

CM Inverter Maximum Output Current

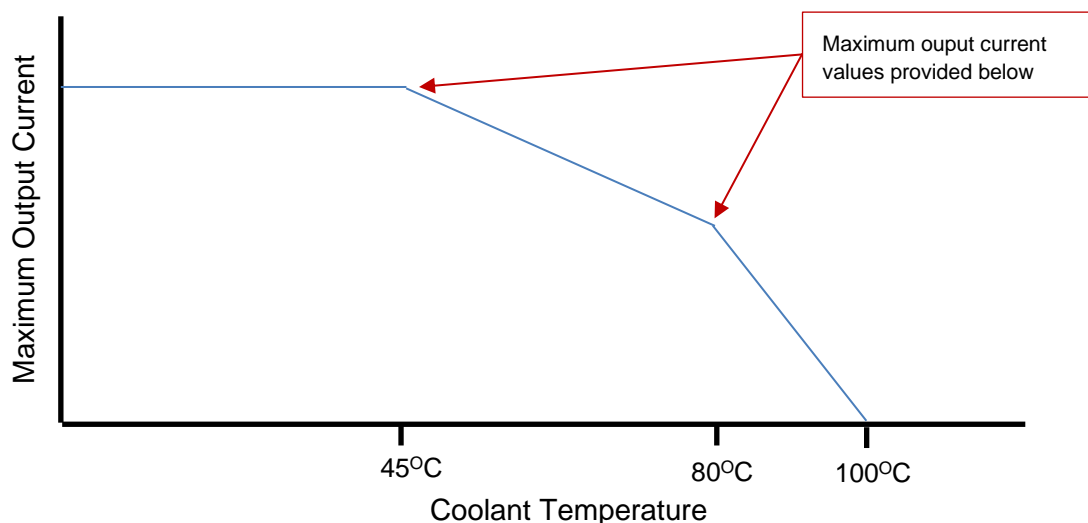
Revision 0.1

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1. Introduction

Inverter output current is automatically limited in software to match capability with operating conditions. Starting with firmware version 6505 output current is limited based on PWM switching frequency and DC bus voltage. Then in firmware version 6511 and newer, output current is also limited based on coolant temperature estimate. Where coolant temperature is estimated from module temperatures and operating output current. When coolant temperature is 45°C or below there is no reduction in output current due to coolant temperature. There are two separate linear derates when coolant is above 45°C . The first linear derate is when coolant temperature is between 45°C and 80°C . The second linear derate is when coolant is between 80°C and 100°C . Current limits at 45°C and 80°C are provided below. At 100°C the current limit is zero amps. Therefore with 62.5°C coolant the maximum output current will be 50% between the 45°C and 80°C limits. With 90°C coolant the maximum output current will be 50% between 80°C limit and zero.



The current limits provided in this manual only covers limits due to coolant temperature, switching frequency, and DC bus voltage. For low speed operation, output frequency below 10Hz, see Low Speed Operation manual.

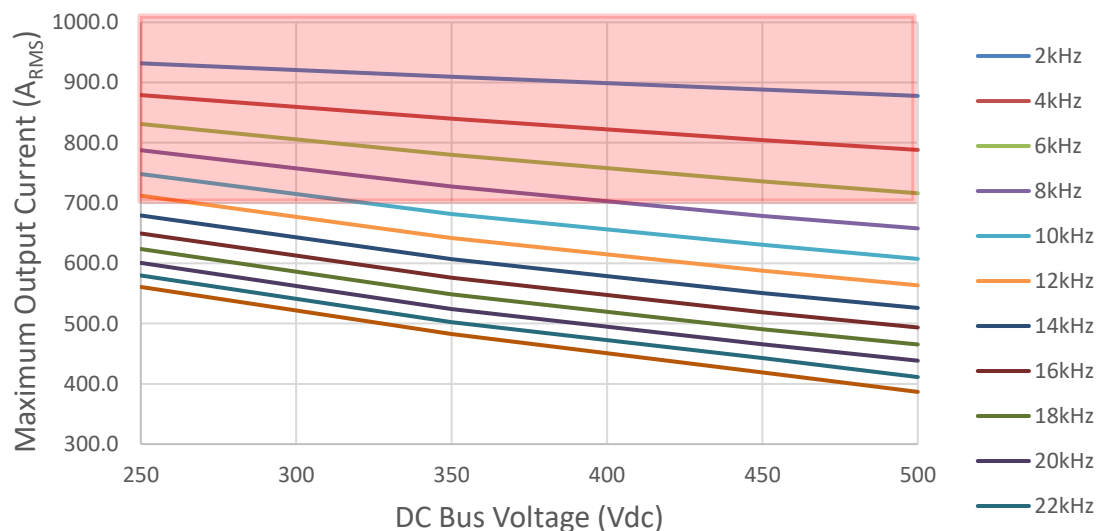
Inverter	Hard Limit on Output Current (A_{RMS})
CM200DX	700
CM200DZ	450
CM350DZ	900

All inverters have a maximum hard limit that will not be exceeded regardless of temperature and switching frequency. Starting with firmware version 651E the hard limit is applied after all other limits. Therefore in low frequency operation the ratio of current will apply to the maximum output current before the hard limit is applied. Firmware prior to 651E will apply the hard limit before all other limits. Therefore ratio of current for low frequency operation will apply to the hard limit for the lower frequency switching frequencies. Both versions will prevent the final maximum current from exceeding the hard limit. However this difference in when the hard limit is applied significantly effects the maximum output current in low frequency operation. Firmware version 651E and newer allows significantly higher output current in low frequency operation, when using low switching frequencies where the limit before the hard limit is higher than the hard limit. See Low Speed Operation manual for more information.

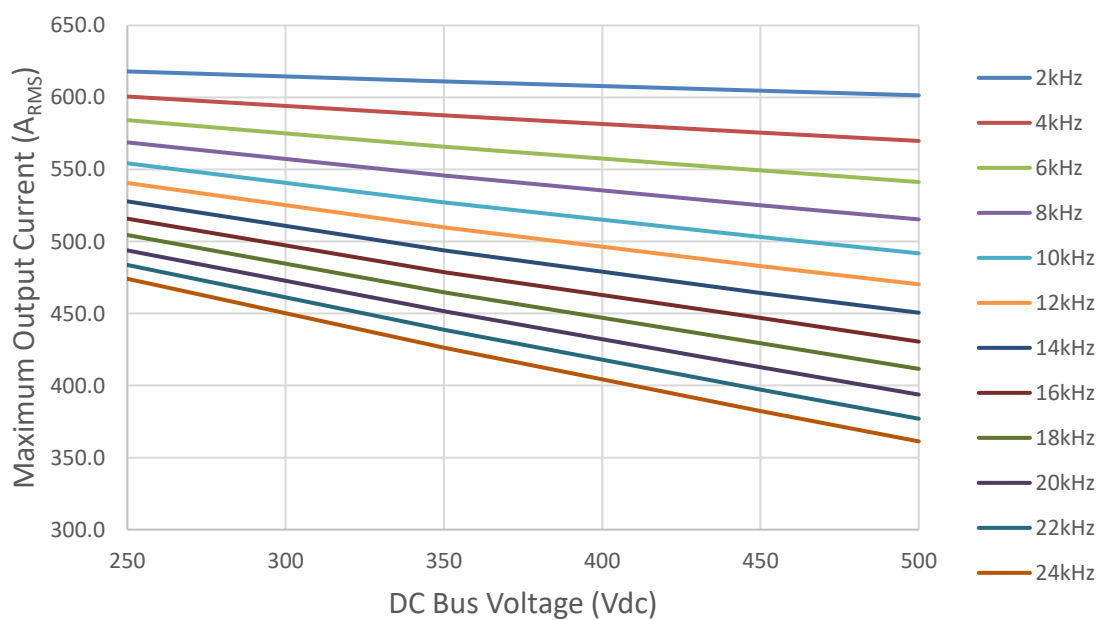
2. CM200DX Maximum Current Output

2.1 Coolant Temperature Less Than or Equal to 45°C

CM200DX Motoring with 45°C Coolant and Colder
Hard Limit at 700A_{RMS}

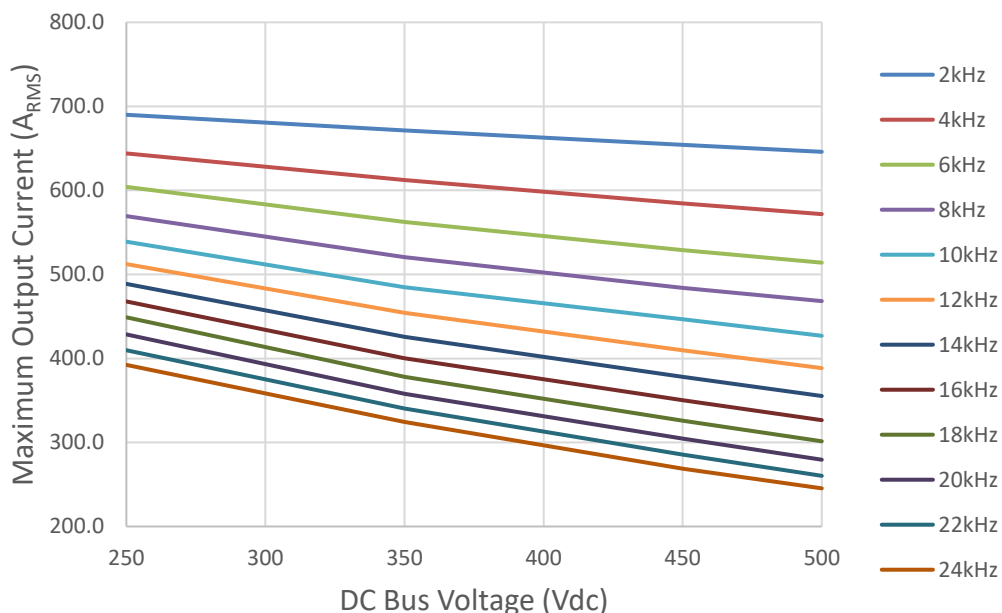


CM200DX Generating with 45°C Coolant and Colder

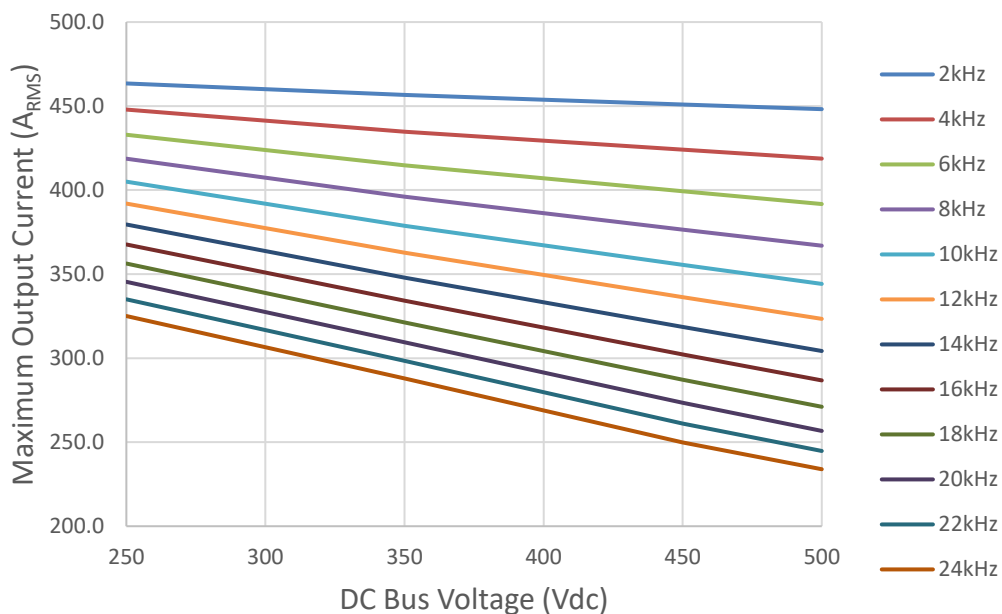


2.2 Coolant Temperature at 80°C

CM200DX Motoring with 80°C Coolant

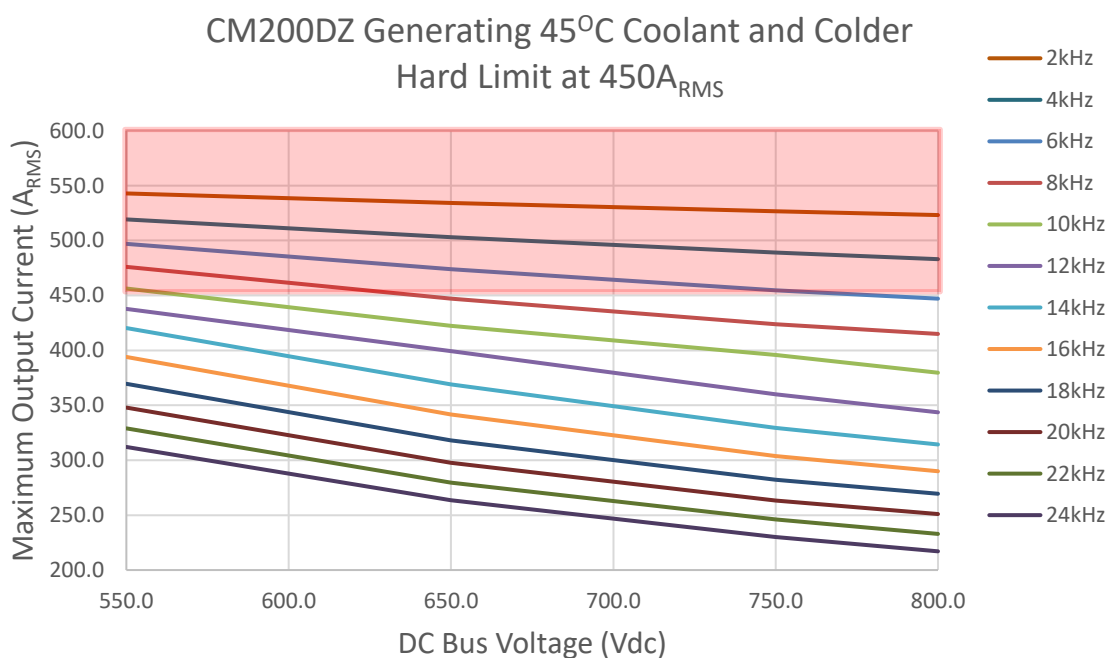
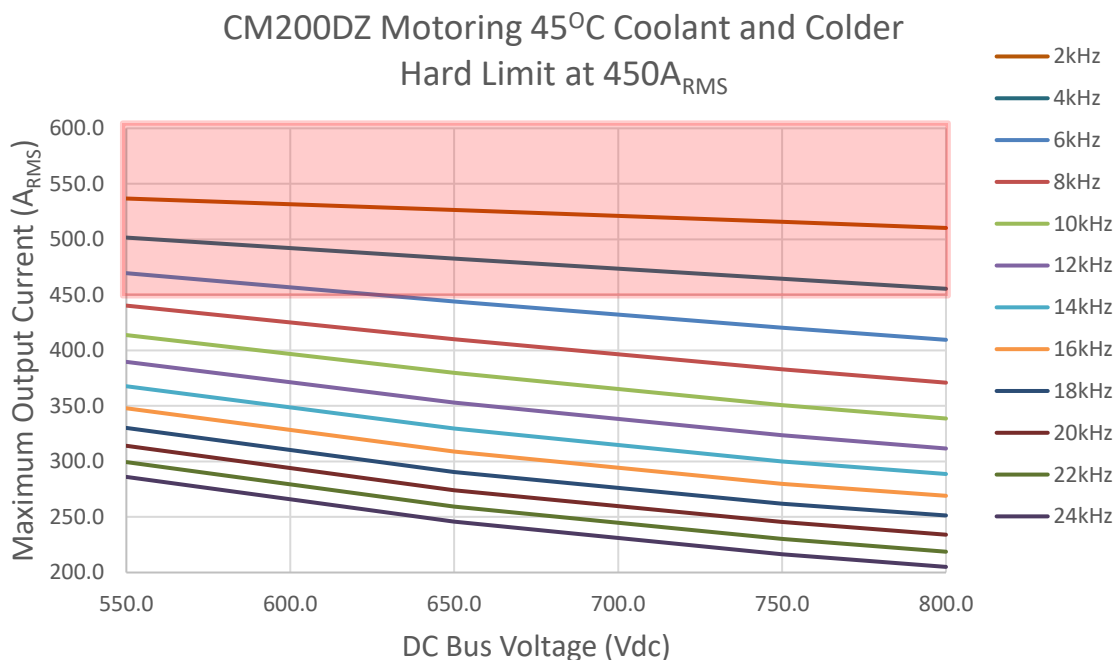


CM200DX Generating with 80°C Coolant

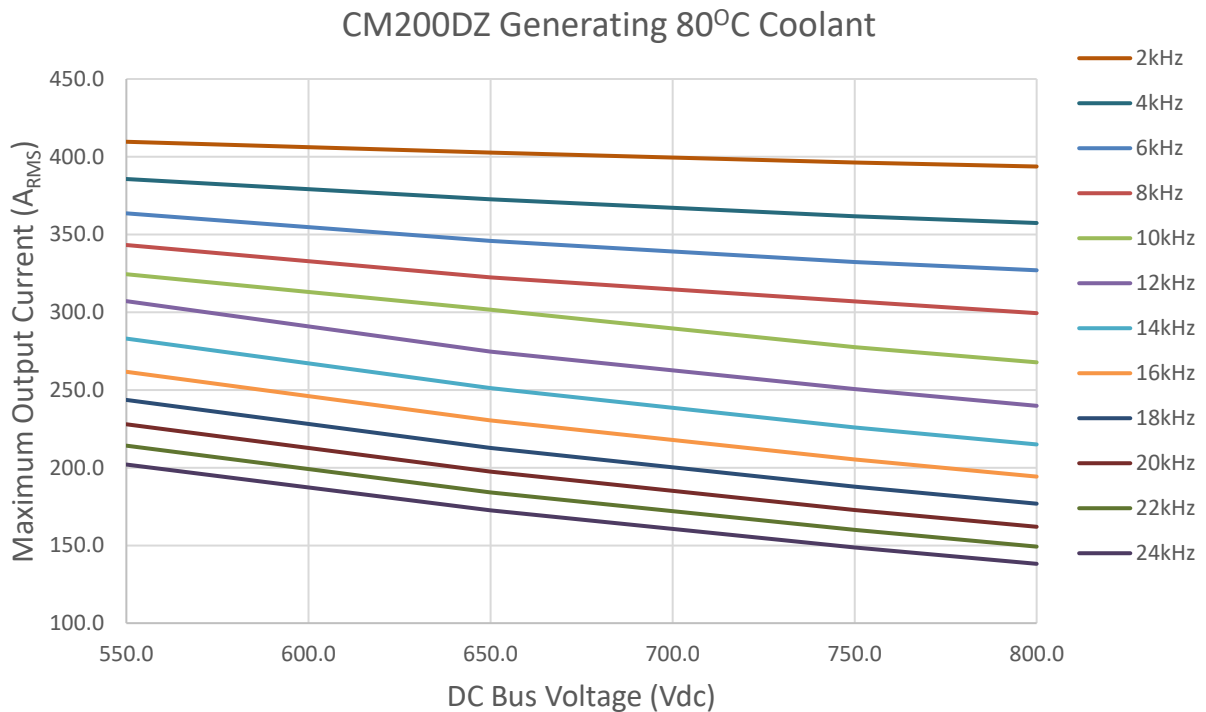
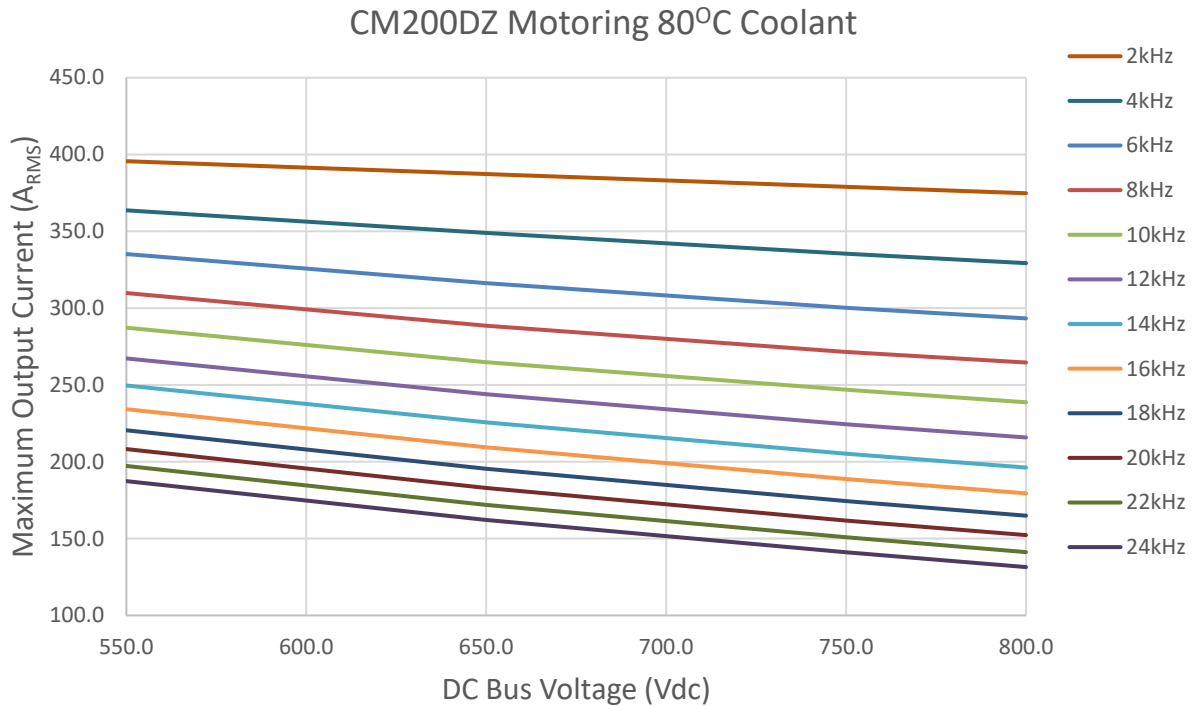


3. CM200DZ Maximum Output Current

3.1 Coolant Temperature Less Than or Equal to 45°C



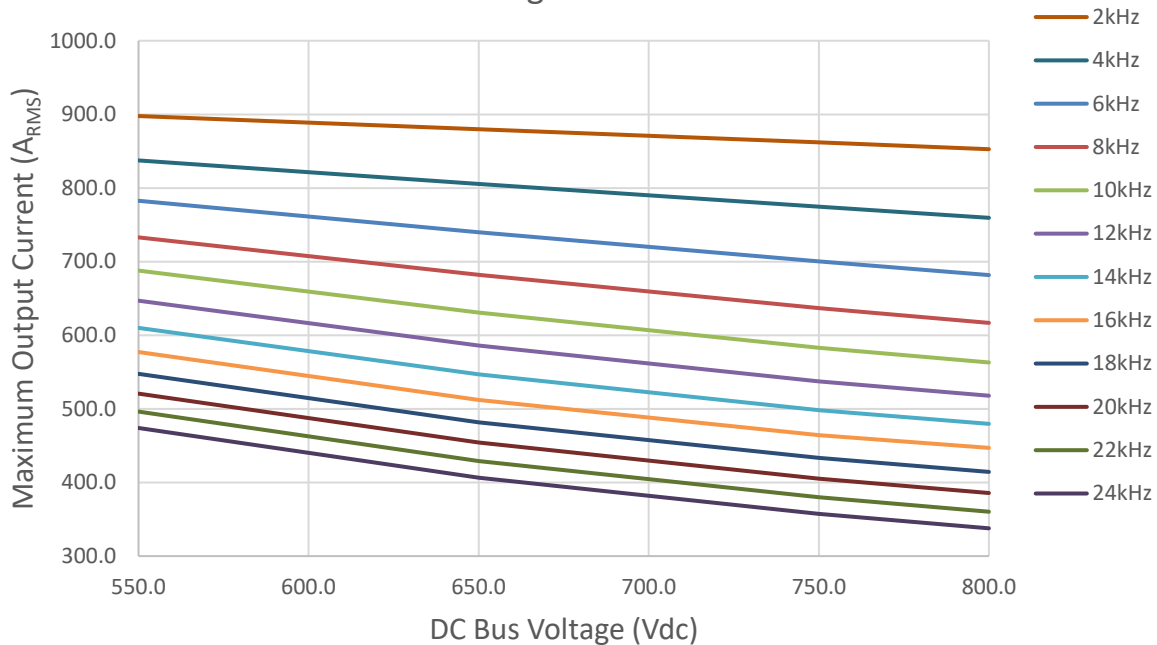
3.2 Coolant Temperature at 80°C



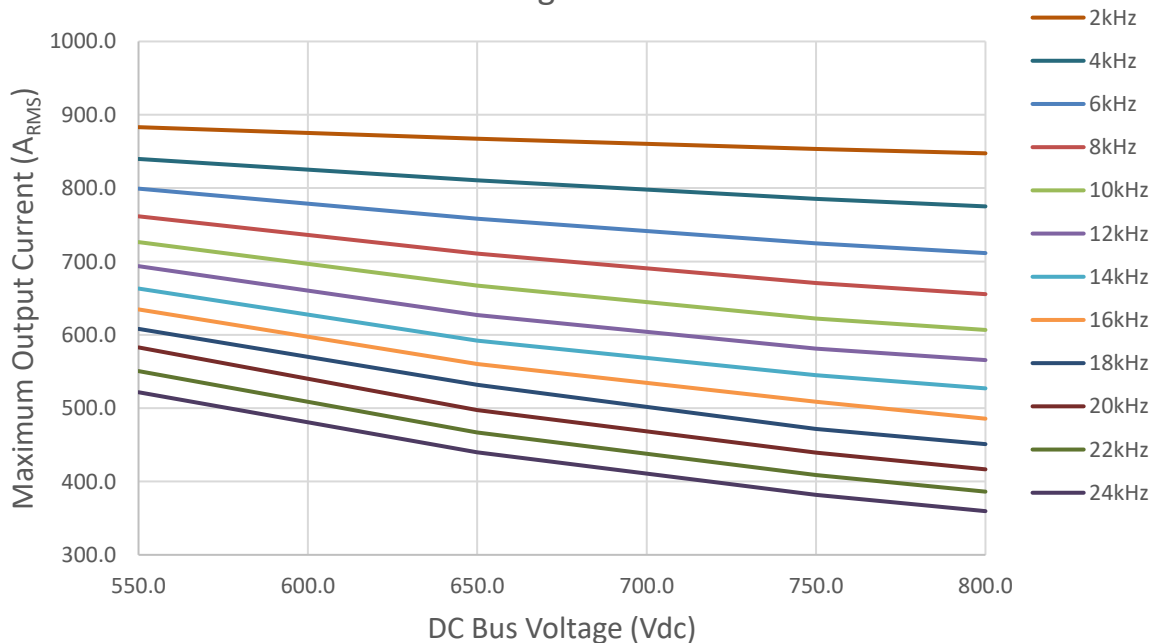
4. CM350DZ Maximum Output Current

4.1 Coolant Temperature Less Than or Equal to 45°C

CM350DZ Motoring 45°C Coolant and Colder

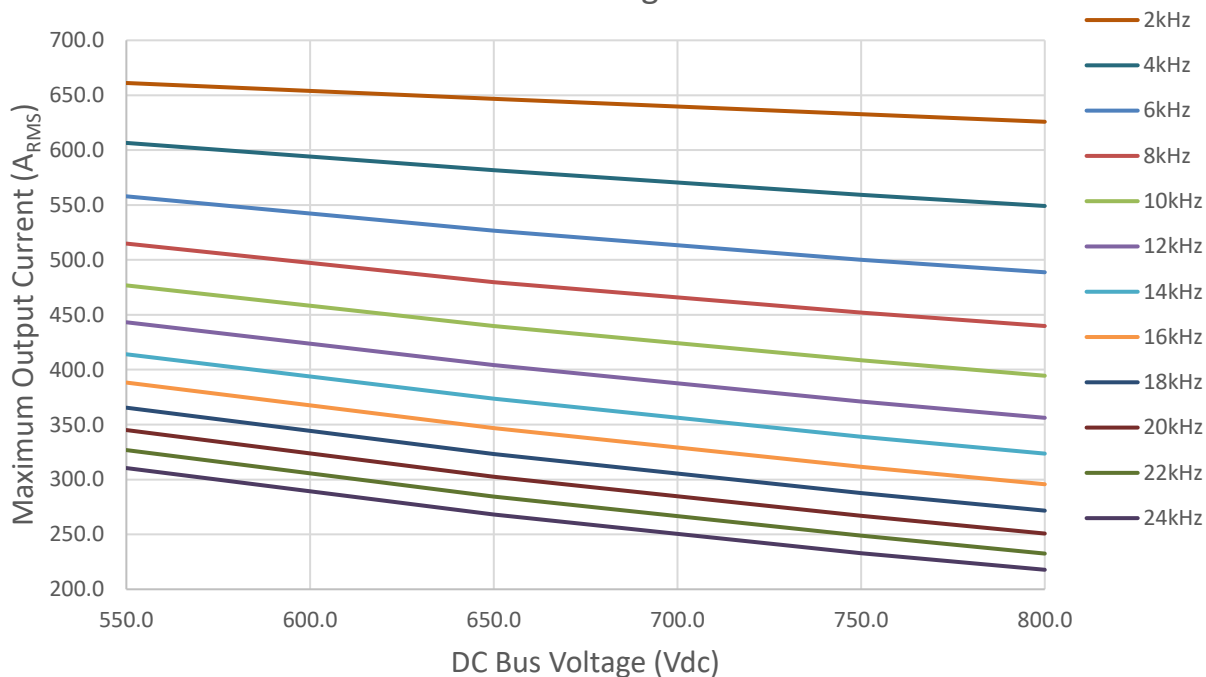


CM350DZ Generating 45°C Coolant and Colder

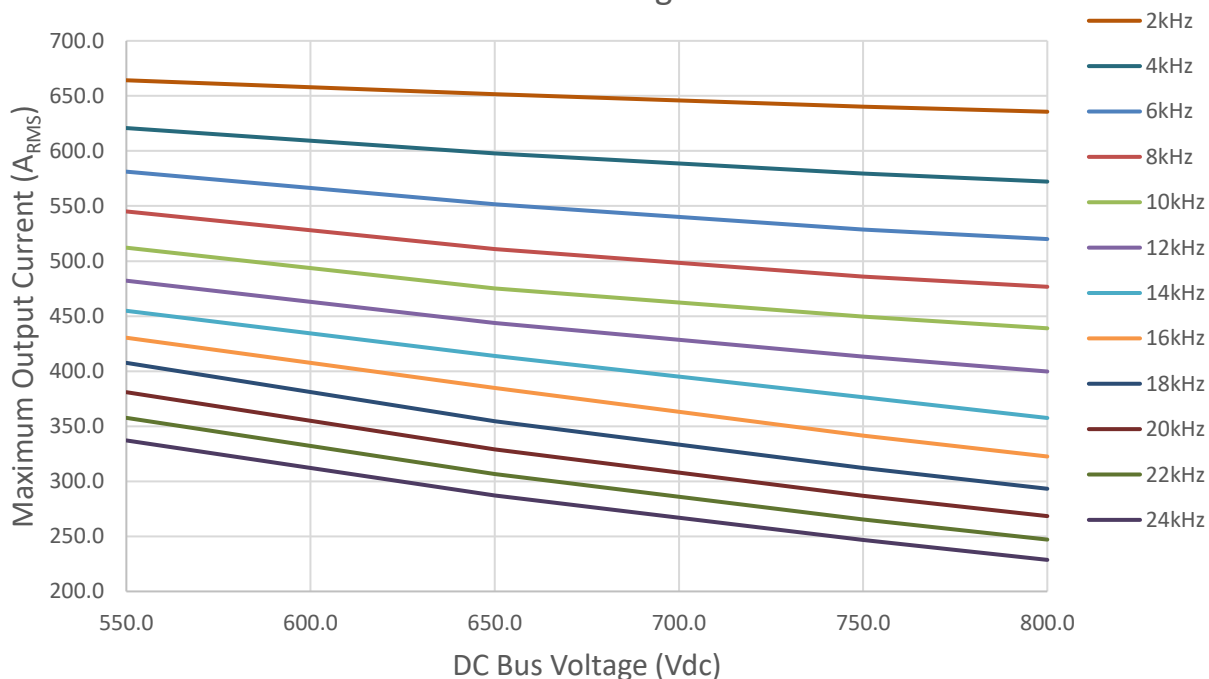


4.2 Coolant Temperature at 80°C

CM350DZ Motoring 80°C Coolant



CM350DZ Generating 80°C Coolant



Revision History

Version	Description of Versions/ Changes	Updated by	Date
0.1	Initial draft.	Andrew Louie	3/16/22