High Voltage ChiP DCM reference design for MIL-STD

MIL STD REF DESIGN HV DCM

APPLICATION: Altium Designer
FILENAME: MIL HVDCM.SchDoc
DRAWN: Vamshi Domudala DATE: 5/21/2020

SIZE FSCM NO. DWG NO. REV
1 67131

REV DESCRIPTION DATE APPROVED

APPLICATIONS ENGINEERING 5/21/2020

APPLICATION NOTES
- Redraw based on the existing schematic;
- TO DO:

DESIGN NOTES:
- Physically place the Y-CAPS close to the output leads
- Physically place the Y-CAPS close to the input leads

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REVISION NOTES:
- 0805 5600pF 450V C6

HV DCM MIL REF DESIGN
Applicable for 160 - 420Vin DCMs
Note:

[a] Alternate configuration: No minimum load is required to meet CE102 with CIN_1 = 100µF.

[b] A minimum load of 10% is required to meet the conducted emissions CE102 for input voltages in the range of 270 – 420VDC with the combination of RIN_D+ CIN (C21-25).
Typical Conducted Emissions Test Data (-OUT Connected to GND)

CE101 – RED Lead, 0% Load, Cin = 100uF/450V, Cout = 200uF/63V

CE101 – RED Lead, 10% Load, Cin = 100uF/450V, Cout = 200uF/63V
CE101 – RED Lead, 50% Load, Cin = 100uF/450V, Cout = 200uF/63V

CE101 – RED Lead, 90% Load, Cin = 100uF/450V, Cout = 200uF/63V
CE101 – BLACK Lead, 0% Load, Cin = 100uF/450V, Cout = 200uF/63V

CE101 – BLACK Lead, 10% Load, Cin = 100uF/450V, Cout = 200uF/63V
CE101 – BLACK Lead, 50% Load, Cin = 100uF/450V, Cout = 200uF/63V

CE101 – BLACK Lead, 90% Load, Cin = 100uF/450V, Cout = 200uF/63V
CE101 – BLACK Lead, 90% Load, Cin = 100uF/450V, Cout = 2000uF/63V

CE101 – BLACK Lead, 100% Load, Cin = 100uF/450V, Cout = 2000uF/63V
CE102 – RED Lead, 0% Load, Cin = 100uF/450V, Cout = 200uF/63V

Date: 2.DECEMBER 2016 10:10:11

CE102 – RED Lead, 10% Load, Cin = 100uF/450V, Cout = 200uF/63V

Date: 2.DECEMBER 2016 10:08:59
CE102 – RED Lead, 100% Load, Cin = 100uF/450V, Cout = 200uF/63V

CE102 – RED Lead, 0% Load, Cin = 100uF/450V, Cout = 2000uF/63V
CE102 – RED Lead, 10% Load, Cin = 100uF/450V, Cout = 2000uF/63V

CE102 – RED Lead, 50% Load, Cin = 100uF/450V, Cout = 2000uF/63V
CE102 – RED Lead, 90% Load, Cin = 100uF/450V, Cout = 2000uF/63V

CE102 – RED Lead, 100% Load, Cin = 100uF/450V, Cout = 2000uF/63V
CE102 – BLACK Lead, 50% Load, Cin = 100uF/450V, Cout = 200uF/63V

CE102 – BLACK Lead, 90% Load, Cin = 100uF/450V, Cout = 200uF/63V
CE102 – BLACK Lead, 100% Load, Cin = 100uF/450V, Cout = 200uF/63V

CE102 – BLACK Lead, 0% Load, Cin = 100uF/450V, Cout = 2000uF/63V
CE102 – BLACK Lead, 10% Load, Cin = 100uF/450V, Cout = 2000uF/63V

CE102 – BLACK Lead, 50% Load, Cin = 100uF/450V, Cout = 2000uF/63V
<table>
<thead>
<tr>
<th>REFERENCE DESIGNATOR</th>
<th>DESCRIPTION</th>
<th>MFG PART NUMBER</th>
<th>MANUFACTURER</th>
<th>QUANTITY</th>
<th>VALUE NOM</th>
<th>RATING NOM</th>
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<tbody>
<tr>
<td>C1, C2, C3, C4, C5</td>
<td>Capacitor</td>
<td>C5750X6S2W225K250KA</td>
<td>TDK</td>
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<td>C7, C8, C9, C10</td>
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<td>Chip DCM Minimum/Maximum output capacitor</td>
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<td>R5, R6</td>
<td>Resistor</td>
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<td>2.2Ω</td>
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<td>Vicor</td>
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