



Ultimate POWER – Perfect Control

COMPLETE Automotive Solutions from Infineon

www.infineon.com/power



Never stop thinking.

Introduction

Power and control – combine your success

THE EVER INCREASING level of power and control needed in automotive electronics is driving innovation in modern vehicles. Although these factors provide a challenge for circuit design, Infineon has the answer. Our automotive power products are designed to meet the highest automotive standards and enable you to create the perfect solution for your automotive application. Infineon's innovative design concepts and technologies not only guarantee leading edge performance but, in addition, offer both minimum form factor and maximum value to cost.

THIS SELECTION GUIDE PROVIDES an overview of our state-of-the-art product offerings including all key components which meet current market demands.

FOR MORE DETAILED INFORMATION, please visit our web-site at www.infineon.com/power or contact your sales partner listed on the back of this selection guide.

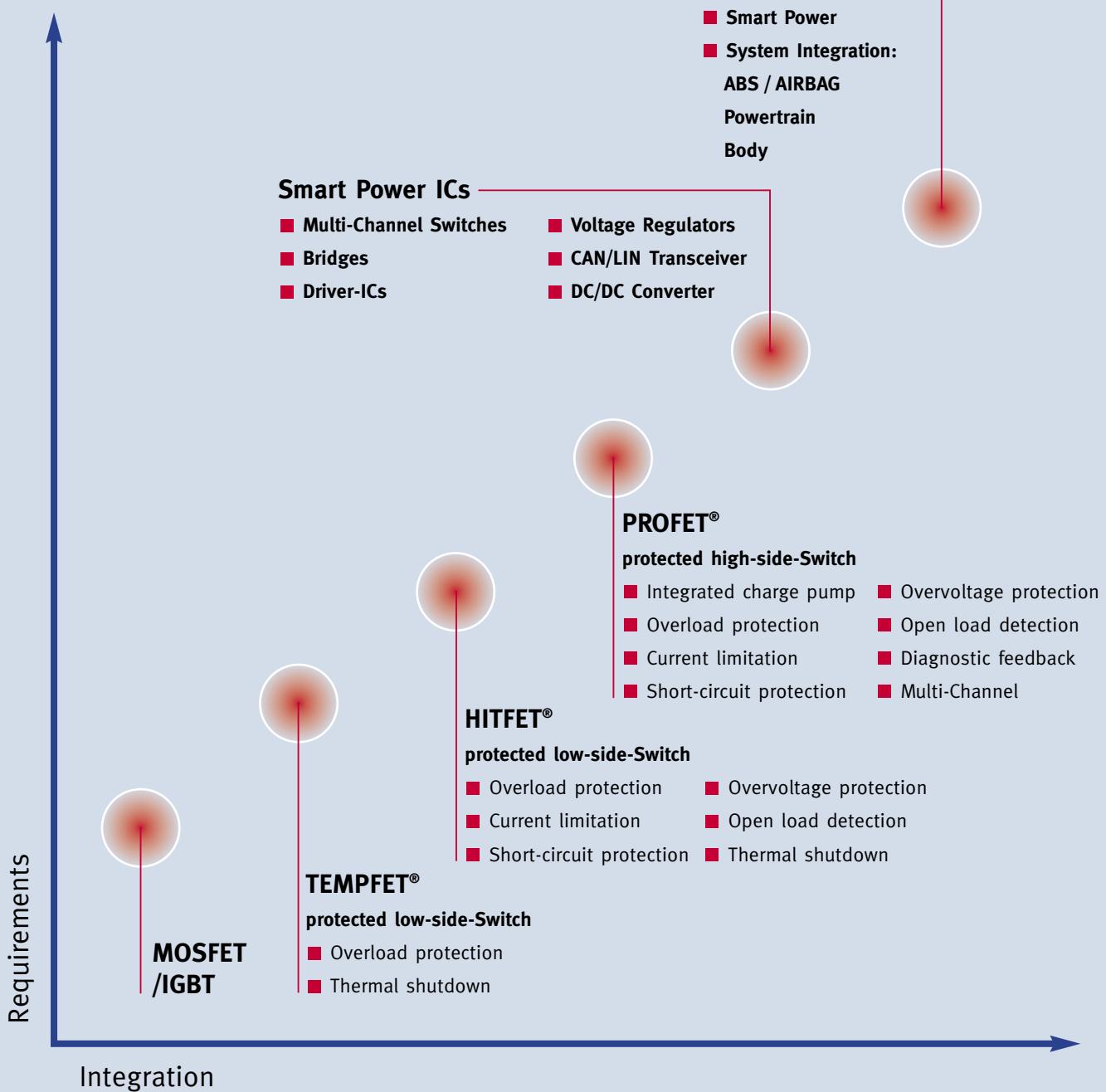


S y m b o l s

I_D	: DC Drain Current	R_{CC}	: Current Sense Resistor
$I_{D(ISO)}$: ISO Drain Current ($T_C = 85^\circ\text{C}$, voltage drop ≤ 0.5 V, $T_j \leq T_{j\max}$)	$R_{DS(on)}$: Drain-Source-Resistance in ON state ($T_j = 25^\circ\text{C}$)
$I_{D(\text{lim})}$: Drain Current Limit	$V_{bb(AZ)}$: Supply Voltage (active zener)
$I_{D(\text{NOM})}$: Nominal Drain Current ($T_a = 85^\circ\text{C}$, specified PCB)	$V_{bb(\text{op.})}$: Operation Supply Voltage
I_{IS}	: Current-Sense Output Current	V_{CE}	: Collector Emitter Voltage
$I_{L(ISO)}$: ISO Load Current ($T_C = 85^\circ\text{C}$, voltage drop ≤ 0.5 V, $T_j \leq T_{j\max}$)	$V_{CE(\text{sat})}$: Saturation Collector Emitter Voltage
$I_{L(\text{NOM})}$: Load Current ($T_a = 85^\circ\text{C}$, specified PCB)	V_{DS}	: Drain Source Voltage
$I_{L(\text{lim})}$: Load Current Limit	$V_{DS(AZ)}$: Drain Source Voltage (active zener)
$I_{L(\text{sat})}$: Saturation Load Current	V_S	: Supply Voltage
$I_{L(\text{SCR})}$: Short Circuit Current Limit at Thermal Shutdown	Inverse	: Normal V_{bb} polarity and inverse load current
		Reverse	: Reverse V_{bb} polarity and reverse load current



We meet all requirements for
cost effective application solutions



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OptiMOS®: N-Channel MOSFET

THE LATEST OPTIMOS portfolio provides top quality, outstanding robustness and high current capabilities for MOSFET.

ALREADY HAVING ACHIEVED a very low PPM defect level, Infineon is working hard to continue to further improve the reliability of its products and bring them closer to the expected “Zero Defect” quality level. Because MOSFET are subject to very high electrical and mechanical stress, Infineon has appropriately improved its OptiMOS devices to provide highly reliable results in a variety of customers’ applications.

THE “ROBUST PACKAGE” of the OptiMOS significantly improves the reliability of both the component and the application. This new package concept is a major optimization which enables the electronics industry to address the new requirements of the “lead free” approach. The improved OptiMOS are capable of sustaining up to 260°C reflows.

INFINEON’S POWER BOND™-2 addresses the requirement for higher current capability and improved quality. The PowerBond™-2 is the second generation of the improved Infineon bond wire technology that lowers the global $R_{DS(ON)}$ and significantly improves the current capability of the Power MOSFET. The PowerBond™-2 helps keeping the bonding “cooler” thus reducing the stress of the device and significantly improving reliability. As a result of this process enhancement, Infineon announces the launch of the SPB160N04S2-03, the first device worldwide with a 160A current capability in a D²-PAK!



Naming System

S P P 80 N o3 S2 L - o3

Company: _____

S for Infineon formerly Siemens

Device: _____

P for Power MOSFET

Package Type: _____

P for P-TO220

B for P-TO263/D²-PAK

D for D-PAK (P-TO252)

I for I²-PAK (P-TO262)

Continuous Drain Current/I_D max. _____

N for N-Channel _____

Breakdown Voltage divided by 10 _____

S2 for OptiMOS® Technology _____

L for Logic Level _____

R_{DS(on)} [mΩ] _____

OptiMOS®: N-Channel MOSFET

30V

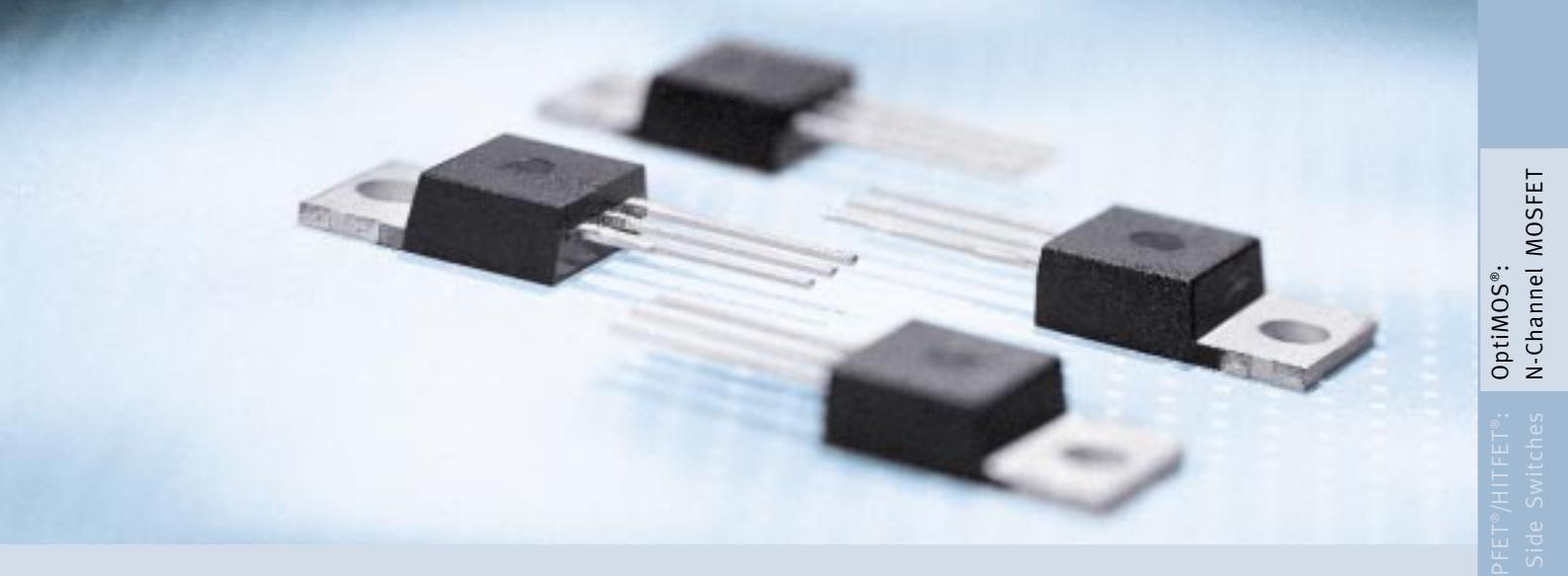
OptiMOS® 30 V	$R_{DS(on)}$ typ. [mΩ]	$R_{DS(on)}$ max. [mΩ]	I_D [A]	R_{thJC} max. [K/W]	Package
BSO 4420	6.7	7.8	13	30	(22)
SPD 100 No3 S2L-04	3.4	4.2	100	1	(11)
SPD 50No3S2L-06	5.3	6.4	50	1.2	(10)
SPD 50No3S2-07	5.8	7.3	50	1.2	(10)
SPD 30No3S2L-07	5.6	6.7	30	1.2	(10)
SPD 30No3S2L-10	8.1	10.0	30	1.8	(10)
SPD 30No3S2L-20	15.3	20.0	30	3.6	(10)
SPP/ B 100No3S2L-03	2	3.0	100	0.5	(2),(12)
SPP/ B 100No3S2-03	2.3	3.3	100	0.5	(2),(12)
SPP/ B 80No3S2L-03	2.5	3.1	80	0.5	(2),(12)
SPP/ B 80No3S2-03	2.6	3.4	80	0.5	(2),(12)
SPP/ B 80No3S2L-04	3.6	4.2	80	0.8	(2),(12)
SPP/ B 80No3S2L-05	3.9	5.2	80	0.9	(2),(12)
SPP/ B 80No3S2L-06	4.8	6.2	80	1	(2),(12)
SPP/ B 73No3S2L-08	6.3	8.4	73	1.6	(2),(12)
SPP/ B 42No3S2L-13	9.5	12.9	42	2.3	(2),(12)

40V

OptiMOS® 40 V	$R_{DS(on)}$ typ. [mΩ]	$R_{DS(on)}$ max. [mΩ]	I_D [A]	R_{thJC} max. [K/W]	Package
SPP/ B 100No4S2L-03	2.6	3.3	100	0.5	(2),(12)
SPP/ B 100No4S2-04	2.9	3.6	100	0.5	(2),(12)
SPP/ B 80No4S2L-03	2.7	3.4	80	0.5	(2),(12)
SPP/ B 80No4S2-04	3	3.7	80	0.5	(2),(12)
SPP/ B 80No4S2-H4	3.4	4	80	0.5	(2),(12)
SPB 160No4S2-03	2.3	2.9	160	0.5	(16)
SPB 160No4S2L-03	2.1	2.7	160	0.5	(16)

55V

OptiMOS® 55 V	$R_{DS(on)}$ typ. [mΩ]	$R_{DS(on)}$ max. [mΩ]	I_D [A]	R_{thJC} max. [K/W]	Package
SPD 50No6S2L-13	9.5	12.6	50	1.1	(11)
SPD 50No6S2-14	10.7	14.3	50	1.1	(11)
SPD 30No6S2L-13	9.8	13	30	1.1	(11)



55 V (following)

OptiMOS® 55 V	$R_{DS(on)}$ typ. [mΩ]	$R_{DS(on)}$ max. [mΩ]	I_D [A]	R_{thJC} max. [K/W]	Package
SPD 30No6S2-15	11	14.7	30	1.1	(11)
SPD 30No6S2L-23	17.3	23	30	1.5	(11)
SPD 30No6S2-23	17.9	23	30	1.5	(10)
SPD 26No6S2L-35	26	35	26	2.3	(11)
SPD 25No6S2-40	30	40	25	2.3	(11)
SPD 15No6S2L-64	48	64	15	3.5	(11)
SPD 14No6S2-80	60	80	14	3.5	(11)
BSP 603S2L	21	33	5.2	20	(21)
BSP 615S2L	59	90	2.8	23	(21)
BSO 604NS2	2 x 27	2 x 35	5	50	(22)
BSS 670S2L	500	650	0.5	—	(20)
SPP/ B 100No6S2L-05	3.9	4.7	100	0.5	(2),(12)
SPP/ B 100No6S2-05	3.7	5	100	0.5	(2),(12)
SPP/ B 80No6S2L-05	4	4.8	80	0.5	(2),(12)
SPP/ B 80No6S2-05	3.8	5.1	80	0.5	(2),(12)
SPP/ B 80No6S2L-H5	4.1	5	80	0.5	(2),(12)
SPP/ B 80No6S2-H5	4.6	5.5	80	0.5	(2),(12)
SPP/ B 80No6S2L-06	5.3	6.3	80	0.6	(2),(12)
SPP/ B 80No6S2-07	5.6	6.6	80	0.6	(2),(12)
SPP/ B 80No6S2L-07	5.3	7	80	0.7	(2),(12)
SPP/ B 80No6S2-08	6	8	80	0.7	(2),(12)
SPP/ B 80No6S2L-09	7	8.5	80	0.8	(2),(12)
SPP/ B 80No6S2-09	7.8	9.1	80	0.8	(2),(12)
SPP/ B 80No6S2L-11	8.6	11	80	0.95	(2),(12)
SPP/ B 77No6S2-12	9.2	12	77	0.95	(2),(12)

75 V

OptiMOS® 75 V	$R_{DS(on)}$ typ. [mΩ]	$R_{DS(on)}$ max. [mΩ]	I_D [A]	R_{thJC} max. [K/W]	Package
SPD 22No8S2L-50	38	50	22	2.2	(11)
SPD 30No8S2L-21	15.3	20.5	30	1.1	(11)
SPD 30No8S2-22	16	21.5	30	1.1	(11)
SPP/ B 100No8S2L-07	5.1	6.8	100	0.5	(2),(12)
SPP/ B 100No8S2-07	5.3	7.1	100	0.5	(2),(12)
SPP/ B 80No8S2L-07	5.3	7.1	80	0.5	(2),(12)
SPP/ B 80No8S2-07	5.6	7.4	80	0.5	(2),(12)
SPI 80No8S2-07R	6.4	7.3	80	0.5	(9)
SI PC 42S2N08	2.8	4.2	227	—	Chip
SI PC 60S2N08	2.3	2.8	305	—	Chip

TEMPFET® / HITFET®: Low Side Switches

Overview

$R_{DS(on)}$ [mΩ]	1/2 Channel	4 Channel	6 Channel	8/16/18 Channel	Page	Package*
$I_L: 2 \times 0.4$ A $I_L: 4 \times 0.05$ A			TLE 4226 G		13	(28)
4 X 620						
6 X 320						
6 X 300						
2 X 220						
8 X 1000						
8 X 350						
8 X 1700						
8 X 750						
8 X 800						
6 X 150				TLE 6288 R		(30)
2 X 450						
4 X 250				TLE 6232 GP	13	(30)
4 X 1700			TLE 6225 G		13	(26)
2 X 200			TLE 6216			(27)
2 X 350			TLE 6217			(27)
			TLE 7229			(30)
2 X 280						
2 X 230			TLE 6228 GP		13	(27)
4 X 320			TLE 6220 GP		13	(27)
2 X 180	TLE 6214 L					(23)
2 X 550	BTS 3408 ¹⁾				12	(22)
	BSP 75 N ¹⁾				12	(21)
2 X 210	TLE 6215					(28)
2 X 200	BTS 3410 G ¹⁾				12	(22)
	BSP 76 ²⁾				12	(21)
	BTS 3110 N ²⁾				12	(21)
100	BSP 77 ¹⁾				12	(21)
	BTS 117 ²⁾				12	(2), (12)
	BTS 118 D ¹⁾				12	(10)
	BTS 3118 D ²⁾				12	(10)
	BTS 3118 N ²⁾				12	(21)
50	BSP 78 ¹⁾				12	(21)
	BTS 133 ²⁾				12	(2), (12)
	BTS 134 D ¹⁾				12	(10)
	BTS 3134 D ²⁾				12	(10)
	BTS 3134 N ²⁾				12	(21)
28	BTS 141 ²⁾				12	(2), (12)
	BTS 142 D ¹⁾				12	(10)
	BTS 3142 D ²⁾				12	(10)
18	BTS 149 ²⁾				12	(2), (12)
	BTS 247 Z				11	(3), (4), (13)
	BTS 333 ³⁾				12	(2)
	BTS 333 B ³⁾				12	(12)
	BTS 949 ²⁾				12	(3), (4), (13)
13	BTS 244 Z				11	(3), (4), (13)
6.5	BTS 282 Z				11	(6), (17)

¹⁾Thermal shutdown with auto-restart²⁾Thermal shutdown with latch³⁾Thermal limitation adjustable by input voltage

*See packages on page 54

SPEED-TEMPFET® (S-FET Technology)

Features:

- Logic level input
- Analog driving capability

- Potential free temperature sensor
- Overload protection and thermal shutdown with external circuit

- High speed switching (1 MHz)
- Avalanche rated

Logic Level Enhancement Types (N-Channel) at $V_{IN}=10\text{ V}$

Type	V_{DS} [V]	$R_{DS(on)\ max.}$ [$\text{m}\Omega$]	$I_{D(ISO)}$ [A]	$I_{D\ max.}$ at $T_c = 100^\circ\text{C}$ [A]	Package
BTS 247 Z	55	18	19	33	(3),(4),(13)
BTS 244 Z	55	13	26	35	(3),(4),(13)
BTS 282 Z	49	6.5	36	80	(6),(17)

Function Table

Devices	BTS 244 BTS 247 BTS 282	BSP 76, 77, 78 BTS 118 D BTS 134 D BTS 142 D BTS 333 BTS 3410 G	BSP 75 N BTS 3408	BTS 117 BTS 133 BTS 141 BTS 149 BTS 949
Technology	S-FET	Smart	SPT	Smart MOS
Power Stage	MOS	MOS	MOS	MOS
Analog driving capability	•	•		•
Logic level input	•	•	TTL/CMOS	•
Overload protection	•	•	•	•
Current limitation	•	•	•	•
Short-circuit protection	•	•	•	•
Thermal shutdown	•	•	•	•
Fast switching (up to 1 MHz)	•			
Oversupply protection		•	•	•
ESD protection		•	•	•
Status/Diagnostic	single ¹⁾		single ¹⁾	single ¹⁾

¹⁾ Status by a voltage drop across an external resistor at input

TEMPFET® / HITFET®:

Low Side Switches

HITFET®

(Smart SIPMOS^{a)}/SPT^{b)} Technology)

Features:

- Overtemperature protection
- Overload protection
- Current limitation
- Short-circuit protection

- Thermal shutdown with auto restart or latch behaviour
- Overvoltage protection
- Logic level input
- Electrostatic discharge (ESD) protection

- Analog driving capability
- Status feedback:
 - digital flag
 - analogous with external resistor at input

Type	$V_{DS(AZ)}$ [V]	$R_{DS(on)}^{(1)}$ [mΩ]	$I_{D(ISO)}$ min. // $I_{D(NOM)}$ min. [A]	$I_{D(lim)}$ min. [A]	Package
BTS 117 ²⁾	60	100	3.5 ISO	7	(2),(12)
BTS 133 ²⁾	60	50	7 ISO	21	(2),(12)
BTS 141 ²⁾	60	28	12 ISO	25	(2),(12)
BTS 149 ²⁾	60	18	19 ISO	30	(2),(12)
BTS 949 ²⁾	60	18	19 ISO	9.5	(3),(4),(13)

Type	$V_{DS(AZ)}$ [V]	$R_{DS(on)}^{(1)}$ [mΩ]	$I_{D(ISO)}$ min. // $I_{D(NOM)}$ min. [A]	$I_{D(lim)}$ min. [A]	Package
BSP 75 N ³⁾	55	550	0.7 NOM	1	(21)
BSP 76 ³⁾	42	200	1.4 NOM	5	(21)
BSP 77 ³⁾	42	100	2.17 NOM	10	(21)
BSP 78 ³⁾	42	50	3 NOM	18	(21)
BTS 118 D ³⁾	42	100	2.4 NOM	10	(10)
BTS 134 D ³⁾	42	50	3.5 NOM	18	(10)
BTS 142 D ³⁾	42	28	4.6 NOM	30	(10)
BTS 333 ³⁾	42	18	7 NOM	— *	(2)
BTS 333 B ³⁾	42	18	7 NOM	— *	(12)
BTS 3110 N ²⁾	42	200	1.4 NOM	5	(21)
BTS 3118 D ²⁾	42	100	2.4 NOM	10	(10)
BTS 3118 N ²⁾	42	100	2.4 NOM	10	(21)
BTS 3134 D ²⁾	42	50	3.5 NOM	18	(10)
BTS 3134 N ²⁾	42	50	3.5 NOM	18	(21)
BTS 3142 D ²⁾	42	28	4.6 NOM	30	(10)
BTS 3408 ³⁾	60	2 X 500	0.7 NOM	1	(22)
BTS 3410 G ³⁾	42	2 X 200	1.3 NOM	5	(22)

¹⁾ Thermal shutdown with auto-restart

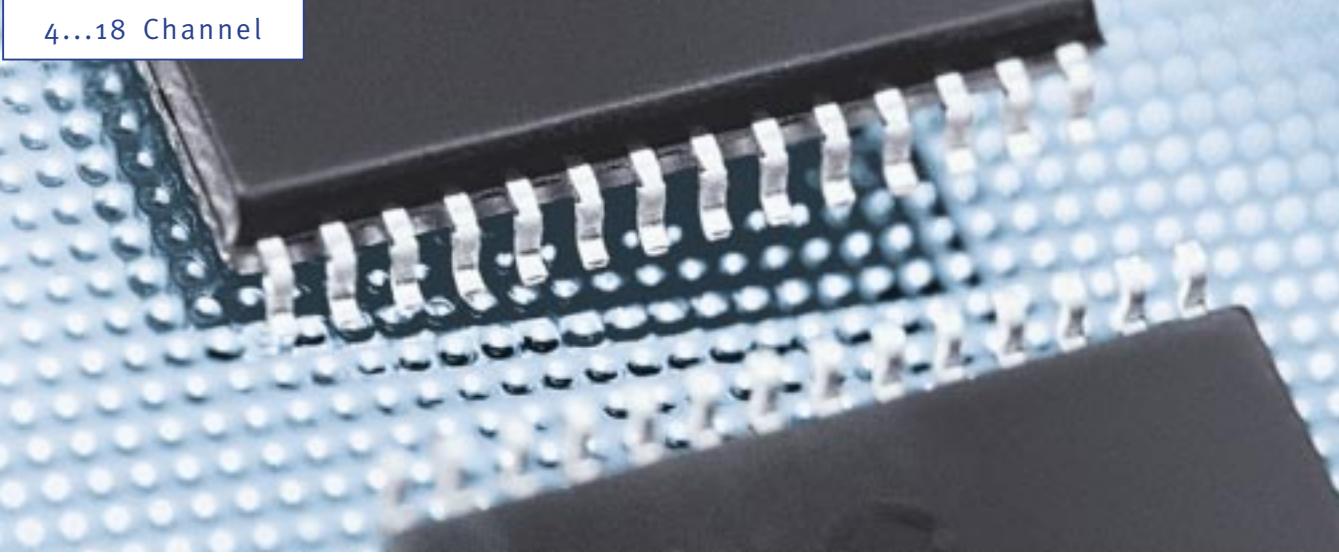
²⁾ Thermal shutdown with latch

³⁾ Thermal limitation adjustable by input voltage

* Controls internally junction temperature

^{a)} Smart SIPMOS = Smart Power MOS

^{b)} SPT = Smart Power Technology



Multiple-Channel Switches

General features:

- Overload protection
- Current limitation
- Short-circuit protection
- Thermal shutdown
- Overvoltage protection
- Diagnostic feedback

- Open load detection in ON or OFF condition
- TTL and CMOS compatible input
- Electrostatic discharge (ESD) protection

Additional Features:

- SPI Interface, 2-bit diagnosis per channel

- Serial and parallel control of the output
- Standby mode
- Parallel inputs high/low active programmable
- General fault pin
- Compatible with 3.3 V µC
- Short to GND detection

In Smart Power Technology SPT

Type	V_S [V]	$V_{DS(AZ)}$ max. [V]	$R_{DS(on)}$ typ. at $T_J = 25^\circ\text{C}$ [$\text{m}\Omega$]	$I_{D(\text{NOM})}$ [A]	$I_{L(\text{lim})}$ min. [A]	Package
TLE 6214 L	4.5...5.5	60	2 x 180	2 x 2	2 x 5	(23)
TLE 6215 G	6.5...40	60	2 x 210	2 x 1.3	2 x 4	(28)
TLE 6216 GP	4.8...32	60	2 x 200 2 x 350	2 x 2 2 x 1	2 x 5 2 x 3	(27)
TLE 6217 GP	4.8...32	60	2 x 200 2 x 350	2 x 2 2 x 1	2 x 5 2 x 3	(27)
TLE 6220 GP	5	60	4 x 320	4 x 1.5	4 x 3	(27)
TLE 6225 G	4.5...32	60	4 x 1700	4 x 0.25	4 x 0.5	(26)
TLE 6228 GP	4.8...32	60	2 x 280 2 x 230	2 x 1 2 x 2	2 x 3 2 x 5	(27)
TLE 6230 GP	5	55	8 x 750	8 x 0.5	8 x 1	(30)
TLE 6232 GP	5	60	4 x 250 2 x 450	4 x 2 2 x 1	4 x 3 2 x 1.5	(30)
TLE 6236 G	5	60	8 x 1700	8 x 0.2	8 x 0.5	(29)
TLE 6240 GP	5	60	8 x 350 8 x 1000	8 x 0.5 8 x 1.5	8 x 1 8 x 3	(30)
TLE 6244 X	5	50/77	6 x 320 (70 V) 6 x 300 2 x 220 4 x 620	6 x 1.5 6 x 1.5 2 x 2 4 x 0.5	6 x 2.2 6 x 2.2 2 x 3 4 x 1.1	(31)
TLE 6288 R	4.5...5.5		6 x 0.15	programmable	3 x 3 3 x 4	(30)
TLE 7229 R	4.8...18	60	2 x 200 2 x 350	2 x 1 2 x 1.6	2 x 3 2 x 5	(30)
TLE 7230 G	4.5...5.5	60	8 x 800	8 x 0.30	8 x 1.0	(28)
TLE 7230 R	4.5...5.5	60	8 x 800	8 x 0.5	8 x 1.0	(30)

In DOPL¹⁾ Technology (bipolar)

Type	V_S [V]	V_{CE} max. [V]	$V_{CE(\text{sat})}$ [V]	$I_{L(\text{sat})}$ at $V_{CE(\text{sat})}$ [A]	$I_{L(\text{lim})}$ min. [A]	Package
TLE 4226 G	5	35	2 x 0.5 4 x 0.4	2 x 0.4 4 x 0.05	2 x 0.5 4 x 0.06	(28)

¹⁾DOPL = Smart Bipolar Technology

Automotive System ICs	Automotive Transceiver	DC Motor Bridges	Power Supply	Bridge Driver ICs	TEMPFET®/HITFET®: Low Side Switches	OptIMOS®: N-Channel MOSFET
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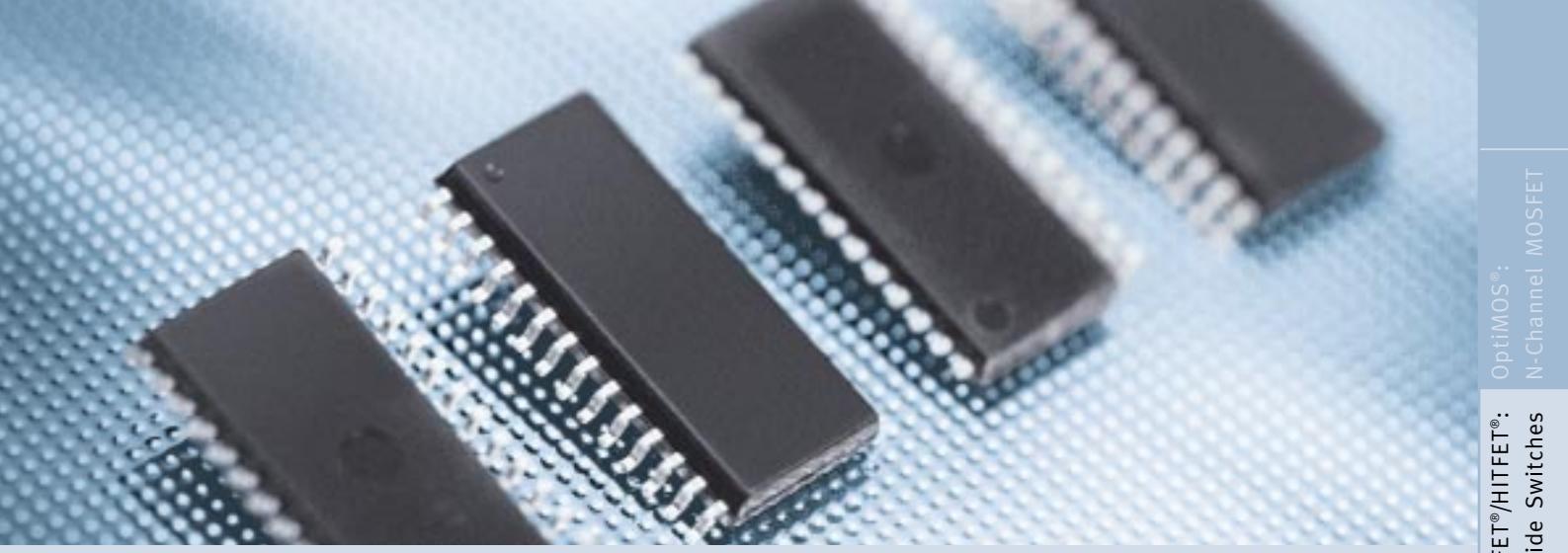
TEMPFET® / HITFET®: Low Side Switches

General Features for all devices:

- Overtemperature shutdown
- Short-circuit/overload protection
- Overvoltage protection
- ESD protection
- 5 V Supply
- Enable/Reset Pin
- 3.3 V µC compatible
- Open load detection off state
- Overtemperature/overload diagnosis

Function Table

Name	TLE 6214 L	TLE 6215 G	TLE 6216 GP	TLE 6217 GP	TLE 6220 GP
Output Channels	2	2	4	4	4
$R_{DS(on)}$ max. at $T_J = 25^\circ\text{C}$ [mΩ]	2 x 220	2 x 250	2 x 260 2 x 400	2 x 260 2 x 400	400
Nominal Current [A]	2 x 2	2 x 1.3	2/1	2/1	1
Parallel Channel Control	2	2	4	4	4
Special Features					
Overload shutdown	•	•	•	•	
Current limitation	•				•
Overload switch-off delay time	•	•	•	•	
Delayed status for pulse with operation		•	•	•	
Failure extension time for status					•
Short to GND detection	•	•	•	•	•
Open load detection on state	•	•	•	•	
Standby mode	•		•	•	•
Extended Supply Voltage		•	•	•	
Hi/Low active programmable Inputs					•
1 Status/Output	•	•	•	•	
General Fault Flag	•				•
SPI	8 bit				8 bit
Open Load Program Pin					
Undervoltage Shutdown	•				•
Daisychain possibility	•				•
Autorestart	•				•
Latch after Shutdown	•	•	•	•	



TLE 6225 G	TLE 6228 GP	TLE 6230 GP	TLE 6232 GP	TLE 6236 G	TLE 6240 GP	TLE 6244 X	TLE 6288 R	TLE 7229 R	TLE 7230G/R
4	4	8	6	8	16	18	6	4	8
2000	2 x 260 2 x 400	1000	4 x 280 2 x 550	2300	8 x 400 8 x 1300	6 x 400(70 V) 6 x 400 2 x 300 4 x 800	6 x 0.71	2 x 260 2 x 400	8 x 1000
0.35	2/1	6 x 1.5 0.5	2/1	0.2 4 x 0.5	1/0.5	6 x 1.5 2 x 2	P & H	2 x 3 2 x 5	8 x 0.30 8 x 0.50
4	4	4	6	4	8	12	6	4	4
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Automotive System ICs

Power Supply

DC Motor Bridges

Bridge Driver ICs

OptIMOS®:
N-Channel MOSFET

TEMPFET®/HITFET®:
Low Side Switches

PROFET®:
High Side Switches

OptIMOS®:
N-Channel MOSFET

PROFET®: High Side Switches

THE HIGHLY INTEGRATED PROFET® family (PROtected FET) incorporates a broad range of smart features. PROFET intelligent power switches consist of a DMOS power transistor and CMOS logic circuitry for complete built-in protection.

THE PROFET FAMILY offers protection against: overload, over voltages, short circuits, excess temperature, ground loss, power supply loss, and electrostatic discharge. The PROFET family products are also capable of protecting against dynamic over voltage such as load dump, and inductive load turn-off. The PROFET family's most important protective function is its ability to safeguard applications from destruction in the event of a short circuit. This is achieved through a combination of both current limitation and thermal shutdown during excess temperatures. By combining switching and protective functions in a single device, the PROFET family eliminates the need for fuses and thus provides a more cost-effective and robust alternative to standard relay and fuse solutions. For the benefits and the functionality of the protection features, please refer to details in the datasheets (www.infineon.com/profet).

THE PROFET DIAGNOSTICS offer the choice of either status or current sense features, or a combination of both. In the event of a malfunction, the status feature is able to diagnose over temperature or open load. The PROFET diagnostic features also provide the user with precise information about switch and load. Diagnostic feedback and load current sensing minimize costs by eliminating the need for additional discrete circuitry and assembly.

THIS VAST RANGE of smart features makes the PROFET ideal for a variety of automotive and industrial applications.

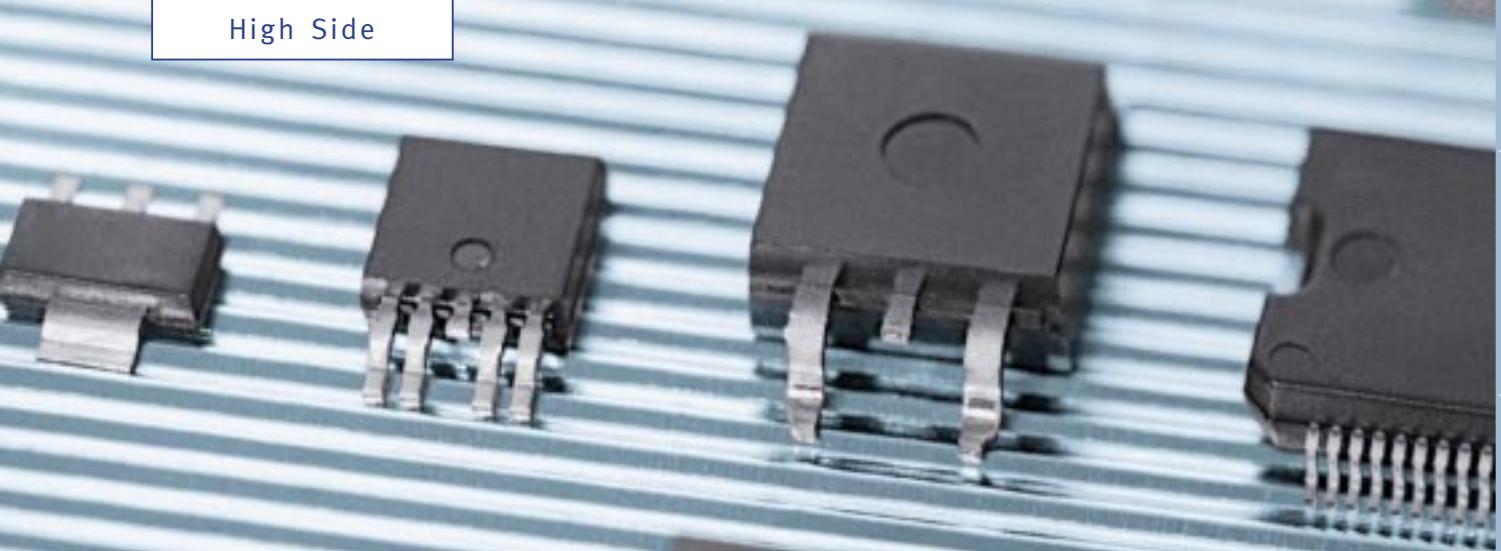
- PROFET® (SMART SIPMOS® & SMART 5 Technologies)
- High Current PROFET (SMART SIPMOS¹) Technology)
- miniPROFET (SMART SIPMOS¹) Technology)

¹SMART SIPMOS = SMART Power MOS

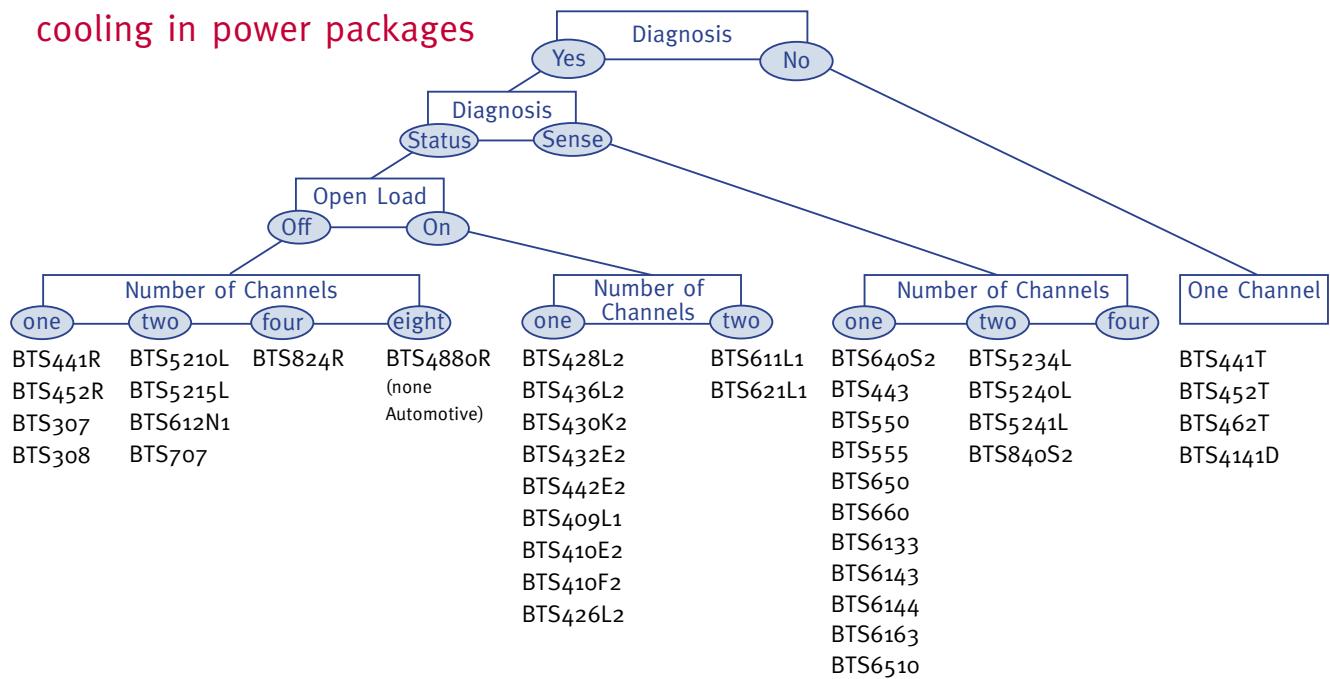
General features

(for all 3 families):

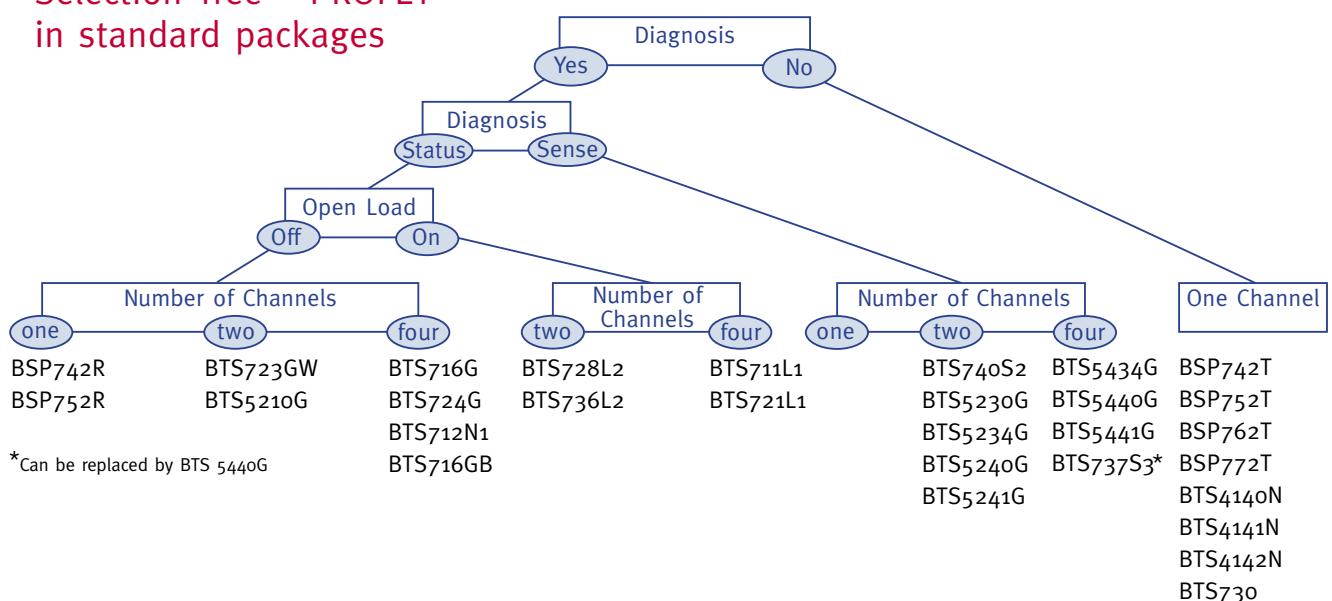
- Overload protection
- Current limitation
- Short-circuit protection
- Thermal shutdown
- Overvoltage protection (including load dump)
- Fast demagnetization of inductive loads
- Reverse battery protection with external resistor
- Undervoltage and overvoltage shutdown with auto-restart and hysteresis (optional)
- Diagnostic feedback
- Open load detection
- CMOS and TTL compatible input
- Loss of ground and loss of V_{bb} protection
- Electrostatic discharge (ESD) protection
- Proportional load current sense (optional)



Selection Tree – PROFET with cooling in power packages



Selection Tree – PROFET in standard packages



Overview PROFET®

In Smart SIPMOS® or Smart Power Technology

R_{ON} [mΩ]	1 Channel	Page	2 Channel	Page	4 Channel	Page	8 Channel	Page	Package*
1000	BTS 4140 N	19							(21)
400	BSP 742 T / 742 R	19							(22)
300	BTS 308	19							(3), (4), (14)
250	BTS 307	19	BTS 707	20					(3), (4), (14) (26)
220	BTS 410 E2 BTS 410 F2	19 19							(3), (4), (14) (3), (4), (14)
200	BSP 452 BTS 409 L1 BSP 752 T / 752 R BTS 452 T / 452 R BTS 4141 D / 4141 N BTS 4142 N	19 19 19 19 19 19	BTS 611 L1 BTS 612 N1	20 20	BTS 711 L1 BTS 712 N1	21 21	BTS 4880 R	21	(21) (3), (4), (14) (22) (11) (11), (21) (21) (6), (7), (16) (6), (7), (16) (26) (26) (30)
140			BTS 5210 L/G BTS 5230 G	20 20	BTS 716 GB BTS 716 G	21 21			(23), (24) (24) (26) (26)
100	BSP 762 T BTS 462 T	19 19	BTS 621 L1	20	BTS 721 L1	21			(22) (11) (6), (7), (16) (26)
95			BTS 723 GW	20					(24)
90			BTS 5215 L	20	BTS 724 G BTS 824 R	21 21			(23) (26) (27)
65	BTS 730	19							(11), (26)
60	BSP 772 T BTS 428 L2 BTS 426 L1	19 19 19	BTS 5234 G BTS 5234 L BTS 728 L2	20 20 20	BTS 5434 G	21			(22) (11) (3), (4), (14) (24) (23) (26) (29)
38	BTS 436 L2 BTS 432 E2 BTS 430 K2	19 19 19	BTS 736 L2	20					(3), (4), (14) (3), (4), (14) (3) (26)
35					BTS 737-S3	21			(29)
30	BSP 640 S2	19	BTS 740 S2 BTS 840 S2	20 20					(6), (7), (16) (26) (27)
25			BTS 5240 L BTS 5241 G BTS 5241 L	20 20 20	BTS 5441 G BTS 5440 G	21 21			(23) (24) (23) (29) (29)
20	BTS 6163 D BTS 441 T / 441 R	19 19							(11) (3), (4), (14)
18	BTS 442 E2	19							(3), (4), (14)
16	BTS 443 P	19							(11)
10	BTS 6143 D BTS 6133 D	19 19							(11) (11)
9	BTS 660 P BTS 6144 P / B	19 19							(6), (17) (6), (7), (17)
6	BTS 650 P BTS 6510	19 19							(6), (17) (17)
3.6	BTS 550 P	19							(1)
2.5	BTS 555	19							(1)

*See packages on page 54

PROFET®: High Side Switches

1 Channel Switches

Type	$V_{bb(AZ)}$ [V]	$R_{ON\ max.}$ [mΩ]	$I_{L(ISO)}/I_{L(NOM)}$ [A]	$I_{L(SC)}$ [A]	Package
BTS 4140 N	65	1000	0.2 NOM	0.7	(21)
BSP 742 R ⁴⁾	41	400	>0.4 NOM	1	(22)
BSP 742 T ⁴⁾	41	400	1.1 NOM	3	(22)
BTS 308	59	300	1.3 ISO	4	(3),(4),(14)
BTS 307	65	250	1.7 ISO	10	(3),(4),(14)
BTS 410 E2	65	220	1.8 ISO	5	(3),(4),(14)
BTS 410 F2	65	220	1.8 ISO	2.7	(3),(4),(14)
BTS 4141 N	47	200	0.7 NOM	1.1	(21)
BTS 4142 N	47	200	1.4 NOM	2.2	(21)
BSP 452	41	200	>0.7 NOM	—	(21)
BSP 752 T ⁴⁾	62	200	1.7 NOM	6	(22)
BSP 752 R ⁴⁾	62	200	1.7 NOM	6	(22)
BTS 4141 D	47	200	0.7 NOM	—	(11)
BTS 409 L1	> 40	200	2.3 ISO	4	(3),(4),(14)
BTS 452 T ^{3), 4)}	62	200	2.2 ISO	6	(11)
BTS 452 R ⁴⁾	62	200	2.2 ISO	6	(11)
BSP 762 T ⁴⁾	41	100	2.4 NOM	7	(22)
BTS 462 T ^{3), 4)}	41	100	4.4 ISO	10	(11)
BTS 730	> 40	65	3 ISO	20	(11),(26)
BSP 772 T ⁴⁾	41	60	3.1 NOM	12	(22)
BTS 426 L1	> 40	60	7 ISO	16	(3),(4),(14)
BTS 428 L2 ^{1),4)}	> 40	60	7 ISO	17	(11)
BTS 432 E2 ²⁾	> 60	38	11 ISO	35	(3),(4),(14)
BTS 436 L2 ⁴⁾	> 40	38	9.8 ISO	21	(3),(4),(14)
BTS 430 K2	50	38	11 ISO	—	(3)
BTS 640 S2 ⁶⁾	> 40	30	12.6 ISO	24	(3),(4),(14)
BTS 6163 D ⁶⁾	63	20	—	70	(11)
BTS 441 T ^{3), 4)}	> 40	20	21 ISO	40	(3),(4),(14)
BTS 441 R ⁴⁾	> 40	20	21 ISO	40	(3),(4),(14)
BTS 442 E2	> 60	18	21 ISO	70	(3),(4),(14)
BTS 443 D ⁴⁾	> 38	16	23 ISO	50	(11)
BTS 6133 D	39	10	33/8 ISO	75	(11)
BTS 6143 D ⁶⁾	39	10	37 ISO	75	(11)
BTS 660 P ⁶⁾	> 60	9	44 ISO	145	(6),(17)
BTS 6144 P ^{5)/B}	39	9	37.5/9.5 ISO	90	(6),(7),(17)
BTS 6510	> 42	6	70 ISO	130	(17)
BTS 650 P ⁶⁾	> 42	6	70 ISO	130	(6),(17)
BTS 550 P ⁶⁾	> 42	3.6	115 ISO	220	(1)
BTS 555 ⁶⁾	> 42	2.5	165 ISO	520	(1)

³⁾ Should be used instead of BTS 425 L1 or BTS 426 L1
Without overvoltage and undervoltage shutdown

²⁾ BTS 436 should be used instead of BTS 432 x 2

³⁾ Without status

⁴⁾ Without undervoltage and overvoltage shutdown

⁵⁾ Should be used instead of BTS 725 L1 or BTS 726 L1
Without overvoltage and undervoltage shutdown

⁶⁾ With proportional load current sense

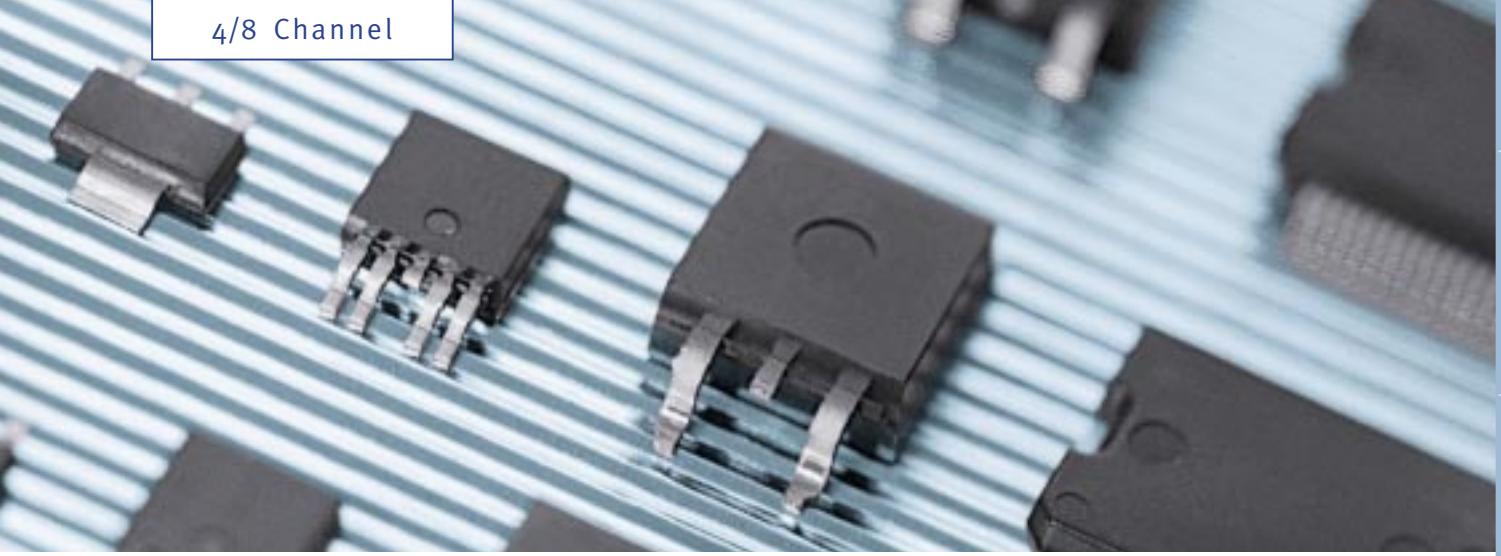


PROFET®: High Side Switches

2 Channel Switches

Type	$V_{bb(AZ)}$ [V]	$R_{ON\ max.}$ [mΩ]	$I_{L(NOM)}/I_{L(ISO)}$ [A] One Channel Active	$I_{L(NOM)}/I_{L(ISO)}$ [A] All Channels Parallel	$I_{L(SCr)}$ [A]	Package
BTS 707	65	2 x 250	1.9 NOM	2.8 NOM	10	(26)
BTS 611 L1	> 40	2 x 200	2.3 ISO	4.4 ISO	4	(6), (7), (16)
BTS 612 N1	> 40	2 x 200	2.3 ISO	4.4 ISO	4	(6), (7), (16)
BTS 5210 L	> 40	2 x 140	2.4 NOM	3.9 NOM	6.5	(23)
BTS 5210 G	> 40	2 x 140	2.4 NOM	3.9 NOM	6.5	(24)
BTS 621 L1	> 40	2 x 100	4.4 ISO	8.5 ISO	8	(6), (7), (16)
BTS 723 GW ¹⁾	> 65	2 x 105	2.9 NOM	4.2 NOM	10	(24)
BTS 5215 L	> 40	2 x 90	3.7 NOM	7.4 NOM	15	(23)
BTS 728 L2 ²⁾	> 40	2 x 60	4.0 NOM	6.0 NOM	17	(26)
BTS 5230 G ³⁾	> 40	2 x 140	2.4 NOM	3.9 NOM	2.5 (10^4)	(24)
BTS 5234 G ³⁾	> 40	2 x 60	3.3 NOM	5.0 NOM	6 (24^4)	(26)
BTS 5234 L ³⁾	> 40	2 x 60	3.5 NOM	5.2 NOM	6 (24^4)	(23)
BTS 736 L2	> 40	2 x 40	4.8 NOM	7.3 NOM	30	(26)
BTS 740 S2 ³⁾	> 40	2 x 30	5.5 NOM	8.5 NOM	24	(26)
BTS 840 S2 ³⁾	> 40	2 x 30	12 ISO	24 ISO	24	(27)
BTS 5240 L ³⁾	> 40	2 x 25	6.0 NOM	9.1 NOM	10/ 40^5)	(23)
BTS 5240 G ³⁾	> 40	2 x 25	5.9 NOM	8.4 NOM	10/ 40^5)	(26)
BTS 5241 L ³⁾	> 40	2 x 25	5.7 NOM	8.8 NOM	7 (40^4)	(23)
BTS 5241 G ³⁾	> 40	2 x 25	5.5 NOM	7.8 NOM	7 (40^4)	(26)

¹⁾ Can replace BTS 707²⁾ Should be used instead of BTS 725 L1 or BTS 726 L1.
Without overvoltage and undervoltage shutdown³⁾ With proportional load current sense⁴⁾ $t_{L(lim)}$ ⁵⁾ Adjustable



4 Channel Switches

Type	$V_{bb(AZ)}$ [V]	$R_{ON\ max.}$ [$m\Omega$]	$I_{L(NOM)}$ [A] One Channel Active	$I_{L(NOM)}$ [A] All Channels Parallel	$I_{L(SC)}$ [A]	Package
BTS 711 L1	> 40	4 x 200	1.9 NOM	4.4 NOM	4	(26)
BTS 712 N1	> 40	4 x 200	1.9 NOM	4.4 NOM	4	(26)
BTS 716 G	> 40	4 x 140	2.6 NOM	5.3 NOM	6.5	(26)
BTS 716 GB	> 40	4 x 140	2.6 NOM	5.3 NOM	6.5	(26)
BTS 721 L1	> 40	4 x 100	2.9 NOM	6.3 NOM	8	(26)
BTS 724 G	> 40	4 x 90	3.3 NOM	7.3 NOM	12	(26)
BTS 824 R	> 40	4 x 90	4.7 NOM	19 NOM	12	(27)
BTS 5434 G ¹⁾	> 40	4 x 60	3.4 NOM	6.8 NOM	6 (24 ³⁾)	(29)
BTS 737 S3 ¹⁾	> 40	4 x 35	5.4 NOM	11.1 NOM	21	(29)
BTS 5440 G ¹⁾	> 40	4 x 25	6.2 NOM	13.9 NOM	10 / 40 ²⁾	(29)
BTS 5441 G ¹⁾	> 40	4 x 25	5.6 NOM	12.8 NOM	7 (40 ³⁾)	(29)

¹⁾ With proportional load current sense

³⁾ $T_{L(lim)}$

²⁾ Adjustable

8 Channel Switches

Type	$V_{bb(op.)}$ [V]	$R_{ON\ max.}$ [$m\Omega$]	$I_{L(ISO)} / I_{L(NOM)}$ [A]	$I_{L(lim)\ min.}$ [A]	$I_{L(SC)}$ [A]	Package
BTS 4880 R	11...45	8 x 200	-	1.4	1.1	(30)

PROFET®: High Side Switches

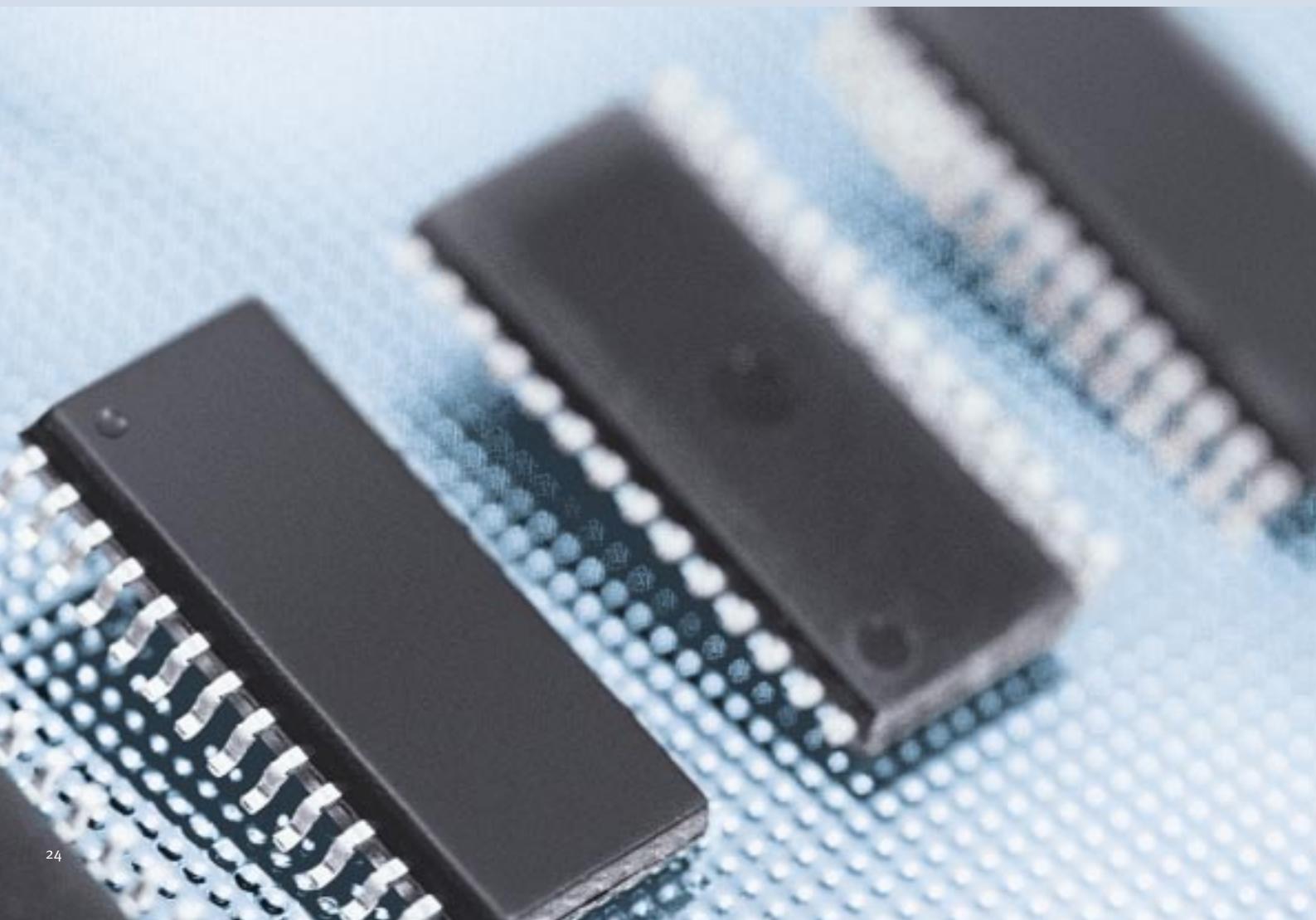
	miniPROFET											
DEVICE BTS... / BSP...	BSP 452	BSP 742 752	BSP 742 752 762 772	BTS 4140	BTS 4141 4142	BTS 4880	BTS 307	BTS 308	BTS 409 426	BTS 726	BTS 410	BTS 428 436 728 736
Logic Version	R	T				R			L1	F2	L2	
Load current limit									●	●	●	
high level (<i>can handle loads with high inrush currents</i>)	●	●	●									
low level (<i>better protection for inductive loads</i>)				●	●	●	●	●				
two level												
Short-circuit to GND protection							2.5 V		●			
switches off when $V_{bb} - V_{OUT} > 3.5$ V typ.												
(when first turned on after approx. 200 µs)												
switches off when $V_{bb} - V_{OUT} > 8.5$ V typ.												
(when first turned on after approx. 200 µs)												
Achieved through overtemperature protection	●	●	●	●	●	●	●	●	●	●	●	
Overtemperature protection												
$T_j > 150^\circ\text{C}$, latch function												
$T_j > 150^\circ\text{C}$, with auto-restart and hysteresis	●	●	●	●		●	●	●	●	●	●	
$T_j > 135^\circ\text{C}$, with auto-restart and hysteresis												
Input protection (ESD)	●	●	●	●	●	●	●	●	●	●	●	
Output negative voltage transient limit												
clamp to $V_{bb} - V_{ON(CL)}$	●	●	●	●	●	●	●	●	●	●	●	
Undervoltage												
shutdown with auto-restart	●				●	●	●	●	●	●	●	
Oversupply												
shutdown with auto-restart	●								●	●	●	
Protection against loss of GND												
fully protected	●	●	●	●	●	●	●	●	●	●	●	
Protection against loss of V_{bb} with charged ind. load												
with additional external diode												
fully protected	●	●	●	● ¹⁾	●	●	●	●	●	●	●	
Reverse battery protection												
fully protected												
protected with additional external resistor	●	●	●	●	●	●	●	●	●	●	●	
Inverse current operation capability												
Load dump protection	●	●	●	●	●	●	●	●	●	●	●	
Status output type												
CMOS												
Open drain	●						3)	●	●	●	●	
Status feedback for												
overtemperature												
short-circuit to GND	●		●									
short to V_{bb}												
open load ON												
open load OFF												
undervoltage												
oversupply												
Open load detection												
in OFF-state with test current 30 µA typ.												
in OFF-state with external pull up resistor												
in ON-state with testing voltage drop across power transistor												
Current sense												
analog signal proportional to load current												
advanced sense (=sense + digital status)												

¹⁾ External INPUT protection necessary²⁾ With external resistor between OUTPUT and V_{bb} ³⁾ Common diagnostic for all channels (LED driver)⁴⁾ 5x41, 5x34, 5x30 clamp to -15 V⁵⁾ 5x40 protected with additional external resistor⁶⁾ 5x41 only

Bridge Driver ICs

	TLE 6280/87/89 GP 3 Phase Driver	TLE 6281 G H-Bridge Driver	TLE 6282 G H-Bridge Driver / Half Bridge Driver
Package	Power S036	S020	S020
Operating range	8V – 24V	6V – 60V	6V – 60V
Diagnostic	•	•	•
SC Protection	•	•	•
100% DC		•	•
Switching Time*	300ns	600ns	600ns
Main Application	EPS, EHPS, Fan Control	Wiper, Gearbox Window Lift	EVT, VVA, Common Lift

* Calculated for SPB80N04S2-H4 (TO 263, 40 V, 4 mOhm, Normal Level Device)





TLE 6280 GP 3 Phase Driver

Main Features

- High driver capacity (6 times 2-4 mΩ MOSFETs)
- Driver IC for 3-Φbridge
 - ▶ Dedicated for EPS and EHPS applications
- Excellent thermal properties of the P-DS036 package
 - ▶ Usable at $T_{Ambient} = 125^{\circ}\text{C}$
- Adjustable dI/dt limitation
 - ▶ Allowes use of low voltage class MOSFETs
 - ▶ Reduces EME
- Bootstrap principle guarantees fast switching of all MOSFETs
 - ▶ Active freewheeling reduces power dissipation
- Separated source connection for each MOSFET
 - ▶ Low sensitivity to inductive noise
- Short circuit protection for the MOSFETs with adjustable current limitation
 - ▶ Protection for the bridge without ext. components
- Charge pump guarantees full $R_{DS(on)}$ with $V_{BAT} > 9\text{V}$
 - ▶ Usable in automotive power net without extra voltage supply
- Error flag
 - ▶ Diagnostic feed back

TLE 6289 GP 3 Phase Driver

Additional features to TLE 6280 GP

- Short-circuit detection optimized for low ohmic MOSFETs

TLE 6287 GP 3 Phase Driver

Additional features to TLE 6280 GP

- Additional pin for charge pump trigger
- No di/dt control

TLE 6281 G H-Bridge Driver IC

- Driver IC for 5.5...60V supply voltage
- Adjustable short-circuit protection. Detection levels down to 0.75V. VDS allows reliable detection even with low ohmic MOSFETs.
- PWM / DIR input structure
 - ▶ Dedicated to drive DC-Brush motors
- Low quiescent current (inhibit mode)
 - ▶ Direct supply from battery
- 2-bit ERR flag for detailed diagnosis
 - ▶ Undervoltage and short-circuit shut down
 - ▶ Overtemperature warning
- Adjustable dead time / deactivation possible
 - ▶ Adjustable to different requirements

TLE 6282 G Dual Half-Bridge Driver IC

Differences to TLE 6281 G

- Flexible input structure
 - ▶ Independent use of all 4 switches
- Highside switches can be used for lowside
 - ▶ Use as H-Bridge / 2 Halfbr / 4 Lowside...
- Split of outputs allows connection of load between High + Lowside switch
 - ▶ Drives valves and injectors
- Diagnosis
 - ▶ 1 ERR flag

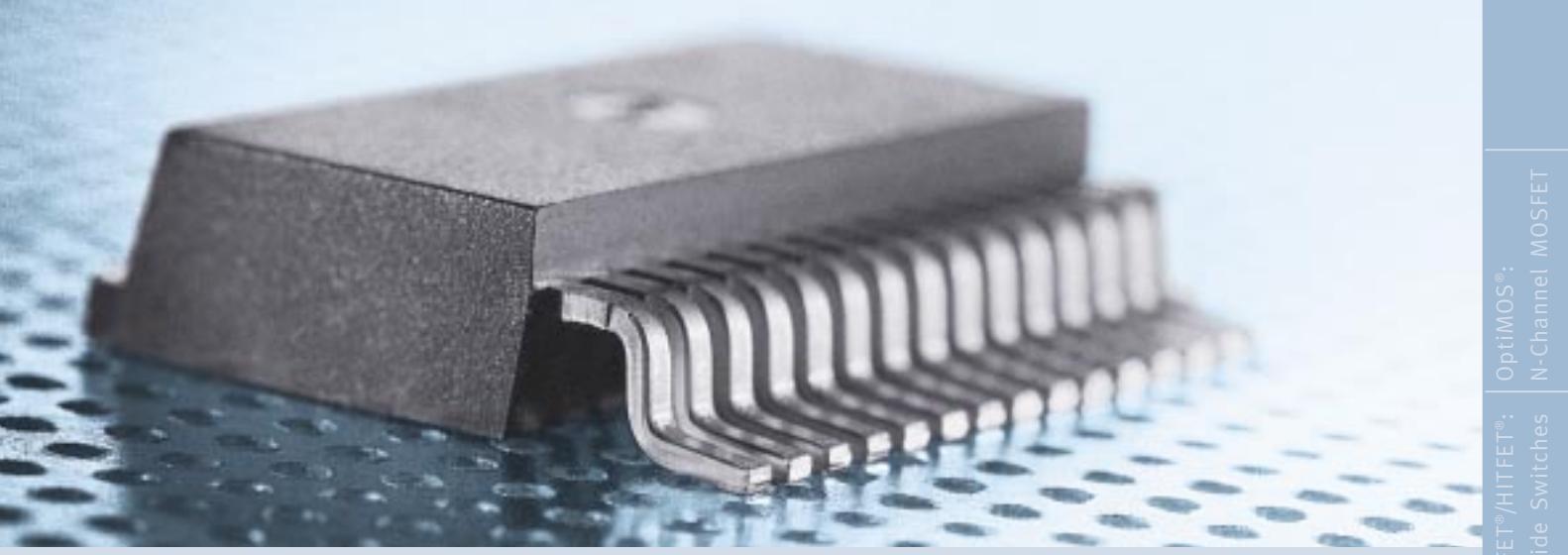
Automotive System ICs	Power Supply	Automotive Transceiver	Bridge Driver ICs	DC Motor Bridges	PROFET®: High Side Switches	TEMPFET®/HITFET®: Low Side Switches	OptiMOS®: N-Channel MOSFET
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DC Motor Bridges

MOS Power Bridges/TrilithICs

Feature	1 sec Pulse Current [A]	Peak Current [A]	Quiescent Current [mA]	Operating Range [V]	Path $R_{DS(on)}$ typ. [mΩ]	Path $R_{DS(on)}$ max [mΩ]	Switching Frequency $f_{max.}$	Short- Circuit Protection	Self Protection	Error Flag	HIGHLIGHT	Package
BTS 7700 G	4.3	9	8	5 – 42	200		HSS: 2 kHz LSS: 50 kHz	Load + GND	OT + OC ³⁾	OT ²⁾	High Peak Current Capability with High Switching Frequency	(29)
BTS 7710 G	5.8	15	8	5 – 42	110	260	HSS: 2 kHz LSS: 50 kHz	Load + GND	OT + OC	OT	High Peak Current Capability with High Switching Frequency	(29)
BTS 7710 GP	9	15	8	5 – 42	110	260	HSS: 2 kHz LSS: 50 kHz	Load + GND	OT + OC	OT	High Peak Current Capability with High Switching Frequency	(18)
BTS 7740 G	4.2	8	8	5 – 42	210	500	HSS: 2 kHz LSS: 2 kHz	Fully Protected	OT + OC	OT	High Peak Current Capability with Full Protected Outputs	(29)
BTS 7741 G	4.2	8	8	5 – 42	210	500	HSS: 2 kHz LSS: 2 kHz	Fully Protected	OT + OC	OT + OL ¹⁾	High Peak Current Capability with Full Protected Outputs	(29)
BTS 7750 G	5.6	12	8	5 – 42	115	285	HSS: 2 kHz LSS: 2 kHz	Fully Protected	OT + OC	OT	High Peak Current Capability with Full Protected Outputs	(29)
BTS 7751 G	5.6	12	8	5 – 42	115	285	HSS: 2 kHz LSS: 2 kHz	Fully Protected	OT + OC	OT + OL	High Peak Current Capability with Full Protected Outputs	(29)
BTS 7750 GP	7.0	12	8	5 – 42	115	285	HSS: 2 kHz LSS: 2 kHz	Fully Protected	OT + OC	OT	High Peak Current Capability with Full Protected Outputs	(18)
BTS 7810 K	25	42	9	5 – 42	40	100	HSS: 2 kHz LSS: 2 kHz	Load + GND	OT + OC	OT + OL	Very High Peak Current Capability	(18)

¹⁾ OL = Open Load²⁾ OT = Overtemperature³⁾ OC = Overcurrent



Bridges for Throttle Control

Feature	Output Current [A]	Peak Current [A]	Quiescent Current [mA]	Operating Range [V]	Short-Circuit Protection	Diagnostic Interface	HIGHLIGHT	$R_{DS(on)}$	Package
TLE 5205-2	4	5	10	6 - 40	Fully Protected	Status Flag	Open Load Detection	220 mΩ/switch	(6),(7) (17),(27)
TLE 5206-2	4	5	10	6 - 40	Fully Protected	Status Flag	Break high and low	220 mΩ/switch	(6),(7) (17),(27)
TLE 6209	6	7	0.02	5 - 40	Fully Protected	SPI	SPI, Chopper Current limitation, Temp prewarning	150 mΩ/switch	(27)
TLE 7209	6	7	0.2	5 - 28	Fully Protected	SPI / Status Flag	SPI, Chopper Current limitation, Temp prewarning	130 mΩ/switch	(27)

Multi Half Bridges

Feature	Output Current [A]	Peak Current [A]	Quiescent Current [µA]	Operating Range [V]	Short-Circuit Protection	Diagnostic Interface	HIGHLIGHT	$R_{DS(on)}$	Package
TLE 4207	2 x 0.8	2 x 1	20	6 - 18	Fully Protected	Status Flag	Very Low Saturation Voltage + Error Det.	1.4 V at 0.6 A*	(24)
TLE 4208	4 x 0.8	4 x 1	20	6 - 18	Fully Protected	Status Flag	Dual Full Bridge Driver Very Low Saturation	1.4 V at 0.6 A*	(29)
TLE 6208-3	3 x 0.8	3 x 1.5	10	6 - 40	Fully Protected	16-Bit SPI	3-Fold Half Bridge	800 mΩ/switch	(24)
TLE 6208-6	6 x 0.8	6 x 1.5	10	6 - 40	Fully Protected	16-Bit SPI	6-Fold Half Bridge 12-Fold Driver	800 mΩ/switch	(29)

* Total drop i.e. drop of HSS + LSS

Automotive System ICs	Power Supply	Bridge Driver ICs	TEMPFET®/HITFET®: High Side Switches	OptiMOS®: N-Channel MOSFET
DC Motor Bridges	Automotive Transceiver			

DC Motor Bridges

Stepper Motor Drivers

Feature	Output Current [A]	Peak Current [A]	Step Operations	Operating Range [V]	Short-Circuit	Diagnostic Interface Protection	HIGHLIGHT	Package
TCA 3727	2 x 0.75	2 x 1	Full to Mini Step	5 – 50	Short to GND	Status Flag	High operating voltage	(28),(35)
TLE 4726	2 x 0.75	2 x 1	Full to Mini Step	5 – 50	Short to GND	Status Flag	Low Quiescent Current	(28)
TLE 4727	2 x 0.75	2 x 1	Full to Mini Step	5 – 16	Fully Protected	Status Flag	Full Protection	(35)
TLE 4728	2 x 0.75	2 x 1	Full to Mini Step	5 – 16	Fully Protected	Status Flag	Two error flags	(28)
TLE 4729	2 x 0.75	2 x 1	Full to Mini Step	5 – 16	Fully Protected	Status Flag	Inhibit, very low quiescent current	(28)

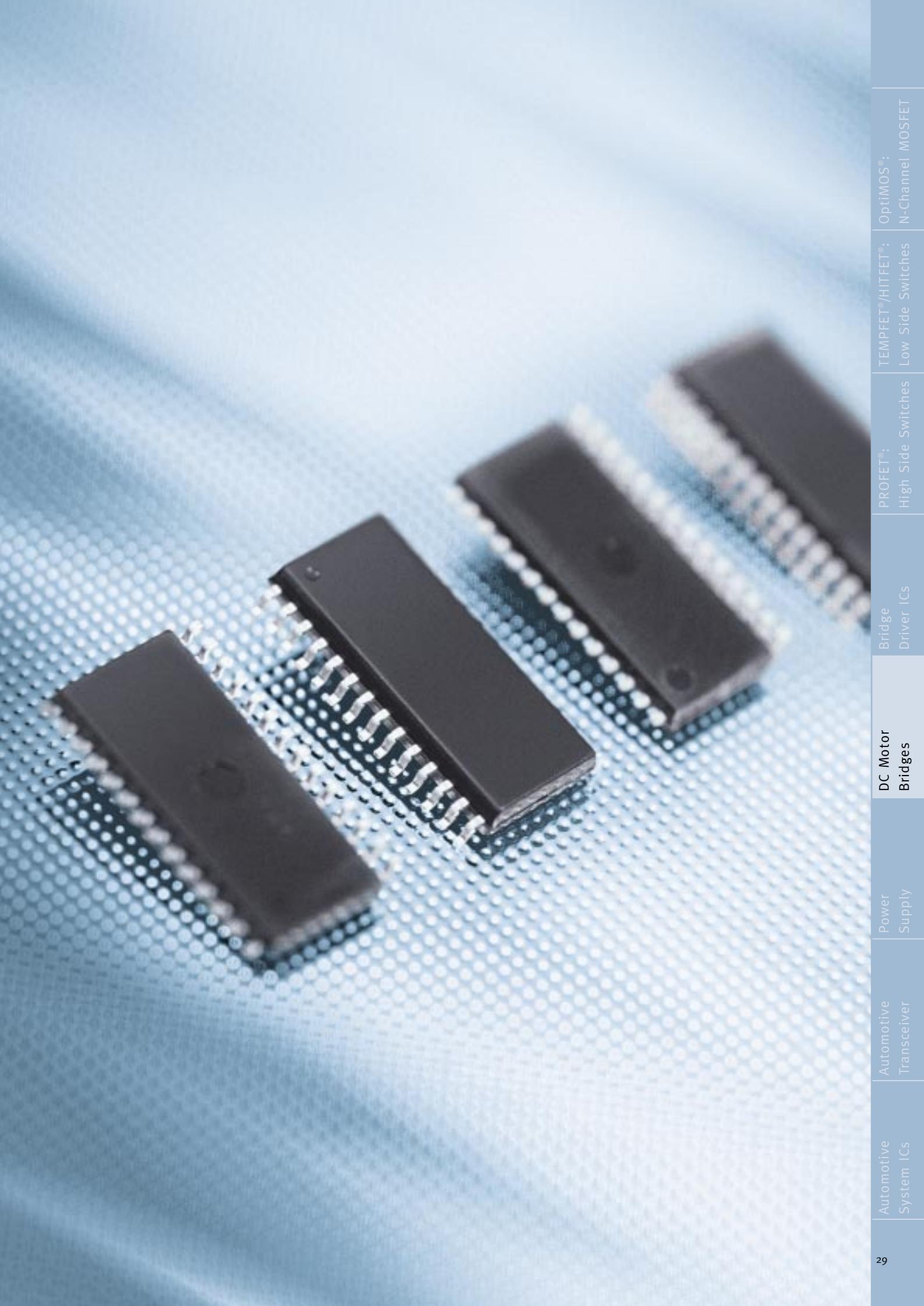
Servo Drivers

Feature	Output Current [A]	Peak Current [A]	Quiescent Current [mA]	Operating Range [V]	Short-Circuit Protection	Inhibit	HIGHLIGHT	$V_{sat}/R_{DS(on)}$	Package
TLE 4205	0.8	1	0.01	6 – 32	to GND	✓	Dual Power Comparator for Higher Supply Voltage	2.1 V at 0.6 A*	(26),(34)
TLE 4206	0.8	1	10	6 – 18	Fully Protected	No	Servo Driver with Current Peak Blanking	1.4 V at 0.6 A*	(24)
TLE 4209	0.8	1	10	6 – 18	Fully Protected	No	Servo Driver	1.4 V at 0.6 A*	(33)

* Total drop i.e. drop of HSS + LSS

Multiple Driver IC, Door Module IC

Feature	Output	Peak Current [A]	Driver Stage	Quiescent Current [μ A]	Operating Range [V]	Protection	Diagnostic + Programming	Package
TLE7201	Out 1,2 Out 3,4 Out 5,6 Out 7 Out 8-11	8 3 1.25 6.25 3	Half Bridge Half Bridge Half Bridge High Side Switches High Side Switches	3	5 - 20	fully protected	SPI	(30)

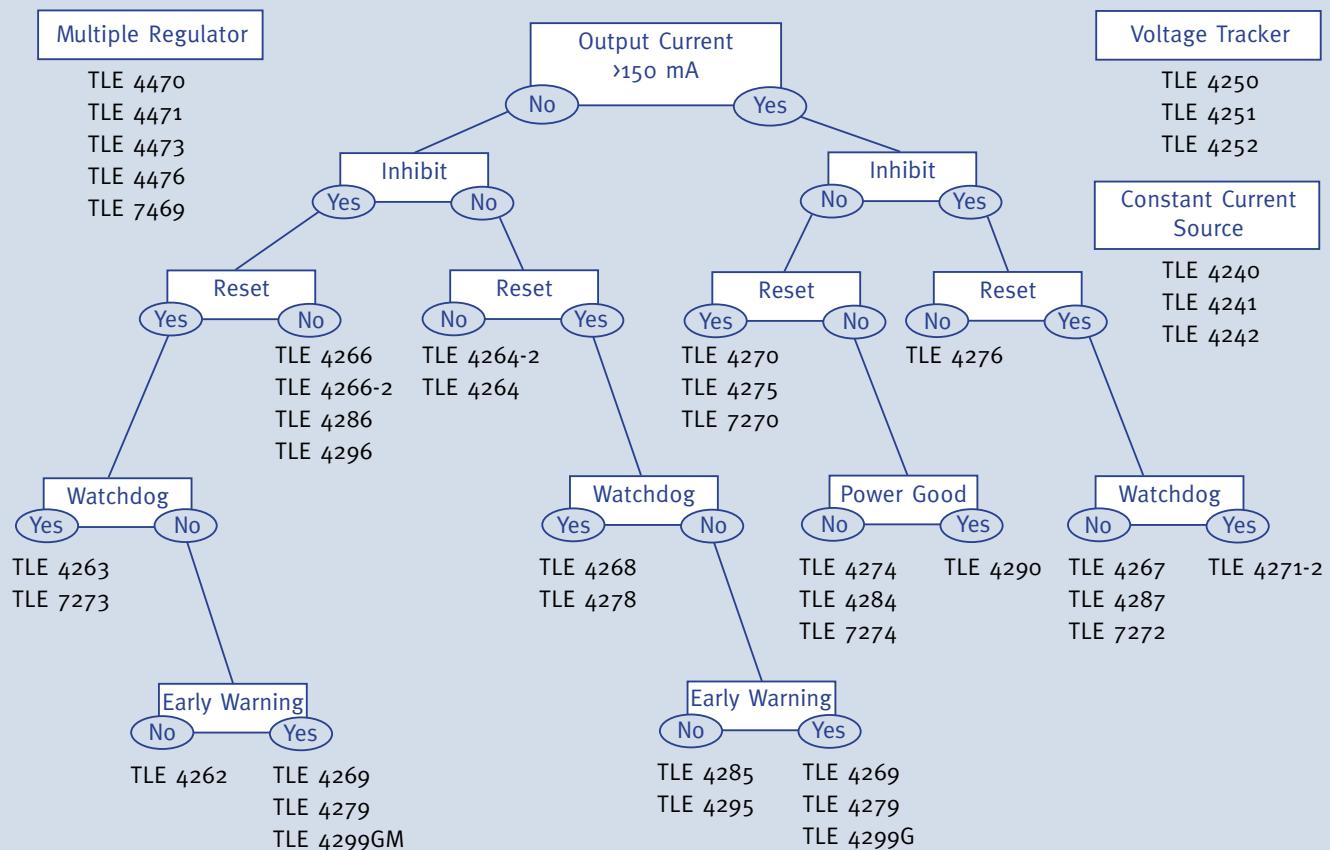


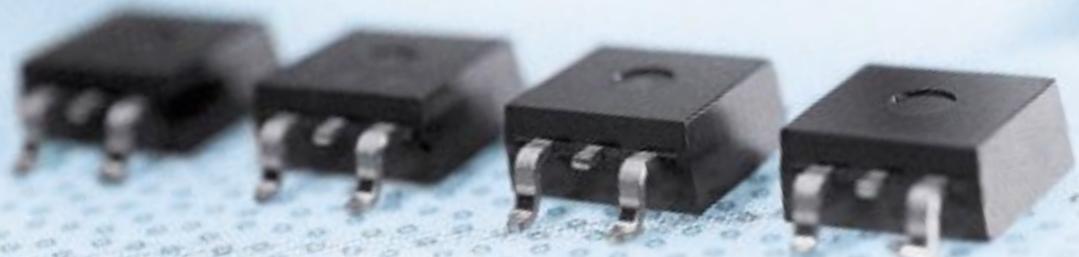
Power Supply

Short Description

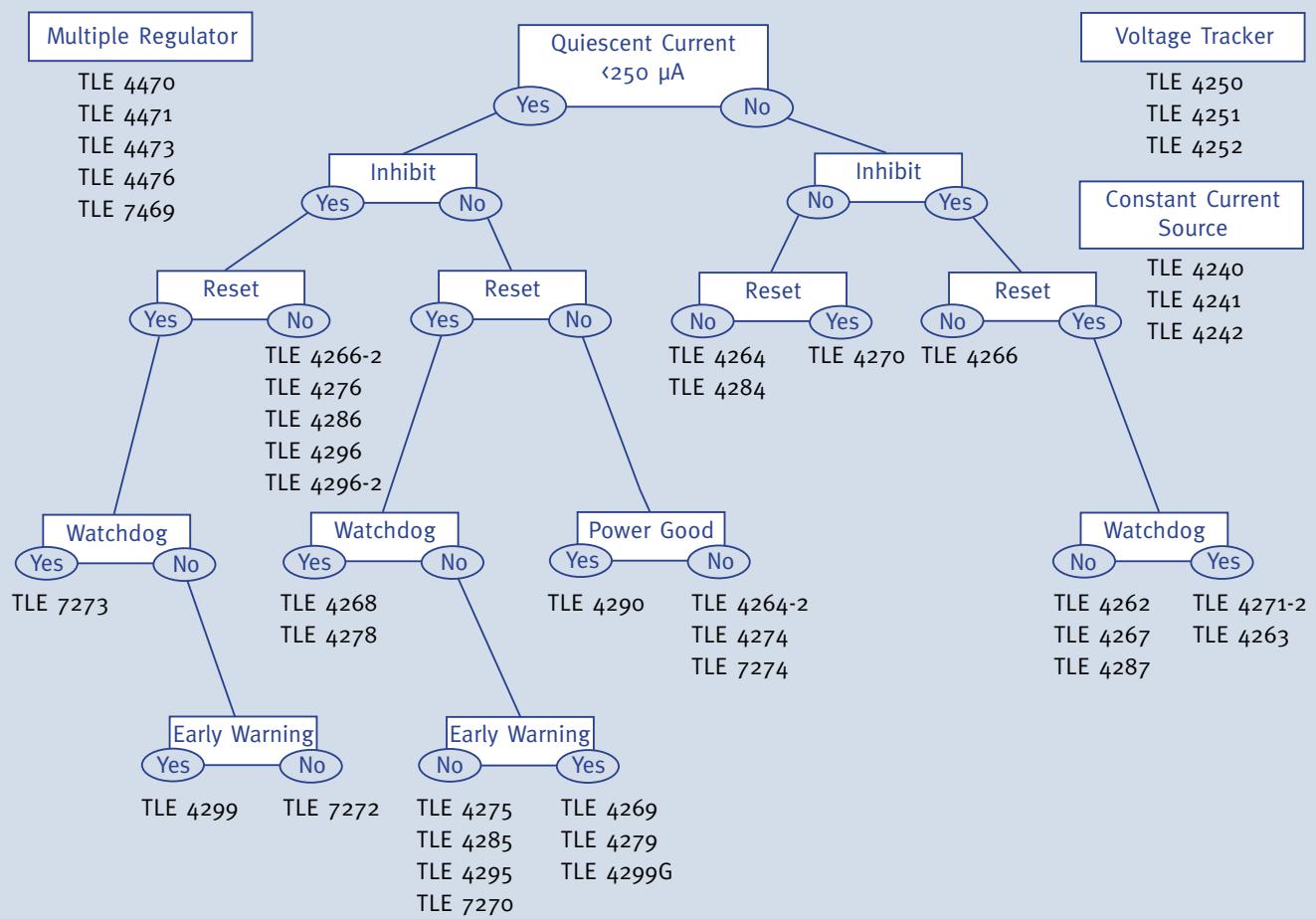
- Low quiescent current consumption in standby mode
- Disable function for main output
- Wide operation range: up to 45 V
- Wide temperature range: -40°C up to +150°C
- Very low dropout
- Power-On-Reset circuit sensing the standby voltage
- Early warning comparator for supply undervoltage
- Output protected against short-circuit
- Wide temperature range
- Overtemperature protection
- Overload protection

Voltage Regulator Selection Tree by Output Current





Voltage Regulator Selection Tree by Quiescent Current



Power Supply

Single Regulators

Type	Output Current [mA]	Operating Range [V]	Output Voltage [V]	Load Dump Protection [V]	Drop Voltage [V]	Accuracy (%)	Leakage Off-Mode [μ A]	Quiescent current On-Mode [μ A]
TLE 4284	800	45	adj. 1.25;3.3		1.2	4		100
TLE 4270	600	42	5.0	65	0.35	2		900
TLE 4271-2	600	42	5.0	65	0.35	2	0	1000
TLE 4275	450	45	5.0		0.25	2		150
TLE 4267	400	42	5.0	65	0.35	2	0	1300
TLE 4274	400	45	5.0;8.5;10.0		0.25	4		100
TLE 4274*	400	45	2.5;3.3		0.25	4		100
TLE 4276	400	45	5.0;8.5;10.0		0.25	2	0	100
TLE 7270	300	42	5.0		0.25	2		30
TLE 7272	300	42	5.0		0.25	2	5	35
TLE 7274	300	42			0.25	2		20
TLE 7276	300	42	5.0		0.25	2	5	25
TLE 4287	250	45	5.0		1.5	2	0	2000
TLE 4262	200	45	5.0		0.25	2	0	720
TLE 4263	200	45	5.0		0.25	2	0	850
TLE 4268	200	45	5.0		0.25	2		270
TLE 7273	200	42	2.6;3.3;5.0		0.25	2	5	35
TLE 4278	160	45	5.0		0.25	2		160
TLE 4269	150	45	5.0		0.25	2		150
TLE 4279	150	45	5.0		0.25	2		150
TLE 4299GM	150	45	5.0		0.25	2		65
TLE 4299G	150	45	5.0		0.25	2		65
TLE 4264	120	45	5.0		0.25	2		250
TLE 4264-2	120	45	5.0		0.25	2		40
TLE 4266	120	45	5.0		0.25	2		250
TLE 4266-2	120	45	5.0		0.25	2		40
TLE 4295	30	45	3.0;3.3;5.0		0.25	4		60
TLE 4296	30	45	3.0;3.3;5.0		0.25	4	10	60
TLE 4285	20	45	5.0		1	4		80
TLE 4286	20	45	5.0		1	4	0	50

* Stable with ceramic cap



Short-Circuit Protection	Overshoot Protection	Overtemperature Protection	Reset	Adjustable Reset Threshold	Inhibit Input	Watchdog Circuit	Early Warning	Package
X		X						(10)
X	X	X	X					(3),(5),(11),(15)
X	X	X	X		X	X		(6),(8),(17)
X		X	X					(3),(5),(11)
X	X	X	X		X			(6),(7),(17),(24)
X		X						(2),(10)
X		X						(21),(10)
X		X			X			(3),(4),(11),(15)
X		X	X					(11)
X		X	X		X			(11)
X		X						(11)
X		X			X			(11)
X		X	X		X			(24)
X		X	X	X	X			(24)
X		X	X	X	X	X		(22),(24),(26)
X		X	X	X		X		(22),(26)
X		X	X		X	X		(24)
X		X	X	X		X		(24)
X		X	X	X			X	(22),(24),(26)
X		X	X	X			X	(22),(24),(26)
X		X	X	X	X		X	(24)
X		X	X	X			X	(22)
X		X						(21)
X		X						(21)
X		X			X			(21)
X		X			X			(21)
X		X	X					(19)
X		X			X			(19)
X		X	X					(19)
X		X			X			(19)

OptiMOS® :
N-Channel MOSFET

TEMPFET®/HITFET®:
Low Side Switches

PROFET®:
High Side Switches

Bridge
Driver ICs

DC Motor
Bridges

Power
Supply

Automotive
Transceiver

Automotive
System ICs

Power Supply

Single Regulators

	Quiescent Current On-Mode [µA]	Operating Range [V]	Output Voltage [V]	Load Dump Protection [V]	Drop Voltage [V]	Accuracy (%)	Leakage Off-Mode [µA]	Output Current [mA]
TLE 7274	20	42	5.0		0.25	2		300
TLE 7276	25	42	5.0		0.25	2	5	300
TLE 7270	30	42	5.0		0.25	2		300
TLE 7272	35	42	5.0		0.25	2	5	300
TLE 7273	35	42	2.6;3.3;5.0		0.25	2	5	200
TLE 4264-2	40	45	5.0		0.25	2		120
TLE 4266-2	40	45	5.0		0.25	2		120
TLE 4286	50	45	5.0			1	4	0
TLE 4295	60	45	3.0;3.3;5.0		0.25	4		30
TLE 4296	60	45	3.0;3.3;5.0		0.25	4	10	30
TLE 4299G	65	45	5.0		0.25	2		150
TLE 4299GM	65	45	5.0		0.25	2		150
TLE 4285	80	45	5.0		1	4		20
TLE 4276	100	45	5.0;8.5;10.0		0.25	2	0	400
TLE 4274	100	45	5.0;8.5;10.0		0.25	4		400
TLE 4274*	100	45	2.5;3.3		0.25	4		400
TLE 4284	100	45	adj. 1.25;3.3		1.2	4		800
TLE 4269	150	45	5.0		0.25	2		150
TLE 4275	150	45	5.0		0.25	2		450
TLE 4279	150	45	5.0		0.25	2		150
TLE 4278	160	45	5.0		0.25	2		160
TLE 4264	250	45	5.0		0.25	2		120
TLE 4266	250	45	5.0		0.25	2		120
TLE 4268	270	45	5.0		0.25	2		200
TLE 4262	720	45	5.0		0.25	2	0	200
TLE 4263	850	45	5.0		0.25	2	0	200
TLE 4270	900	42	5.0	65	0.35	2		600
TLE 4271-2	1000	42	5.0	65	0.35	2	0	600
TLE 4267	1300	42	5.0	65	0.35	2	0	400
TLE 4287	2000	45	5.0		1.5	2	0	250

* Stable with ceramic cap



Short-Circuit Protection	Ovvoltage Protection	Ovtemperature Protection	Reset	Adjustable Reset Threshold	Inhibit Input	Watchdog Circuit	Early Warning	Package
X		X						(11)
X		X			X			(11)
X		X	X					(11)
X		X	X		X			(11)
X		X	X		X	X		(24)
X		X						(21)
X		X			X			(21)
20	X		X			X		(19)
X		X	X					(19)
X		X			X			(19)
X		X	X	X			X	(22)
X		X	X	X	X		X	(24)
X		X	X					(19)
X		X				X		(3),(4),(11),(15)
X		X						(2),(10)
X		X						(2),(10)
X		X						(10)
X		X	X	X			X	(22),(24),(26)
X		X	X					(3),(4),(11),(15)
X		X	X	X			X	(22),(24),(26)
X		X	X	X		X		(24)
X		X						(21)
X		X			X			(21)
X		X	X	X		X		(22),(26)
X		X	X	X	X			(24)
X		X	X	X	X	X		(22),(24),(26)
X	X	X	X					(3),(4),(11),(15)
X	X	X	X		X	X		(6),(8),(17)
X	X	X	X		X			(6),(7),(17),(24)
X		X	X		X			(24)

Multiple & Tracker
Constant Current Source

Power Supply

Multiple Regulators

	Output Current One [mA]	Output Current Two/Three [mA]	Operating Range [V]	Output Voltage One [V]	Output Voltage Two/Three [V]	Load Dump Protection [V]	Drop Voltage [V]	Accuracy (%)	Leakage Current [μ A]
TLE 4470	350	180	45	5.0	adj.		0.25	2	
TLE 4471	500	100 + 50	42	5.0	5.0 + 5.0	65	0.35	2	10
TLE 4473	350	200	45	5.0	3.3 or 2.6		0.3	2	1
TLE 4476	430	350	42	5.0	3.3	65	0.35	4	10
TLE 7469	220	200	45	5.0	3.3 or 2.6		0.3	2	1

Tracker

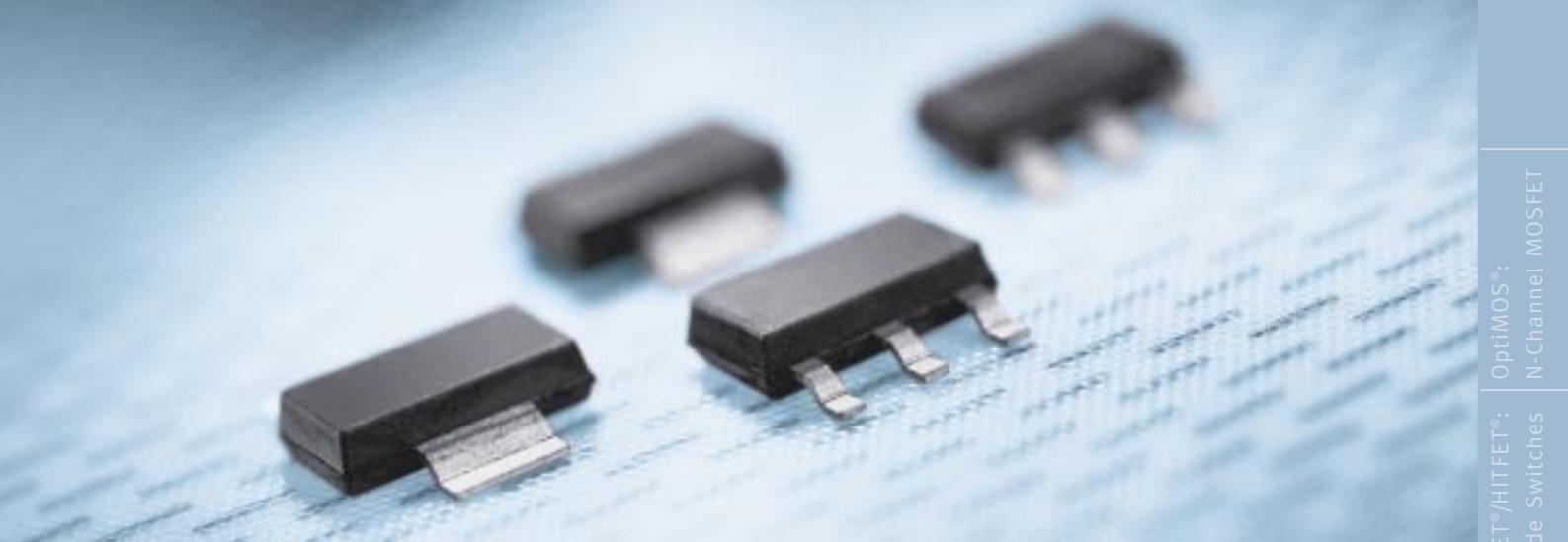
	Output Current One [mA]	Output Current Two/Three [mA]	Operating Range [V]	Output Voltage One [V]	Output Voltage Two/Three [V]	Load Dump Protection [V]	Drop Voltage [V]	Accuracy (%)	Leakage Current [μ A]
TLE 4250	50		45	adj.			0.25	0.5	10
TLE 4251	400		45	adj.			0.25	0.5	0
TLE 4252	250		45	adj.			0.25	0.5	0

Constant Current Source

Short description

- Constant output current, therefore constant brightness and extended LED lifetime
- Wide input voltage range
- Low drop voltage
- Open load detection
- Overtemperature protection
- Short-circuit proof
- Reverse polarity proof
- Wide temperature range
- Very small SMD-Packages

Parameters	Output Current [mA]	Output Current [mA]	Operating Range [V]	Drop Voltage [V]	Accuracy (%)	Quiescent Curr. IQ = 1mA/ μ A
TLE 4240	66		45	0.5		
TLE 4241	8/65	adj.	45	0.3		
TLE 4242	600	adj.	45	0.35	5	0



Quiescent Curr. IQ = 1mA	Short-Circuit Protection	Ovvoltage Protection	Overtemperature Protection	Reset	Adjustable Reset Threshold	Inhibit Input	Watchdog Circuit	Early Warning	Package
200	X		X	X	X	X		X	(24)
500	X	X	X	X	X	X	X		(26)
200	X		X	X		X	X		(23)
250	X	X	X			X			(11)
55	X		X	X		X	X		(23)

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Low Side Switches | OptimOS®:
N-Channel MOSFET

Quiescent Curr. IQ = 1mA	Short-Circuit Protection	Ovvoltage Protection	Overtemperature Protection	Reset	Adjustable Reset Threshold	Inhibit Input	Watchdog Circuit	Early Warning	Package
60	X		X			X			(19)
100	X		X			X			(11,14)
100	X		X			X			(11)

Bridge
Driver ICs

DC Motor
Bridges

Power
Supply

Short-Circuit Protection	Ovvoltage Protection	Overtemperature Protection	Reset	Adjustable Reset Threshold	Inhibit Input	PWM	Package
X	X	X	X				(19)
X	X	X	X	X	X	X	(22)
X	X	X	X	X	X	X	(17)

Automotive
Transceiver

Automotive
System ICs

Power Supply

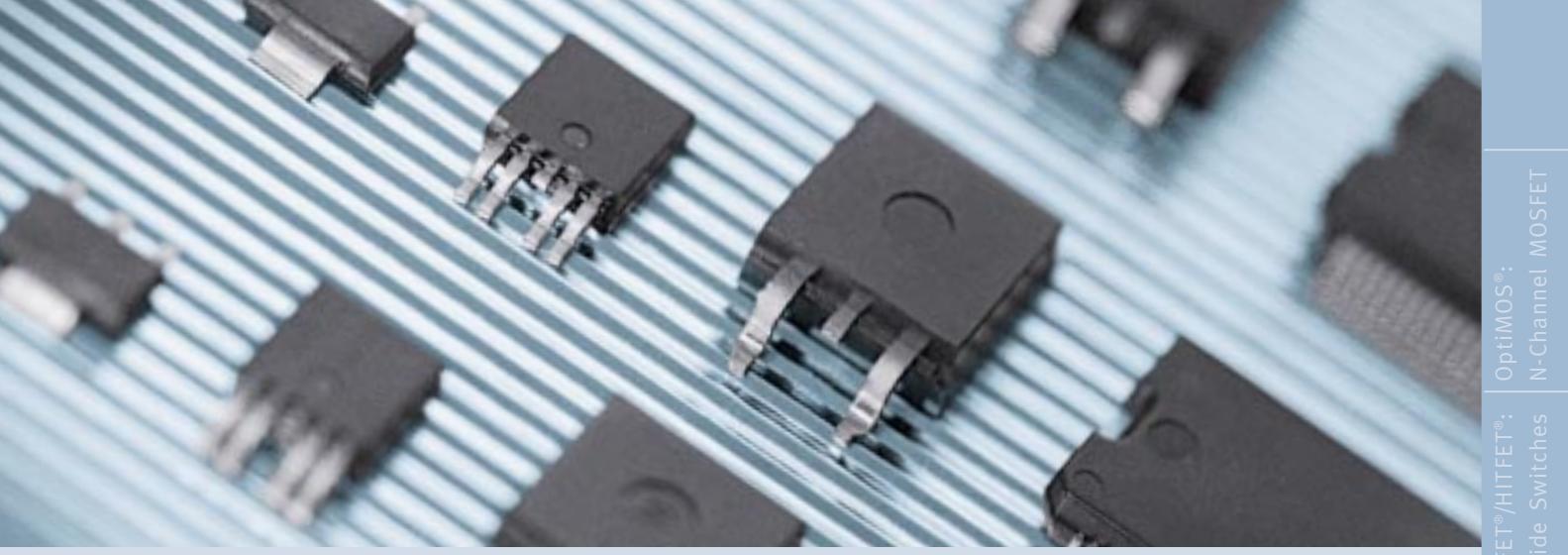
Short description

- Step up and step down converters
- High-efficiency regulators
- Wide supply voltage operation range
- Very low current consumption operation
- Suitable for standard 12 V/24 V and 42 V PowerNets
- Output Under-Voltage-Reset with delay
- Overtemperature shutdown
- Wide ambient operation range: -40°C up to +125°C

DC/DC

Type	Topology	Input Voltage Range [V]	Output Voltage 1 [V]	Output Voltage 2 [V]	Output Voltage 3 [V]	Output Voltage 4 [V]	Output Voltage 4 [V]	Output Current 1 [mA]	Output Current 2 [mA]	Output Current 3 [mA]	Output Current 4 [mA]	Output Current 5 [mA]	Accuracy 1 (%)	Accuracy 2 (%)
TLE 6361	Buck plus Linear	8 (5.5)-60	5.5	5.0	2.6 or 3.3	5 or 3.3	6x5	1500	800	500	350	6x17	10	2
TLE 6368	Buck plus Linear	5.5-60	5.5	5.0	2.6 or 3.3	2.6 or 3.3	6x5	1500	800	500	350	6x17	10	2
TLE 6363	Boost plus Buck	4.0-40	adj. up to 33 V	5.0				1000	700				10	2
TLE 6365	Buck	8.0-40	5					400					2	
TLE 6372	Buck	12.0-60	5					1000					3	
TLE 6389GV	Buck	5.0-60	adj.					adj.					3	
TLE 6389G50	Buck	5.0-60	5					adj.					3	
TLE6389G50-1	Buck	5.0-60	5					adj.					3	

* 1 Volt Reset Hysteresis



Key Features and Applications													
Accuracy 3 (%)	Accuracy 4 (%)	Accuracy 5 (%)	Quiescent Current IQ = 1mA/µA	Standby Regulator	PFM Operation	Short-Circuit Protection	Over-temperature Protection	Reset	Window Watchdog	SPI and Add Logic	Enable/Disable Possibility	Early Warning	Package
5	4	+0.1 to -0.3	50	X		X	X	X	X	X	X		(30)
5	4	+0.1 to -0.3	50	X		X	X	X	X	X	X		(30)
			4000			X	X	X	X				(24)
			4000			X	X	X					(22)
			50		X	X	X	X			X		(22)
			100		X	X	X	X			X	X	(24)
			100		X	X	X	X			X	X	(24)
			100		X	X	X	X*			X	X	(24)

PROFET®: High Side Switches | TEMPFET®/HITFET®: Low Side Switches | OptimOS®: N-Channel MOSFET

Bridge Driver ICs | DC Motor Bridges

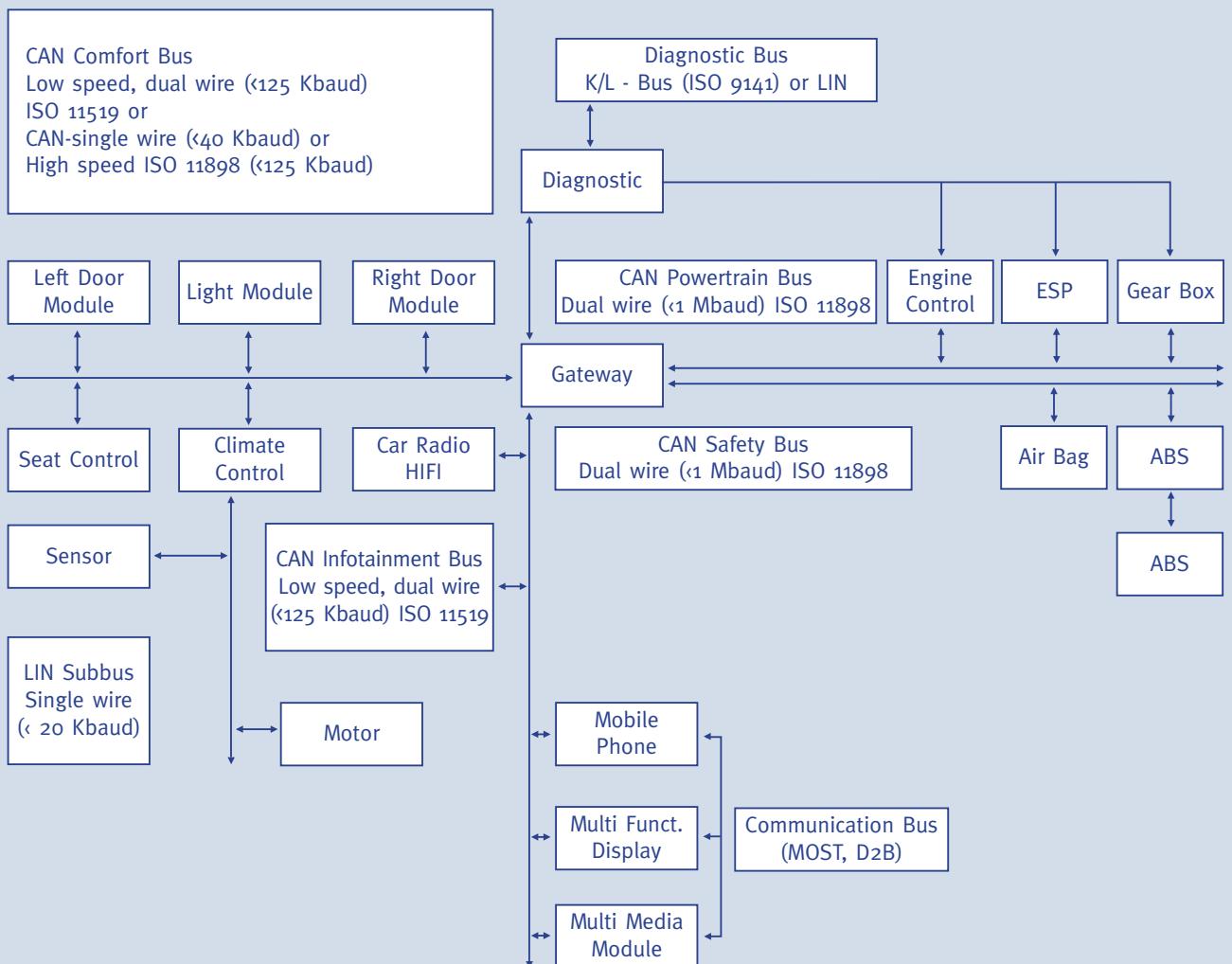
Power Supply

Automotive Transceiver

Automotive System ICs

Automotive Transceivers

Bus Systems



Product Overview

Type	Transceiver Type	Transmission Rate	Voltage Regulator Output
Stand Alone Transceiver			
TLE 6250	High Speed CAN	1 Mbaud	No
TLE 6254-3	Medium Speed CAN	125 kbaud	No
TLE 6255	Single Wire CAN	33 kbaud	No
TLE 6258-2	Low Speed LIN	20 kbaud	No
TLE 6259-2	Low Speed LIN, with Inhibit Output	20 kbaud	No
TLE 7259	Low Speed LIN, with Inhibit Output	20 kbaud	No
Communication and Supply ICs			
TLE 6262	SBC with Relays Driver, Low Speed CAN	125 kbaud	50 mA, @ 5 V
TLE 6263	Standard Body, Low Speed CAN	125 kbaud	120 mA, @ 5 V
TLE 6266	SBC with Relays Driver, Low Speed CAN	125 kbaud	150 mA, @ 5 V
TLE 6272	Standard Body, High Speed CAN-LDO	1 Mbaud	150 mA, @ 5 V
TLE 6285	Standard LIN-LDO with Reset Function	20 kbaud	150 mA, @ 5 V
TLE 6286	Standard LIN-LDO with Watchdog Function	20 kbaud	150 mA, @ 5 V

Automotive Transceivers

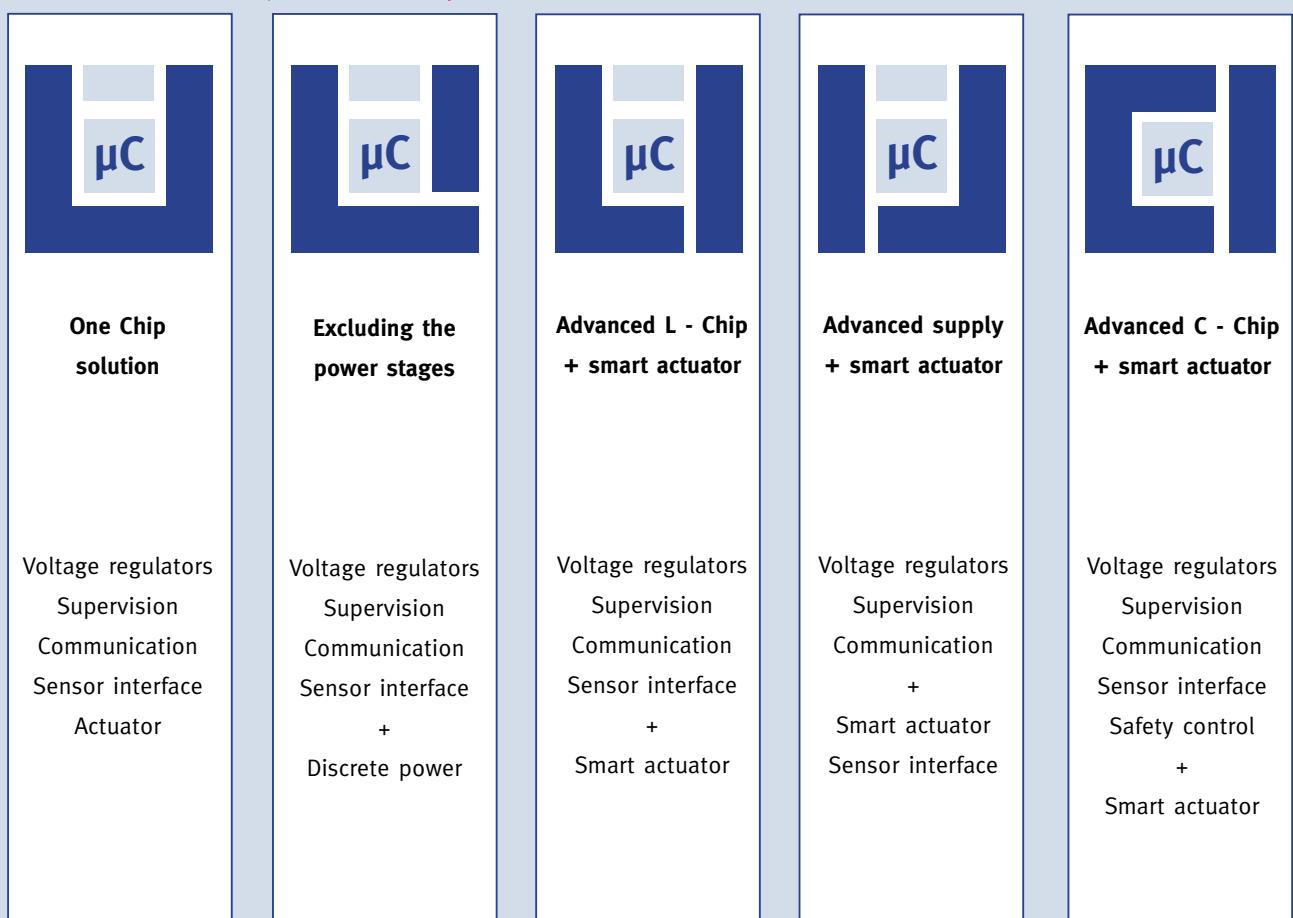
Feature Matrix

Type	Transceiver Type	Transmission Rate	Quiescent Current	Stand-by Current	Bus Wake Up Capability
TLE 6250 G	HighSpeedCAN ISO11898	1 MBaud	< 10 µA	< 10 mA receive only	No
TLE 6250 GV33	HighSpeedCAN ISO11898	1 MBaud	< 10 µA	< 10 mA receive only	No
TLE 6251 G	HighSpeedCAN ISO11898	1 Mbaud	< 10 µA	< 10 µA	Yes
TLE 6251 GS	HighSpeedCAN ISO11898	1 Mbaud	< 10 µA	< 10 µA	Yes
TLE 6254-3 G	FaultTolerantCAN ISO 11519/ISO 11898-3	125 kBaud	< 55 µA sleep mode	< 6 mA receive only	Yes
TLE 6255 G	SingleWireCAN	33 kBaud	< 40 µA sleep mode	< 6 mA	Yes
TLE 6258-2 G	SingleWireLIN/k-line and ISO9141	20 kBaud	< 40 µA sleep mode	N/A	No
TLE 7259 G	SingleWireLIN/k-line and ISO9141	20 kBaud	< 20 µA sleep mode	N/A	Yes
TLE 6259-2 G	SingleWireLIN/k-line and ISO9141	20 kBaud	< 30 µA sleep mode	N/A	Yes
TLE 6262 G	FaultTolerantCAN ISO 11519/ISO 11898-3	125 kBaud	< 280 µA @ 5 V stand-by	< 280 µA @ 5 V stand-by	Yes
TLE 6263 G	FaultTolerantCAN ISO 11519/ISO 11898-3	125 kBaud	< 60 µA sleep mode	< 400 µA @ 5 V stand-by	Yes
TLE 6266 G	FaultTolerantCAN ISO 11519/ISO 11898-3	125 kBaud	< 70 µA @ 5 V stand-by	< 400 µA @ 5 V on	Yes
TLE 6272 G	HighSpeedCAN ISO11898	1 Mbaud	< 15 µA	< 8 mA	No
TLE 6285 G	SingleWireLIN/k-line and ISO9141	20 kBaud	< 50 µA sleep mode	< 140 µA @ 5 V stand-by	Yes
TLE 6286 G	SingleWireLIN/k-line and ISO9141	20 kBaud	< 50 µA sleep mode	< 140 µA @ 5 V stand-by	Yes

System Overview						
Suitable for applications	Voltage Regulator Output	Wake Up Inputs	Watchdog	Output Drivers	Bus Failure Management	Package
12 + 24 V applications	No	No	No	No	No	(22)
12 + 24 V applications	No	No	No	No	No	(22)
12 + 24 V applications	No	bus wakeup	No	No	bus failure detection	(24)
12 + 24 V applications	No	bus wakeup	No	No	No	(22)
12 V applications	No	bus wakeup	No	No	fault tolerant failure management	(24)
12 V applications	No	bus wakeup	No	No	No	(24)
12 V applications	No	bus wakeup	No	No	No	(22)
12 V applications	No	bus wakeup	No	No	LIN bus to GND short circuit detection	(22)
12 V applications	No	bus wakeup	No	No	LIN bus to GND short circuit detection	(22)
12 V applications	50 mA, @ 5 V	bus wakeup	window watchdog	2 low side relays driver 3 high side driver	fault tolerant failure management	(29)
12 V applications	120 mA, @ 5 V	2 wakeup in bus wakeup	window watchdog	1 high side switch 150 mA	fault tolerant failure management	(29)
12 V applications	150 mA, @ 5 V	bus wakeup	window watchdog	2 low side relays driver 3 high side driver	fault tolerant failure management	(29)
12 V applications	150 mA, @ 5 V	No	watchdog	No	No	(24)
12 V applications	150 mA, @ 5 V	bus wakeup	No	No	LIN bus to GND short circuit detection	(25)
12 V applications	150 mA, @ 5 V	bus wakeup	watchdog	No	LIN bus to GND short circuit detection	(25)

Automotive System ICs

Integration of System Components

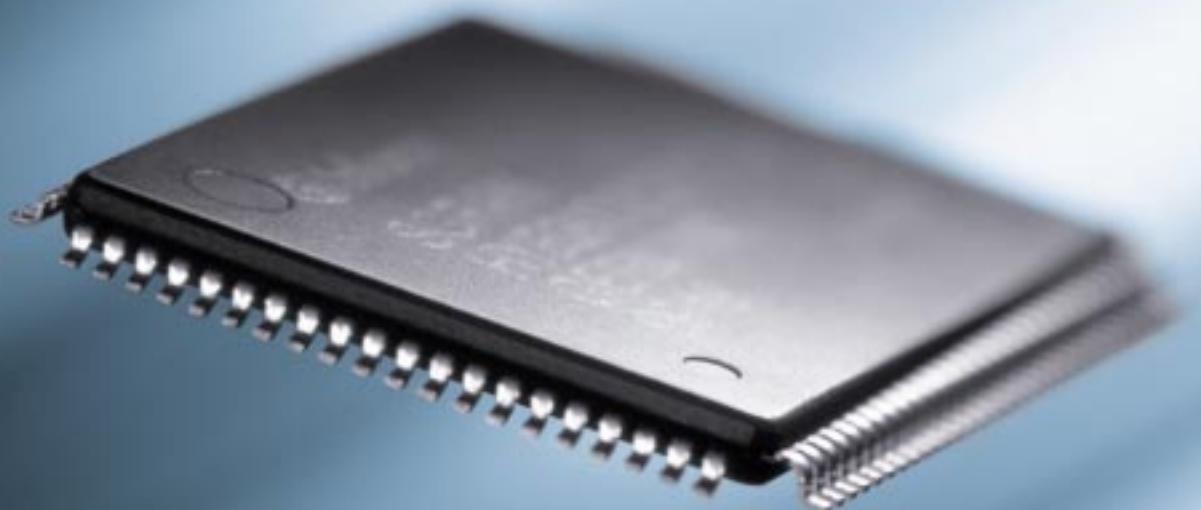


Body System ICs

System Basis Chips

Type	Transceiver Type	Transmission Rate	Quiescent Current	Stand-by Current	Bus Wake Up Capability	Suitable for
TLE 6262 G	FaultTolerantCAN ISO11519 / ISO 11898-3	125 kBaud	<280 µA @ 5V stand-by	<280 µA @ 5V stand-by	Yes	12V
TLE 6263 G	FaultTolerantCAN ISO11519 / ISO 11898-3	125 kBaud	<60 µA sleep mode	<400 µA @ 5V stand-by	Yes	12V
TLE 6266 G	FaultTolerantCAN ISO11519 / ISO 11898-3	125 kBaud	<70 µA @ 5V stand-by	<400 µA @ 5V On	Yes	12V

► www.infineon.com/transceiver



Door Module IC

Feature	Output Current A DC	Peak A	Driver Stage	Quiescent Current μ A	Operating Range	Protection	Diagnostic + Programming	Package
TLE7201	Out 1.2 8	15	Half Bridge	3	8 - 20	fully protected	SPI	(30)
	Out 3.4 4	8	Half Bridge					
	Out 5.6 1.5	2.5	Half Bridge					
	Out 7 8	111	High Side Switches					
	Out 8-11 2.4	3.5	High Side Switches					

► www.infineon.com/bridges

Voltage Regulator Output	Wake Up Inputs	Watchdog	Output Drivers	Bus Failure Management	Package
50 mA, @ 5V	bus wakeup	window watchdog	2 low side relays driver 3 high side driver	fault tolerant failure management	(29)
120 mA, @ 5V	2 wakeup and bus wakeup	window watchdog	1 high side switch 150 mA	fault tolerant failure management	(29)
150 mA, @ 5V	bus wakeup	window watchdog	2 low side relays driver 3 high side driver	fault tolerant failure management	(29)

Automotive System ICs	Automotive Transceiver	Power Supply	DC Motor Bridges	Bridge Driver ICs	PROFET®: High Side Switches	TEMPFET®/HITFET®: Low Side Switches	OptIMOS®: N-Channel MOSFET
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Automotive System ICs

Powertrain System ICs

Type	V _s [V]	V _{DS(AZ) max.} [V]	R _{DS(on)} typ.at T _j =25°C [mΩ]	I _{D(NOM)} [A]	I _{L(lim) min.} [A]	Package
TLE 6244 X	5	50/77	6x500 (70V) 6x450 2x350 4x1000	6x1.5 6x1.5 2x2 4x0.5	6x2.2 6x2.2 2x3 4x1.1	(31)
TLE 6288 R	4.5 ... 5.5		6x0.270	6x2.0	programmable	(30)

► www.infineon.com/multi-channel-switches

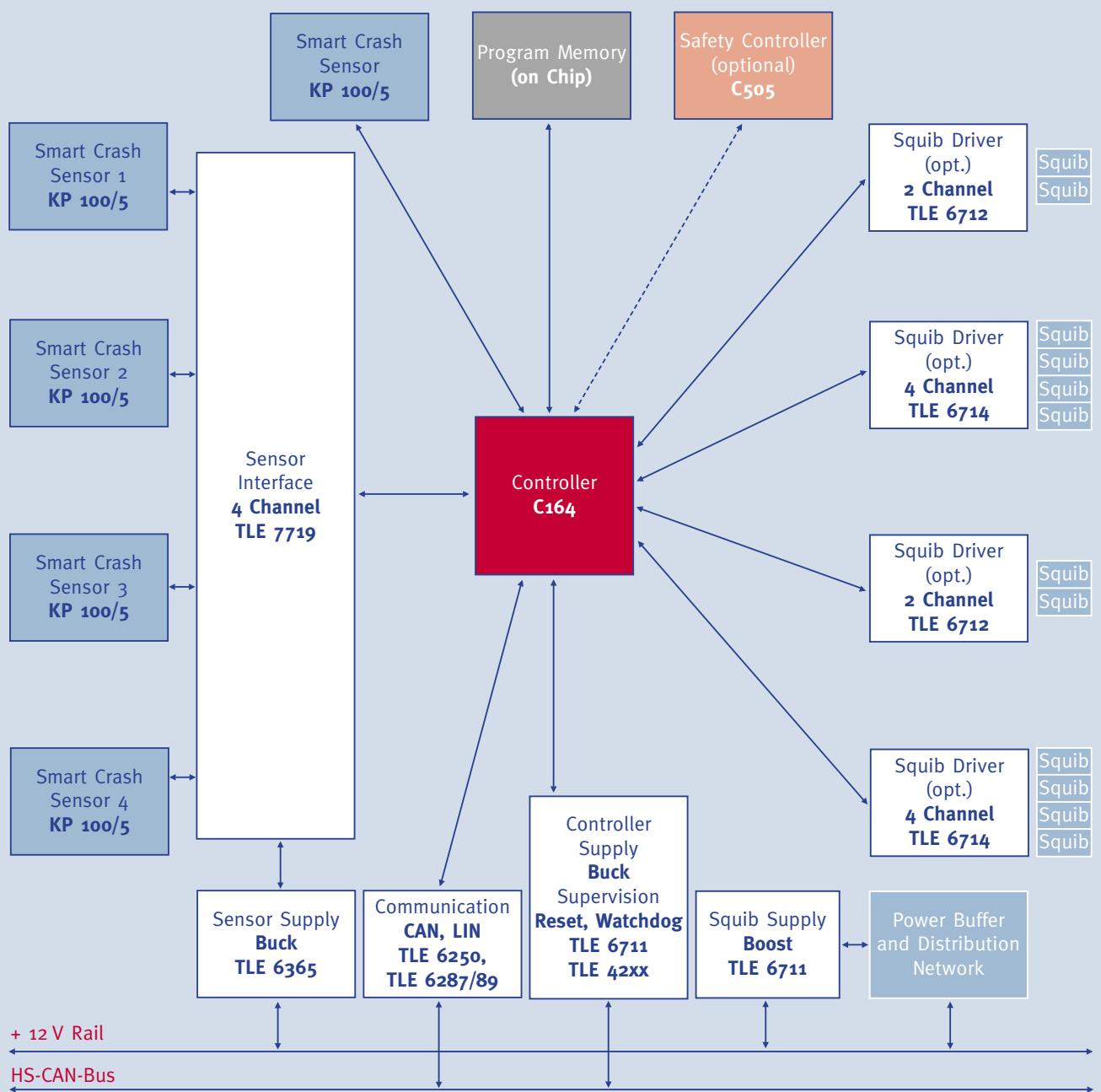
Bridges for Throttle Control

Feature	Output Current [A]	Peak Current [A]	Quiescent Current [mA]	Operating Range [V]	Short Circuit Protection	Diagnostic Interface	HIGHLIGHT	R _{DS(on)}	Package
TLE 6209	6	7	0.02	5 - 40	Fully Protected	SPI	SPI, Chopper Current limitation, Temp prewarning	150 mΩ/switch	(27)
TLE 7209	6	7	0.02	5 - 40	Fully Protected	SPI	SPI, Chopper Current limitation, Temp prewarning	150 mΩ/switch	(27)

► www.infineon.com/bridges



Restraint System System Block Diagram



Automotive System ICs

TLE 6712 2-Channel Airbag Firing IC

- Two independent thermally protected firing squib drivers
- Highside and lowside switch for each firing circuit
- Maximum firing current limitation for each firing circuit
- Discrete level output for minimum firing current detection
- Precision squib resistance measurement (with programmable gain) and analog outputs
- Squib leakage measurement to ground or to battery supply set by external resistor with analog or digital output
- Voltage measurements multiplexed to an analog output pin
- Serial Peripheral Interface (SPI)
- Logic and analog output signals for sensing and diagnostics
- Two hardware firing loop enable inputs
- Buckle switch detection
- Package P-DSO-24

TLE 6714 4-Channel Airbag Firing IC

- Four independent thermally protected firing squib drivers
- Highside and lowside switch for each firing circuit
- Maximum firing current limitation for each firing circuit
- Discrete level output for minimum firing current detection
- Precision squib resistance measurement (with programmable gain) and analog outputs
- Squib leakage measurement to ground or to battery supply set by external resistor with analog or digital output
- Voltage measurements multiplexed to an analog output pin
- Serial Peripheral Interface (SPI)
- Logic and analog output signals for sensing and diagnostics
- Two hardware firing loop enable inputs
- Buckle switch detection
- Package P-DSO-28



TLE 6710 Combined Airbag Power Supply and 4-Channel Firing IC

- Step up converter 30 V (Boost Converter)
- Step down converter 5 V (Buck Converter)
- Four independent firing squib drivers with current limitation
- Highside and lowside switch for each firing circuit
- Digital output for firing current detection
- Squib resistance measurement with analog outputs
- Selectable gain factor (10 / 30) for squib resistance measurement
- Programmable squib leakage measurement to ground or to battery
- Several supply voltage measurements on external pins
- Digital output for detection of safing sensor closure
- Power on / off reset generator and watch dog circuit
- Precise 100kHz oscillator
- Serial interface line driver (ISO 9141 and TTL-level)
- Four voltage/current sources for diagnostic purposes
- Two warning lamp driver with diagnostic
- Serial Peripheral Interface (SPI)
- Logic and analog output signals for diagnostics
- Package P-MQFP-64

TLE 6711 Multifunctional Regulator and Watchdog

- Boost converter 30 V
- Boost over- and undervoltagelockout
- Buck converter 5 V
- Logic over- and undervoltagelockout
- Power on / off reset generator
- System enable output
- Low voltage detection
- Very low current consumption
- Package P-DSO-14 or P-DSO-20

TLE 7719 4-Channel Satellite Receive IC (SatRIC)

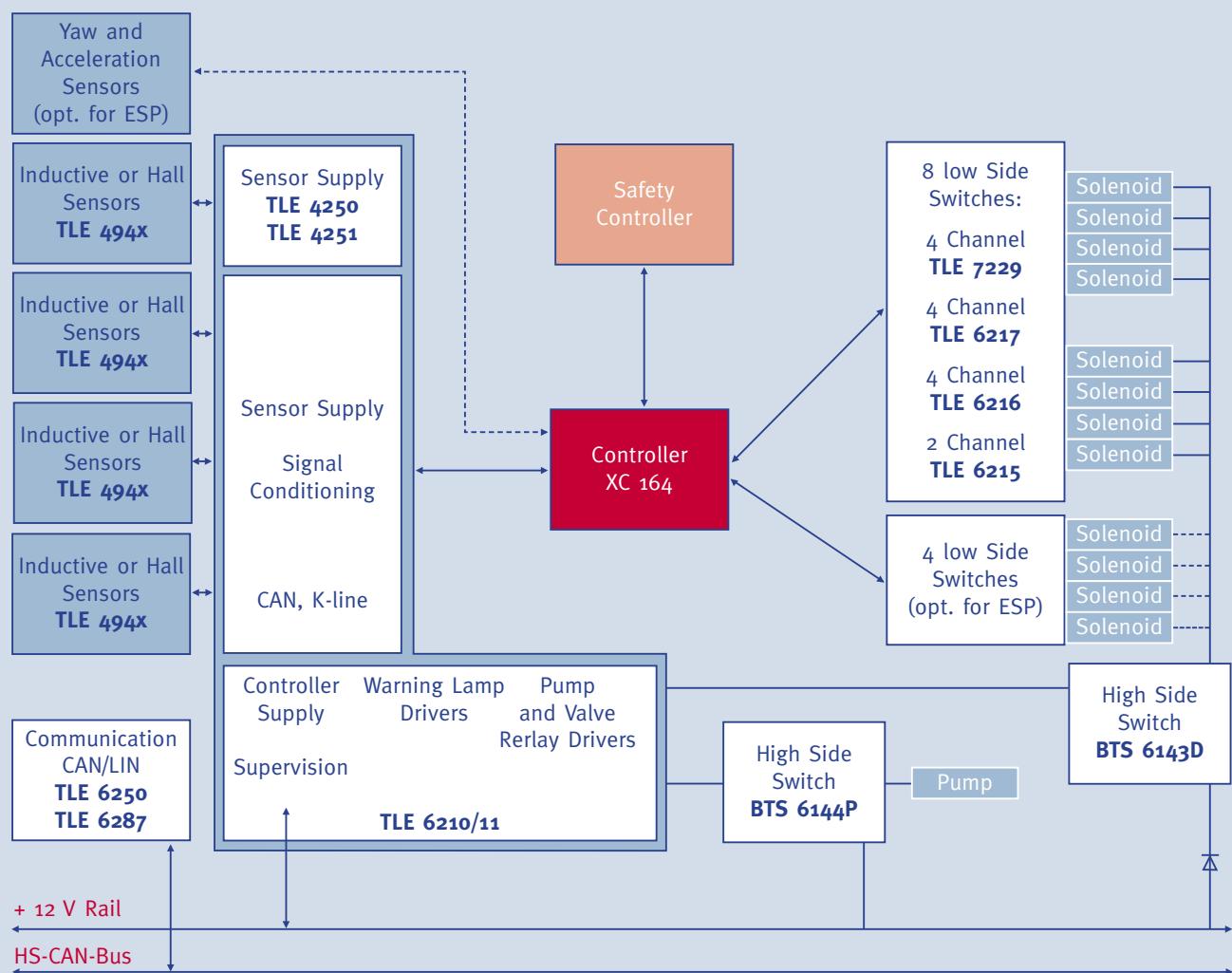
- Receives data from 4 satellite channels
- Max. data rate by current modulation 125 KBAud
- Decoding of current modulated data:
 - UART (8-bit, 9-bit, 16-bit)
 - Manchester Code (up to 16-bit)
- Programmable sample clock generator with two clock options: internal system clock (1 MHz) or external clock line (4 ... 20 MHz)
- Supplies satellite channels with 4 independent + 10 V voltage regulators
- Digital voltage output for transmitted satellite signal (V/I-converter)
- Logic operating voltage 5.0 V
- 16-bit SPI-Interface
- Diagnostic interface, leakage detection and overtemperature switch off for all channels
- Package P-TSSOP-28

Automotive System ICs	Power Supply	DC Motor Bridges	Bridge Driver ICs	PROFET®: High Side Switches	TEMPFET®/HITFET®: Low Side Switches	OptiMOS®: N-Channel MOSFET
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Automotive System ICs

ABS/EPS System

System Block Diagram





TLE 6215 2-fold Low Side Switch

- Protection against short-circuit, overtemperature, overvoltage, ESD and overload
- Diagnostic feedback
- µC compatible input
- Pin and function compatible to TLE 5224
- Two open drain output stages
- $R_{on} = 0.21 \Omega$, ID = 2 x 4 A
- P-DSO-24-3 package or bare die

TLE 6228 4-fold Low Side Switch

- All kinds of resistive and inductive loads (relays, electromagnetic valves)
- Protection against short-circuit, overtemperature, overvoltage and ESD
- Parallel control of the inputs (PWM applications)
- Open load (on/off)
- Separate diagnostic pin for each channel
- Standby mode with low current consumption
- µC compatible input
- Four open drain output stages
- $R_{on\ 1..2} = 0.2 \Omega$, $R_{on\ 3..4} = 0.35 \Omega$,
ID_{1..2} = 2 x 5 A, ID_{3..4} = 2 x 3 A
- P-DSO-20-12 (Power-SO) package or bare die

TLE 6216 4-fold Low Side Switch

- EMV optimised version of TLE 6228
- but with cross open load detection
- P-DSO-20-12 (Power-SO) package or bare die

TLE 6217 4-fold Low Side Switch

- EMV optimised version of TLE 6228
- P-DSO-20-12 (Power-SO) package or bare die

TLE 6210/11 System-IC

- 5 V, 800 mA linear regulator
- Undervoltage / overvoltage reset
- Undervoltage / overvoltage logout
- Digital watchdog supervision for two µC
- (motor) relay driver
- (valve) relay driver
- Inverted or non-inverted lamp relay driver
- Enable output
- Overtemperature and overcurrent protection
- P-DSO-20-12 (Power-SO) package or bare die

TLE 7229 4-fold Low Side Switch

- 2x free wheeling diodes
- Enable function
- Status monitoring
- $R_{on\ 1..2} = 0.2 \Omega$, $R_{on\ 3..4} = 0.35 \Omega$,
ID_{1..2} = 2 x 5 A, ID_{3..4} = 2 x 3 A
- Integrated clamping Z-diodes
- Overload shutdown
- Selective overtemperature shutdown
- Shorted load protecting
- ESD protected
- Power P-DSO-36-12 package with integrated cooling area

Automotive System ICs	Power Supply	DC Motor Bridges	Bridge Driver ICs	PROFET®: High Side Switches	TEMPFET®/HITFET®: Low Side Switches	OptiMOS®: N-Channel MOSFET
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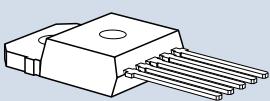
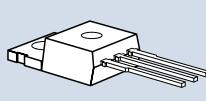
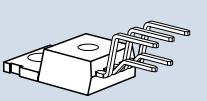
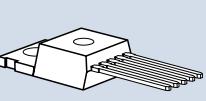
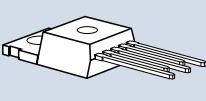
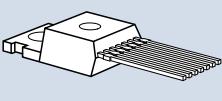
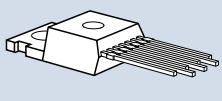
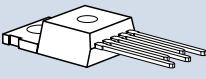
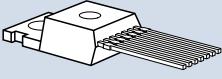
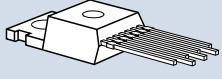
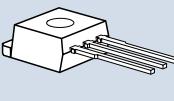
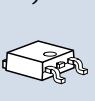
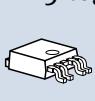
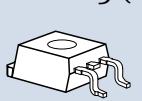
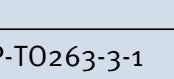
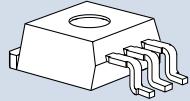
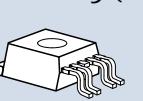
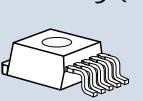
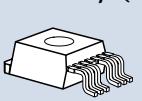
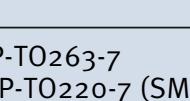
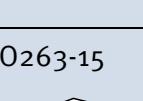
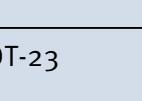
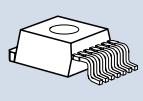
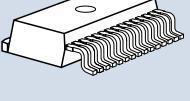
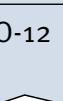
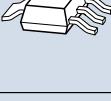
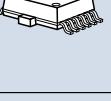
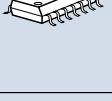
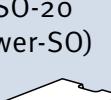
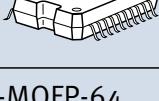
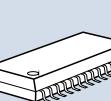
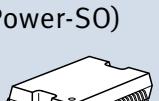
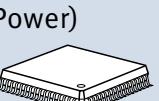
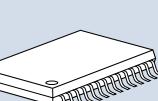
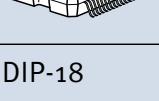
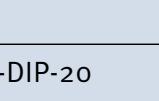
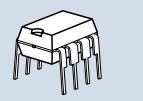
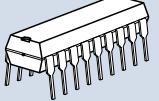
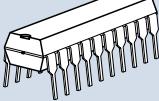
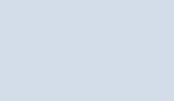
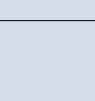
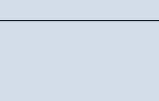
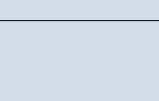
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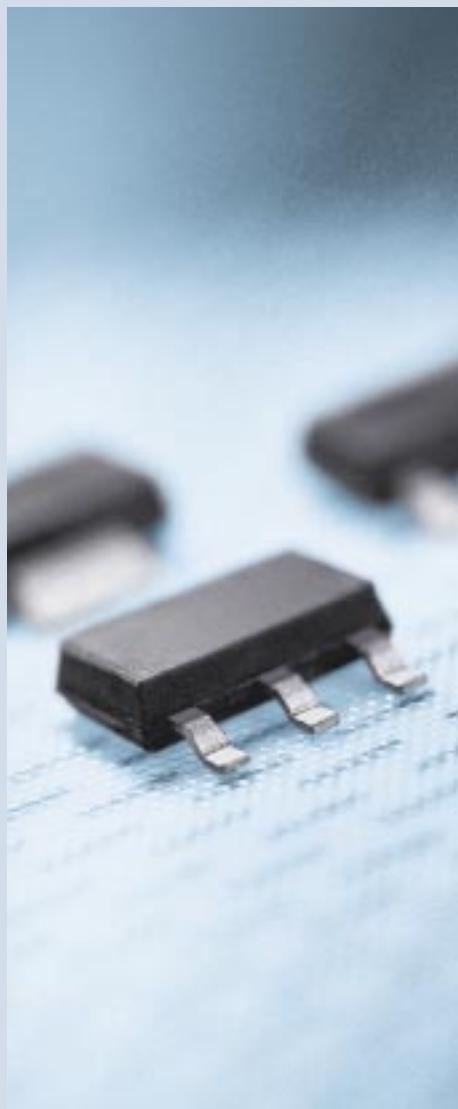
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