

Proven Power for Everyday Electronics

Mass Production & Reliability
for Everyday Electronics







1 Industry-Leading WLCSP for Li-ion Battery Protection



**11
Billion**

Cumulative Units Shipped

-  Best-in-Class Protection
-  Ultra-Compact WLCSP
-  Low Power Consumption
-  Proven Reliability

2 SJ MOSFET for High-Efficiency TV SMPS



-  Low Conduction Loss
-  High Voltage Capability
-  Fast Switching Performance
-  High Thermal Reliability
-  Compact & Space Saving

3 Production-Proven Power Technology



8-Inch Wafer
Production



High-Volume
Manufacturing



Automotive-grade
Quality



Global Supply
Capability



Scaling from Consumer Power to Industrial & Automotive Power

Building on proven consumer power technologies, Magnachip is expanding into high-current and high-power-density markets.



1 Power Solutions for Higher-Current Applications

High-current IGBT

- ✓ High Current Capability
- ✓ Low Conduction Loss
- ✓ Rugged Power Conversion

Target Applications

- Solar Inverter
- ESS
- Industrial Power Conversion
- EV Traction Inverter

Low $R_{DS(on)}$ MV MOSFET

- ✓ Low $R_{DS(on)}$
- ✓ Fast Switching
- ✓ Compact Motor Drive
- ✓ High Efficiency

Target Applications

- Motor Drive
- Robotics
- Hot-Swap
- AI Server PSU
- Automotive Auxiliary Systems

2 Expanding from Discrete Devices to Power Modules

Discrete Devices

IGBT

650V / 1200V

SiC MOSFET

650V / 1200V

Power Module Roadmap

Platform Expansion

Future Module Platform
Early-stage module concepts across multiple package classes for future system needs.

Scalable Roadmap
Building a scalable, standard platform from 650V to 1700V for various applications.

System-Focused Approach
Enabling higher power density, improved efficiency, and simplified system design.

3 Package Innovation for Advanced Thermal Performance

Legacy Packages

TO-220

DPAK

Advanced Thermal Packages

TOLL

COPAK

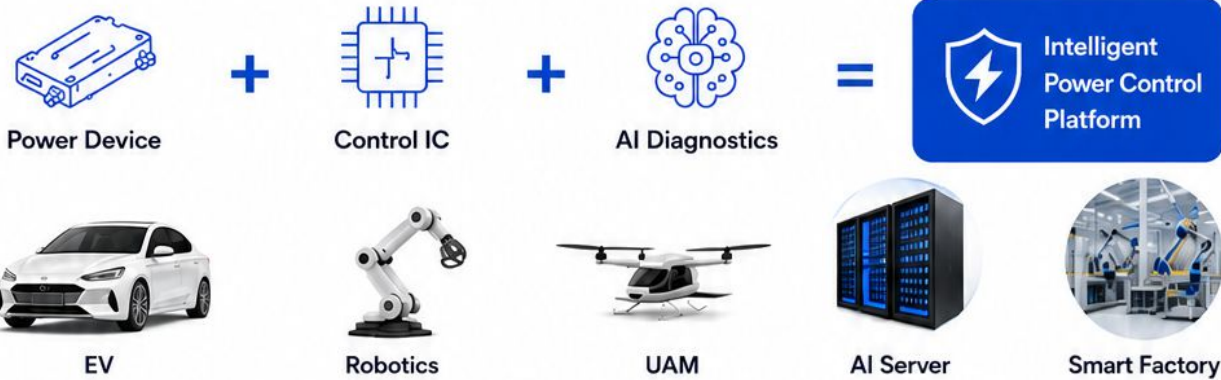
TOLT

uM-PACK

- ✓ **Lower Thermal Resistance**
Better heat dissipation
- ✓ **Higher Current Density**
Supports higher power in the same size
- ✓ **Smaller Footprint**
Optimized for space-constrained designs
- ✓ **Improved Reliability**
Enhanced performance in demanding env.

AI-Driven Intelligent Power Control Platform

Smart power solutions that sense, diagnose, predict, and protect next-generation mobility systems.



1 Why It Matters

Autonomous systems require power solutions that can respond before failure happens.



Detect early. Predict failure. Reduce downtime. Protect the system.

2 Core Intelligence Engine

AI-Driven Power Control with PDM & PHM

Real-time diagnostics and health monitoring for next-generation mobility systems.



PDM

Predictive Diagnostics Module



Real-time Monitoring

Continuously monitor system parameters and operating conditions.



Anomaly Detection

Identify deviations and early indicators of potential issues.



Fault Classification

Accurately classify faults for faster root cause identification.



Diagnostic Reporting

Generate actionable insights and detailed health reports.



Detect Now.

Predict Next.

Protect Before Failure.



PHM

Prognostics & Health Monitoring



Lifetime Prediction

Predict remaining useful life for critical components and systems.



Degradation Tracking

Track component health degradation over time.



Health Index Score

Quantify component health with a comprehensive score.



Maintenance Alerts

Provide intelligent alerts to optimize maintenance and reduce downtime.

3 How It Works

From sensor data to AI decisions and protective actions.

