Automotive Transceivers

In Vehicle Network ICs
Product presentation

Infineon Automotive Division

Q4 2025

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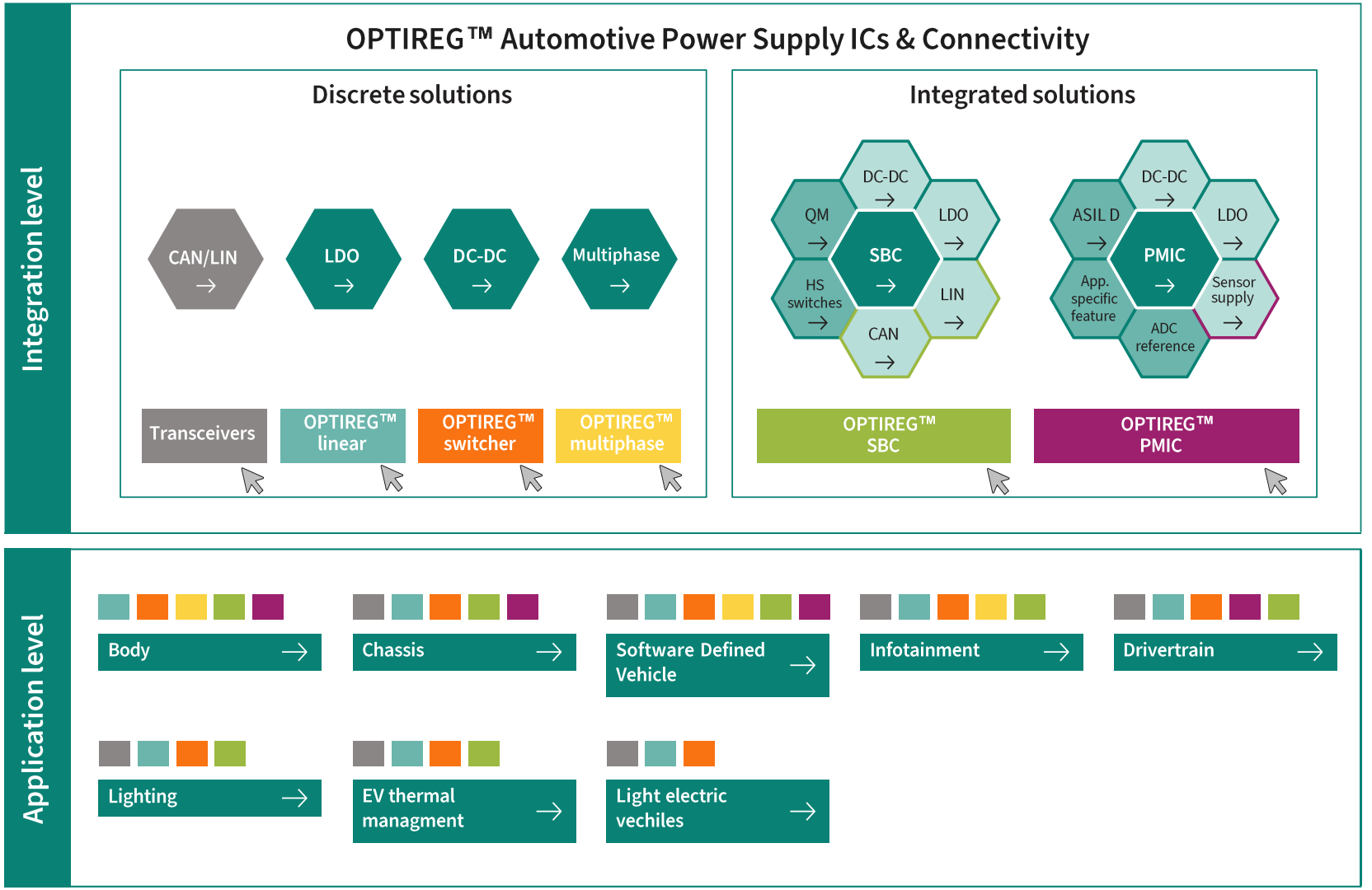
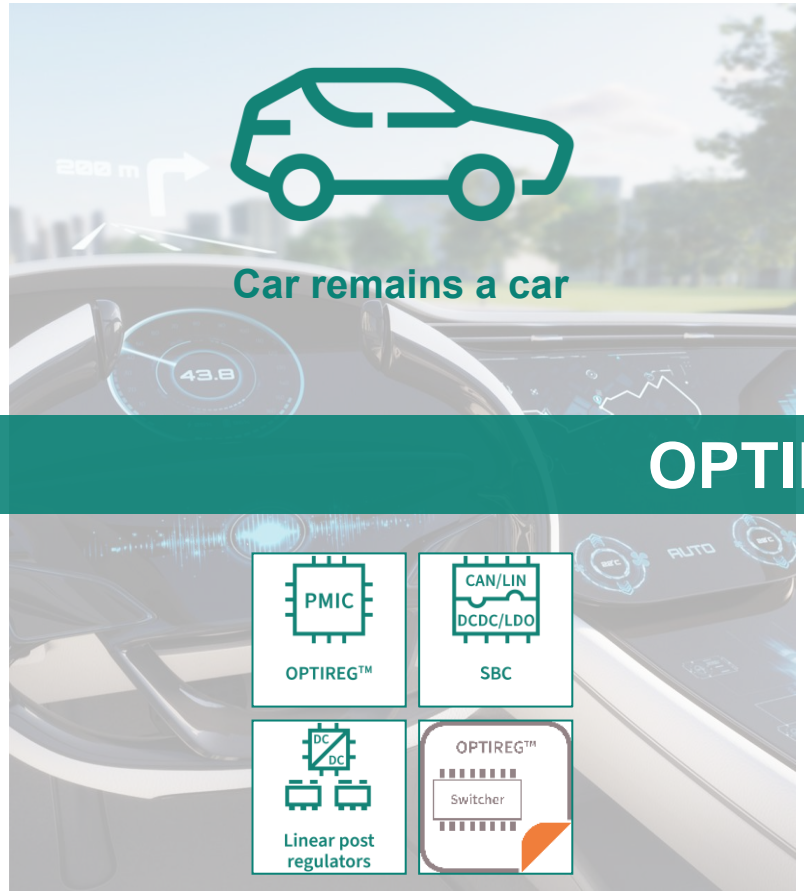
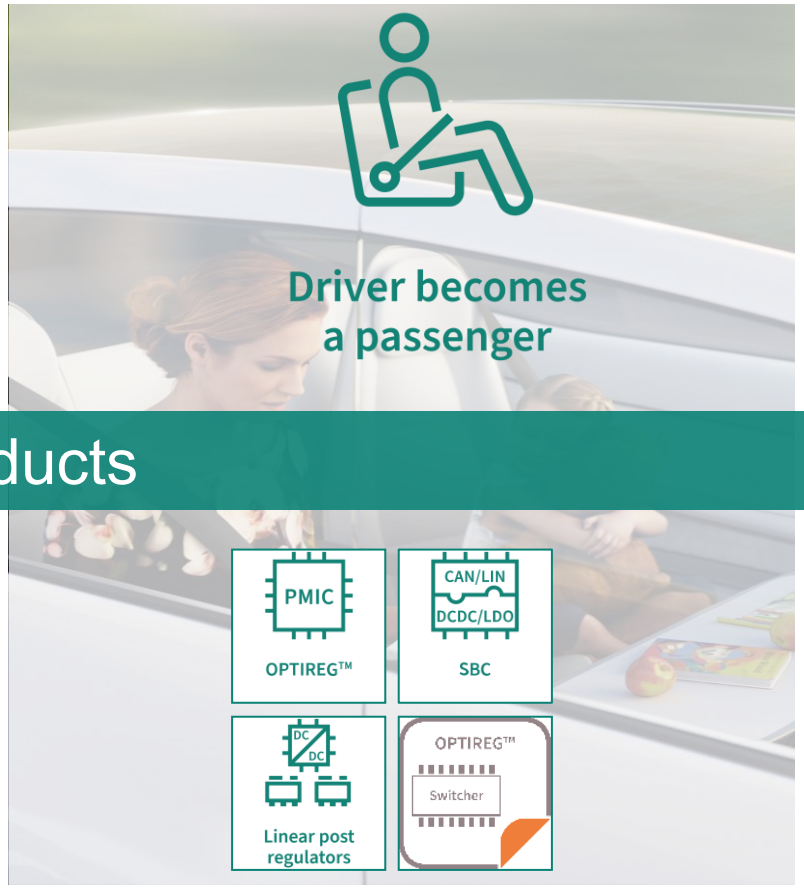
OPTIREG™

OPTIREG™ Portfolio



OPTIREG™ Power Supply fits in all automotive relevant trends





OPTIREG™ provides the right products

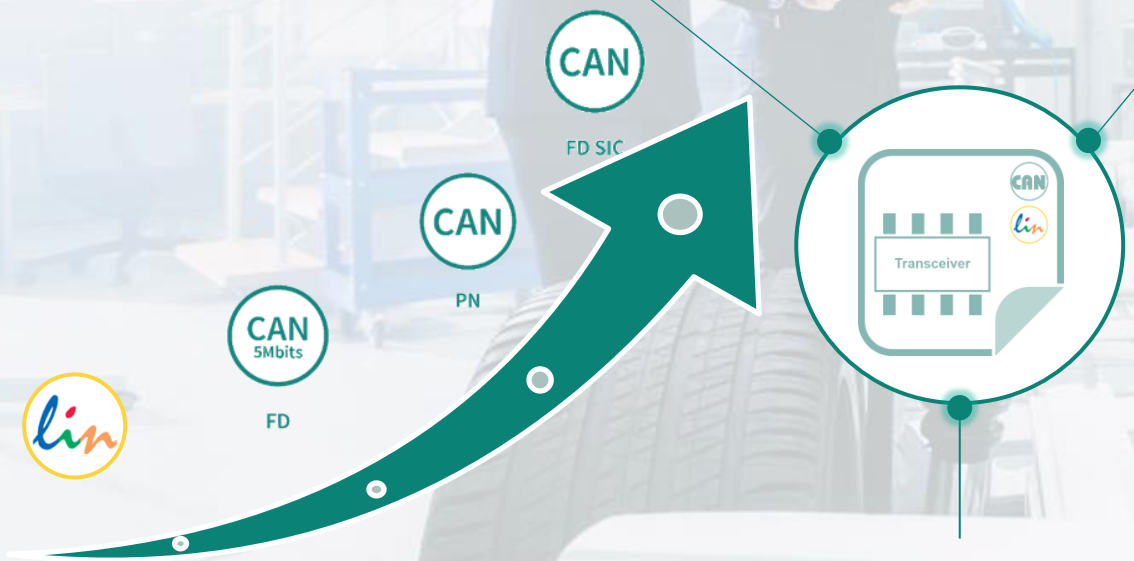
to support all these trends

Traditional applications ***Efficient supply concepts*** ***Emerging business models***

Transceivers

Transceivers in a Nutshell

Product families



Versatile and Reliable

Key Feature	Customer Benefit
Extensive portfolio for versatile applications	Enable design flexibility across a wide range of automotive applications.
Different package solutions	Reducing layout efforts
Backward pin to pin compatible with previous product versions	Easy transition towards higher speed solutions
Worldwide release by OEMs	Evaluated and approved for worldwide release in automotive applications
Very low CAN bus leakage current	Low power consumption during low-power state
Following newest standards and certification	Easy implementation into new platforms with newst requirements

Applications

BMS · Body Comfort · Transmission · Telematics · Car antenna · Truck · Infotainment · Autonomous driving · xEV · CAV

CAN transceivers (value steps overview – current portfolio)

PACKAGE OPTION		FEATURE SET							
DSO8	TSON8								
TLE9350BSJ	**TLE9250LE**	5MBit/s				Receive Only / Power Save			
TLE9350BXSJ	TLE9250XLE	5MBit/s	Vio Pin			Receive Only Mode			
TLE9350BVSJ	TLE9250VLE	5MBit/s	Vio Pin			Power Save Mode			
TLE9351BSJ	**TLE9251LE**	5MBit/s		Standby Mode	Bus Wake-Up				
TLE9371SJ	-	8MBit/s		Standby Mode	Bus Wake-Up				
TLE9351BVSJ	**TLE9251VLE**	5MBit/s	Vio Pin	Standby Mode	Bus Wake-Up				
TLE9371VSJ	-	8MBit/s	Vio Pin	Standby Mode	Bus Wake-Up				
-	**TLT9251VLE**	5MBit/s	Vio Pin	Standby Mode	Bus Wake-Up	AEC-Q100 Grade 0			
DSO14	TSON14								
TLE9252VSK	**TLE9252VLC**	5MBit/s	Vio Pin	Standby Mode	Bus Wake-Up		Wake-up Input	Inhibit output	Error detection
TLE9255WSK	TLE9255WLC	5MBit/s	Vio Pin	Standby Mode	Bus Wake-Up		Wake-up Input	Inhibit output	Partial Networking
-	**TLT9252VLC**	5MBit/s	Vio Pin	Standby Mode	Bus Wake-Up	AEC-Q100 Grade 0	Wake-up Input	Inhibit output	Error detection
-	TLT9255WLC	5MBit/s	Vio Pin	Standby Mode	Bus Wake-Up	AEC-Q100 Grade 0	Wake-up Input	Inhibit output	Partial Networking

CAN transceivers (value steps overview – upcoming updates)

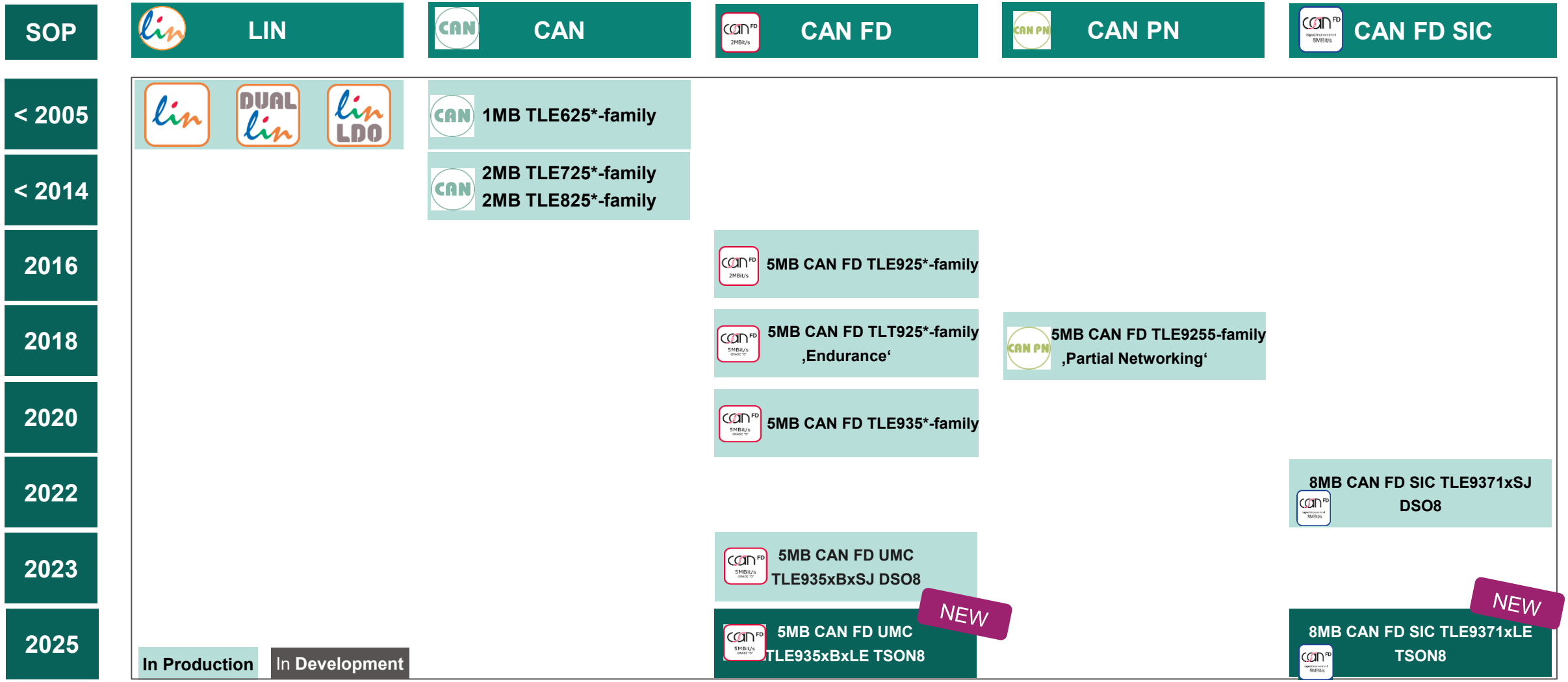
PACKAGE OPTION		FEATURE SET								
DSO8	TSON8									
TLE9350BSJ	**TLE9350BLE**	5MBit/s				Receive Only / Power Save				
TLE9350BXSJ	TLE9350BXLE	5MBit/s	Vio Pin			Receive Only Mode				
TLE9350BVSJ	TLE9350BVLE	5MBit/s	Vio Pin			Power Save Mode				
TLE9351BSJ	**TLE9351BLE**	5MBit/s		Standby Mode	Bus Wake-Up					
TLE9371SJ	TLE9371LE	8MBit/s		Standby Mode	Bus Wake-Up					
TLE9351BVSJ	**TLE9351BVLE**	5MBit/s	Vio Pin	Standby Mode	Bus Wake-Up					
TLE9371VSJ	TLE9371VLE	8MBit/s	Vio Pin	Standby Mode	Bus Wake-Up					
-	**TLT9251VLE**	5MBit/s	Vio Pin	Standby Mode	Bus Wake-Up	AEC-Q100 Grade 0				
DSO14	TSON14									
TLE9252VSK	**TLE9252VLC**	5MBit/s	Vio Pin	Standby Mode	Bus Wake-Up		Wake-up Input	Inhibit output		Error detection
TLE9255WSK	TLE9255WLC	5MBit/s	Vio Pin	Standby Mode	Bus Wake-Up		Wake-up Input	Inhibit output	Partial Networking	
-	**TLT9252VLC**	5MBit/s	Vio Pin	Standby Mode	Bus Wake-Up	AEC-Q100 Grade 0	Wake-up Input	Inhibit output		Error detection
-	TLT9255WLC	5MBit/s	Vio Pin	Standby Mode	Bus Wake-Up	AEC-Q100 Grade 0	Wake-up Input	Inhibit output	Partial Networking	

Coming soon

LIN transceivers (value steps overview)

PACKAGE OPTION		FEATURE SET						
DSO8	TSON8							
TLE7257SJ	TLE7257LE	20kbit/s	Inhibit output		Bus Wake-Up		Efficient start-up	
TLE7258SJ	TLE7258LE	20kbit/s	Inhibit output		Bus Wake-Up		Fast start-up	
TLE7259-3GE	TLE7259-3LE	20kbit/s	Inhibit output	Fast Programming (assembly line)	Bus Wake-Up			Local Wake-Up
TLE8457DSJ	TLE8457DLE	20kbit/s			Bus Wake-Up		LDO 3.3V	
TLE8457CSJ	TLE8457CLE	20kbit/s			Bus Wake-Up		LDO 5V	
TLE8457BSJ discontinued	TLE8457BLE	20kbit/s			Bus Wake-Up	Time out	LDO 3.3V	
TLE8457ASJ discontinued	TLE8457ALE	20kbit/s			Bus Wake-Up	Time out	LDO 5V	
DSO14	TSON14							
TLE7268SK	TLE7268LC	20kbit/s	Inhibit output		Bus Wake-Up			Dual LIN

Transceivers Portfolio (LIN and CAN) overview



Infineon Automotive Transceiver Complete Portfolio

LIN

Up to 20kbit/s

Basic LIN
- TLE7257SJ/LE
- TLE7258SJ/LE

High End LIN
- TLE7259-3GE/LE

LIN LDO
- TLE8457ALE/BLE
- TLE8457CSJ/LE
- TLE8457DSJ/LE

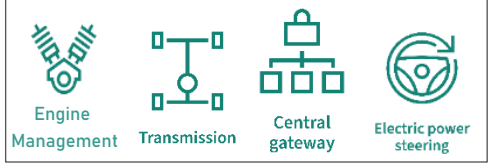
DUAL LIN
- TLE7268SK
- TLE7268LC

CAN 5Mbits FD

Up to 5Mbit/s
- TLE935xBx
- TLE9250xLE
- TLE9251xLE
- TLE9252VLC/VSK
- TLT9251VLE*
- TLT9252VLC*

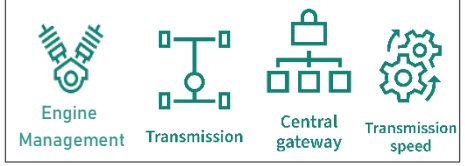
Coming soon

- TLE935xBxLE



CAN PN

Up to 5Mbit/s
- TLE9255WSK
- TLE9255WLC
- TLT9255WLC*

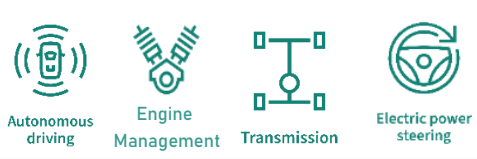


CAN FD SIC

Up to 8Mbit/s
- TLE9371SJ
- TLE9371VSJ

- TLE9371LE
- TLE9371VLE

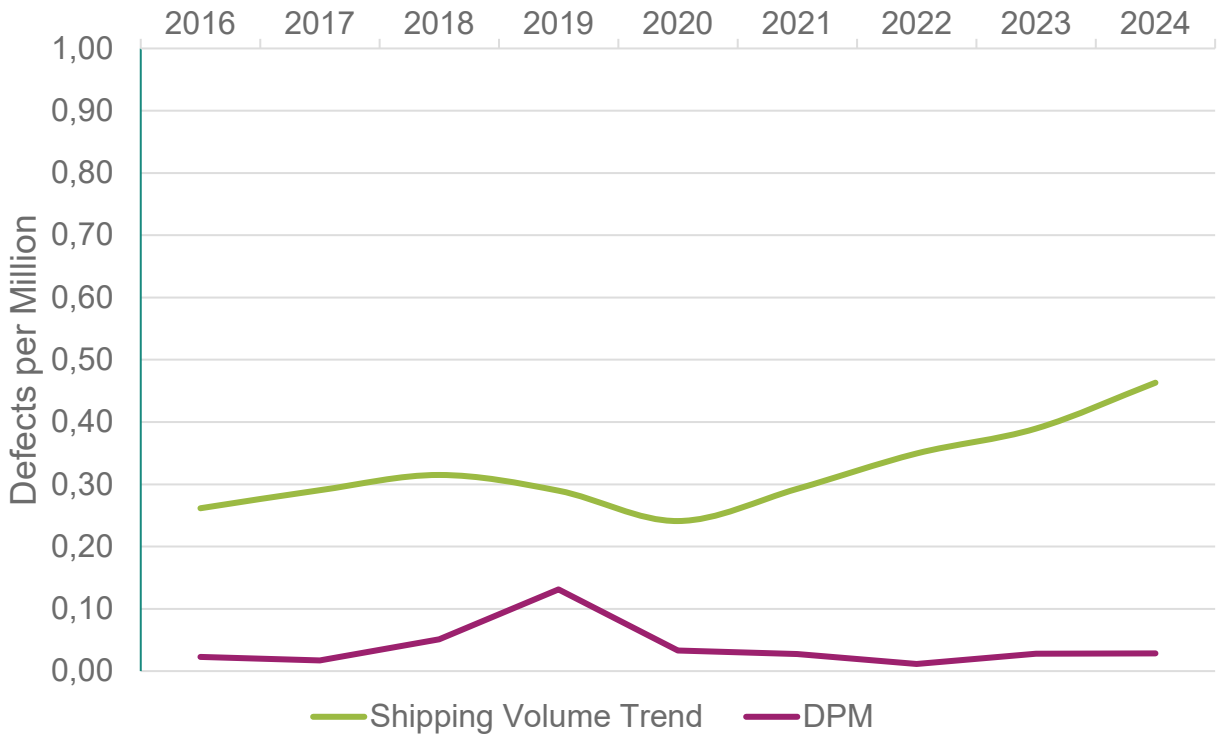
Coming soon



*Grade Zero/Endurance family = T ambient -40°C to +150°C or longer life-time

Infineon Zero-Defect approach improves quality level year over year

DPM rate is decreasing while the volume remains constant



Transceivers
FY2024

0.03DPM

LIN Transceivers

LIN Transceivers

Key features	Customer benefits
– Extensive portfolio for versatile applications	– Enable design flexibility across a wide range of automotive applications.
– Different package solutions	– Reducing layout efforts
– Backward pin to pin compatible with previous product versions	– Easy transition between product families
– Worldwide release by OEMs	– Evaluated and approved for worldwide release in automotive applications
– Following newest standards and certification	– Easy implementation into new platforms with newest requirements

	TLE7257x	TLE7258x	TLE7259-3x	TLE8457Dx	TLE8457Cx	TLE8457BLE	TLE8457ALE	TLE7268x
Inhibit output	✓	✓	✓					✓
Fast Programming (assembly line)			✓					
Bus Wake-Up	✓	✓	✓	✓	✓	✓	✓	✓
Local Wake-Up			✓					
Efficient start-up	✓							
Fast start-up		✓						
Time out						✓	✓	
LDO 3.3V				✓		✓		
LDO 5V					✓		✓	
Dual LIN								✓

Applications


Park assist


Pumps

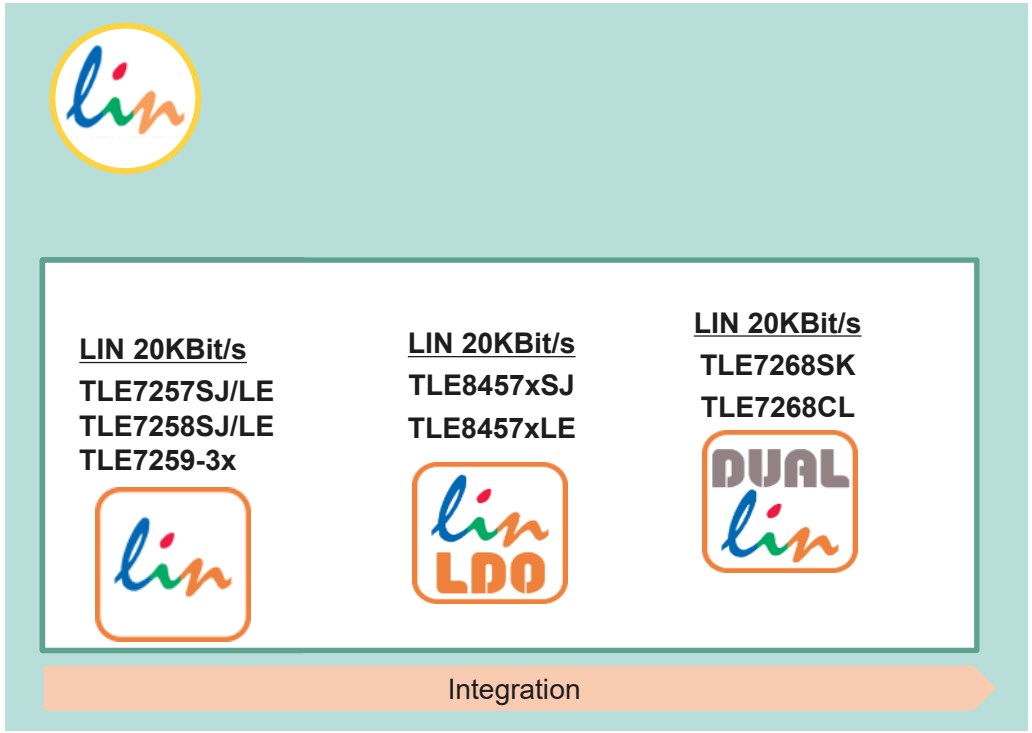

Fans


Seat heating

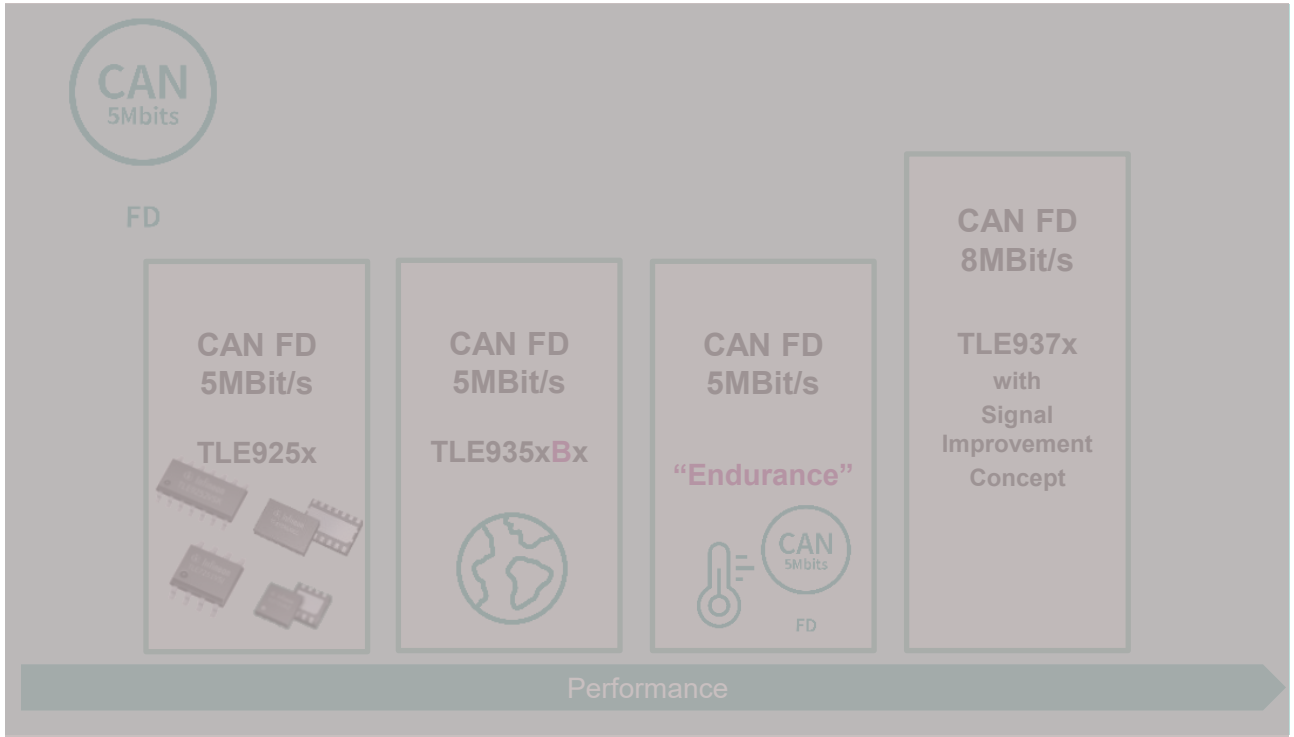

Sunroof


Rain sensor

Offering unique solutions to satisfy developments towards „In Vehicle Network“ segment



- To date: More than 1 Billion LIN transceivers shipped
- More than 20 different LIN products
- Compliant to ISO 17987-4
- World-wide release



- To date: More than 2.7 Billion CAN transceivers shipped
- More than 50 different CAN products
- ISO 11898-2 ed 2024 compliant
- World-wide release

LIN Transceiver Product Portfolio
Moving towards Integration

Performance

Single LIN

Sunroof

Central gateway

In Production

TLE7257SJ/LE
TLE7258SJ/LE

BASIC LIN

In Production

TLE7259-3GE
TLE7259-3LE

High End LIN

Seat heating

MULTI-LIN (Integration)

DUAL LIN

Engine Management

Park assist

In Production

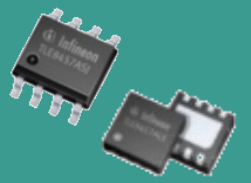
TLE7268SK
TLE7268LC

DUAL LIN

LIN LDO

In Production

TLE8457A/B/C/DLE/SJ



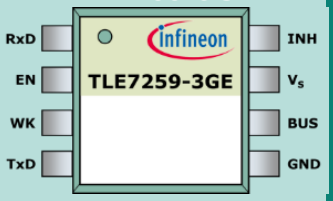
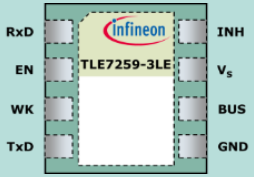
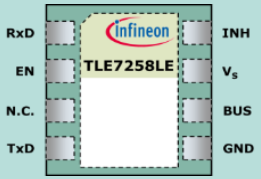
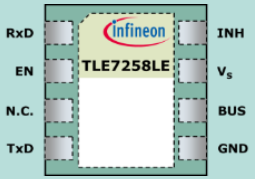
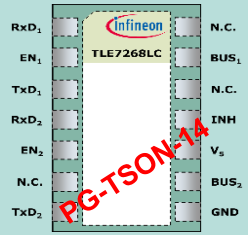
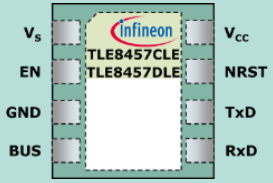
LIN LDO

Pumps

Sunroof

Higher Performance; Reduced layout efforts (Compatibility Single LIN vs Dual LIN)
Pinout compatibility with main competitors

Infineon's Automotive Network ICs
LIN Transceiver Portfolio

	High End LIN commander & responder	Basic LIN commander & responder	Basic LIN commander & responder	Dual LIN commander & responder	LIN LDO commander & responder
DSO-8	TLE7259-3GE 	TLE7257SJ 	TLE7258SJ 	TLE7268SK 	TLE8457xSJ 
TSON-8	TLE7259-3LE 	TLE7257LE 	TLE7258LE 	TLE7268LC 	TLE8457xLE 
› Fast progr. › Local wake › TxD timeout › Power-up	✓ ✓ ✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓
	Stand-by	Sleep	Stand-by	Stand-by	Sleep/Stand-by

Infineon's Automotive Network ICs
TLE7259-3GE/LE: Hih End LIN Transceiver

Key Features

- Standby, sleep and flash mode to support accelerated µC programming
- Improved receiver performance: Reduced propagation delay and increased delay symmetry 5V output V-Reg w/o timeout
- Available in DSO-8 and TSON-8

Key Value Proposition

Reduced data transmission time (up to 100kbit/ in flash mode) and fast programming

Pin-to-Pin compatibility with existing competitors devices **reduces development time and effort**

Digital I/O's compatible to 3.3 V and 5 V micro controllers

Applications

Park assist

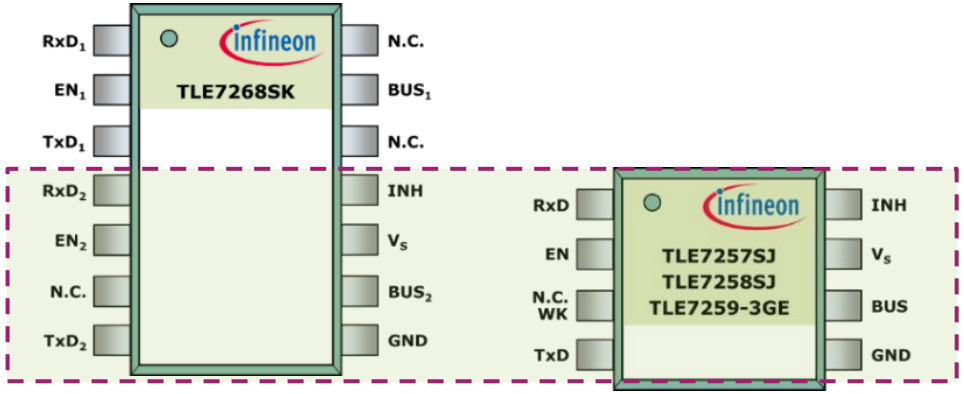
Pumps

Fans

Engine Management

Infineon's Automotive Network ICs
TLE7268SK/LC: DUAL LIN Transceiver

Modularity



Key Value Proposition

Multiple and flexible designs

Reduced layout efforts with placement options.
Modularity and pin to pin compatible with single LIN

Reduced cost

Pin-to-Pin compatibility with existing competitors devices **reduces development time and effort**

Space saving

Two LIN Transceivers in one package reduced layout with placement options.
Available in **DSO-14 and TSON-14**

Applications

Sunroof

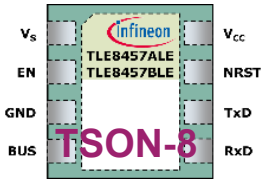
Seat heating

Car lighting

Infineon's Automotive Network ICs
LIN LDO Product Family: LIN transceiver with integrated LDO

Feature Scalability and two package options

- A 5V output V-Reg w/timeout
- B 3.3V output V-Reg w/timeout
- C 5V output V-Reg w/o timeout
- D 3.3V output V-Reg w/o timeout



Key Value Proposition

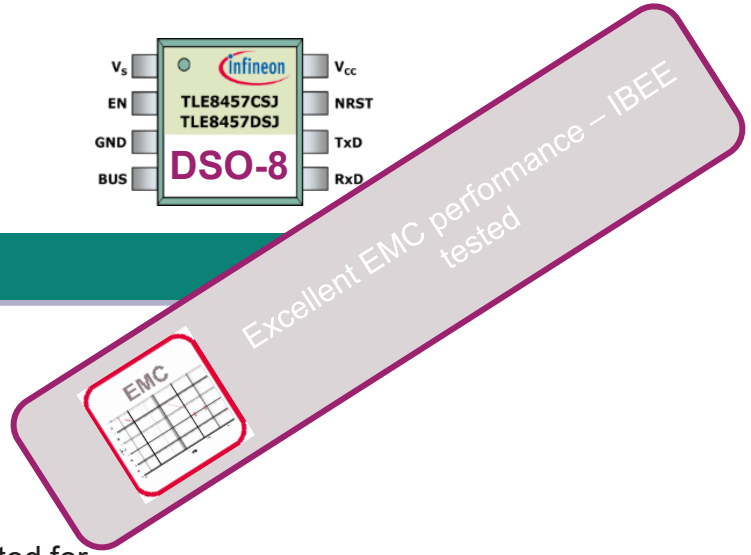
Protection through VCC under-voltage reset

Ultralow Quiescent current

Ultralow quiescent current of 20µA in stand-by mode, especially suited for permanently supplied applications

Bi-directional bus cummunication

Bi-directional bus communication compliant with LIN specification 2.2A and SAE J2602



Applications

Pumps

Fans

Rain sensor

Infineon's Automotive Network ICs
TLE7257SJ/LE & TLE7258SJ/LE Basic LIN Transceiver

Key Features

- Power up in Sleep or power up in STB mode
- Excellent ESD robustness
- Available in DSO-8 and TSON-8
- TSON-8 package supports Automated Optical Inspection (AOI)

Key Value Proposition

Especially suitable for partially supplied networks due to low leakage current on the BUS pin

Pin-to-Pin compatibility with existing competitors devices **reduces development time and effort**

Ultralow quiescent current of 10µA in sleep mode

Ultralow Quiescent current

Applications

Park assist

Seat heating

Car lighting

CAN Transceivers with Flexible Data (FD)

CAN Transceivers

Key features	Customer benefits
– Extensive portfolio for versatile applications	– Enable design flexibility across a wide range of automotive applications.
– Different package solutions	– Reducing layout efforts
– Backward pin to pin compatible with previous product versions	– Easy transition towards higher speed solutions
– Very low CAN bus leakage current	– Low power consumption during low-power state
– Following newest standards and certification	– Easy implementation into new platforms with newest requirements

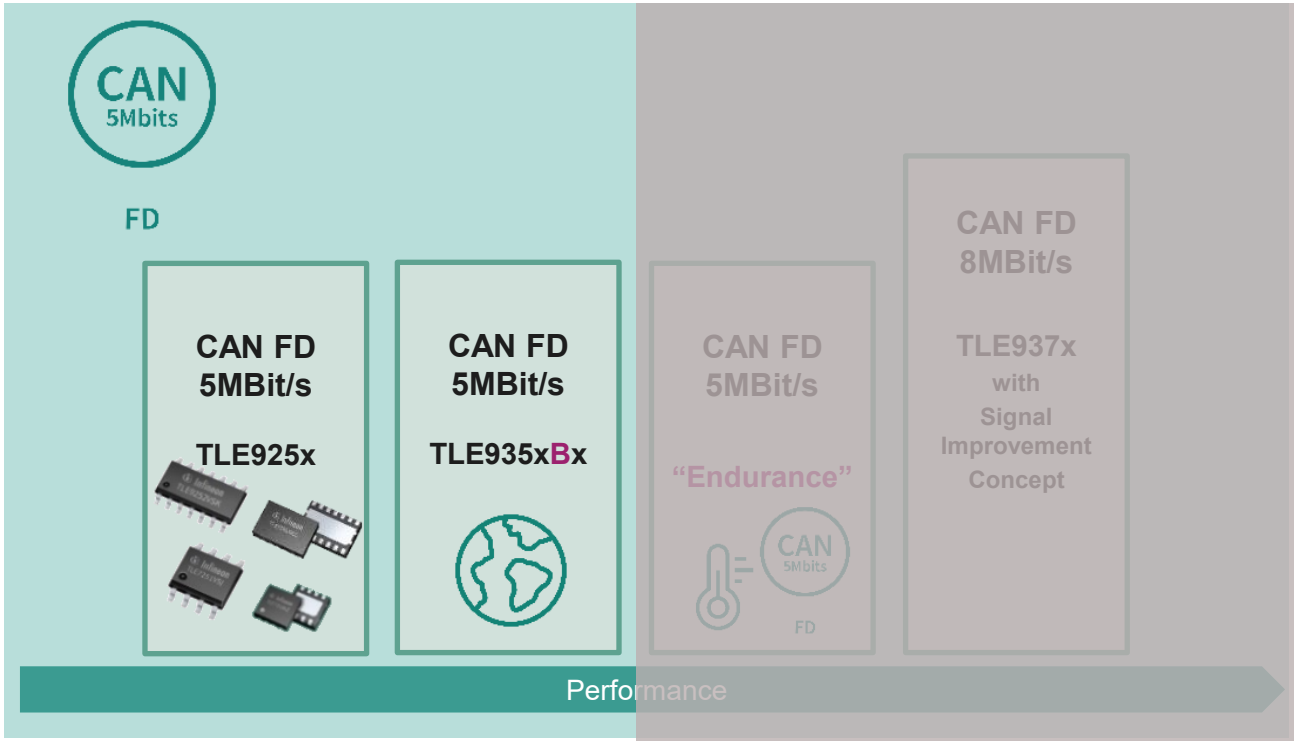
	TLE9350Bx	TLE9350BXx	TLE9350BVx	TLE9351Bx	TLE9371x	TLE9351BVx	TLE9371Vx	TLT9251VLE	TLE9252Vx	TLE9255Wx	TLT9252VLC	TLT9255WLC
5MBit/s	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓
8MBit/s					✓		✓					
Vio Pin		✓	✓			✓	✓	✓	✓	✓	✓	✓
Standby Mode				✓	✓	✓	✓	✓	✓	✓	✓	✓
Bus Wake-Up				✓	✓	✓	✓	✓	✓	✓		
AEC-Q100 Grade 0								✓			✓	✓
Receive Only / Power Save	✓											
Receive Only Mode		✓										
Power Save Mode			✓									
Wake-up Input									✓	✓	✓	✓
Inhibit output									✓	✓	✓	✓
Partial Networking										✓		✓
Error detection									✓		✓	

Applications

- Radar
- Car lighting
- Infotainment
- Dashboard
- Lane assist
- Central gateway
- Transmission

Offering unique solutions to satisfy developments towards „In Vehicle Network“ segment

- To date: More than 1 Billion LIN transceivers shipped
- More than 20 different LIN products
- Compliant to ISO 17987-4
- World-wide release



- To date: More than 2.7 Billion CAN transceivers shipped
- More than 50 different CAN products
- ISO 11898-2 ed 2024 compliant
- World-wide release

Infineon's Automotive Network ICs: Ease of Change

CAN FD 5MBit/s without wake

CAN 1MBit/s

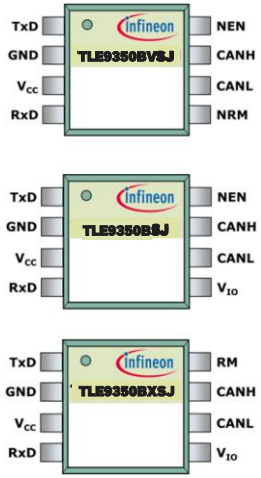
CAN 5MBits FD

- TLE7250G
- TLE7250SJ
- TLE8250G
- TLE8250SJ
- TLE9250SJ
- TLE9350SJ

- TLE7250GVIO
- TLE7250VSJ
- TLE8250GVIO
- TLE8250SJ
- TLE9250VSJ
- TLE9350VSJ

- TLE7250XSJ
- TLE8250XSJ
- TLE9250XSJ
- TLE9350XSJ

CAN 5MBits FD



CAN FD 5MBit/s with wake

CAN 1MBit/s

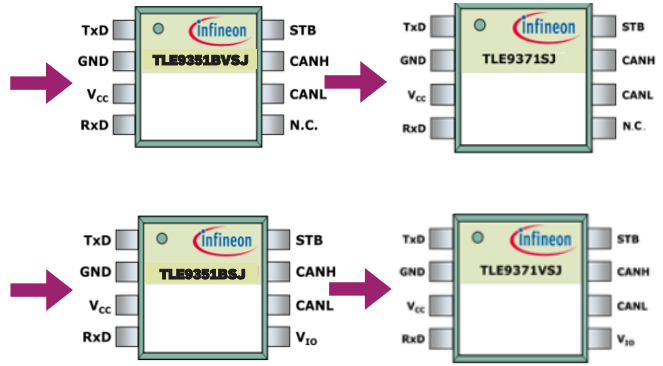
CAN 5MBits FD

CAN 5MBits FD

CAN FD SIC

- TLE6251DS
- TLE8251SJ
- TLE9251SJ
- TLE9351SJ

- TLE6251D
- TLE7251VSJ
- TLE8251VSJ
- TLE9251VSJ
- TLE9351VSJ



CAN FD 5MB variant is backwards compatible to 1MBit/s and 2MBit/s

CAN FD SIC is backwards compatible to TLE9251x, TLE9351x and TLE9351Bx family

Fulfills latest ISO Standard (11898-2: 2016)

Worldwide OEM release

Infineon's Automotive Transceivers CAN FD Family

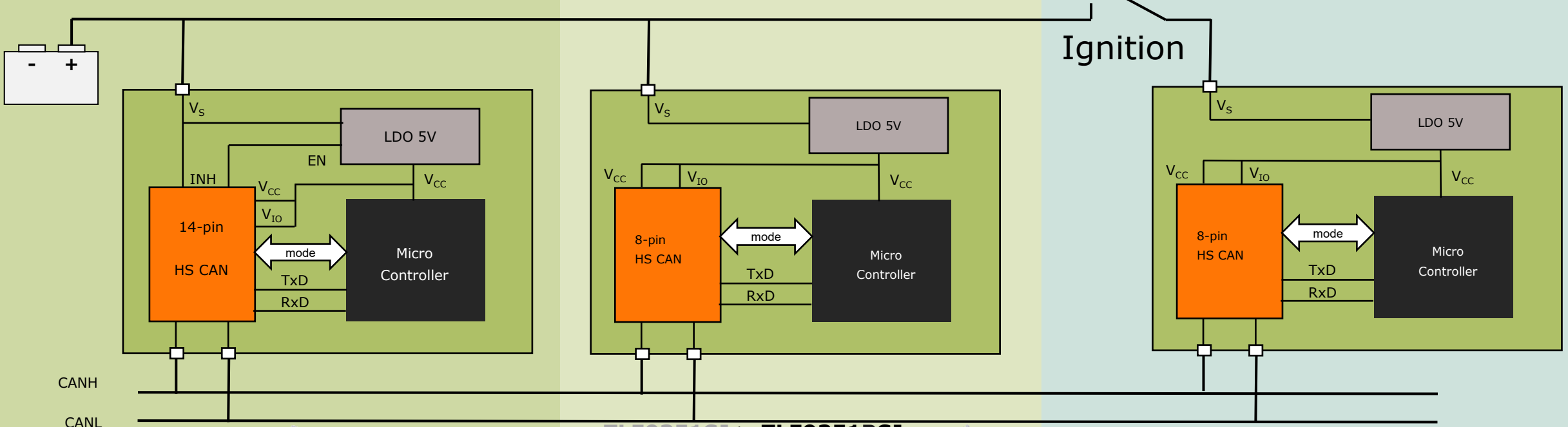
ECU permanent connected to V_{BAT}
(CAN Bus Wake up required)

Switched powered ECU

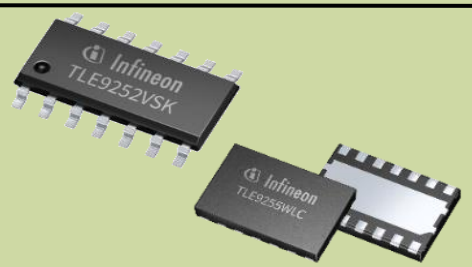
14 Pin Transceiver with INH

8 Pin Transceiver

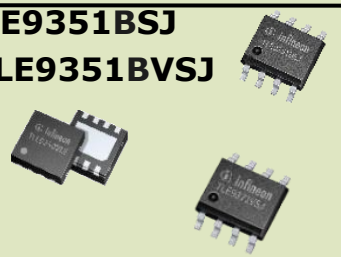
8 Pin Transceiver



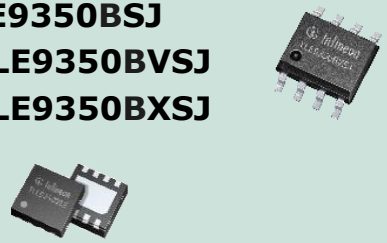
TLE9252VSK
TLE9252VLC
TLE9255WSJ
TLE9255WLC



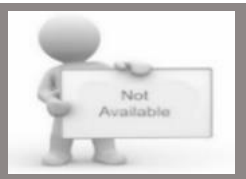
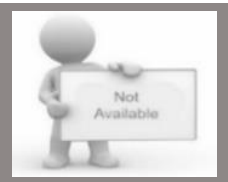
TLE9351SJ > TLE9351BSJ
TLE9351VSJ >TLE9351BVSJ
TLE9251LE
TLE9251VLE
TLE9371SJ
TLE9371VSJ



TLE9350SJ > TLE9350BSJ
TLE9350VSJ > TLE9350BVSJ
TLE9350XSJ > TLE9350BXSJ
TLE9250LE
TLE9250VLE
TLE9250XLE



Infineon Automotive In Vehicle Networking
CAN FD Product Overview

Bus type	ECU connected to VBAT (Bus Wake up)		Switched powered ECU (no bus wake-up)
	Microcontroller boot time critical: NO (14 Pin Device with INH Pin required)	Microcontroller boot time critical: NO (8 Pin Device required)	
CAN FD	**TLE9252 Family**: › **USP**: Dual power supply concept to avoid disruption of communication during cranking › **USP**: WUP t_{Filter} (0.5µs – 1.8µs) 1 device meets worldwide requirement. › **USP**: Lowest current consumption in the market (20µA@125°C) TLE9252V (CAN FD 5MBit/s) 	**TLE9251x/TLE9351x/TLE9351Bx Family:** › Vio supplied wake receiver › **USP**: WUP t_{Filter} (0.5µs – 1.8µs) 1 device meets worldwide requirement. TLE9251VLE/LE (CAN FD 5MBit/s) TLE9351VSJ/SJ (CAN FD 5MBit/s) TLE9351BVSJ/BSJ (CAN FD 5MBit/s) 	**TLE9250x/TLE9350x/TLE9350Bx Family:** › ESD 8KV (HBM) › Optimized cost TLE9350BVSJ/BXSJ/BSJ (CAN FD 5MBit/s) TLE9250VLE/XLE/LE (CAN FD 5MBit/s) TLE9350VSJ/XSJ/SJ (CAN FD 5MBit/s) 
CAN FD SIC	**TLE9371x Family Signal Improved: Up to 8MBit/s** › Pin compatible TLE9251x/TLE9351xfamily › Robust communication in complex networks through ringing prevention TLE9371VSJ/SJ (CAN FD SIC 8MBit/s)		
CAN PN	**TLE9255x Family:** › **USP**: WUP t_{Filter} (0.5µs – 1.8µs) › **USP**: Lowest current consumption in the market (20µA@125C) TLE9255W (CAN FD 5MBit/s)		

CAN FD 5MBit/s – portfolio extended (2nd Generation)
TLE935xBx - Overview

Product	VIO supply	Bus wake	CAN FD	Pin 8	Package	Voltage range
TLE9350BSJ / LE	No V_{IO}	No	5MBit/s	Not Enable	PG-DSO-8 / PG-TSON-8	4.5V-5.5V
TLE9350BVSJ / LE	3.3V-5V	No	5MBit/s	Not Enable	PG-DSO-8 / PG-TSON-8	4.5V-5.5V
TLE9350BXSJ / LE	3.3V-5V	No	5MBit/s	Receive only	PG-DSO-8 / PG-TSON-8	4.5V-5.5V
TLE9351BVSJ / LE	3.3V-5V	Yes	5MBit/s	Stand-by	PG-DSO-8 / PG-TSON-8	4.5V-5.5V
TLE9351BSJ / LE	No VIO	Yes	5MBit/s	Stand-by	PG-DSO-8 / PG-TSON-8	4.5V-5.5V

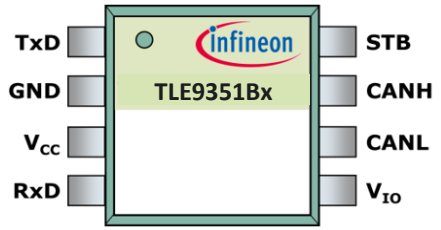
- TLE935x is backwards compatible to 1MB (TLE625x), 2MB (TLE725x, TLE825x), 5MB (TLE9250x, TLE935x)
- Fulfills latest ISO Standard ISO 11898-2: 2024
- IBEE EMC certified
- DSO8 package version in production. TSON8 package versions in release.

Infineon's Automotive Network ICs : TLE9351Bx CAN FD 5MB with Bus Wake-up

Features & benefits

- Fully compliant to ISO 11898-2:2024 and SAE J2284-4/-5
- Loop delay symmetry for CAN FD data frames up to 5 MBit/s
- Very low electromagnetic emission (EME) allows the use without additional common mode choke
- VIO input for voltage adaption to the microcontroller interface (3.3 V or 5 V)
- Bus wake-up pattern (WUP) function with optimized filter time for worldwide OEM usage
- Stand-by mode with minimized quiescent current
- Transmitter supply VCC can be disabled in stand-by mode to further minimize quiescent current
- Excellent ESD robustness
- TxD time-out function
- Very low CAN bus leakage current in power-down state
- Overtemperature protection
- Protected against automotive transients according to ISO 7637 and SAE J2962-2
- Green Product (RoHS compliant)

Pinout



PG-DSO-8

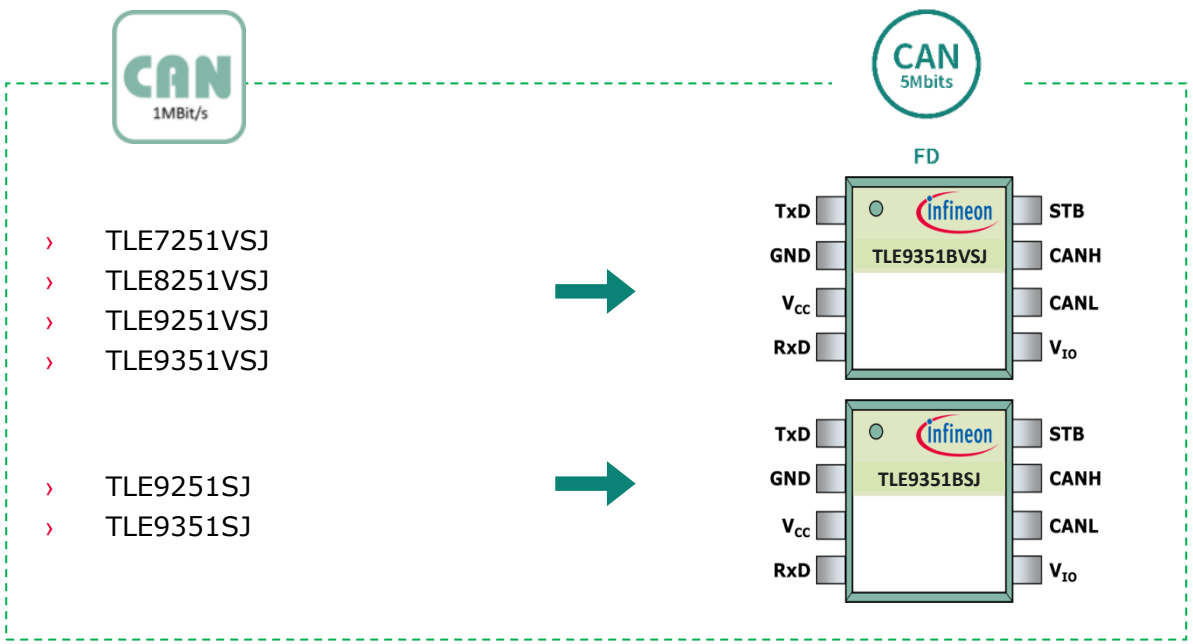
RoHS · Pb · Hal · CAN 5Mbits FD · Automotive

Applications

Central gateway · Electric power steering · Transmission · Engine Management

Infineon's Automotive Network ICs : TLE9351Bx
CAN FD 5MB with Bus Wake-up & Worldwide release

Product	VIO supply	Bus wake	CAN FD	Package
TLE9351BVSJ	3.3V-5V	Yes	5MBit/s	PG-DSO-8
TLE9351BSJ	No VIO	Yes	5MBit/s	PG-DSO-8



CAN FD 5MB

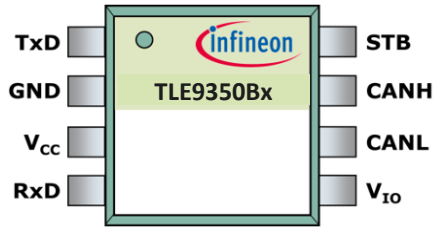
- CAN FD 5MB variant is backwards compatible to 1MB, 2MB and 5MB
- Fulfills latest ISO Standard 11898-2:2024
- IBEE EMC certified
- Extended voltage range

Infineon's Automotive Network ICs : TLE9350Bx
CAN FD 5MB w/o Wake-up

Features & benefits

- Fully compliant to ISO 11898-2:2024 and SAE J2284-4/-5
- Loop delay symmetry for CAN FD data frames up to 5 MBit/s
- Certified according to VeLIO (Vehicle LAN Interoperability and Optimization) test requirements
- Very low electromagnetic emission (EME) allows the use without additional common mode choke
- VIO input for voltage adaption to the microcontroller interface (3.3V or 5V)
- Excellent ESD robustness
- TxD time-out function
- Very low CAN bus leakage current in power-down state
- Overtemperature protection
- Protected against automotive transients according to ISO 7637 and SAE J2962-2
- Power-save mode
- Green Product (RoHS compliant)

Pinout



PG-DSO-8

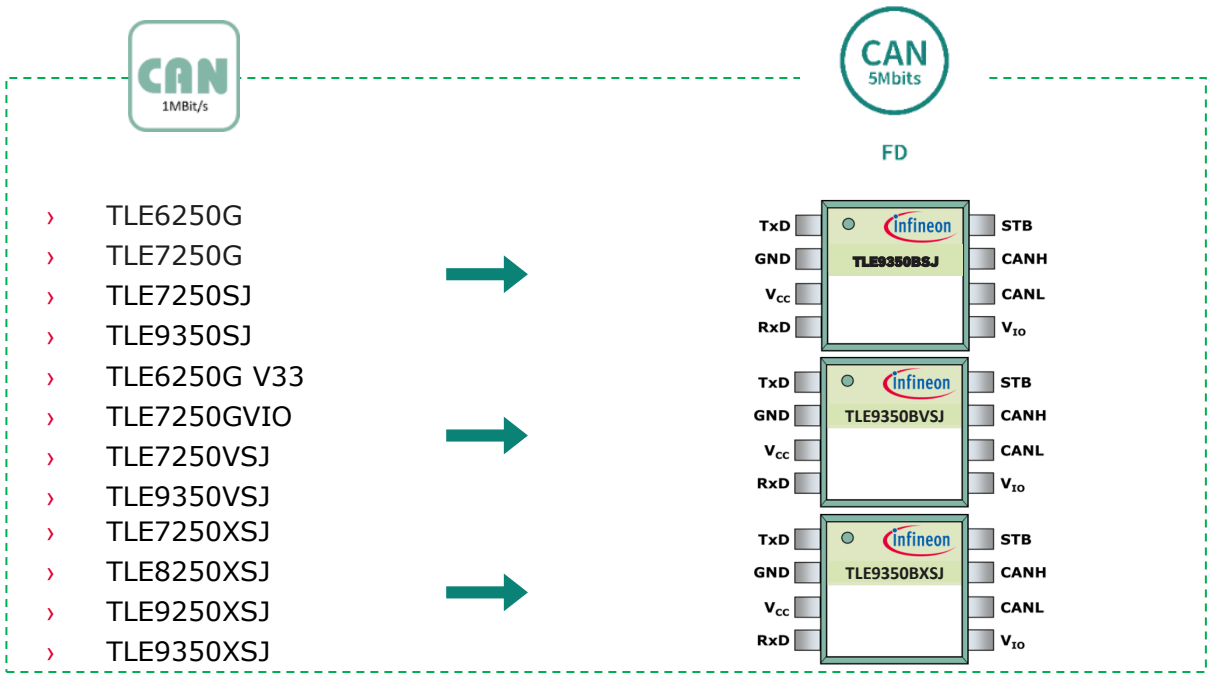
RoHS · Pb · Hal · CAN 5Mbits FD · Automotive

Applications

Central gateway · Electric power steering · Transmission · Engine Management

Infineon's Automotive Network ICs : TLE9350Bx
CAN FD 5MB w/o Wake-up & Worldwide release

Product	VIO supply	Bus wake	CAN FD	Pin 8	Package
TLE9350BSJ	No V_{IO}	No	5MBit/s	Not Enable	PG-DSO-8
TLE9350BVSJ	3.3V-5V	No	5MBit/s	Not Enable	PG-DSO-8
TLE9350BXSJ	3.3V-5V	No	5MBit/s	Receive only	PG-DSO-8



CAN FD 5MB

- CAN FD 5MB variant is backwards compatible to 1MB, 2MB and 5MB
- Fulfills latest ISO Standard (Edition 2024)
- IBEE EMC certified
- Extended voltage range

Infineon's Automotive Network ICs
TLE9252VSK TLE9252VLC: Dual Power Supply Concept

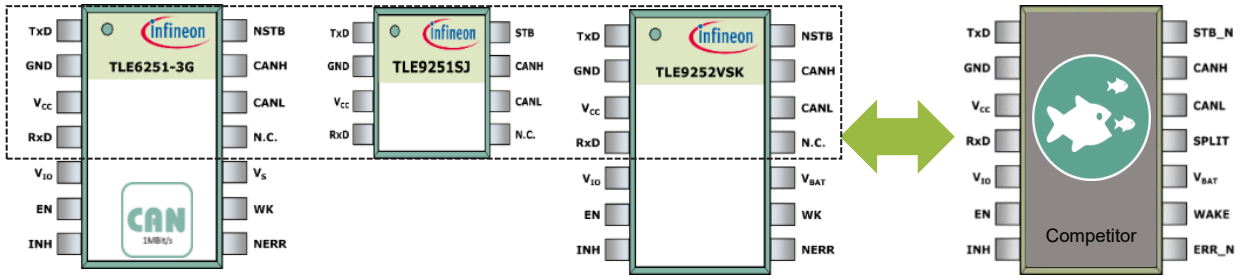
Product	VIO supply	Bus wake	CAN FD	Pin 14/Pin 7	Package	Power Supply	Voltage range
TLE9252VSK	3.3V-5V	Yes	Up to 5MBit/s	CSN/INH	PG-DSO-14	Dual (V_{BAT} +V_{CC})	-0.3V-6.0V
TLE9252VLC	3.3V-5V	Yes	Up to 5MBit/s	CSN/INH	PG-TSON-14	Dual (V_{BAT} +V_{CC})	-0.3V-6.0V
TLT9252VLC Grade 0+	3.3V-5V	Yes	Up to 5MBit/s	CSN/INH	PG-TSON-14	Dual (V_{BAT} +V_{CC})	-0.3V-6.0V

- Compatible to 1MB (TLE625x), 2MB (TLE725x, TLE825x), 5MB (TLE9250x, TLE935x) and other components on the market
- Approved by OEMs without external ESD protection
- Fulfill latest ISO Standard (ISO 11898-2: 2024)
- In production

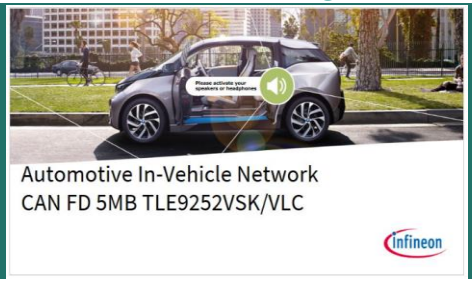
TLE9252VSK/VLC: CAN FD 5MB with Sleep mode and lowest current consumption in Sleep mode

CAN 5Mbits FD

Compatibility



e-Learning



USP

Dual power supply concept

Description

Internal state machine supplied by VBAT or VCC

Benefits

No disruption of communication during VBAT cranking

Vcc under-voltage diagnosis via NERR pin

Description

Microcontroller is able to detect root cause of disabled transmitter

Benefits

During ramp-up, µC is able to verify if Vcc is in functional range and transmitter is enabled

Parameter	TLE9252V		A		B		C		D		
	min	max	min	max	Min	max	min	max	min	max	Unit
Current consumption V_{BAT} Sleep Mode		25 (18 @ 85°C)		30		30		50		28	µA

Radar

Car lighting

Infotainment

Dashboard

Infineon's Automotive Network ICs
TLE9255WSK/WLC, TLT9255WLC: CAN FD Partial Networking

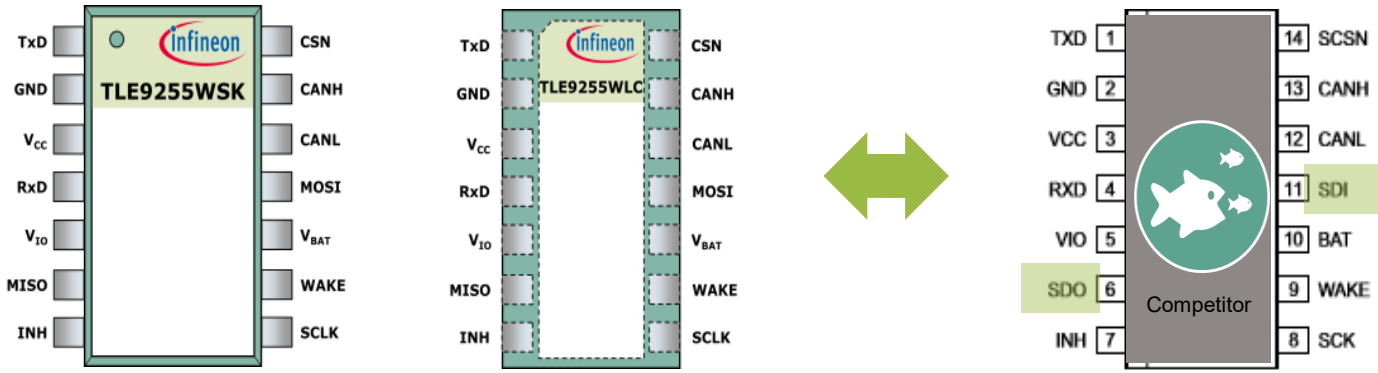
Product	VIO supply	Bus wake	CAN FD	Pin 14/Pin 7	Package	Voltage range
TLE9255WSK	3.3V-5V	Yes	Up to 5MBit/s	CSN/INH	PG-DSO-14	-0.3V-6.0V
TLE9255WLC	3.3V-5V	Yes	Up to 5MBit/s	CSN/INH	PG-TSON-14	-0.3V-6.0V
TLT9255WLC Grade 0+	3.3V-5V	Yes	Up to 5Mbit/s	CSN/INH	PG-TSON-14	0.3V-6.0V

- TLE9255WSK/WLC/TLT9255WLC are backwards compatible to 1MB (TLE625x), 2MB (TLE725x, TLE825x), 5MB (TLE9250x, TLE935x)
- TLT9255WLC higher ambient operation temperature and longer lifetime, suitable for harsh environments
- Fulfills latest ISO Standard (ISO 11898-2: 2024)
- In production

Infineon's Automotive Network ICs
TLE9255WSK/WLC: 14-pin CAN with Partial networking

CAN PN

Compatibility



Central gateway

Engine Management

Transmission

Navigation

CAN PN

ESD

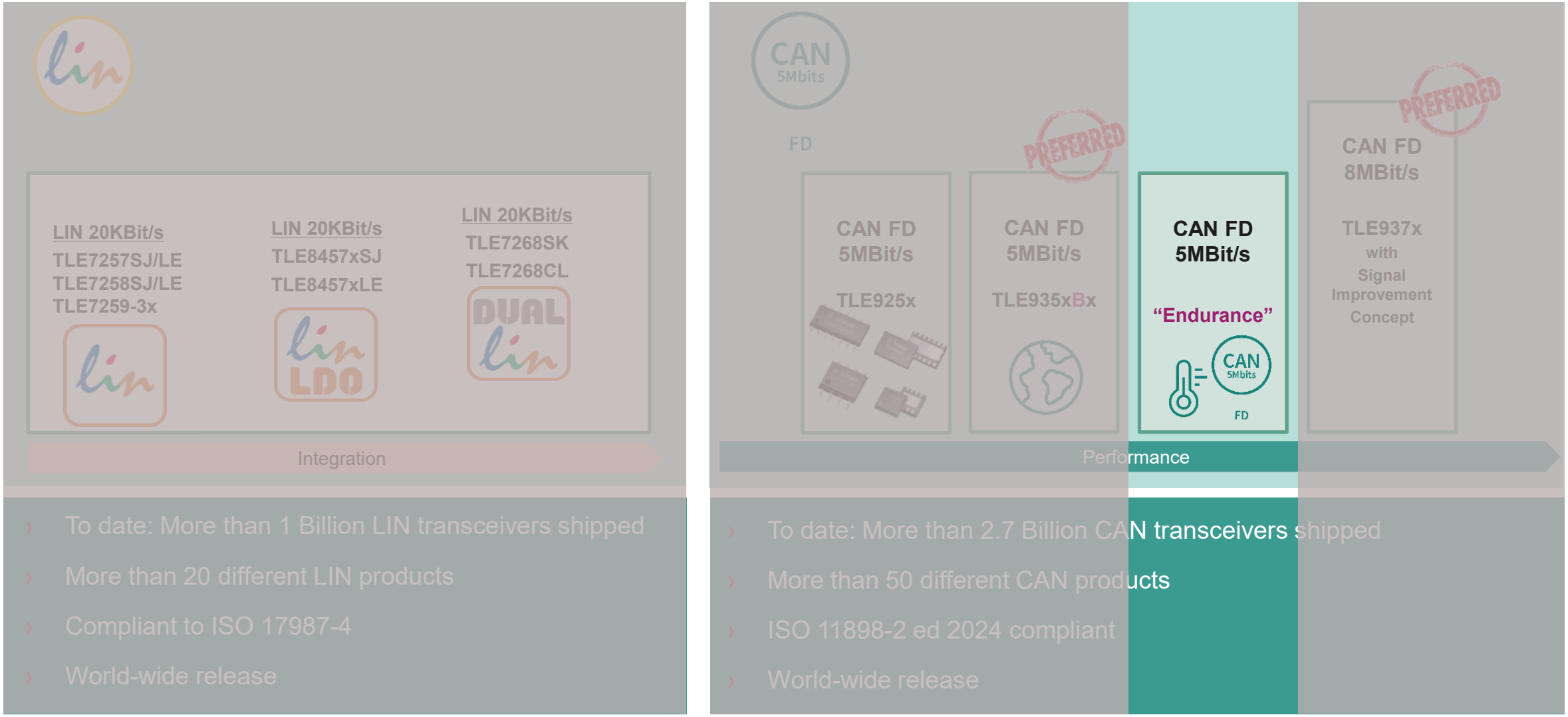
Comparison

Parameter	TLE9255WSK			Competitor 1			Competitor 2		
	Min	Max	Unit	Min	Max	Unit	Min	Max	Unit
I_{BAT} in sleep mode		20@125°C	µA		59@85°C	µA		30@85°C	µA
I_{BAT} in normal mode		1.3	mA		1.5	mA		1.5	mA
Approved w/o external ESD protection US OEMs		YES			NO			NO	

- Reduced layout efforts with placement options
- Lowest current consumption I_{BAT} Sleep mode @125°C: 20µA

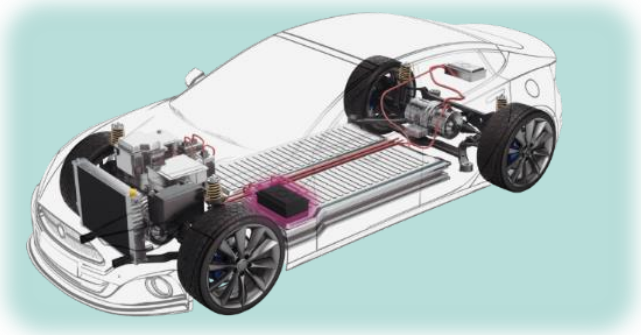
CAN FD with Grade "0+" Capability

Offering solutions to satisfy developments towards „In Vehicle Network“ segment



CAN 5Mbits FD Grade 0+

Offering unique solutions to satisfy developments towards „In Vehicle Network“ segment

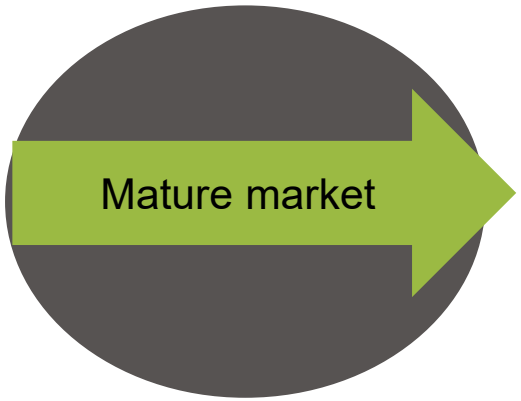


- CAN FD with Grade 0+

Robustness qualification approach beyond AEC Q-100

Enhancing CAN FD 5MB Product Portfolio

TLE… products (Grade 1)



Volumes remain high
but slow growth

Higher temperature
(T ambient >150°C)

Longer lifetime
(>8.000h)

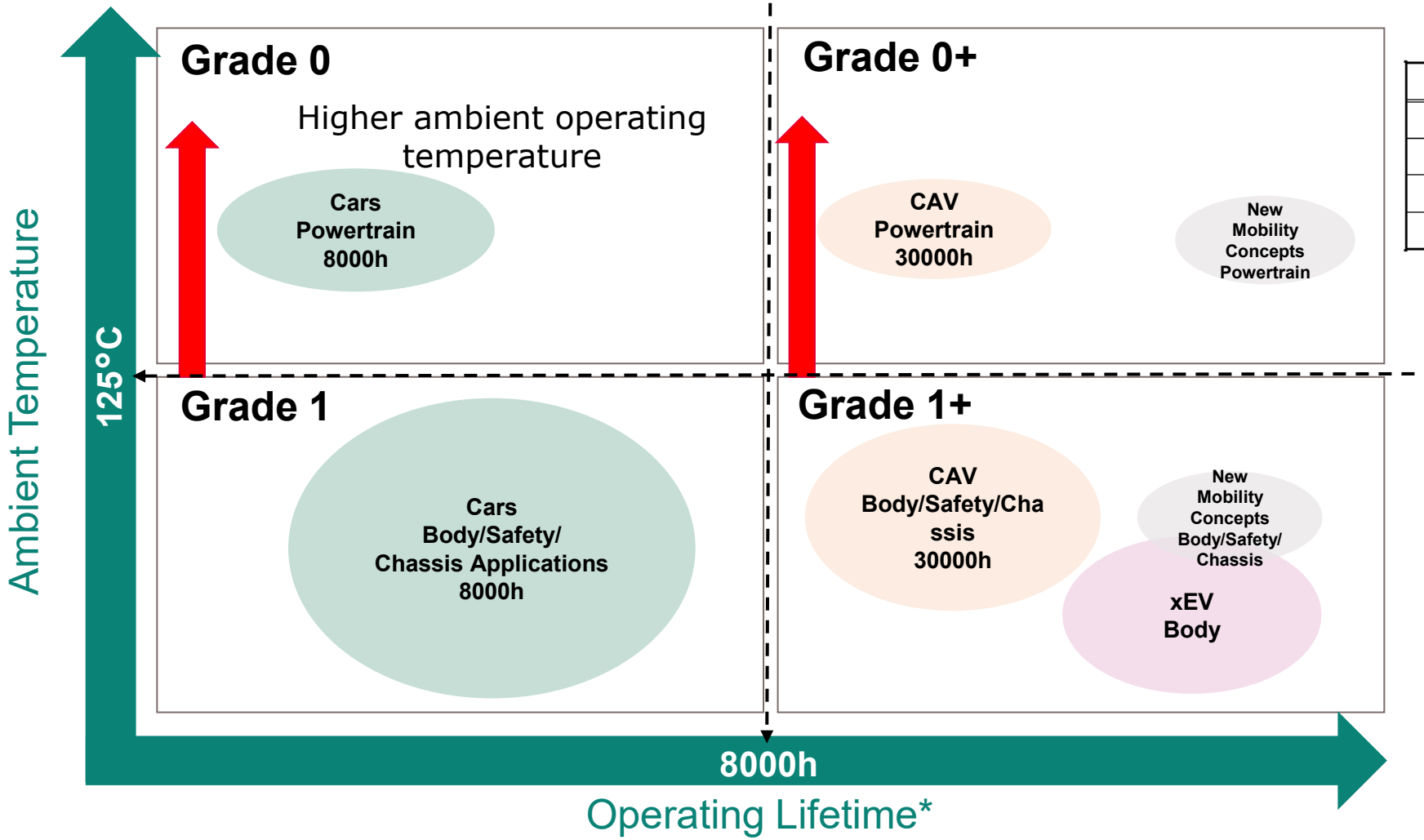
TLT… products (Grade 0+)

Volumes are low
but high growth

Target Application Landscape within Infineon Endurance Grades

CAN 5Mbits FD

Grade 0+



AEC-Q100 Rev. H Grades:

Table 1: Part Operating Temperature Grades

Grade	Ambient Operating Temperature Range
0	-40°C to +150°C
1	-40°C to +125°C
2	-40°C to +105°C
3	-40°C to +85°C

*product lifetime pending on mission profile

Infineon's Automotive Network ICs:
CAN FD Grade 0+ higher operating temperature and extended lifetime

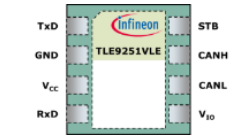
CAN 5Mbits

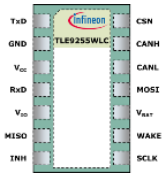
FD

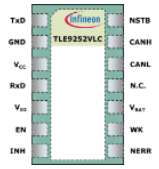
Grade 0+

Extended temperature range and feature scalability

- Available in TSON-14, TSON-8 or DSO-14
- With bus wake up, sleep mode or Partial Networking







Key Value Proposition

AEC-Q100 Grade 0 (Ta: -40°C to +150°C) qualification for high temperature mission profiles

ESD

Excellent ESD robustness, up to ± 11 kV according to IEC61000-4-2

Low EME

Very low electromagnetic emission allows the use without additional common mode choke

CAN

PN

Available also as Partial Networking allowing the usage of microcontrollers in CAN FD networks, which are not CAN FD capable

Applications

Engine Management

Transmission

Central gateway

CAN FD 5MB with Grade „0+“ TLT925x in TSON Package

CAN 5Mbits FD

Grade 0+

Bus type	ECU connected to VBAT (Bus Wake up)		Switched powered ECU (no bus wake-up)
	Microcontroller boot time critical: NO (14 Pin Device with INH Pin required)	Microcontroller boot time critical: NO (8 Pin Device required)	
CAN 5Mbits FD	**TLT9252VLC**: › **$T_{ambient}$ -40 to +150°C** › **USP**: Dual power supply concept to avoid disruption of communication during cranking › **USP**: WUP t_{Filter} (0.5µs – 1.8µs) 1 device meets worldwide requirement. › **USP**: Lowest current consumption in the market (20µA@125°C) **TLT9252VLC (CAN FD 5MBit/s)** 	**TLT9251VLE**: › **$T_{ambient}$ -40 to +150°C** › Vio supplied wake receiver › **USP**: WUP t_{Filter} (0.5µs – 1.8µs) 1 device meets worldwide requirement. **TLT9251VLE (CAN FD 5MBit/s)** 	
CAN PN	**TLT9255WLC:**  › **Tambient -40 to +150°C** › **USP**: WUP tFilter (0.5µs – 1.8µs) › **USP**: Lowest current consumption in the market (20µA@125°C) **TLT9255WLC (CAN FD 5MBit/s)**		

CAN FD with Signal Improvement Concept (SIC)

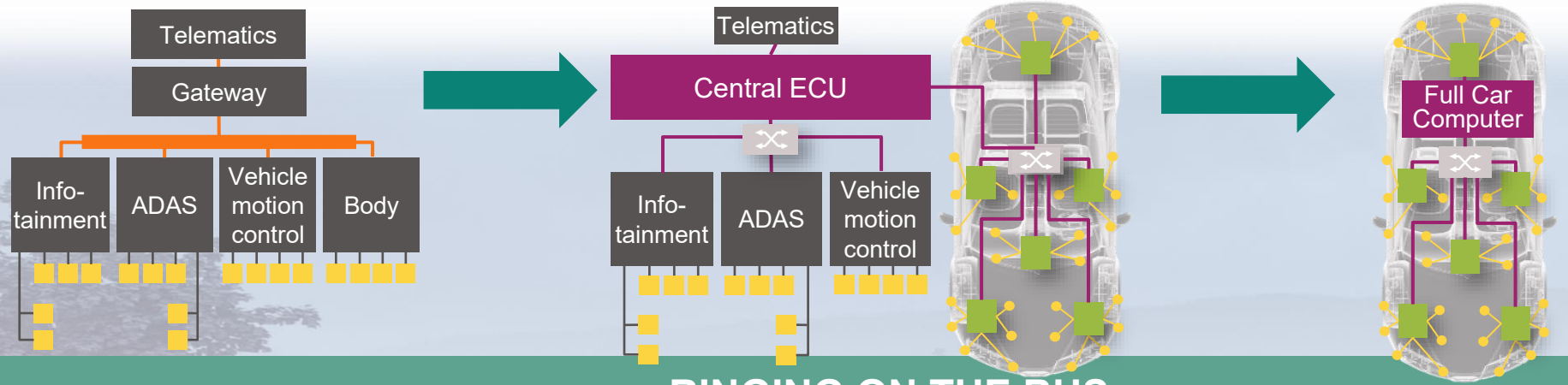
Offering solutions to satisfy developments towards „In Vehicle Network“ segment

FD SIC

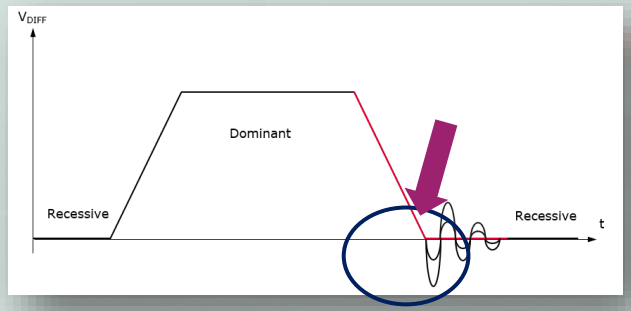
- To date: More than 1 Billion LIN transceivers shipped
- More than 20 different LIN products
- Compliant to ISO 17987-4
- World-wide release

- To date: More than 2.7 Billion CAN transceivers shipped
- More than 50 different CAN products
- ISO 11898-2 ed 2024 compliant
- World-wide release

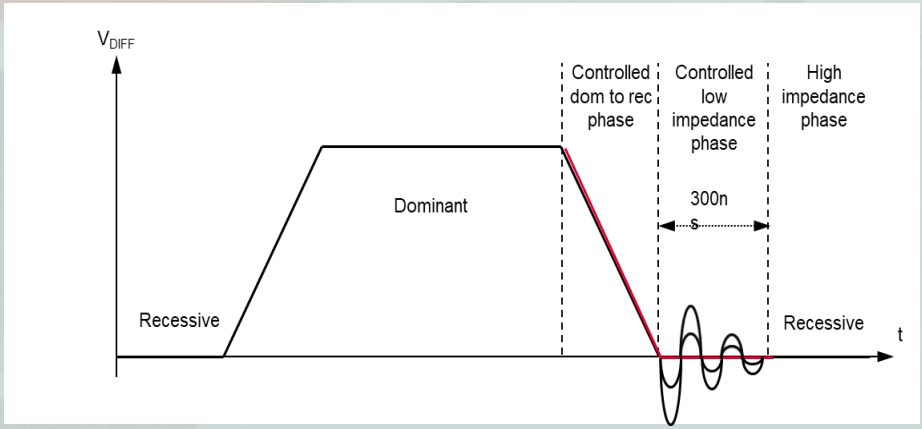
CAN FD SIC addresses IVN Trends



RINGING ON THE BUS,
is the limiting factor to support trends towards Full Car Computer



Ringing caused by:
- Length of the stubs
- Number of nodes in the network
- Kind of topology
- Impedance mismatch of the wiring harness



The Ringing Prevention:
- The transceiver controls the dominant to recessive edge
- And afterwards drives the CAN Bus with a low impedance of 300ns
- **Benefits:**
- SIC guarantees a stable signal after state change to recessive
- No change of software or Microcontroller
- SIC enables flexibility to design larger topologies with increased data rate

CAN FD Signal Improvement TLE9371SJ/VSJ
Ease of Change from Old to New CANs

FD SIC

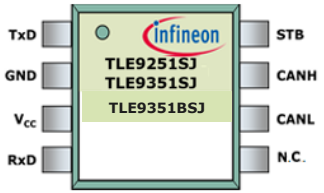
CAN Classic & CAN FD becomes CAN FD SIC

CAN 1MBit/s

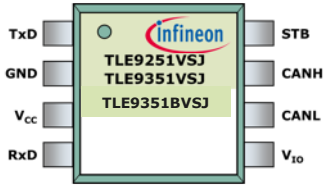
CAN 5Mbits FD

CAN FD SIC

- TLE6251DS
- TLE7251SJ



- TLE6251D
- TLE7251VSJ



CAN FD SIC variants are backwards compatible to 1MBit/s, 2MBit/s and 5MBit/s

CAN FD SIC variants fulfill latest ISO Standard (Edition 2024)

CAN FD SIC variants fulfill CiA601-4

CAN FD Signal Improvement TLE9371SJ/VSJ at Glance

CAN FD SIC	Package	Features
TLE9371VSJ	DSO-8	With bus wake up and Vio Pin
TLE9371SJ	DSO-8	With bus wake up and NO Vio Pin

The TLE937x products…

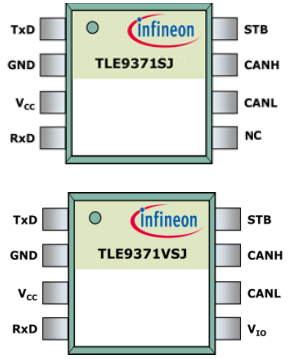
- actively improve CAN signals to ensure **robust communication and faster bit rates** in large networks. Signal ringing, an artifact of **large, complex networks** with unterminated stubs, is significantly reduced, thus removing previous limitations in network topologies. Even lower specification cabling solutions can be considered.
- achieve significantly faster bit rates of up to **8MBit/s** than conventional transceivers thanks to a highly symmetrical transmitter, ensuring very accurate and reliable bits generation on the bus.
- provide much tighter control over the transmitted signal and guarantee faster and shorter bit times.
- are available as **pin-compatible** replacements to conventional HS-CAN transceivers, thus allowing simple upgrades for existing designs and backward compatibility,
- fulfil the ISO 11898-2 (2016) specification.
- **In production**

Infineon's Automotive Network ICs:
Infineon CAN FD SIC addresses changing, market requirements

CAN FD SIC

Extended temperature range and feature scalability

- Available in DSO-8 and TSON-8 package
- 2 modes of operation: Normal operating and stand-by mode
- VIO input for voltage adaption to the microcontroller interface (3.3 V or 5 V)
- Lowest current consumption in the stand-by mode



Key Value Proposition

Connection of more nodes with more functions possible, high accuracy of data transmission, data rate up to 8Mbit/s, use in complex networks

Supports new comfort features in body applications

Current

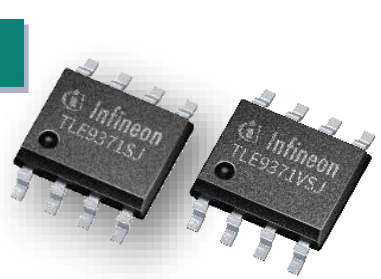
Dedicated low-power modes, like Stand-by mode provide very low quiescent currents while the device is powered up

Reduced cost

Simplified wire harness & costs; more **positive CO_2 balance** in raw materials and production

ISO 11898-2 ed. 2024

CiA 601-4



Applications

Lane assist

Central gateway

Transmission

Autonomous driving

CAN FD 8MBit/s – portfolio extended TLE9371x – Overview

Product	VIO supply	Bus wake	CAN FD	Pin 8	Package	Voltage range
TLE9371VSJ / LE	3.3V-5V	Yes	5MBit/s	Stand-by	PG-DSO-8 / PG-TSON-8	4.5V-5.5V
TLE9371SJ / LE	No VIO	Yes	5MBit/s	Stand-by	PG-DSO-8 / PG-TSON-8	4.5V-5.5V

- TLE9371SJ/VSJ are already in Production
- TLE937x is backwards compatible to 1MB, 2MB, 5MB
- Fulfills latest ISO Standard ISO 11898-2: 2024
- IBEE EMC certified
- DSO8 package version in production. TSON8 package versions in release.

CAN FD SIC TLE9371SJ/VSJ - addressing the trends

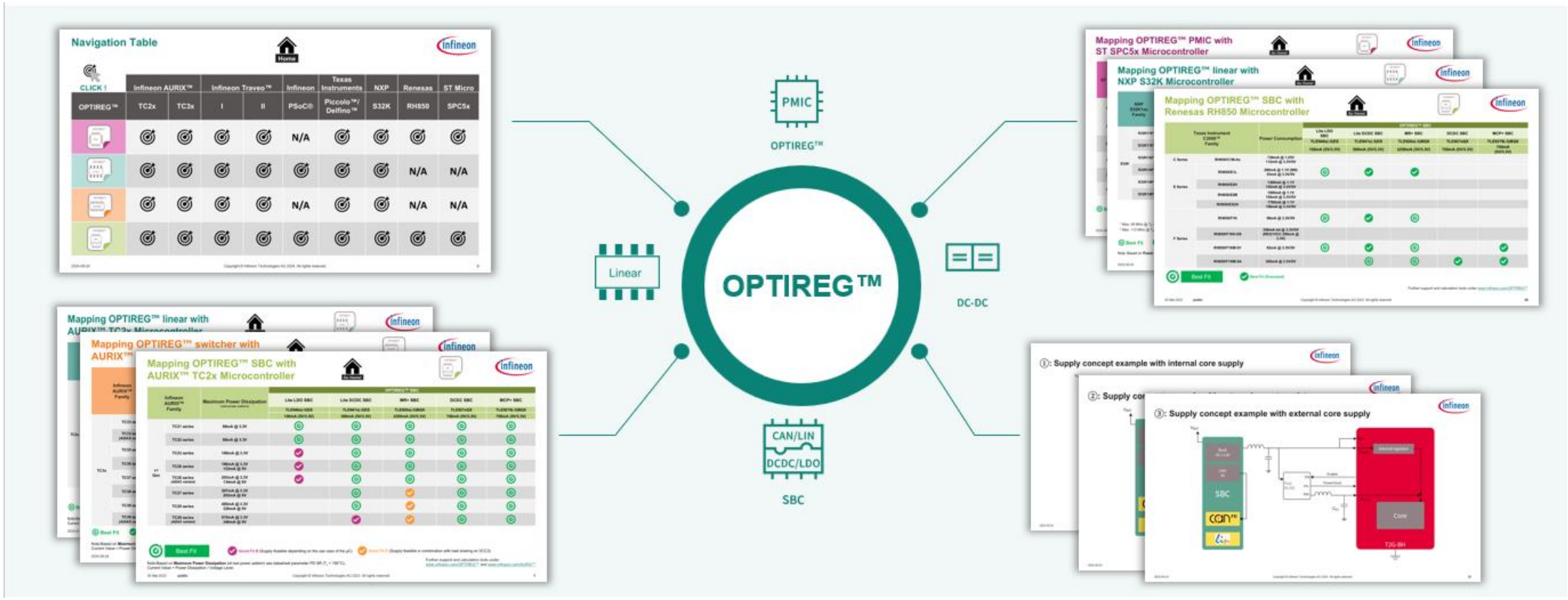
Value Drivers	CAN FD SIC solution	Value
› Increasing No. of nodes e.g. new sensors, new car architectures (zone)	› Highly accurate transmitter allowing precise control of CANH and CANL signals, active drive of recessive edge and active signal improvement	Connection of more nodes to the network
› Expanding CAN networks and emerging in new applications	› Ringing in CAN networks significantly reduced, star-based typologies with higher data rates possible	Entry for more complex application e.g. autonomous driving with security requirements, new comfort features in a body applications
› Pressure to optimized CAN networks: more efficient cables & connectors, higher data rates	› Increases maximum achievable CAN speed to 8MB/s › Increased EMC performance	Simple wire harness & costs; more positive CO_2 balance
› CAN FD reached their limits	› Guaranteed CAN FD protocol operations under all conditions incl. error handling and arbitration scenarios › Fully interoperable with CAN XL protocol	No loss of network in case of single failure independently of CAN protocol; Drop-in replacement without adoption of Hardware or Software

Cross-selling

Mapping of OPTIREG™ with various microcontrollers
Find the right OPTIREG™ for your microcontroller in just a few clicks!

Scan

Click



Mapping of OPTIREG™ with various microcontrollers
Find the right OPTIREG™ for your microcontroller in just a few clicks!

Scan

Click

	Infineon AURIX™		Infineon Traveo™		Infineon	Texas Instruments	NXP	Renesas	ST Micro
OPTIREG™	TC2x	TC3x	I	II	PSoC®	Piccolo™/ Delfino™	S32K	RH850	SPC5x
	◎	◎	◎	◎	N/A	◎	◎	◎	◎
	◎	◎	◎	◎	◎	◎	◎	N/A	N/A
	◎	◎	◎	◎	N/A	◎	◎	N/A	N/A
	◎	◎	◎	◎	◎	◎	◎	◎	◎

Mapping of OPTIREG™ linear with Transceivers
Find the right OPTIREG™ for your Transceiver in just a few clicks!

Scan

Click

Trainings

Transceiver trainings

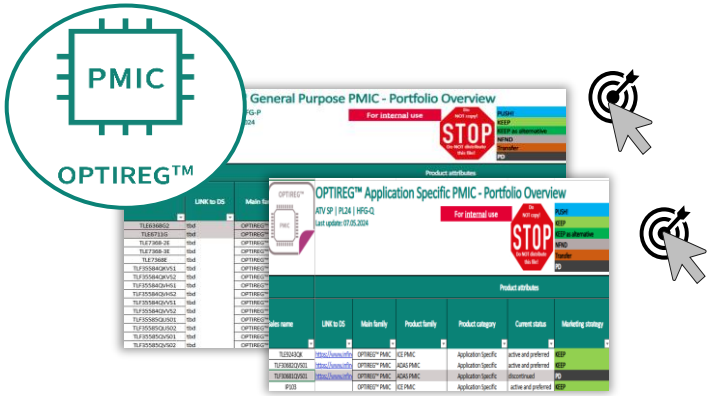
Fixed

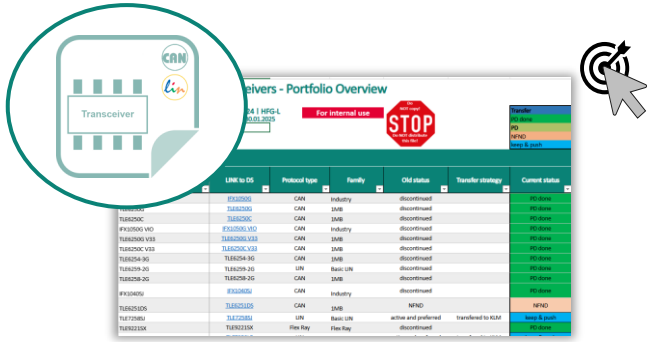
Training name	Content
ATV: Automotive in-vehicle network CAN FD 5MB (S1/E1)	This training covers: • Main functions and different communication protocols • Advantages and benefits of Infineon's CAN FD 5MB transceivers • Overview of the CAN FD products
ATV: Automotive in-vehicle network CAN FD 5MB TLE9252VSK/VLC (S1/E1)	This training covers: • Main functions and different communication protocols • New ISO wake-up pattern • Benefits of the VIO pin • TLE9252VSK/VLC transceivers
New routing requirements in gateways and zone controllers	This training covers: • Definition of gateway and zone controllers • New routing requirements • Block diagrams for gateway and zone controller units
Infineon transceivers	This video covers: • Infineon's quality pillars • Customer benefits

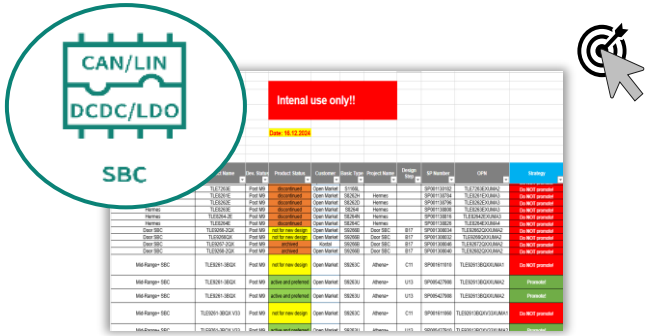
Click on the training title to access it

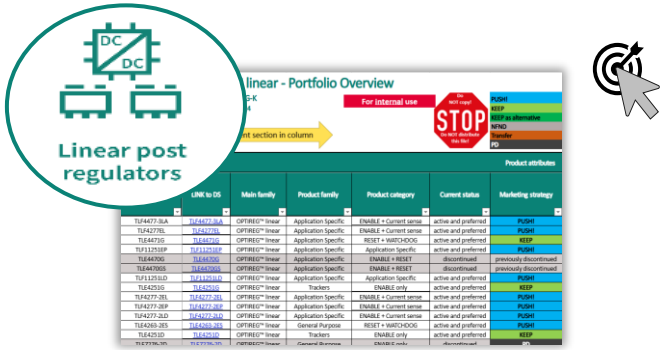
Supporting Tools & Documents

Portfolio Management
Your go-to hub for product info !





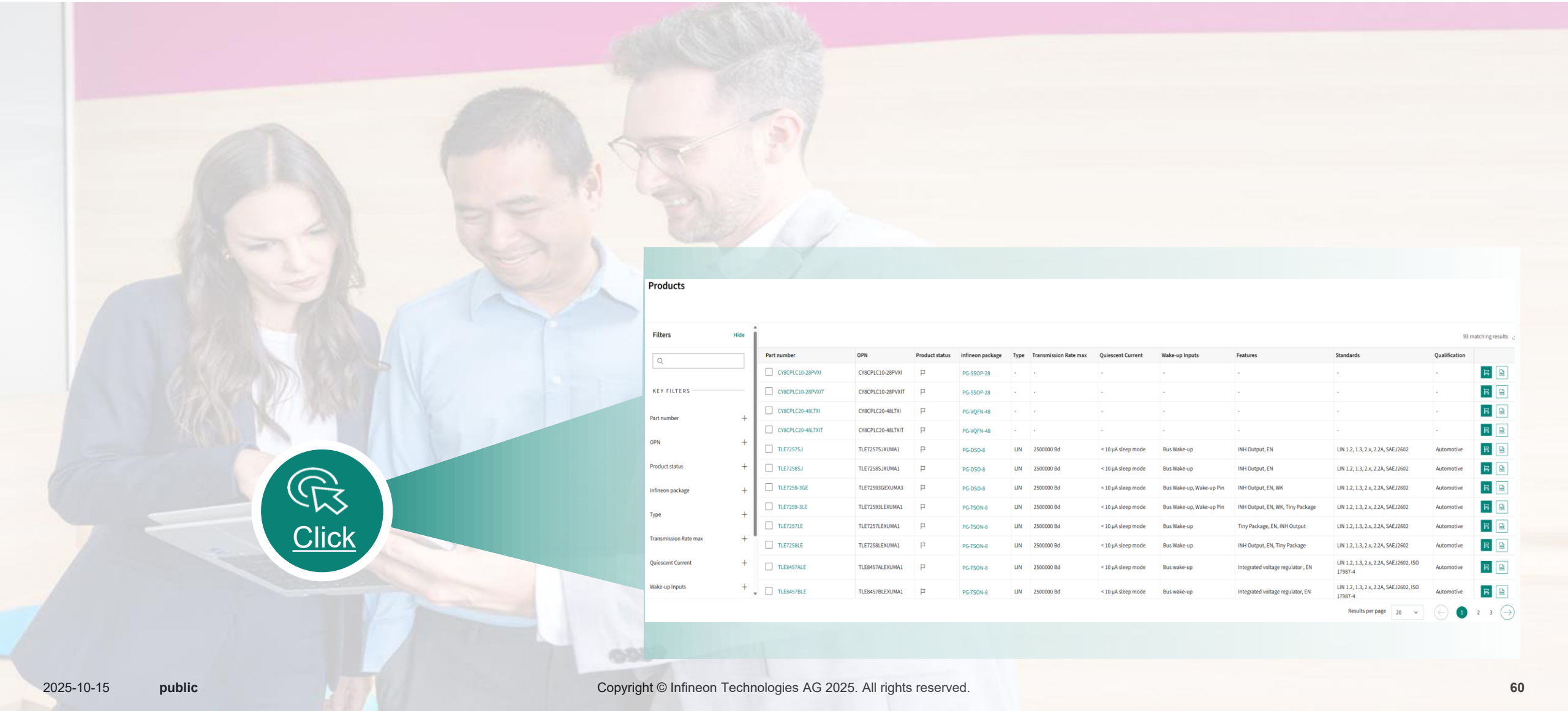




Transceiver

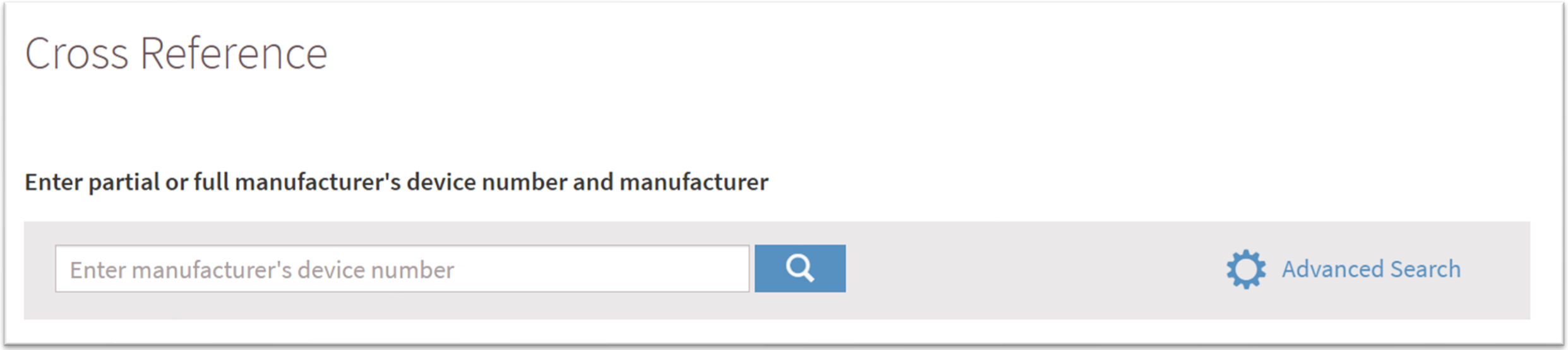
To ensure optimal selection, we provide a detailed selection tool

Find the right Transceiver for your specifications in just a few clicks!



OPTIREG™

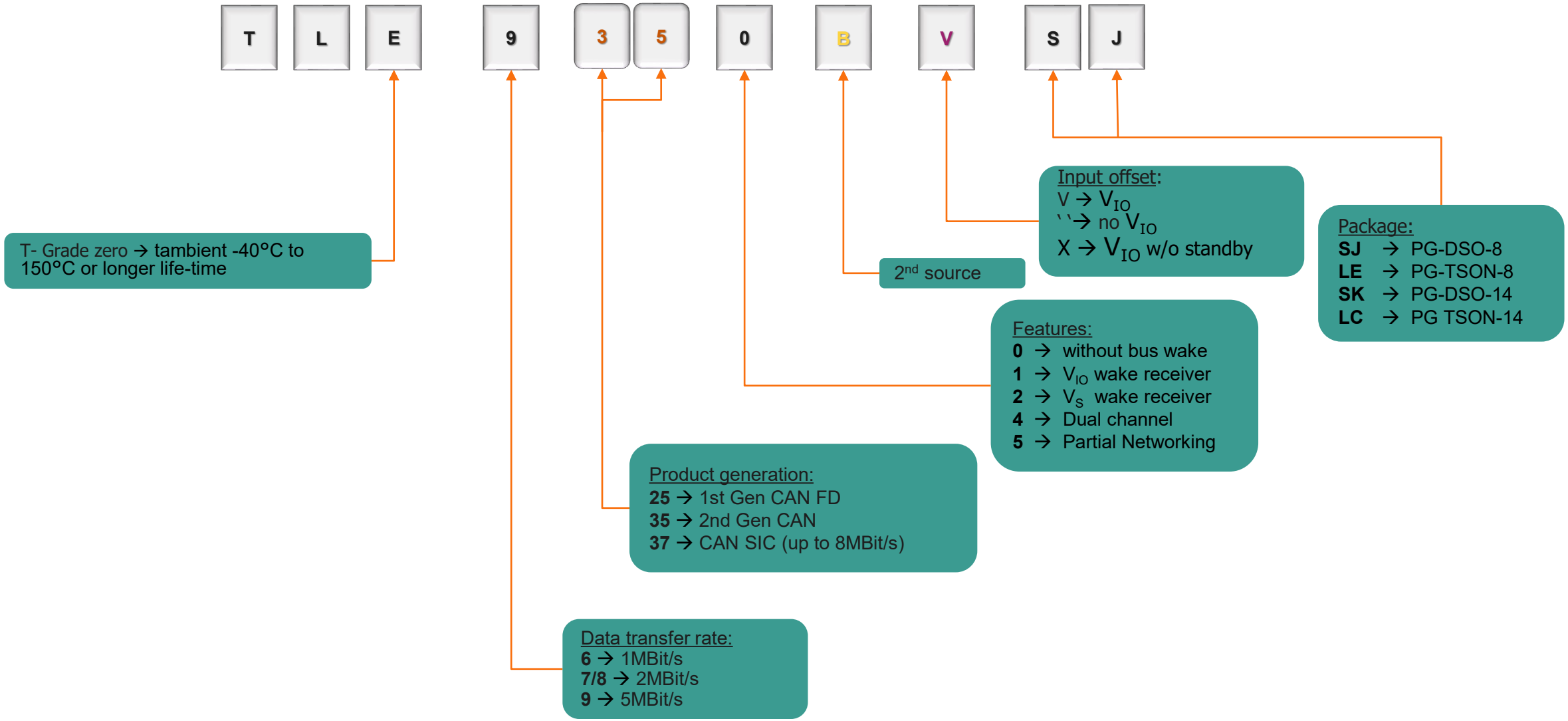
find compatible devices to many competitor's devices for your design.



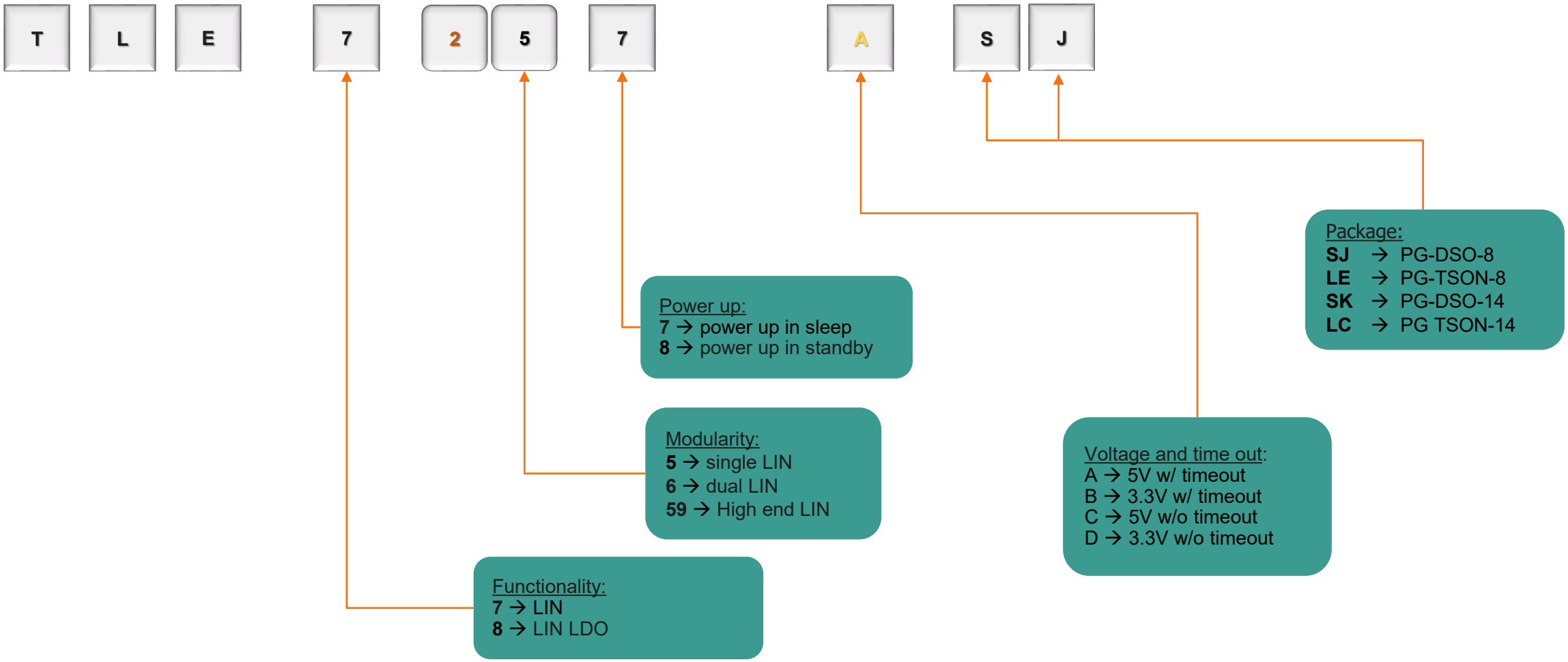
Infineon's cross reference search: LINK

Device Naming Nomenclature

CAN Transceiver naming system



LIN Transceiver naming system




Infineon