



# CIPOS™ IPM Simulation Tool

3-phase Inverter

H-Bridge Inverter

## IPM 3-phase Inverter Simulator

A three-phase two-level motor drive inverter system is implemented to simulate the power loss and junction temperature of a selected IPM's power switches at a given steady-state operating condition.

- ▶ Modify Parameters in accordance to your operating conditions
- ▶ Select Partnumber(s) by clicking the checkboxes
- ▶ Select 'Get Result' at bottom of list to start simulation
- ▶ Select 'Hold result' to keep trace and compare to new simulation results

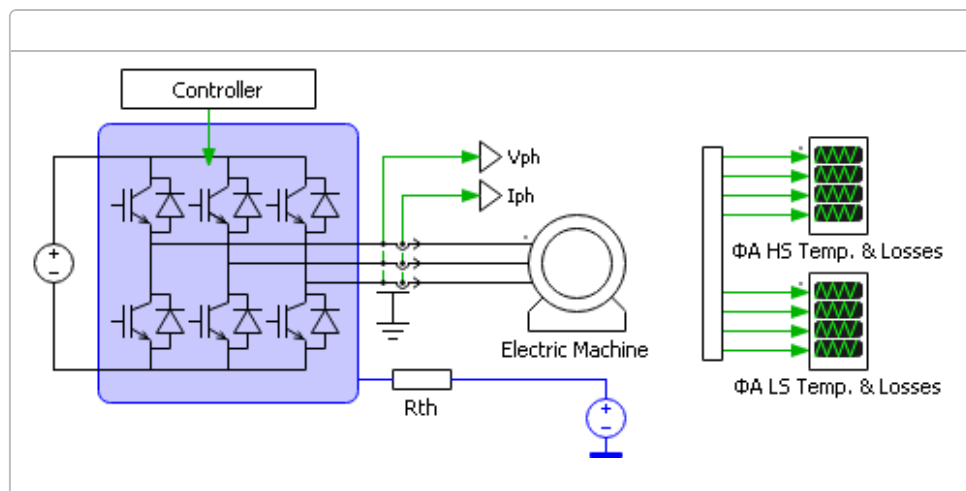
### Legal Disclaimer

The information given by Infineon in the CIPOS™ IPM Simulation Tool is the result of Infineon's characterization measurements and the methodology used by Infineon to estimate the performance of Intelligent Power Modules (IPM). Such information is given as a hint for the implementation of the relevant Infineon products only. The performance estimations shall be verified by Infineon's customers before implementation of the relevant Infineon products, as actual operating conditions and environmental factors differ from Infineon's assumptions. Therefore, Infineon is not responsible for the correctness of any calculations that are based on this performance estimation. Please note that the technical specifications of Infineon's products are conclusively stated in the applicable Infineon data sheets. Please contact your sales partner of Infineon products for further information.

**Version:** 6.0.1

**Release Date:** 16.01.2024

[Revision History](#)



System Frequency:  Hz

PWM Frequency:  kHz

Modulation Scheme:  ▼

DC Bus Voltage:  V

Voltage to motor, line to line:  Vrms

Motor Drive Phase Current RMS:  A

Power Factor:  [-1, 1]

Mounting Option:  ▼

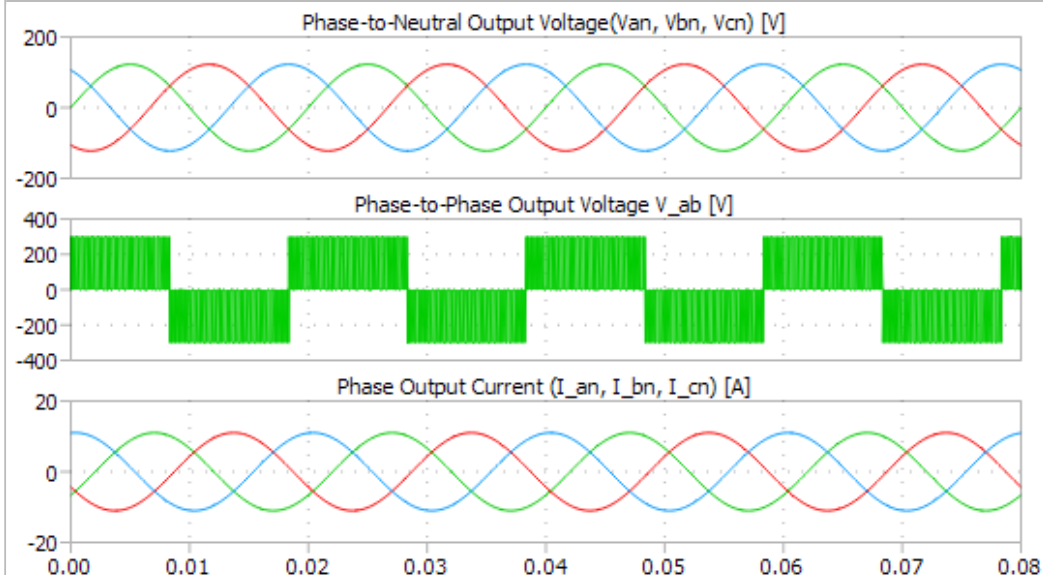
Reference Temperature:  °C

Family and Package:  ▼

Parts:

- ☐ IMM101T-015M 6Ω - Nano QFN 12x12
- ☐ IMM101T-046M 1.4Ω - Nano QFN 12x12
- ☐ IMM101T-056M 0.95Ω - Nano QFN 12x12
- ☐ IMM102T-015M 6Ω - Nano QFN 12x12
- ☐ IMM102T-046M 1.4Ω - Nano QFN 12x12

### System Probes/Inverter Output



### Inverter Losses

|              | Partnumber  | $P_{loss}$ | $\eta$  | $P_{out}$ | $T_{c,avg}$ |
|--------------|-------------|------------|---------|-----------|-------------|
| All Switches | IKCM20L60GA | 33.30 W    |         |           |             |
| All Diodes   | IKCM20L60GA | 8.71 W     |         |           |             |
| Inverter     | IKCM20L60GA | 42.01 W    | 97.41 % | 1621 W    | 85.00 °C    |

### Phase A High Side Device Losses and Junction Temperatures

|            | Partnumber  | $P_{sw,on}$ | $P_{sw,off}$ | $P_{sw}$ | $P_{cond}$ | $T_{j,avg}$ | $T_{j,max}$ |
|------------|-------------|-------------|--------------|----------|------------|-------------|-------------|
| Per Switch | IKCM20L60GA | 1.05 W      | 0.84 W       | 1.89 W   | 3.66 W     | 123.4 °C    | 128.4 °C    |
| Per Diode  | IKCM20L60GA |             | 0.31 W       | 0.31 W   | 1.15 W     | 119.0 °C    | 122.5 °C    |

- ☐ [IMM102T-056M](#) 0.95Ω - Nano QFN 12x12
- ☐ [IRSM807-045MH](#) 1.7Ω - Nano QFN 8x9
- ☐ [IRSM807-105MH](#) 0.8Ω - Nano QFN 8x9
- ☐ [IRSM808-105MH](#) 0.8Ω - Nano QFN 8x9
- ☐ [IRSM836-015MA](#) 6Ω - Nano QFN 12x12
- ☐ [IRSM836-025MA](#) 4Ω - Nano QFN 12x12
- ☐ [IRSM836-035MA](#) 2.2Ω - Nano QFN 12x12
- ☐ [IRSM836-035MB](#) 2.2Ω - Nano QFN 12x12
- ☐ [IRSM836-045MA](#) 1.7Ω - Nano QFN 12x12
- ☐ [IM241-S6xxB](#) 2A - Micro DIP/SOP 29x12
- ☐ [IM241-S6xxJ](#) 2A - Micro DIP/SOP 29x12
- ☐ [IM241-M6xxB](#) 4A - Micro DIP/SOP 29x12
- ☐ [IM241-M6xxJ](#) 4A - Micro DIP/SOP 29x12
- ☐ [IM241-L6xxB](#) 6A - Micro DIP/SOP 29x12
- ☐ [IGCM04G60GA](#) 4A - Mini DIP 36x21
- ☐ [IGCM06F60GA](#) 6A - Mini DIP 36x21
- ☐ [IM523-S6A](#) 6A - Mini DIP 36x21
- ☐ [IGCM10F60GA](#) 10A - Mini DIP 36x21
- ☐ [IKCM10H60GA](#) 10A - Mini DIP 36x21
- ☐ [IKCM10L60GA](#) 10A - Mini DIP 36x21
- ☐ [IM523-M6A](#) 10A - Mini DIP 36x21
- ☐ [IGCM15F60GA](#) 15A - Mini DIP 36x21
- ☐ [IKCM15F60GA](#) 15A - Mini DIP 36x21
- ☐ [IKCM15H60GA](#) 15A - Mini DIP 36x21
- ☐ [IKCM15L60GA](#) 15A - Mini DIP 36x21

| Phase A Low Side Device Losses and Junction Temperatures |             |             |              |          |            |             |             |
|----------------------------------------------------------|-------------|-------------|--------------|----------|------------|-------------|-------------|
|                                                          | Partnumber  | $P_{sw,on}$ | $P_{sw,off}$ | $P_{sw}$ | $P_{cond}$ | $T_{j,avg}$ | $T_{j,max}$ |
| Per Switch                                               | IKCM20L60GA | 1.05 W      | 0.84 W       | 1.89 W   | 3.66 W     | 123.4 °C    | 128.4 °C    |
| Per Diode                                                | IKCM20L60GA |             | 0.30 W       | 0.30 W   | 1.15 W     | 119.0 °C    | 122.5 °C    |

- ☐ [IKCM15L60GD](#) 15A - Mini DIP 36x21D
- ☐ [IM523-L6A](#) 15A - Mini DIP 36x21
- ☐ [IM523-X6A](#) 17A - Mini DIP 36x21
- ☐ [IGCM20F60GA](#) 20A - Mini DIP 36x21
- ☒ [IKCM20L60GA](#) 20A - Mini DIP 36x21
- ☐ [IKCM20L60GD](#) 20A - Mini DIP 36x21D
- ☐ [IKCM30F60GA](#) 30A - Mini DIP 36x21
- ☐ [IKCM30F60GD](#) 30A - Mini DIP 36x21D
- ☐ [IM535-U6D](#) 30A - Mini DIP 36x21D
- ☐ [IM818-SCC](#) 5A - Maxi DIP 36x23D
- ☐ [IM818-MCC](#) 10A - Maxi DIP 36x23D
- ☐ [IM818-LCC](#) 15A - Maxi DIP 36x23D
- ☐ [IM828-XCC](#) 55mΩ - Maxi DIP 36x23D

Get result

Hold result

Analysis completed.

Simulation powered by [PLECS](#) using [WebSIM](#)<sup>®</sup> patented technology

## Legal Disclaimer

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