NXP standalone LIN2.1 transceiver TJA1021TK/20 in HVSON8

Smaller, lighter LIN2.1 transceiver in leadless HVSON8 package

To enable smaller, lighter, and more environmentally friendly LIN2.1 modules, the industry-leading TJA1021 transceiver is now available in a leadless HVSON8 package that measures only 3 x 3 x 0.85 mm. Compared to an SO8 package, the HVSON8 reduces board space by up 70%.

HVSON8 package features

- Body width: 3 mm
- Pitch: 0. 65 mm
- 70% less board space than SO8
- Thermal resistance improved from 145 K/W to 50 K/W
- Leadless "Dark Green" package (RoHS and Halogen-free)

TJA1021TK/20/c features

- LIN2.1/SAEJ2602 compliant
- Baud rate up to 20 kBd
- Very low electromagnetic emission (EME)
- High electromagnetic immunity (EMI)
- Passive behavior in unpowered state
- Input levels compatible with 3.3 and 5 V devices
- Integrated termination resistor for LIN slave applications
- Wake-up source recognition (local or remote)
- Pin-to-pin compatible with TJA1020 to support K-LIN functions
- Very low current consumption in Sleep mode with local and remote wake-up (<10 µA)
- High ESD robustness: 6 kV to IEC61000-4-2 for pins LIN, VBAT, and WAKE_N
- Transmit data (TXD) dominant time-out function
- Bus terminal and battery pin protected against transients in the automotive environment (ISO7637)
- Communication down to 5.5 V during cranking pulse (for engine start related application, e.g. Start-Stop, RKE)
- Bus terminal short-circuit protection to battery and ground
- Thermally protected

General information

The NXP TJA1021 provides the interface between the Local Interconnect Network (LIN) master/slave protocol controller and the physical bus. It is primarily intended for in-vehicle sub-networks using baud rates from 1 to 20 kBd.

It is the first transceiver of its kind to conform to LIN 2.1/SAEJ2602 and offers improved ratings for electrostatic discharge (ESD). It is pin-to-pin compatible with the TJA1020.

Due to its light weight and environmentally friendly packaging, the TJA1021 has been nominated as an NXP "Eco Excellence" product. The combined package and die weight is a 70% reduction over its predecessor and, depending on the package type and MSL level, the packing weight has been reduced by 40%. Several factors — RHF-2006 indicator, diffusion process, small die size, small package size, and halogen-free packaging — contribute to reduce the IC's use of hazardous substances, as well.

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The TK/20 version is housed in a leadless HVSON8 package, a format that is 70% smaller than conventional SO8 packages. Its compact size and light weight enable a smaller, more cost-effective module. This in turn creates a vehicle harness that is smaller and lighter, and thus helps reduce CO_2 emissions.

The HVSON8 package uses a "Dark Green" molding that is free of Halogen and meets RoHS standards. As a result, the new package saves space while lowering its impact on the environment.

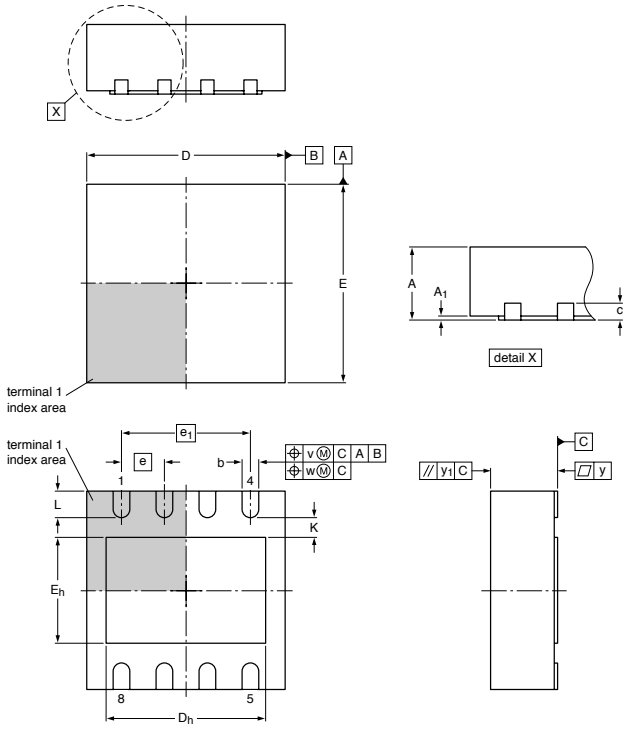
The TJA1021 is manufactured in NXP's third-generation Silicon-On-Insulator (SOI) process technology. It delivers the steady performance required for higher levels of system reliability. It offers built-in protections, failsafe features, and passive behavior when unpowered. The result is ruggedness with lower design risk, shorter time-to-market, and reduced system costs.

The TJA1021 withstands the harsh automotive environment, virtually eliminating potentially hazardous miscommunication within the vehicle's network.

To minimize electromagnetic emission (EME), the TJA1021 converts the transmit data stream of the protocol controller at the transmit data input (TXD) to a bus signal with optimized slew rate and wave shaping.

Package diagram

HVSON8: plastic thermal enhanced very thin small outline package; no leads; 8 terminals; body 3 x 3 x 0.85 mm **SOT782-1**



Dimensions

Unit(1)		A	A1	b	c	D	Dh	E	Eh	e	e1	K	L	v	w	y	y1
mm	max	1.00	0.05	0.35		3.10	2.45	3.10	1.65			0.35	0.45				
	nom	0.85	0.03	0.30	0.2	3.00	2.40	3.00	1.60	0.65	1.95	0.30	0.40	0.1	0.05	0.05	0.1
	min	0.80	0.00	0.25		2.90	2.35	2.90	1.55			0.25	0.35				

Note
1. Plastic or metal protrusions of 0.075 maximum per side are not included.

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Outline version	References			European projection	Issue date
	IEC	JEDEC	JEITA		
SOT782-1	---	MO-229	---		~~09-08-25~~ 09-08-28

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