# PCA82C250

## CAN controller interface

**Rev. 06 — 26 March 2009**

**Product data sheet**

## 1. General description

The PCA82C250 is the interface between a CAN protocol controller and the physical bus. The device provides differential transmit capability to the bus and differential receive capability to the CAN controller.

## 2. Features

- Fully compatible with the *"ISO 11898"* standard
- High speed (up to 1 MBd)
- Bus lines protected against transients in an automotive environment
- Slope control to reduce Radio Frequency Interference (RFI)
- Differential receiver with wide common-mode range for high immunity against ElectroMagnetic Interference (EMI)
- Thermally protected
- Short-circuit proof to battery and ground
- Low-current Standby mode
- An unpowered node does not disturb the bus lines
- At least 110 nodes can be connected

## 3. Applications

- High-speed automotive applications (up to 1 MBd).

## 4. Quick reference data

**Table 1.   Quick reference data**

| Symbol | Parameter | Conditions | Min | Max | Unit |
|---|---|---|---|---|---|
| $V_{CC}$ | supply voltage | | 4.5 | 5.5 | V |
| $I_{CC}$ | supply current | Standby mode | - | 170 | µA |
| $1/t_{bit}$ | maximum transmission speed | non-return-to-zero | 1 | - | MBd |
| $V_{CAN}$ | CANH, CANL input/output voltage | | −8 | +18 | V |
| $V_{diff}$ | differential bus voltage | | 1.5 | 3.0 | V |
| $t_{PD}$ | propagation delay | High-speed mode | - | 50 | ns |
| $T_{amb}$ | ambient temperature | | −40 | +125 | °C |

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# 5. Ordering information

**Table 2.    Ordering information**

| Type number | Package | | | |
| --- | --- | --- | --- | --- |
| | **Name** | **Description** | | **Version** |
| PCA82C250T | SO8 | plastic small outline package; 8 leads; body width 3.9 mm | | SOT96-1 |

# 6. Block diagram



**Fig 1.    Block diagram**
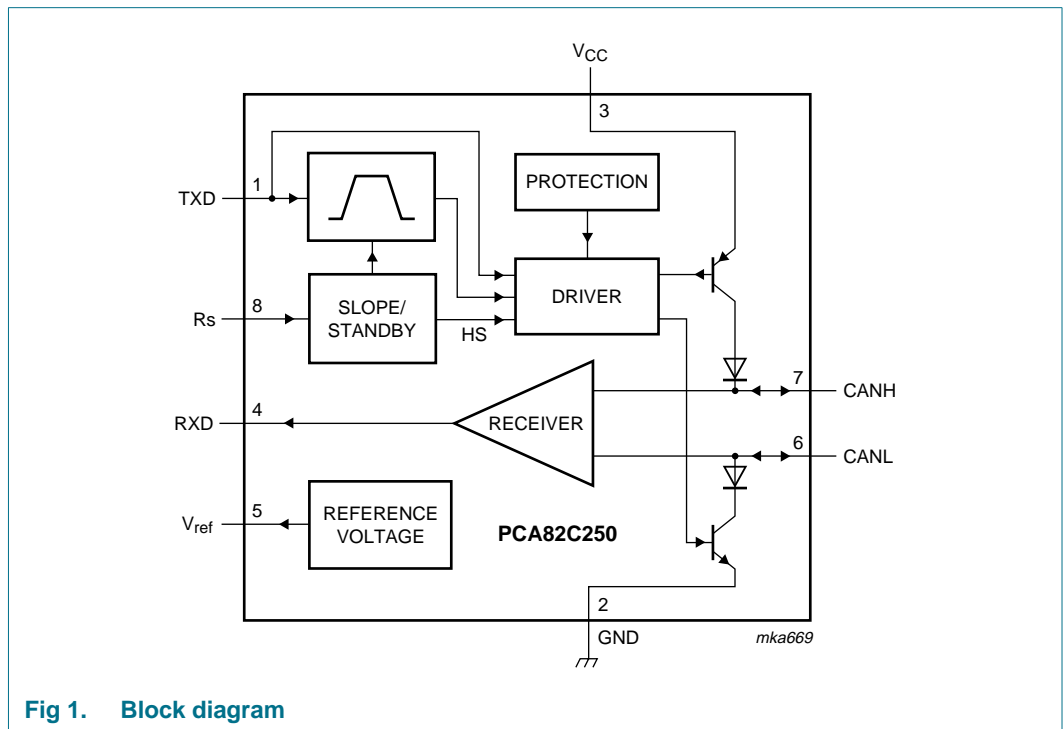
# 7. Pinning information

## 7.1  Pinning



**Fig 2.    Pin configuration**
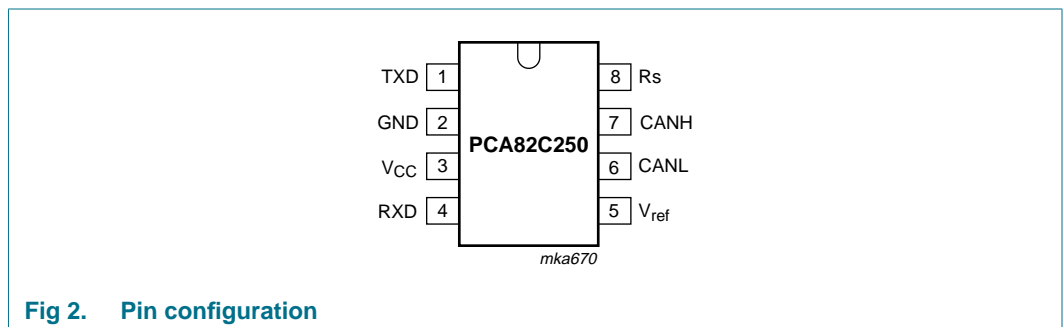
### 7.2 Pin description

**Table 3.** **Pin description**

| Symbol | Pin | Description |
|---|---|---|
| TXD | 1 | transmit data input |
| GND | 2 | ground |
| $V_{CC}$ | 3 | supply voltage |
| RXD | 4 | receive data output |
| $V_{ref}$ | 5 | reference voltage output |
| CANL | 6 | LOW-level CAN voltage input/output |
| CANH | 7 | HIGH-level CAN voltage input/output |
| Rs | 8 | slope resistor input |

## 8. Functional description

The PCA82C250 is the interface between a CAN protocol controller and the physical bus. It is primarily intended for high-speed automotive applications (up to 1 MBd). The device provides differential transmit capability to the bus and differential receive capability to the CAN controller. It is fully compatible with the *"ISO 11898"* standard.

A current limiting circuit protects the transmitter output stage against short-circuit to positive and negative battery voltage. Although the power dissipation is increased during this fault condition, this feature will prevent destruction of the transmitter output stage.

If the junction temperature exceeds a value of approximately 160 °C, the limiting current of both transmitter outputs is decreased. Because the transmitter is responsible for the major part of the power dissipation, this will result in reduced power dissipation and hence a lower chip temperature. All other parts of the PCA82C250 will remain in operation. The thermal protection is needed, in particular, when a bus line is short-circuited.

The CANH and CANL lines are also protected against electrical transients which may occur in an automotive environment.

Pin 8 (Rs) allows three different modes of operation to be selected: High-speed, Slope control and Standby.

For high-speed operation, the transmitter output transistors are simply switched on and off as fast as possible. In this mode, no measures are taken to limit the rise and fall slope. Use of a shielded cable is recommended to avoid RFI problems. The High-speed mode is selected by connecting pin 8 to ground.

For lower speeds or shorter bus length, an unshielded twisted pair or a parallel pair of wires can be used for the bus. To reduce RFI, the rise and fall slope should be limited. The rise and fall slope can be programmed with a resistor connected from pin 8 to ground. The slope is proportional to the current output at pin 8.

If a HIGH level is applied to pin 8, the circuit enters a low-current Standby mode. In this mode, the transmitter is switched off and the receiver is switched to a low current. If dominant bits are detected (differential bus voltage >0.9 V), RXD will be switched to a

LOW level. The microcontroller should react to this condition by switching the transceiver back to normal operation (via pin 8). Because the receiver is slow in Standby mode, the first message will be lost.

**Table 4.    Truth table of the CAN transceiver**

| Supply | TXD | CANH | CANL | Bus state | RXD |
|---|---|---|---|---|---|
| 4.5 V to 5.5 V | 0 | HIGH | LOW | dominant | 0 |
| 4.5 V to 5.5 V | 1 (or floating) | floating | floating | recessive | 1 |
| < 2 V (not powered) | X[1] | floating | floating | recessive | X[1] |
| $2\ V < V_{CC} < 4.5\ V$ | $>0.75V_{CC}$ | floating | floating | recessive | X[1] |
| $2\ V < V_{CC} < 4.5\ V$ | X[1] | floating if $V_{Rs} > 0.75V_{CC}$ | floating if $V_{Rs} > 0.75V_{CC}$ | recessive | X[1] |

[1]    X = don't care.

**Table 5.    Pin Rs summary**

| Condition forced at pin Rs | Mode | Resulting voltage or current at pin Rs |
|---|---|---|
| $V_{Rs} > 0.75V_{CC}$ | Standby | $I_{Rs} < \lvert 10\ \mu A\rvert$ |
| $-10\ \mu A < I_{Rs} < -200\ \mu A$ | Slope control | $0.4V_{CC} < V_{Rs} < 0.6V_{CC}$ |
| $V_{Rs} < 0.3V_{CC}$ | High-speed | $I_{Rs} < -500\ \mu A$ |

# 9.  Limiting values

**Table 6.    Limiting values**
*In accordance with the Absolute Maximum Rating System (IEC 60134). All voltages are referenced to pin 2; positive input current.*

| Symbol | Parameter | Conditions | | Min | Max | Unit |
|---|---|---|---|---|---|---|
| $V_{CC}$ | supply voltage | | | −0.3 | +9.0 | V |
| $V_n$ | DC voltage at pins 1, 4, 5 and 8 | | | −0.3 | $V_{CC}$ + 0.3 | V |
| $V_{6, 7}$ | DC voltage at pins 6 and 7 | 0 V < $V_{CC}$ < 5.5 V; no time limit | | −8.0 | +18.0 | V |
| $V_{trt}$ | transient voltage at pins 6 and 7 | see Figure 8 | | −150 | +100 | V |
| $T_{stg}$ | storage temperature | | | −55 | +150 | °C |
| $T_{amb}$ | ambient temperature | | | −40 | +125 | °C |
| $T_{vj}$ | virtual junction temperature | | [1] | −40 | +150 | °C |
| $V_{esd}$ | electrostatic discharge voltage | | [2] | −2000 | +2000 | V |
| | | | [3] | −200 | +200 | V |

[1]    In accordance with *"IEC 60747-1"*. An alternative definition of virtual junction temperature is:
$T_{vj} = T_{amb} + P_d \times R_{th(vj\text{-}a)}$, where $R_{th(vj\text{-}a)}$ is a fixed value to be used for the calculation of $T_{vj}$. The rating for $T_{vj}$ limits the allowable combinations of power dissipation ($P_d$) and ambient temperature ($T_{amb}$).

[2]    Classification A: human body model; C = 100 pF; R = 1500 Ω; V = ±2000 V.

[3]    Classification B: machine model; C = 200 pF; R = 25 Ω; V = ±200 V.

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## 10. Thermal characteristics

**Table 7.    Thermal characteristics**

| Symbol | Parameter | Conditions | Typ | Unit |
|--------|-----------|------------|-----|------|
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | in free air | 160 | K/W |

## 11. Characteristics

**Table 8.    Characteristics**

*$V_{CC}$ = 4.5 to 5.5 V; $T_{amb}$ = −40 to +125 °C; $R_L$ = 60 Ω; $I_8$ > −10 μA; unless otherwise specified; all voltages referenced to ground (pin 2); positive input current; all parameters are guaranteed over the ambient temperature range by design, but only 100 % tested at +25 °C.*

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|--------|-----------|------------|-----|-----|-----|------|
| **Supply** | | | | | | |
| $I_3$ | supply current | dominant; $V_1$ = 1 V | - | - | 70 | mA |
| | | recessive; $V_1$ = 4 V; $R_8$ = 47 kΩ | - | - | 14 | mA |
| | | recessive; $V_1$ = 4 V; $V_8$ = 1 V | - | - | 18 | mA |
| | | Standby; $T_{amb}$ < 90 °C [1] | - | 100 | 170 | μA |
| **DC bus transmitter** | | | | | | |
| $V_{IH}$ | HIGH-level input voltage | output recessive | $0.7V_{CC}$ | - | $V_{CC}$ + 0.3 | V |
| $V_{IL}$ | LOW-level input voltage | output dominant | −0.3 | - | $0.3V_{CC}$ | V |
| $I_{IH}$ | HIGH-level input current | $V_1$ = 4 V | −200 | - | +30 | μA |
| $I_{IL}$ | LOW-level input current | $V_1$ = 1 V | −100 | - | −600 | μA |
| $V_{6,7}$ | recessive bus voltage | $V_1$ = 4 V; no load | 2.0 | - | 3.0 | V |
| $I_{LO}$ | off-state output leakage current | −2 V < $(V_6, V_7)$ < 7 V | −2 | - | +1 | mA |
| | | −5 V < $(V_6, V_7)$ < 18 V | −5 | - | +12 | mA |
| $V_7$ | CANH output voltage | $V_1$ = 1 V | 2.75 | - | 4.5 | V |
| $V_6$ | CANL output voltage | $V_1$ = 1 V | 0.5 | - | 2.25 | V |
| $\Delta V_{6,7}$ | difference between output voltage at pins 6 and 7 | $V_1$ = 1 V | 1.5 | - | 3.0 | V |
| | | $V_1$ = 1 V; $R_L$ = 45 Ω; $V_{CC} \geq$ 4.9 V | 1.5 | - | - | V |
| | | $V_1$ = 4 V; no load | −500 | - | +50 | mV |
| $I_{sc7}$ | short-circuit CANH current | $V_7$ = −5 V; $V_{CC} \leq$ 5 V | - | - | −105 | mA |
| | | $V_7$ = −5 V; $V_{CC}$ = 5.5 V | - | - | −120 | mA |
| $I_{sc6}$ | short-circuit CANL current | $V_6$ = 18 V | - | - | 160 | mA |
| **DC bus receiver: $V_1$ = 4 V; pins 6 and 7 externally driven; −2 V < $(V_6, V_7)$ < 7 V; unless otherwise specified** | | | | | | |
| $V_{diff(r)}$ | differential input voltage (recessive) | | −1.0 | - | +0.5 | V |
| | | −7 V < $(V_6, V_7)$ < 12 V; not Standby mode | −1.0 | - | +0.4 | V |
| $V_{diff(d)}$ | differential input voltage (dominant) | | 0.9 | - | 5.0 | V |
| | | −7 V < $(V_6, V_7)$ < 12 V; not Standby mode | 1.0 | - | 5.0 | V |
| $V_{diff(hys)}$ | differential input hysteresis | see Figure 5 | - | 150 | - | mV |
| $V_{OH}$ | HIGH-level output voltage | pin 4; $I_4$ = −100 μA | $0.8V_{CC}$ | - | $V_{CC}$ | V |

**Table 8.  Characteristics** *…continued*

*$V_{CC}$ = 4.5 to 5.5 V; $T_{amb}$ = −40 to +125 °C; $R_L$ = 60 Ω; $I_8$ > −10 µA; unless otherwise specified; all voltages referenced to ground (pin 2); positive input current; all parameters are guaranteed over the ambient temperature range by design, but only 100 % tested at +25 °C.*

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $V_{OL}$ | LOW-level output voltage | pin 4; $I_4$ = 1 mA | 0 | - | 0.2$V_{CC}$ | V |
| | | $I_4$ = 10 mA | 0 | - | 1.5 | V |
| $R_i$ | input resistance | CANH, CANL | 5 | - | 25 | kΩ |
| $R_{diff}$ | differential input resistance | | 20 | - | 100 | kΩ |
| $C_i$ | input capacitance | CANH, CANL | - | - | 20 | pF |
| $C_{diff}$ | differential input capacitance | | - | - | 10 | pF |
| **Reference output** | | | | | | |
| $V_{ref}$ | reference output voltage | $V_8$ = 1 V; −50 µA < $I_5$ < 50 µA | 0.45$V_{CC}$ | - | 0.55$V_{CC}$ | V |
| | | $V_8$ = 4 V; −5 µA < $I_5$ < 5 µA | 0.4$V_{CC}$ | - | 0.6$V_{CC}$ | V |
| **Timing (see Figure 4, Figure 6 and Figure 7** | | | | | | |
| $t_{bit}$ | bit time | minimum; $V_8$ = 1 V | - | - | 1 | µs |
| $t_{onTXD}$ | delay TXD to bus active | $V_8$ = 1 V | - | - | 50 | ns |
| $t_{offTXD}$ | delay TXD to bus inactive | $V_8$ = 1 V | - | 40 | 80 | ns |
| $t_{onRXD}$ | delay TXD to receiver active | $V_8$ = 1 V | - | 55 | 120 | ns |
| $t_{offRXD}$ | delay TXD to receiver inactive | $V_8$ = 1 V; $V_{CC}$ < 5.1 V; $T_{amb}$ < +85 °C | - | 82 | 150 | ns |
| | | $V_8$ = 1 V; $V_{CC}$ < 5.1 V; $T_{amb}$ < +125 °C | - | 82 | 170 | ns |
| | | $V_8$ = 1 V; $V_{CC}$ < 5.5 V; $T_{amb}$ < +85 °C | - | 90 | 170 | ns |
| | | $V_8$ = 1 V; $V_{CC}$ < 5.5 V; $T_{amb}$ < +125 °C | - | 90 | 190 | ns |
| $t_{onRXD}$ | delay TXD to receiver active | $R_8$ = 47 kΩ | - | 390 | 520 | ns |
| | | $R_8$ = 24 kΩ | - | 260 | 320 | ns |
| $t_{offRXD}$ | delay TXD to receiver inactive | $R_8$ = 47 kΩ | - | 260 | 450 | ns |
| | | $R_8$ = 24 kΩ | - | 210 | 320 | ns |
| \|SR\| | differential output voltage slew rate | $R_8$ = 47 kΩ | - | 14 | - | V/µs |
| $t_{WAKE}$ | wake-up time from standby | via pin 8 | - | - | 20 | µs |
| $t_{dRXDL}$ | bus dominant to RXD LOW | $V_8$ = 4 V; Standby mode | - | - | 3 | µs |
| **Standby/Slope Control (pin 8)** | | | | | | |
| $V_8$ | input voltage for high-speed | | - | - | 0.3$V_{CC}$ | V |
| $I_8$ | input current for high-speed | $V_8$ = 0 V | - | - | −500 | µA |
| $V_{stb}$ | input voltage for standby mode | | 0.75$V_{CC}$ | - | - | V |
| $I_{slope}$ | slope control mode current | | −10 | - | −200 | µA |
| $V_{slope}$ | slope control mode voltage | | 0.4$V_{CC}$ | - | 0.6$V_{CC}$ | V |

[1]  $I_1$ = $I_4$ = $I_5$ = 0 mA; 0 V < $V_6$ < $V_{CC}$; 0 V < $V_7$ < $V_{CC}$; $V_8$ = $V_{CC}$.
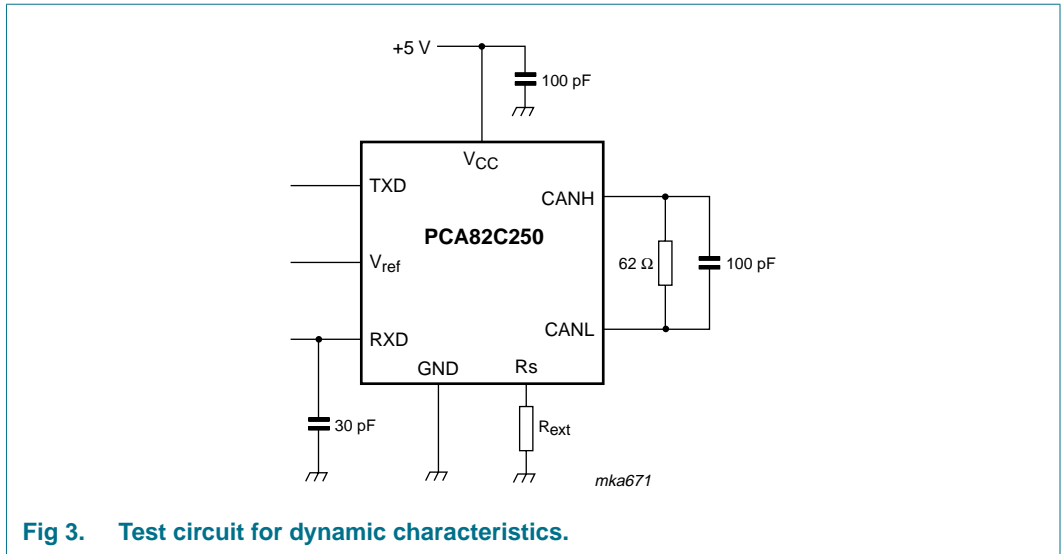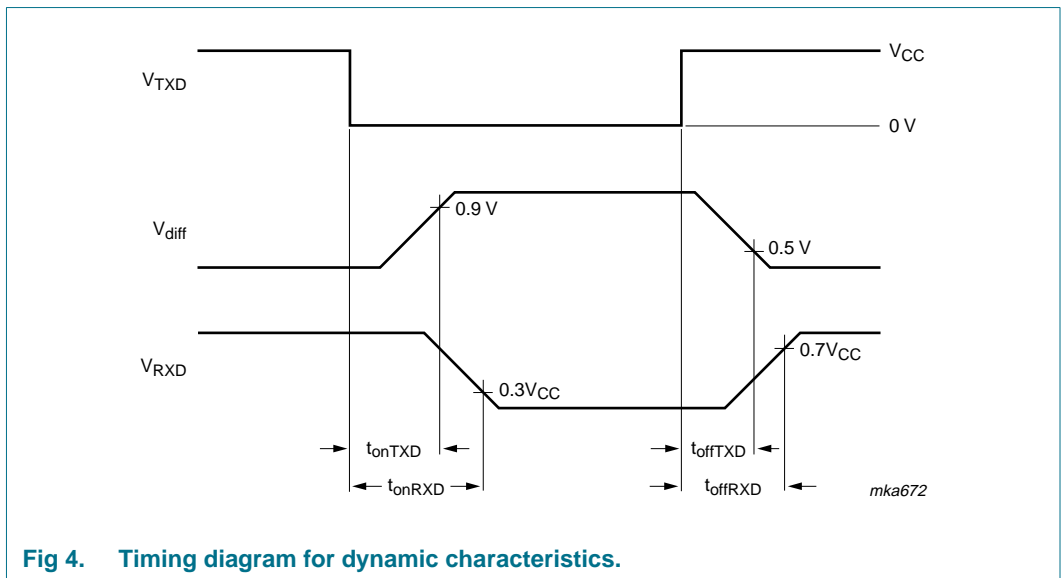
**Fig 3.    Test circuit for dynamic characteristics.**



**Fig 4.    Timing diagram for dynamic characteristics.**



**Fig 5.    Hysteresis.**

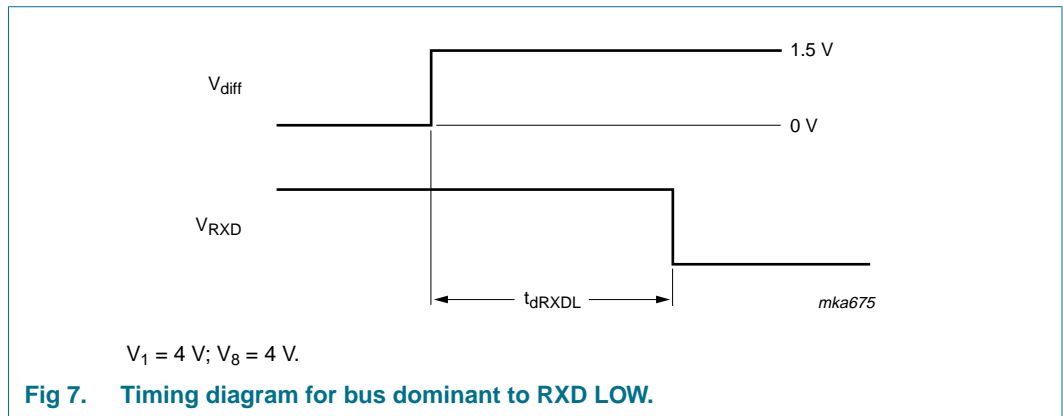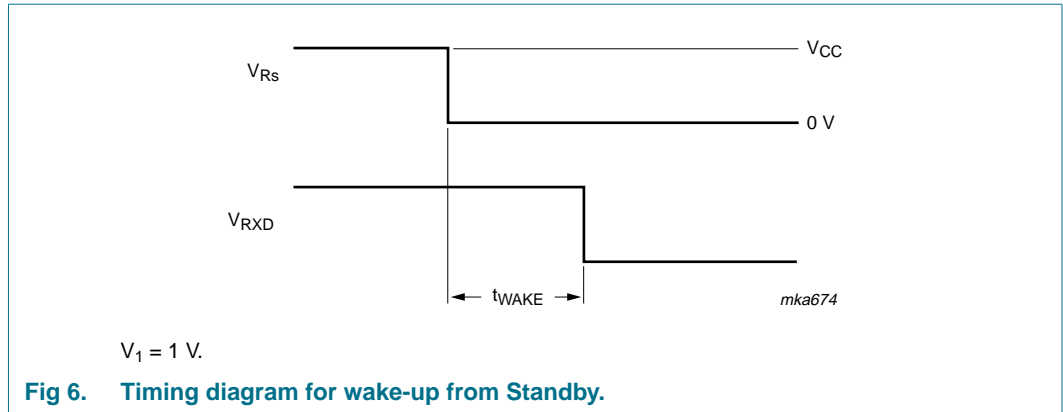$V_1 = 1$ V.

**Fig 6.    Timing diagram for wake-up from Standby.**



$V_1 = 4$ V; $V_8 = 4$ V.

**Fig 7.    Timing diagram for bus dominant to RXD LOW.**



The waveforms of the applied transients shall be in accordance with *"ISO 7637 part 1"*, test pulses 1, 2, 3a and 3b.
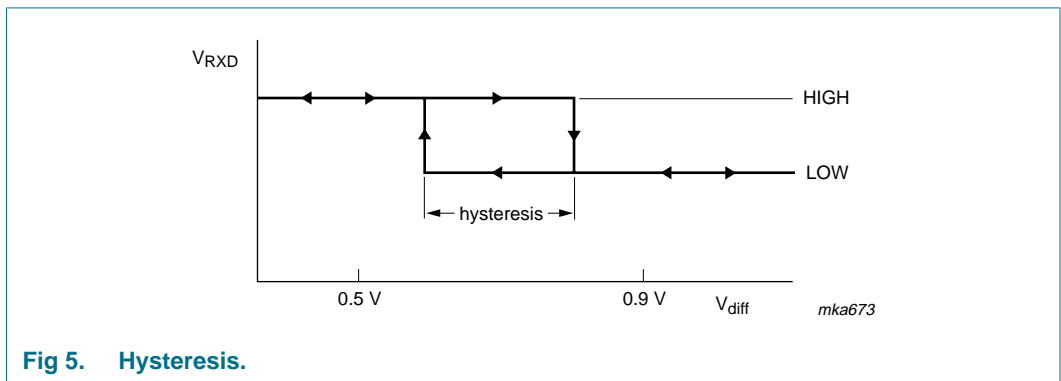
**Fig 8.    Test circuit for automotive transients.**
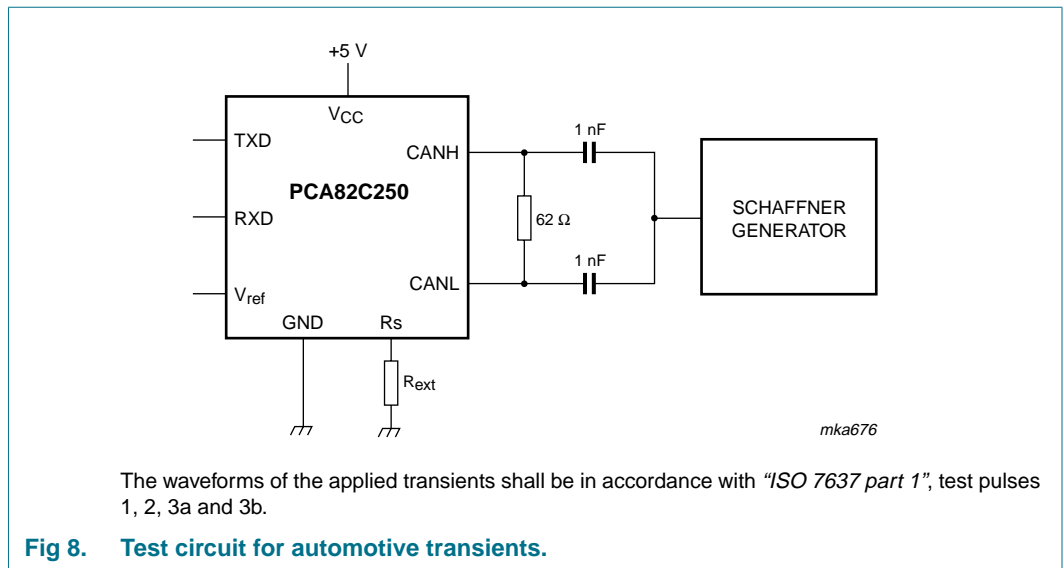
## 12. Application information
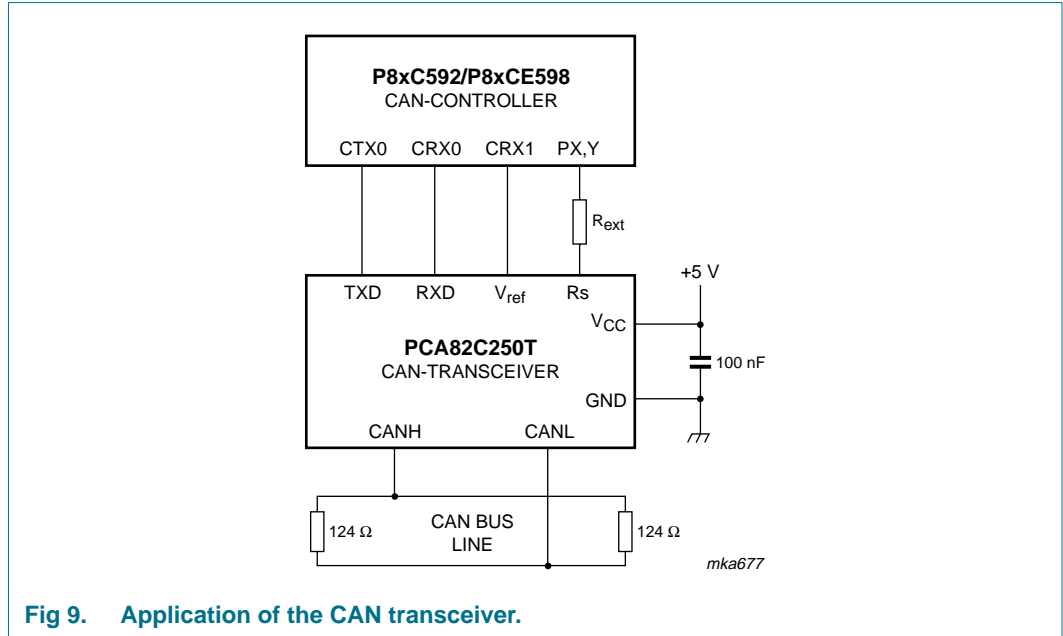


**Fig 9.** **Application of the CAN transceiver.**
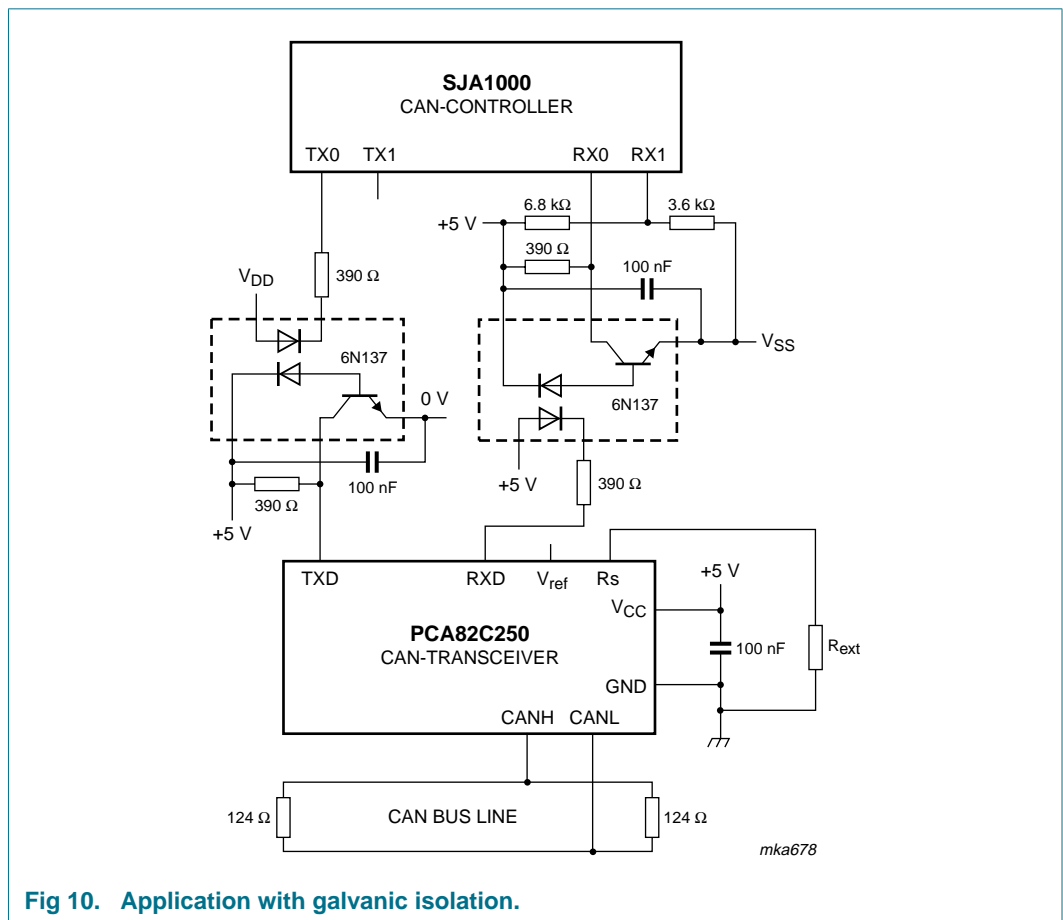


**Fig 10.** **Application with galvanic isolation.**
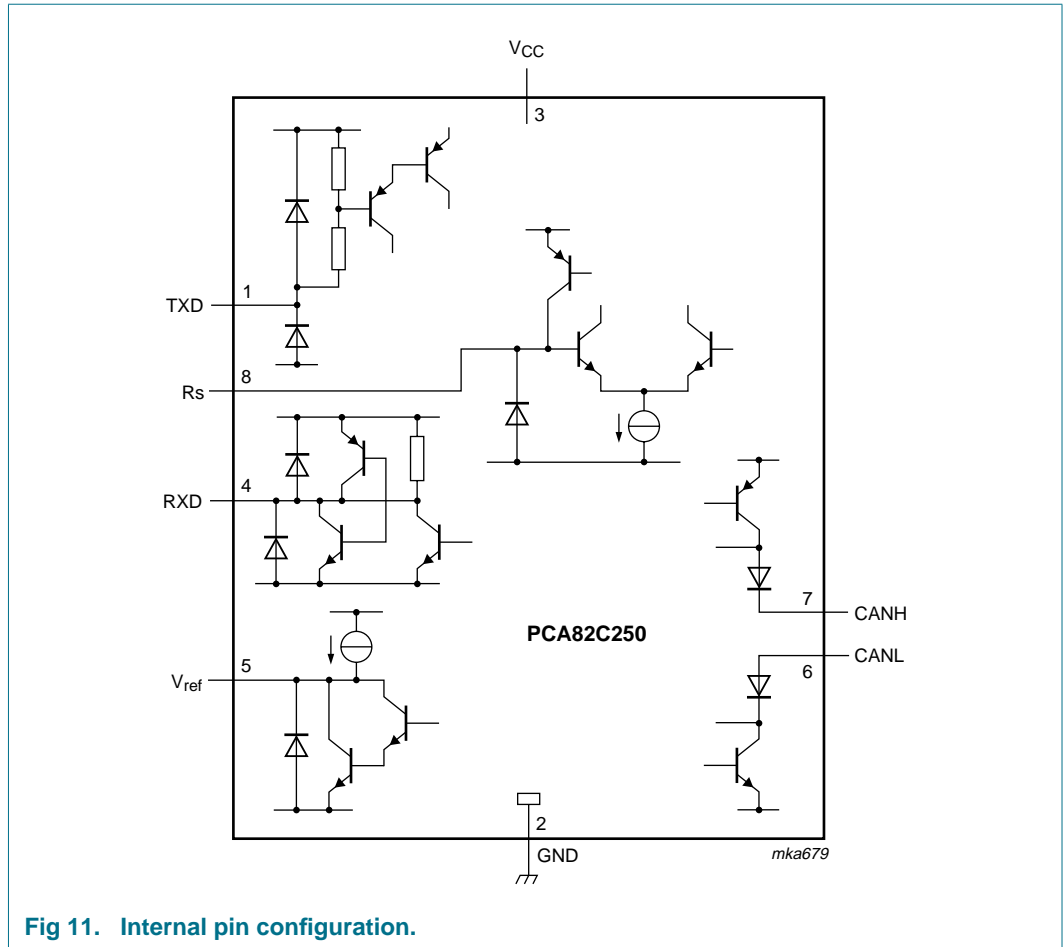
**Fig 11. Internal pin configuration.**

## 13. Package outline

**SO8: plastic small outline package; 8 leads; body width 3.9 mm**

**SOT96-1**



**DIMENSIONS (inch dimensions are derived from the original mm dimensions)**

| UNIT | A max. | A$_1$ | A$_2$ | A$_3$ | b$_p$ | c | D$^{(1)}$ | E$^{(2)}$ | e | H$_E$ | L | L$_p$ | Q | v | w | y | Z$^{(1)}$ | θ |
|------|--------|-------|-------|-------|-------|---|-----------|-----------|---|-------|---|-------|---|---|---|---|-----------|---|
| mm | 1.75 | 0.25 0.10 | 1.45 1.25 | 0.25 | 0.49 0.36 | 0.25 0.19 | 5.0 4.8 | 4.0 3.8 | 1.27 | 6.2 5.8 | 1.05 | 1.0 0.4 | 0.7 0.6 | 0.25 | 0.25 | 0.1 | 0.7 0.3 | 8° 0° |
| inches | 0.069 | 0.010 0.004 | 0.057 0.049 | 0.01 | 0.019 0.014 | 0.0100 0.0075 | 0.20 0.19 | 0.16 0.15 | 0.05 | 0.244 0.228 | 0.041 | 0.039 0.016 | 0.028 0.024 | 0.01 | 0.01 | 0.004 | 0.028 0.012 | |

**Notes**

1. Plastic or metal protrusions of 0.15 mm (0.006 inch) maximum per side are not included.

2. Plastic or metal protrusions of 0.25 mm (0.01 inch) maximum per side are not included.

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------|------------|------|-------|---|---------------------|------------|
| | IEC | JEDEC | JEITA | | | |
| SOT96-1 | 076E03 | MS-012 | | | | ~~99-12-27~~ 03-02-18 |

**Fig 12. Package outline SOT96-1 (SO8)**

# 14. Soldering of SMD packages

This text provides a very brief insight into a complex technology. A more in-depth account of soldering ICs can be found in Application Note *AN10365 "Surface mount reflow soldering description"*.

## 14.1 Introduction to soldering

Soldering is one of the most common methods through which packages are attached to Printed Circuit Boards (PCBs), to form electrical circuits. The soldered joint provides both the mechanical and the electrical connection. There is no single soldering method that is ideal for all IC packages. Wave soldering is often preferred when through-hole and Surface Mount Devices (SMDs) are mixed on one printed wiring board; however, it is not suitable for fine pitch SMDs. Reflow soldering is ideal for the small pitches and high densities that come with increased miniaturization.

## 14.2 Wave and reflow soldering

Wave soldering is a joining technology in which the joints are made by solder coming from a standing wave of liquid solder. The wave soldering process is suitable for the following:

- Through-hole components
- Leaded or leadless SMDs, which are glued to the surface of the printed circuit board

Not all SMDs can be wave soldered. Packages with solder balls, and some leadless packages which have solder lands underneath the body, cannot be wave soldered. Also, leaded SMDs with leads having a pitch smaller than ~0.6 mm cannot be wave soldered, due to an increased probability of bridging.

The reflow soldering process involves applying solder paste to a board, followed by component placement and exposure to a temperature profile. Leaded packages, packages with solder balls, and leadless packages are all reflow solderable.

Key characteristics in both wave and reflow soldering are:

- Board specifications, including the board finish, solder masks and vias
- Package footprints, including solder thieves and orientation
- The moisture sensitivity level of the packages
- Package placement
- Inspection and repair
- Lead-free soldering versus SnPb soldering

## 14.3 Wave soldering

Key characteristics in wave soldering are:

- Process issues, such as application of adhesive and flux, clinching of leads, board transport, the solder wave parameters, and the time during which components are exposed to the wave
- Solder bath specifications, including temperature and impurities

## 14.4 Reflow soldering

Key characteristics in reflow soldering are:

- Lead-free versus SnPb soldering; note that a lead-free reflow process usually leads to higher minimum peak temperatures (see Figure 13) than a SnPb process, thus reducing the process window

- Solder paste printing issues including smearing, release, and adjusting the process window for a mix of large and small components on one board

- Reflow temperature profile; this profile includes preheat, reflow (in which the board is heated to the peak temperature) and cooling down. It is imperative that the peak temperature is high enough for the solder to make reliable solder joints (a solder paste characteristic). In addition, the peak temperature must be low enough that the packages and/or boards are not damaged. The peak temperature of the package depends on package thickness and volume and is classified in accordance with Table 9 and 10

**Table 9.    SnPb eutectic process (from J-STD-020C)**

| Package thickness (mm) | Package reflow temperature (°C) | |
| --- | --- | --- |
| | Volume (mm$^3$) | |
| | < 350 | ≥ 350 |
| < 2.5 | 235 | 220 |
| ≥ 2.5 | 220 | 220 |

**Table 10.    Lead-free process (from J-STD-020C)**

| Package thickness (mm) | Package reflow temperature (°C) | | |
| --- | --- | --- | --- |
| | Volume (mm$^3$) | | |
| | < 350 | 350 to 2000 | > 2000 |
| < 1.6 | 260 | 260 | 260 |
| 1.6 to 2.5 | 260 | 250 | 245 |
| > 2.5 | 250 | 245 | 245 |

Moisture sensitivity precautions, as indicated on the packing, must be respected at all times.

Studies have shown that small packages reach higher temperatures during reflow soldering, see Figure 13.

MSL: Moisture Sensitivity Level

**Fig 13.  Temperature profiles for large and small components**
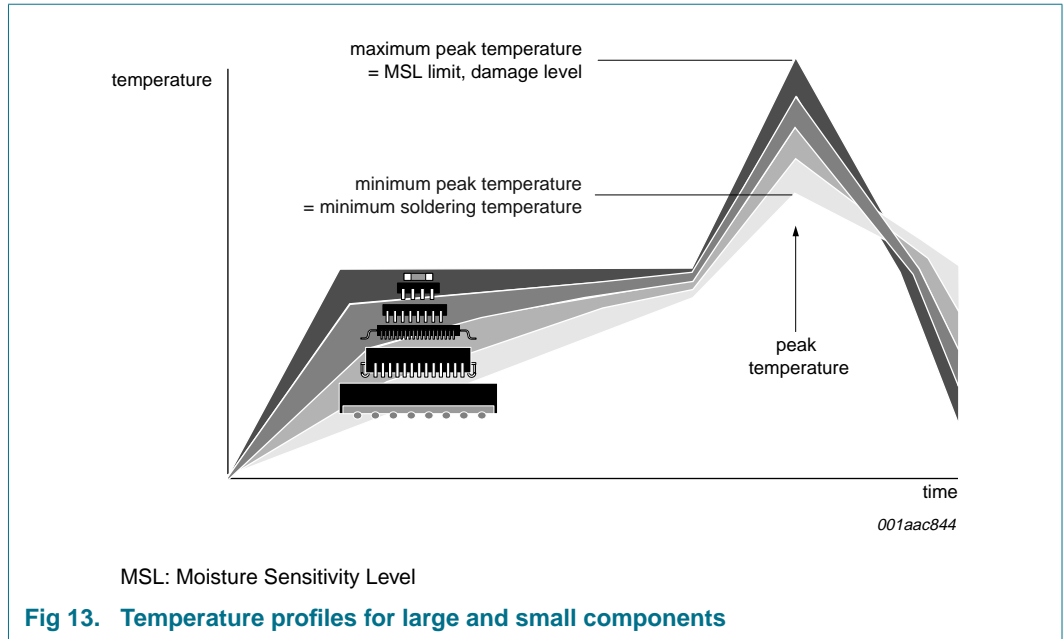
For further information on temperature profiles, refer to Application Note *AN10365 "Surface mount reflow soldering description"*.

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## 15. Revision history

**Table 11.    Revision history**

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|---|---|---|---|---|
| PCA82C250_6 | 20090326 | Product data sheet | - | PCA82C250_5 |
| Modifications: | • The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors.<br>• Legal texts have been adapted to the new company name where appropriate.<br>• DIP8 package discontinued; bare die no longer available. | | | |
| PCA82C250_5 | 20000113 | Product specification | - | PCA82C250_3 |
| PCA82C250_3 | 19971021 | Preliminary specification | | PCA82C250_2 |
| PCA82C250_2 | 19940915 | - | | PCA82C250_1 |
| PCA82C250_1 | 19940408 | - | | - |

# 16. Legal information

## 16.1 Data sheet status

| Document status[1][2] | Product status[3] | Definition |
|---|---|---|
| Objective [short] data sheet | Development | This document contains data from the objective specification for product development. |
| Preliminary [short] data sheet | Qualification | This document contains data from the preliminary specification. |
| Product [short] data sheet | Production | This document contains the product specification. |

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.nxp.com.

## 16.2 Definitions

**Draft** — The document is a draft version only. The content is still under internal review and subject to formal approval, which may result in modifications or additions. NXP Semiconductors does not give any representations or warranties as to the accuracy or completeness of information included herein and shall have no liability for the consequences of use of such information.

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## 16.3 Disclaimers

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For more information, please visit: **http://www.nxp.com**

For sales office addresses, please send an email to: **salesaddresses@nxp.com**

## 18. Contents

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Products   ...   High-speed CAN transceivers   **PCA82C250T**

Applications        Looking for

**PCA82C250**          Preview        Product information ⓘ        Selection guide ⊞

**See also**

**Datasheet**

**PCA82C250 - CAN controller interface**

📄 **PCA82C250**
(Product Specification)
26-Mar-09, 17 Pages, 93kB

General description
Features
Products/packages
Quality/reliability/chemical
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areas

**General description**                                                     Hide

The PCA82C250 is the interface between a CAN protocol controller and the physical bus. The device provides differential transmit
capability to the bus and differential receive capability to the CAN controller.

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**Features**                                                                 Hide

Fully compatible with the *"ISO 11898"* standard
High speed (up to 1 MBd)
Bus lines protected against transients in an automotive environment
Slope control to reduce Radio Frequency Interference (RFI)
Differential receiver with wide common-mode range for high immunity against ElectroMagnetic Interference (EMI)
Thermally protected
Short-circuit proof to battery and ground
Low-current Standby mode
An unpowered node does not disturb the bus lines
At least 110 nodes can be connected

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**Products/packages**                                                        Hide

| Type number | Orderable part number | Ordering code (12NC) | Product status | Package | Packing | Marking | ECCN |
|---|---|---|---|---|---|---|---|
| PCA82C250T/YM | PCA82C250T/YM,112 | 9352 888 83112 | Development | SOT96 | Tube | Standard Marking | |
| PCA82C250T/YM | PCA82C250T/YM,115 | 9352 888 83115 | Development | SOT96 | Reel Pack, SMD, 7" | Standard Marking | |
| PCA82C250T/YM | PCA82C250T/YM,118 | 9352 888 83118 | Development | SOT96 | Reel Pack, SMD, 13" | Standard Marking | |

The variants in the table below are discontinued. See the table Discontinued information for more information.

| Type number | Orderable part number | Ordering code (12NC) | Product status | Package | Packing | Marking | ECCN |
|---|---|---|---|---|---|---|---|
| PCA82C250T/N4 | PCA82C250T/N4,112 | 9350 853 30112 | Discontinued Replacement product | SOT96 | Tube | Standard Marking | |
| PCA82C250T/N4 | PCA82C250T/N4,115 | 9350 853 30115 | Discontinued Replacement product | SOT96 | Reel Pack, SMD, 7" | Standard Marking | |
| PCA82C250T/N4 | PCA82C250T/N4,118 | 9350 853 30118 | Discontinued Replacement product | SOT96 | Reel Pack, SMD, 13" | Standard Marking | |

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### Quality/reliability/chemical content

Hide

| Type number | Orderable part number | Chemical content | RoHS | Leadfree conversion date | RHF | IFR (FIT) | MTBF (hours) | MSL |
|---|---|---|---|---|---|---|---|---|
| PCA82C250T/YM | PCA82C250T/YM,112 | Not available | EU/CN RoHS COMPLIANT Pb | Always Pb-free | D | | | |
| PCA82C250T/YM | PCA82C250T/YM,115 | Not available | EU/CN RoHS COMPLIANT Pb | Always Pb-free | D | | | |
| PCA82C250T/YM | PCA82C250T/YM,118 | Not available | EU/CN RoHS COMPLIANT Pb | Always Pb-free | D | | | |

The variants in the table below are discontinued. See the table Discontinued information for more information.

| Type number | Orderable part number | Chemical content | RoHS | Leadfree conversion date | RHF | IFR (FIT) | MTBF (hours) | MSL |
|---|---|---|---|---|---|---|---|---|
| PCA82C250T/N4 | PCA82C250T/N4,112 | PCA82C250T_N4 | EU/CN RoHS COMPLIANT Pb | week 3, 2005 | G | | | |
| PCA82C250T/N4 | PCA82C250T/N4,115 | PCA82C250T_N4 | EU/CN RoHS COMPLIANT Pb | week 3, 2005 | G | | | |
| PCA82C250T/N4 | PCA82C250T/N4,118 | PCA82C250T_N4 | EU/CN RoHS COMPLIANT Pb | week 3, 2005 | G | | | |

Quality and reliability disclaimer

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### Pricing/ordering/availability

Hide

| Type number | Ordering code (12NC) | Orderable part number | Indicative price/unit ($) | Region | Distributor | In stock | Order quantity | Inventory date | Buy online | Samples |
|---|---|---|---|---|---|---|---|---|---|---|
| PCA82C250T/YM | 9352 888 83112 | PCA82C250T/YM,112 | | | | | | | | not available |
| PCA82C250T/YM | 9352 888 83115 | PCA82C250T/YM,115 | | | | | | | | not available |
| PCA82C250T/YM | 9352 888 83118 | PCA82C250T/YM,118 | | | | | | | | not available |

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### Discontinued information

Hide

| Type number | Ordering code (12NC) | Last-time buy date | Last-time delivery date | Replacement product | DN Notice | Status | Comments |
|---|---|---|---|---|---|---|---|

| PCA82C250T/N4 | 935085330112 | 31-dec-09 | 31-mrt-12 | PCA82C250T/YM | DN 64 | Sole source product Limited availability (check with your usual sales contact) | FAB ICN5 Closure. Refer to PCN200901053A dated January 21, 2009. Extended Last Time Delivery to 31.3.2012. Replacement type with new diffusion fab location only |
|---|---|---|---|---|---|---|---|
| PCA82C250T/N4 | 935085330115 | 31-dec-09 | 31-mrt-12 | PCA82C250T/YM | DN 64 | Sole source product Limited availability (check with your usual sales contact) | FAB ICN5 Closure. Refer to PCN200901053A dated January 21, 2009. Extended Last Time Delivery to 31.3.2012. Replacement type with new diffusion fab location only |
| PCA82C250T/N4 | 935085330118 | 31-dec-09 | 31-mrt-12 | PCA82C250T/YM | DN 64 | Sole source product Limited availability (check with your usual sales contact) | FAB ICN5 Closure. Refer to PCN200901053A dated January 21, 2009. Extended Last Time Delivery to 31.3.2012. Replacement type with new diffusion fab location only |

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**Applications**                                                                                                    Hide

High-speed automotive applications (up to 1 MBd).

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**Block diagrams/pinning**                                                                                          Hide
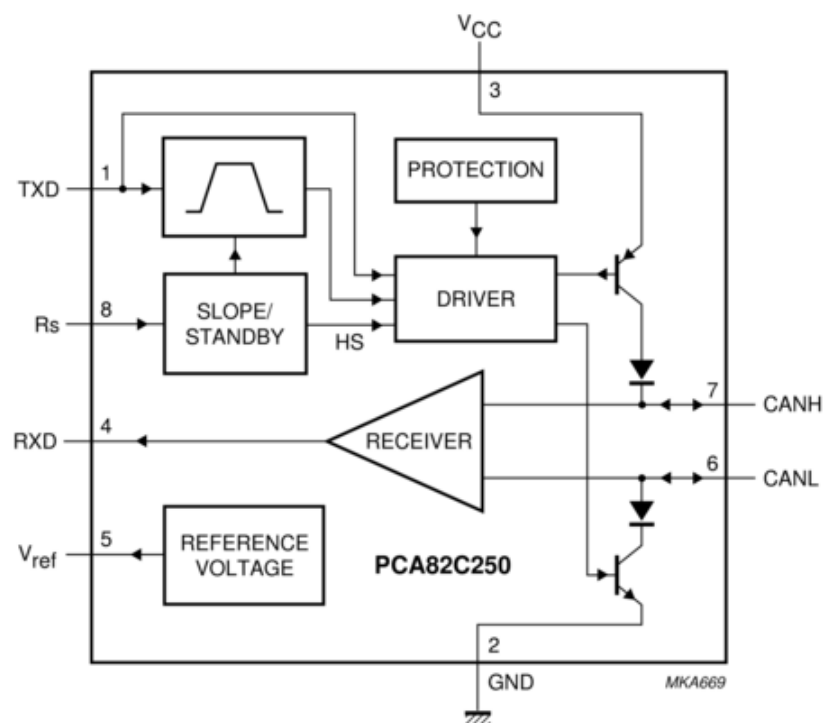
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## Design support

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**Application Notes**
AN10211_2;TJA1040 high speed CAN transceiver (2006-11-10)
AN00094_3;TJA1041/1041A high speed CAN transceiver (2006-11-08)
AN00020_2;TJA1050 high speed CAN transceiver (2006-11-10)

**Support Documents**
75015742; Add value to your networks with CAN solutions that set the standard (2006-09-01)
75015744; High-speed CAN transceivers TJA104x, JA1050 and PCA82C25x (2006-09-01)
75016161; NXP Automotive networking solutions (2007-09-01)
75015741; The vital link in the interconnected car (2006-09-01)
PCA82C250_251_TJA1040_TJA1050; Upgrading Note PCA82C250/251 -> TJA1040, TJA1050 (2001-11-20)

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## Parametrics/similar products

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| Type number | Package | Supply voltage (V) | Application | Configuration | CATEGORY | FEATURES | FUNCTION | Operating temp. (Cel) | No. of Pins | Package Material | Controller Type |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PCA82C250T/N4 | SOT96 | 4.75 ~ 5.25 | Control Devices | HS-CAN transceiver | transceiver | ISO11898-2 compliant, standby mode | Controllers | -40 ~ +125 | 8 | DIL8, SO8, bare die | CAN Interface |
| PCA82C250T/YM | SOT96 | 4.75 ~ 5.25 | Control Devices | HS-CAN transceiver | transceiver | ISO11898-2 compliant, standby mode | Controllers | -40 ~ +125 | 8 | SO8 | CAN Interface |

**Similar products**
PCA82C250 links to the similar products page containing an overview of products that are similar in function or related to the type number(s) as listed on this page. The similar products page includes products from the same catalog tree(s), relevant selection guides and products from the same functional category.

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