ }^\circ\text{C}$	1.11	2.0	V
Reverse Current *	I_{R1}	@ $V_R = \text{rated } V_R$ $T_J = 25\text{ }^\circ\text{C}$	0.4	100	μA
Reverse Recovery Time	t_{rr}	IF=500mA, IR=1A, and Irm=250mA	150	200	ns

* Pulse width < 300 μs , duty cycle < 2%

Thermal-Mechanical Specifications:

Characteristics	Symbol	Condition	Specification	Units	
Junction Temperature	T_J	-	-55 to +175	$^\circ\text{C}$	
Storage Temperature	T_{stg}	-	-55 to +175	$^\circ\text{C}$	
Typical Thermal Resistance Junction to Case(per leg)	$R_{\theta JC}$	DC operation	0.40	$^\circ\text{C/W}$	
Typical Thermal Resistance, Case to Heat Sink	$R_{\theta CS}$	Mounting surface, smooth and greased	0.20	$^\circ\text{C/W}$	
Approximate Weight	wt	-	91	g	
Mounting Torque	T_M	-	Mounting Torque	3.84(min) 4.80(max)	Nm
			Terminal Torque	2.35(min) 3.43(max)	
Case Style	PRM4 Non-Isolated				

Ratings and Characteristics Curves

Figure 1
Typical Forward Characteristics

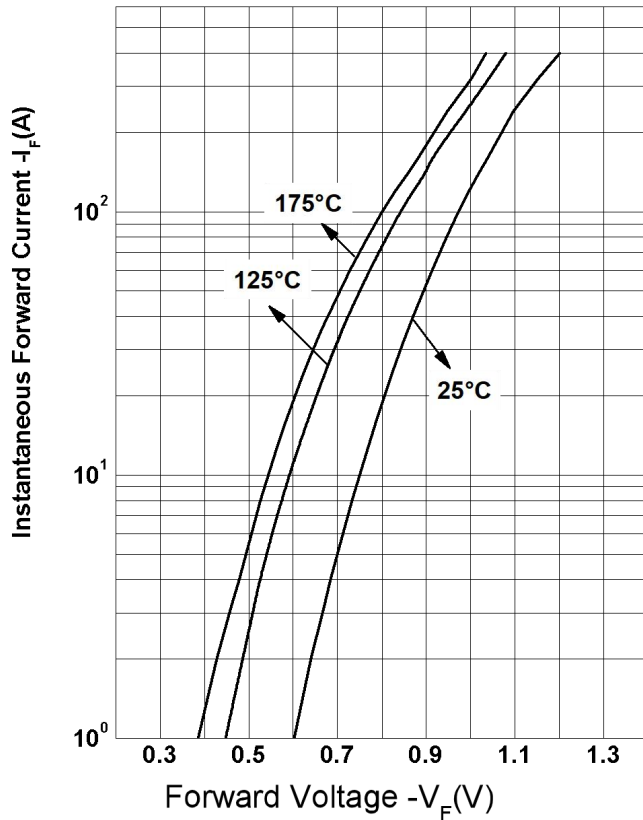


Figure 2
Typical Reverse Characteristics

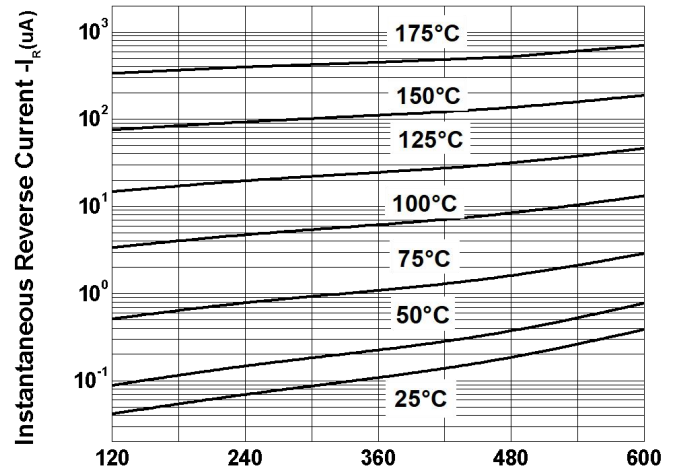
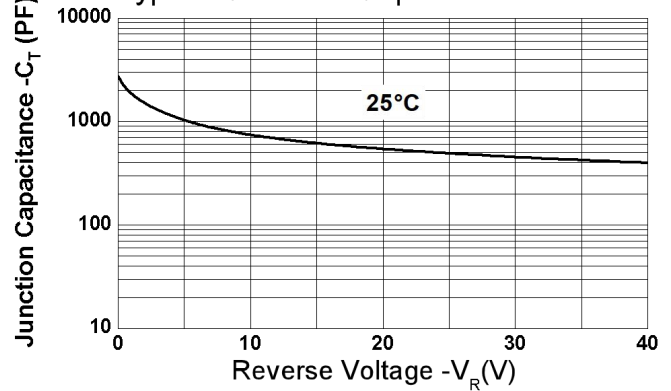


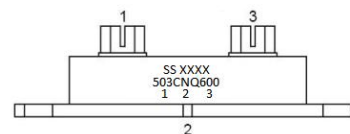
Figure 3
Reverse Voltage $-V_R$ (V)
Typical Junction Capacitance



Ordering Information

Device	Package	Shipping
503CNQ600	PRM4 (Pb-Free)	9pcs/ box

Marking Diagram

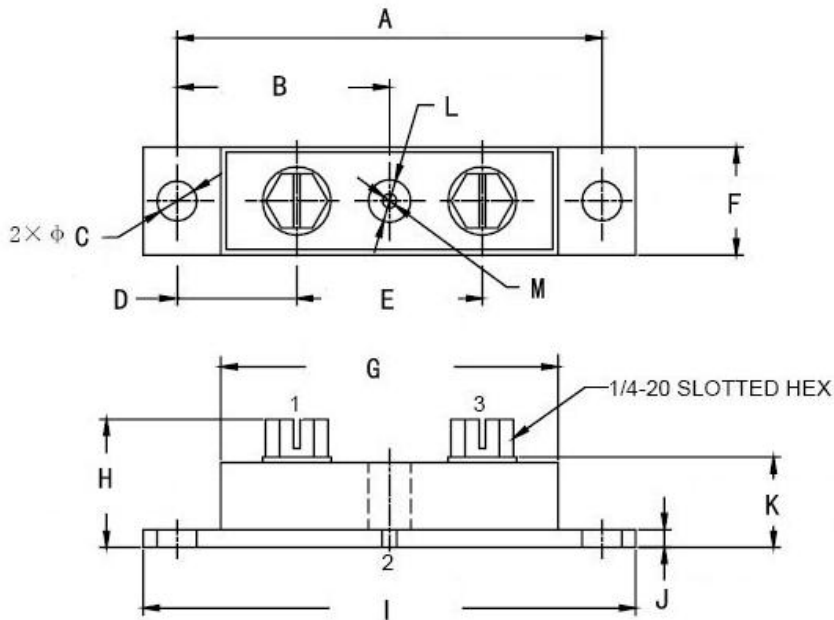


Where XXXX is YYWW

1st row SS YYWW
2nd row 503CNQ600
SS = SS
YY = Year
WW = Week

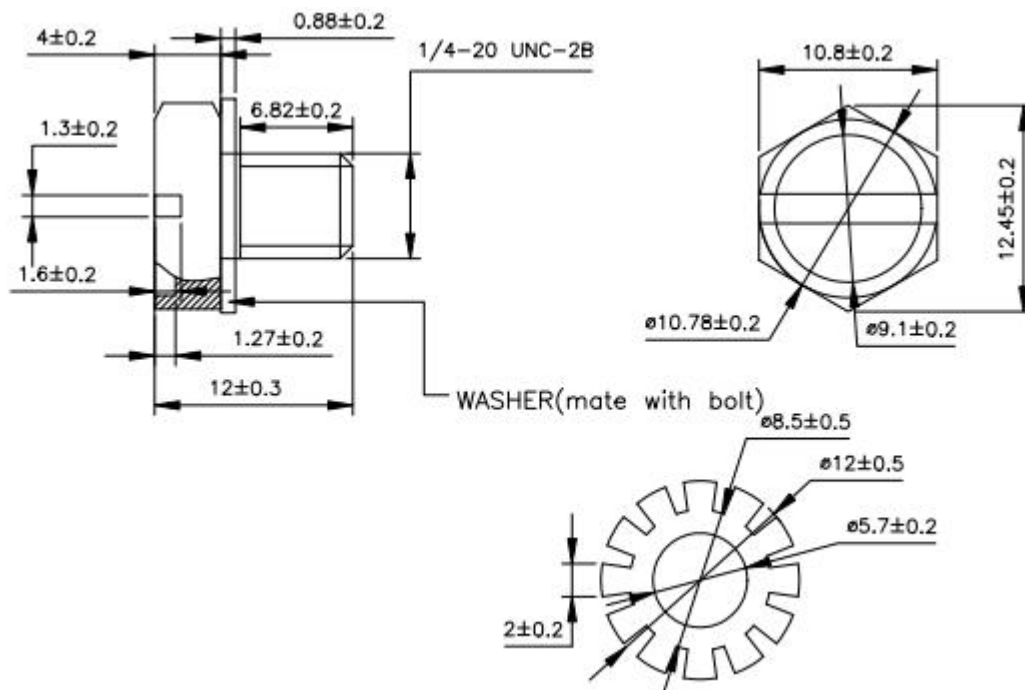
Cautions: Molding resin
Epoxy resin UL:94V-0

Mechanical Dimensions PRM4 Non-Isolated(Millimeters/Inches)



SYMBOL	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	78.74	81.28	3.100	3.200
B	37.47	42.55	1.475	1.675
C	6.89	7.69	0.271	0.303
D	19.51	24.59	0.768	0.968
E	33.02	38.10	1.300	1.500
F	17.78	20.32	0.700	0.800
G	60.96	64.77	2.400	2.550
H	17.26	23.25	0.680	0.915
I	90.17	92.71	3.550	3.650
J	3.02	3.68	0.119	0.145
K	14.30	16.15	0.563	0.636
L	9.27	10.79	0.365	0.425
M	4.37	5.28	0.172	0.208

1/4-20 screws (Millimeters)



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