

Index

1. Circuit Topologies	3
2. Numbering System	5
3. HVIGBT Datasheet Ratings	6
3.1 Maximum Ratings	6
3.2 Electrical Characteristics	11
3.3 Thermal Characteristics	20
3.4 Mechanical characteristics	23
3.5 Performance Curves	24
3.6 Safe Operating Areas	31
3.7 Reverse Bias Safe Operating Area (RBSOA)	31
3.8 Short Circuit Safe Operating Area (SCSOA)	33
3.9 Reverse Recovery Safe Operating Area (RRSOA)	35
4. FWDi Forward Surge Current vs. Pulse Width	38
4.1 Expected diode surge current for different pulse lengths	38
5. Baseplate Flatness	41
5.1 Baseplate flatness	41
6. How to use the HVIGBT	42
6.1 Voltage Rating	42
6.2 Collector Current Rating	42
6.3 Thermal Design	43
6.4 Estimating Power Losses	43
6.5 VVVF Inverter Loss Calculation	44
6.6 Thermal Calculation	46
6.7 Using Melcosim for Thermal Design	47
7. Gate drive considerations	49
7.1 General Description	49
7.2 Gate Resistance R_G	51
7.3 C_{GE} Effect	53
7.4 Gate Drive with Active Clamping	53
7.5 Switching Speed	54
7.6 Dead Time	55
8. Snubber Circuit	56
8.1 Snubber Circuit	56
8.2 Bus Bar	57
9. Mounting Recommendations	58
9.1 General Description	58
9.2 Application of Thermal Grease	59
9.3 Mounting	60
9.4 Handling Precautions & Storage	61
10. Series Connection	62
10.1 Static voltage balance	62
10.2 Dynamic voltage balance	63
11. Parallel Connection	64
11.1 Static current balance	64
11.2 Dynamic current balance	65