

NXP Mantis™ CAN transceivers for 12 V automotive applications

Everything you need in a CAN transceiver

Offering an optimized feature set, benchmark emissions performance (even without a common-mode choke), dual-sourced manufacturing base, and high-end variants for CAN FD, these optimized devices deliver everything you need in a CAN transceiver.

KEY BENEFITS

- ▶ Feature set optimized for 12 V applications
- ▶ Excellent EMC performance, allowing removal of common mode choke
- ▶ Agile, secure and high capacity supply chain from two independent manufacturing sites
- ▶ High-end variants (TJA1044GT and TJA1057GT) optimized for CAN FD communications

KEY FEATURES

- ▶ Fully ISO-11898-2 and ISO-11898-5* compliant transceivers
- ▶ Voltage on CAN pins: +/- 42 V
- ▶ 6 kV ESD robustness on bus pins, according IEC-61000-4-2 and HBM
- ▶ EMC compliant up to 2 Mbps, according "Hardware Requirements for LIN, CAN and FlexRay Interfaces in Automotive Application – AUDI, BMW, Daimler, Porsche, Volkswagen – Revision 1.3 / 2012"
- ▶ Input logic levels compatible with 3V3 microcontrollers

- ▶ Standby current: 10 μ A typical*
- ▶ Fully automotive qualified vs. AEC-Q100 standards.
- ▶ Available in SO8 package

TJA1044GT AND TJA1057GT ONLY

- ▶ Loop delay symmetry guaranteed to -15% / +5%
- ▶ Propagation delay guaranteed to 210 ns

TARGET APPLICATIONS

- ▶ 12 V automotive applications
- ▶ Industrial applications

NXP's standalone Mantis HS-CAN transceivers are the natural evolution of our third-generation transceivers. In a market where basic CAN functions are becoming standardized, there remains a relentless demand for performance and innovation. The Mantis family provides the ideal solution. The family includes two pairs of transceivers, Mantis (TJA1044T and TJA1057T) and Mantis GT (TJA1044GT and TJA1057GT), which cover the application needs both of today and tomorrow.

*TJA1044T and TJA1044GT only



MANTIS: ALL YOU NEED TODAY

The TJA1044T (Standby HS-CAN transceiver) and TJA1057T (Basic HS-CAN transceiver) provide an optimized feature set for HS-CAN transceivers, designed for simple integration in 12 V automotive applications.

Continuing NXP's heritage of high performance, Mantis also features even further improved EMC performance, meeting current emissions targets for CAN transceivers, even when operated without a common-mode choke.

To support use in CAN FD (Flexible Data rate) applications, Mantis also fulfills emission requirements at bus speeds of 2 Mbps, demonstrating that even with faster data rates, EMC can be controlled.

To ensure a secure and agile supply chain, the Mantis family is dual sourced from two fabs: ICN8 Nijmegen and SSMC Singapore. Each family member has a single ordering code, supplied by both manufacturing locations, providing a continuous and secure supply chain for customers.

The TJA1044T and TJA1057T have fully deterministic behavior over the complete voltage and temperature range, and produced in NXP's high quality ABCD mixed signal processes to ensure reliability, quality and robustness in the application.

MANTIS GT: ALL YOU NEED TOMORROW

The Mantis GT benefits from all the features as Mantis, with the same EMC performance and dual sourced supply chain.

This high-end variant additionally guarantees critical parameters are tested in production to ensure robust communications at higher data rates, making them the perfect choice for CAN FD (Flexible Datarate) networks.

CAN FD permits the network to operate at higher data rates and longer cable lengths. When increasing the bus speed, the loop delay symmetry (the robustness of the transitions from dominant to recessive and recessive to dominant) needs to be preserved to maintain the integrity of CAN communications. This parameter is specifically tested within production to ensure only those that pass this limit are awarded the Mantis-GT status.

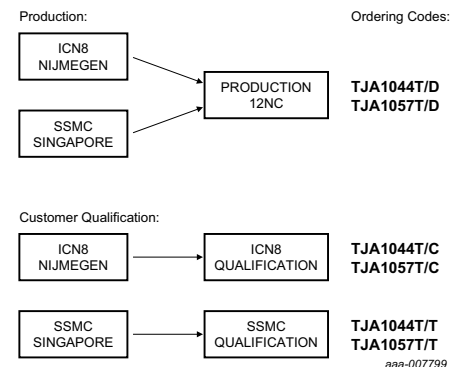
CAN FD also enables the use of longer cables in an application. When using longer cables, the propagation delay becomes a critical parameter. Mantis GT devices guarantee, via inline testing, an improved propagation delay of 210 ns, to ensure continued reliability of communications at these longer cable lengths.

DUAL SOURCE ORDERING

To order Mantis production material, two ordering codes are made available: TJA1044T/D and TJA1057T/D. Orders placed against these codes will receive products manufactured from either ICN8 or SSMC factories, or a combination of both.

To ensure that both sources are qualified in customers' applications, NXP makes available two ordering codes for qualification samples of each factory. It is not possible to place production orders with these ordering codes. For more information on how to receive these qualification codes, please contact your local NXP sales representative.

Feature / requirement	TJA1042/51	TJA1044T/57T	TJA1044GT/57GT
VCC voltage range	±10%		±5%
Absolute max voltage	+7 V		+6 V
DC voltage at CAN pins	±58 V		±42 V
Common mode voltage	±30 V		±12 V
Termination	45 to 65 Ω		50 to 65 Ω
SPLIT pin	yes		no
Time filter as wake-up filter	yes		no
ISO11898-5 conformant wake-up pattern filter	no		yes
TXD dominant time-out filter	yes		yes
Enable pin	yes		no
VIO pin	yes		no
3.3 V tolerant microcontroller interface	no		yes
ESD IEC 61000-4-2 at pins CANH and CANL	8 kV		6 kV
ESD-HBM (at CANH/CANL)	8 kV		6 kV
ESD-HBM (at other pins)	4 kV		4 kV
ESD-MM	300 V		200 V
ESD-CDM	750 / 500 V		750 / 500 V
Max propagation delay (recessive)	230 ns	250 ns	210 ns
Loop delay symmetry	not specified	not specified	-15%/+5%



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Date of release: May 2013

Document order number: 9397 750 17405

Printed in the Netherlands