

Automotive Electronics

Product Information

MH6560C

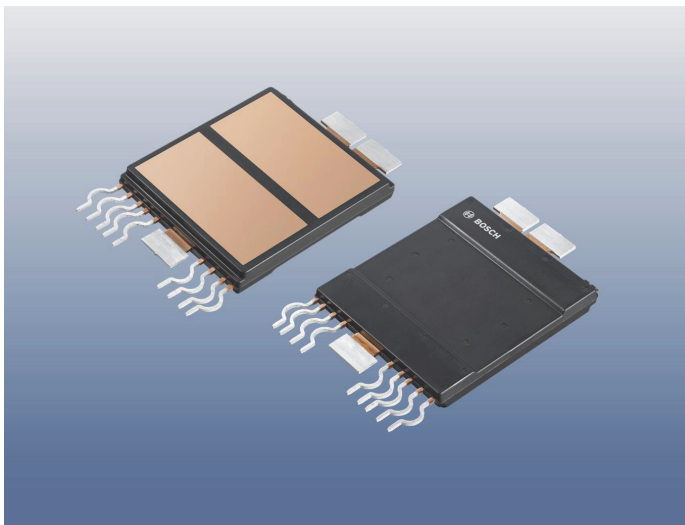
600A IGBT Halfbridge Module for (H)EV inverters

Product in development



BOSCH

Invented for life



Customer benefits:

- ▶ Robust high power module for extremely compact inverter assemblies
- ▶ Significantly smaller than conventional industrial power packages
- ▶ Excellent thermal contact

Features

- ▶ Wirebond-less contacting of IGBTs and diodes for higher reliability
- ▶ Low inductance layout for reduced voltage overshoot
- ▶ T-sense (NTC) for overtemperature detection
- ▶ I-sense on chip for short-circuit detection
- ▶ Large, isolated pads for excellent thermal contact
- ▶ ROHS compliant, halogen-free

Maximum Ratings

MH6560C		Value	
			unit
Collector-Emitter voltage ($\vartheta_c=25^\circ$)	V_{max}	650	V
DC collector current ($\vartheta_c=65^\circ, \vartheta_J=175^\circ$)	I_{Cnom}	600	A
Operating temperature	T_j	-40 ... +150	°C

The MH6560C is an extremely compact, high-power half-bridge module.

It has been especially designed for use in inverters for Hybrid Electric Vehicles (HEV) or Electric Vehicles (EV), where high currents have to be handled, space is limited, heat dissipation is critical and high reliability is a must.

Package and Semiconductors have been developed by Bosch, the expert for automotive electronics.

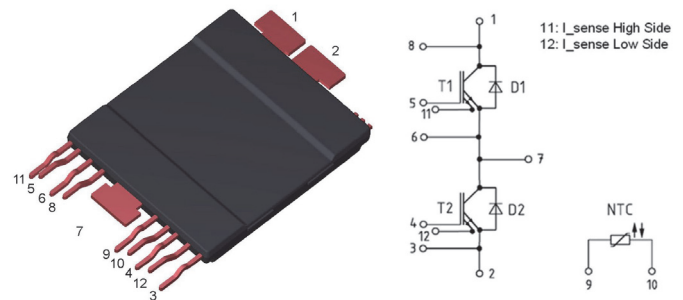
The MH6560C is part of Bosch's new range of MCPP (Multi-chip Power Package) modules.

Key parameters

IGBTs	typ. Value	Unit
Collector-Emitter saturation voltage ($I_C=600A$, $V_{GE}=15V$, $\vartheta_j=25^\circ C$)	1.40	V
Total gate charge ($V_{CE}=300V$, $V_{GE}=-15 \dots +15V$)	5.7	μC
Internal Gate Resistor R_{GINT} ($\vartheta_j=25^\circ C$)	0.75	Ω
Turn-on delay time t_{on} Rise time t_R ($I_C=600A$, $V_{CE}=300V$, $V_{GE}=15V$, $R_G=1.5\Omega$, $L_G=25nH$, $\vartheta_j=25^\circ C$)	124.7 78.6	ns ns
Turn-off delay time t_{off} Fall time t_F ($I_C=600A$, $V_{CE}=300V$, $V_{GE}=15V$, $R_G=1.5\Omega$, $L_G=25nH$, $\vartheta_j=25^\circ C$)	415.6 73.7	ns ns
Turn-on energy loss per pulse E_{ON} ($I_C=600A$, $V_{CE}=300V$, $V_{GE}=15V$, $R_G=1.5\Omega$, $L_G=25nH$, $di/dt=4.9kA/\mu s$, $\vartheta_j=150^\circ C$)	6.49	mJ
Turn-off energy loss per pulse E_{OFF} ($I_C=600A$, $V_{CE}=300V$, $V_{GE}=15V$, $R_G=1.5\Omega$, $L_G=25nH$, $du/dt=3.7kV/\mu s$, $\vartheta_j=150^\circ C$)	16.85	mJ

Diodes	typ. Value	Unit
Forward voltage V_F ($I_C=600A$, $V_{GE}=0V$, $\vartheta_j=25^\circ C$)	1.43	V
Peak reverse recovery current I_{RM} ($I_C=600A$, $V_{CE}=300V$, $V_{GE}=15V$, $R_G=1.5\Omega$, $L_G=25nH$, $di/dt=6.6kA/\mu s$, $\vartheta_j=25^\circ C$)	260	A
Reverse recovery energy E_{rec} ($I_C=600A$, $V_{CE}=300V$, $V_{GE}=15V$, $R_G=1.5\Omega$, $L_G=25nH$, $di/dt=6.6kA/\mu s$, $\vartheta_j=25^\circ C$)	3.69	mJ

Module	typ. Value	Unit
Thermal resistance, junction-case (per IGBT, $\frac{1}{2}$ Module)	0.065	K/W
Thermal resistance, junction-fluid (per IGBT, 120 μm thermal foil with $\lambda = 2.4 W/mK$, Al pin-fin cooler: $\lambda = 140W/mK$)	0.163	K/W
Module lead resistance (terminal to chips, per switch)	0.1	m Ω

Pinout, Block Diagram

Package

Multi Chip Power Package (MCP) with customer specific contacts (soldering / welding / screw contact)

Module package size

63 mm (L) x 57 mm (W) x 7.5 mm (H)

Samples

Engineering samples available on request

Regional sales contacts

Europe/Japan bosch.semiconductors@de.bosch.com
 USA/Canada bosch.semiconductors@us.bosch.com
 China bosch.semiconductors@cn.bosch.com
 Korea bosch.semiconductors@kr.bosch.com

www.bosch-semiconductors.com
www.bosch-sensors.com

Robert Bosch GmbH
 AE/MKC
 Postfach 13 42
 72703 Reutlingen
 Germany

www.bosch.de