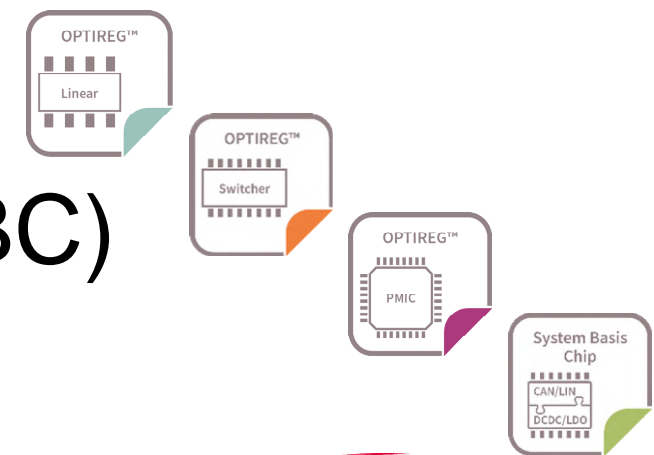


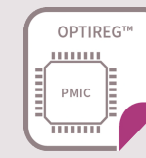
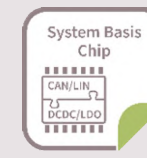
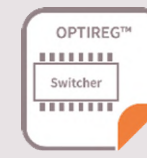
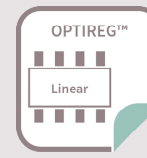


Powering AURIX™ μ C with OPTIREG™ and System Basis Chips (SBC)



April 2020

From discrete to high Integration Infineon offers the widest Portfolio



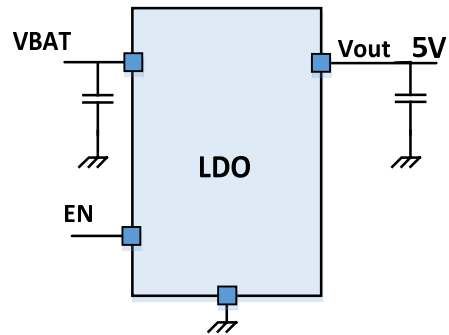
OPTIREG™ linear
Standalone LDO

OPTIREG™ switcher
Standalone DC-DC

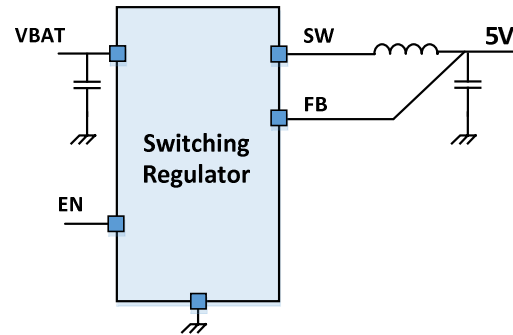
System Basis Chip (SBC)
Power Supply & Communication

OPTIREG™ PMIC
Multi-Channel Power Supply IC

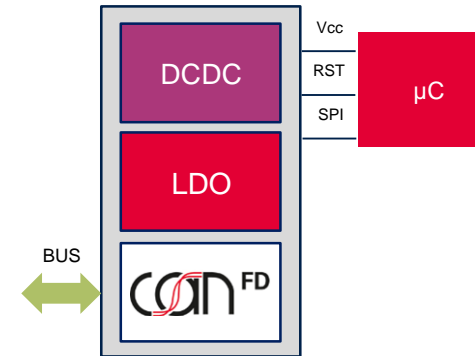
Linear Voltage Regulator



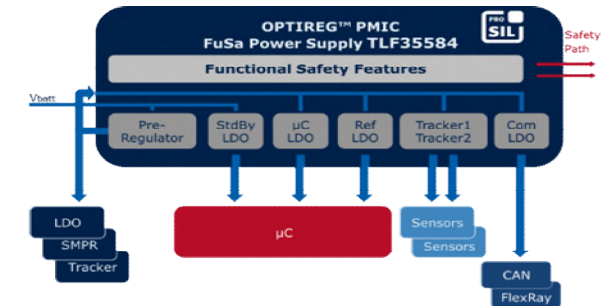
DC-DC / Switching Regulator



Voltage Regulator (Linear or DCDC)
+ Communication + Switches



Multi-Channel Power Supply IC
Optimized for Infineon μController Families



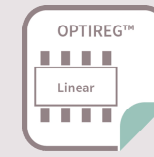
Applications

Any Automotive ECU
Dashboard, Cluster
Telematics, Navigation, Car-Media,
Door control, Seat, Sunroof, others

Body Control Modules, Gateways
Climate Control Modules
Light Control Units, Passive Keyless Entry
On-board Charger, eSound

Airbag ,Engine management,
Transmission & EPS
Camera, Radar, Telematics
Safety relevant Applications

Mapping OPTIREG™ Linear with AURIX™ 1G Microcontroller



Infineon AURIX™ Family		Maximum Power Requirements (real power pattern)	OPTIREG™ Linear					
			Ultra Low Quiescent Current			Advanced Feature Set Reset and Watchdog		Post LDO / Core Voltage
			TLS810xxx	TLS820xxx	TLS835xxx	TLS820Fx	TLS850Fx	TLS20x Family
			100mA (5V/3.3V)	200mA (5V/3.3V)	350mA (5V/3.3V)	200mA (5V/3.3V)	500mA (5V/3.3V)	Use in combination with pre dc-dc
1 st Gen	TC21 series	88mA @ 3.3V	√	√	√	√	√	TLS202x (150mA)
	TC22 series	88mA @ 3.3V	√	√	√	√	√	TLS202x (150mA)
	TC23 series	109mA @ 3.3V		√	√	√	√	TLS202x (150mA)
	TC26 series	186mA @ 3.3V 123mA @ 5V		√	√	√	√	TLS203x (300mA)
	TC26 series (ADAS variant)	203mA @ 3.3V 134mA @ 5V		√ ²⁾	√	√ ²⁾	√	TLS203x (300mA)
	TC27 series	307mA @ 3.3V 203mA @ 5V			√ ¹⁾		√ ¹⁾	TLS203x (300mA)
	TC29 series	485mA @ 3.3V 320mA @ 5V			√ ²⁾		√ ²⁾	TLS205x (500mA)
	TC29 series (ADAS variant)	515mA @ 3.3V 340mA @ 5V			√ ²⁾		√ ²⁾	TLS205x (500mA) TLS208x (800mA)

Note:

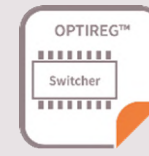
√¹⁾ High current might lead to limited thermal budget on LDO

√²⁾ Supply feasible depending on the use case of the μC

Based on **Maximum Power Dissipation** (at real power pattern) see datasheet parameter PD SR ($T_J = 150^\circ\text{C}$);
Current Value = Power Dissipation / Voltage Level;

Further support and calculation tools under
www.infineon.com/OPTIREG™ and www.infineon.com/AURIX™

Mapping OPTIREG™ Switcher with AURIX™ 1G Microcontroller



Infineon AURIX™ Family		Maximum Power Dissipation (real power pattern)	OPTIREG™ Switcher for Pre-Regulation and Core Voltages				
			12V Pre-Regulator Low Power DC-DC 500mA			12V Pre-Regulator Medium Power Up-to 2.5A	
			TLF50201 / TLF50211	TLF50241 / TLF50251	TLF50281	TLS4120D0x	TLS4125D0x
			500mA (5V)	500mA (5V)	500mA (5V)	2000mA (5V/3.3V)	2500mA (5V/3.3V)
		Simple or with Enable	Enable and Reset	Watchdog	Enable + Reset	Enable + Reset	
1 st Gen	TC21 series	88mA @ 3.3V	√ ⁽¹⁾	√ ⁽¹⁾	√ ⁽¹⁾	√	√
	TC22 series	88mA @ 3.3V	√ ⁽¹⁾	√ ⁽¹⁾	√ ⁽¹⁾	√	√
	TC23 series	109mA @ 3.3V	√ ⁽¹⁾	√ ⁽¹⁾	√ ⁽¹⁾	√	√
	TC26 series	186mA @ 3.3V 123mA @ 5V	√ ⁽¹⁾	√ ⁽¹⁾	√ ⁽¹⁾	√	√
	TC26 series (ADAS variant)	203mA @ 3.3V 134mA @ 5V	√ ⁽¹⁾	√ ⁽¹⁾	√ ⁽¹⁾	√	√
	TC27 series	307mA @ 3.3V 203mA @ 5V	√ ⁽¹⁾	√ ⁽¹⁾	√ ⁽¹⁾	√	√
	TC29 series	485mA @ 3.3V 320mA @ 5V	√ ⁽¹⁾	√ ⁽¹⁾	√ ⁽¹⁾	√	√
	TC29 series (ADAS variant)	515mA @ 3.3V 340mA @ 5V	√ ⁽¹⁾	√ ⁽¹⁾	√ ⁽¹⁾	√	√

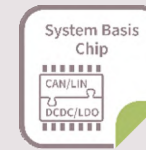
Note:

√⁽¹⁾ For 3.3V in combination with a post LDO

Based on **Maximum Power Dissipation** (at real power pattern) see datasheet parameter PD SR ($T_j = 150^\circ\text{C}$);
Current Value = Power Dissipation / Voltage Level;

Further support and calculation tools under
www.infineon.com/OPTIREG™ and www.infineon.com/AURIX™

Mapping System Basis Chips (SBC) with AURIX™ 1G Microcontroller



Infineon AURIX™ Family		Maximum Power Dissipation (real power pattern)	System Basis Chip (SBC)				
			Lite LDO SBC	Lite DCDC SBC	MR+ SBC	DCDC SBC	MCP+ SBC
			TLE946x(-3)ES 150mA (5V/3.3V)	TLE947x(-3)ES 500mA (5V/3.3V)	TLE926x(-3)BQX ≥250mA (5V/3.3V)	TLE927xQX 750mA (5V/3.3V)	TLE9278(-3)BQX 750mA (5V/3.3V)
1 st Gen	TC21 series	88mA @ 3.3V	√	√	√	√	√
	TC22 series	88mA @ 3.3V	√	√	√	√	√
	TC23 series	109mA @ 3.3V	√ ²⁾	√	√	√	√
	TC26 series	186mA @ 3.3V 123mA @ 5V	√ ²⁾	√	√	√	√
	TC26 series (ADAS variant)	203mA @ 3.3V 134mA @ 5V	√ ²⁾	√	√	√	√
	TC27 series	307mA @ 3.3V 203mA @ 5V		√	√ ¹⁾	√	√
	TC29 series	485mA @ 3.3V 320mA @ 5V		√	√ ¹⁾	√	√
	TC29 series (ADAS variant)	515mA @ 3.3V 340mA @ 5V		√ ²⁾	√ ¹⁾	√	√

Note:

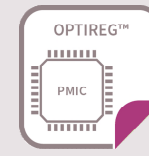
√¹⁾ Supply feasible in combination with load sharing on VCC3

√²⁾ Supply feasible depending on the use case of the μC

Based on **Maximum Power Dissipation** (at real power pattern) see datasheet parameter PD SR ($T_J = 150^\circ\text{C}$);
Current Value = Power Dissipation / Voltage Level;

Further support and calculation tools under www.infineon.com/SBC
and www.infineon.com/AURIX™

Mapping OPTIREG™ PMIC with AURIX™ 1G Microcontroller



Infineon AURIX™ Family		Maximum Power Dissipation (real power pattern)	OPTIREG™ PMIC		
			ISO26262 compliant		
			TLF35584/5Q*	TLF30681QV	TLF30682QV
1st Gen	TC21 series	88mA @ 3.3V	√	√	√
	TC22 series	88mA @ 3.3V	√	√	√
	TC23 series	109mA @ 3.3V	√	√	√
	TC26 series	186mA @ 3.3V 123mA @ 5V	√	√	√
	TC26 series (ADAS variant)	203mA @ 3.3V 134mA @ 5V	√	√	√
	TC27 series	307mA @ 3.3V 203mA @ 5V	√	√	√
	TC29 series	485mA @ 3.3V 320mA @ 5V	√ ²⁾	√ ²⁾	√
	TC29 series (ADAS variant)	515mA @ 3.3V 340mA @ 5V	√ ²⁾	√ ²⁾	√

Note:

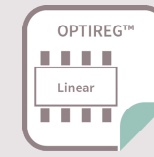
√¹⁾ Supply feasible in combination with load sharing on VCC3

√²⁾ Supply feasible depending on the use case of the μC

Based on **Maximum Power Dissipation** (at real power pattern) see datasheet parameter PD SR ($T_j = 150^\circ\text{C}$);
Current Value = Power Dissipation / Voltage Level;

Further support and calculation tools under
www.infineon.com/OPTIREG™ and www.infineon.com/AURIX™

Mapping OPTIREG™ Linear with AURIX™ 2G Microcontroller



Infineon AURIX™ Family		Maximum Power Requirements (real power pattern)	OPTIREG™ Linear					
			Ultra Low Quiescent Current			Advanced Feature Set Reset and Watchdog		Post LDO / Core Voltage
			TLS810xxx	TLS820xxx	TLS835xxx	TLS820Fx	TLS850Fx	TLS20x Family
			100mA (5V/3.3V)	200mA (5V/3.3V)	350mA (5V/3.3V)	200mA (5V/3.3V)	500mA (5V/3.3V)	Use in combination with pre dc-dc
2nd Gen	TC33 series	200mA @ 3.3V 132mA @ 5V		√	√	√	√	TLS202x (150mA)
	TC33 series (ADAS variant)	381mA @ 3.3V 252mA @ 5V			√ ²⁾		√ ²⁾	TLS202x (150mA)
	TC35 series	576mA @ 3.3V 380mA @ 5V			√ ²⁾		√ ²⁾	TLS202x (150mA)
	TC36 series	333mA @ 3.3V 240mA @ 5V			√ ²⁾		√ ²⁾	TLS203x (300mA)
	TC37 series	370mA @ 3.3V 244mA @ 5V			√ ²⁾		√ ²⁾	TLS203x (300mA)
	TC38 series	515mA @ 3.3V 340mA @ 5V						TLS203x (300mA)
	TC39 series	758mA @ 3.3V 500mA @ 5V						TLS205x (500mA)
	TC39 series (ADAS variant)	679 mA @ 3.3V (T _J = 125°C) 448 mA @ 5V (T _J = 125°C)						TLS205x (500mA) TLS208x (800mA)

Note:

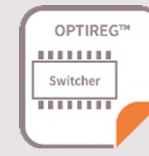
√¹⁾ High current might lead to limited thermal budget on LDO

√²⁾ Supply feasible depending on the use case of the μC

Based on **Maximum Power Dissipation** (at real power pattern) see datasheet parameter PD SR (T_J = 150°C);
Current Value = Power Dissipation / Voltage Level;

Further support and calculation tools under
www.infineon.com/OPTIREG™ and www.infineon.com/AURIX™

Mapping OPTIREG™ Switcher with AURIX™ 2G Microcontroller



Infineon AURIX™ Family		Maximum Power Dissipation (real power pattern)	OPTIREG™ Switcher for Pre-Regulation and Core Voltages				
			12V Pre-Regulator Low Power DC-DC 500mA			12V Pre-Regulator Medium Power Up-to 2.5A	
			TLF50201 / TLF50211	TLF50241 / TLF50251	TLF50281	TLS4120D0x	TLS4125D0x
			500mA (5V)	500mA (5V)	500mA (5V)	2000mA (5V/3.3V)	2500mA (5V/3.3V)
			Simple or with Enable	Enable and Reset	Watchdog	Enable + Reset	Enable + Reset
2 nd Gen	TC33 series	200mA @ 3.3V 132mA @ 5V	√ ⁽¹⁾	√ ⁽¹⁾	√ ⁽¹⁾	√	√
	TC33 series (ADAS variant)	381mA @ 3.3V 252mA @ 5V	√ ⁽¹⁾	√ ⁽¹⁾	√ ⁽¹⁾	√	√
	TC35 series	576mA @ 3.3V 380mA @ 5V	√ ⁽¹⁾	√ ⁽¹⁾	√ ⁽¹⁾	√	√
	TC36 series	333mA @ 3.3V 240mA @ 5V	√ ⁽¹⁾	√ ⁽¹⁾	√ ⁽¹⁾	√	√
	TC37 series	370mA @ 3.3V 244mA @ 5V	√ ⁽¹⁾	√ ⁽¹⁾	√ ⁽¹⁾	√	√
	TC38 series	515mA @ 3.3V 340mA @ 5V	√ ⁽¹⁾	√ ⁽¹⁾	√ ⁽¹⁾	√	√
	TC39 series	758mA @ 3.3V 500mA @ 5V	√ ⁽¹⁾	√ ⁽¹⁾	√ ⁽¹⁾	√	√
	TC39 series (ADAS variant)	679 mA @ 3.3V (T _J = 125°C) 448 mA @ 5V (T _J = 125°C)	√ ⁽¹⁾	√ ⁽¹⁾	√ ⁽¹⁾	√	√

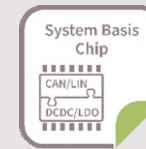
Note:

√⁽¹⁾ For 3.3V in combination with a post LDO

Based on **Maximum Power Dissipation** (at real power pattern) see datasheet parameter PD SR (T_J = 150°C);
Current Value = Power Dissipation / Voltage Level;

Further support and calculation tools under
www.infineon.com/OPTIREG™ and www.infineon.com/AURIX™

Mapping System Basis Chips (SBC) with AURIX™ 2G Microcontroller



Infineon AURIX™ Family		Maximum Power Dissipation (real power pattern)	System Basis Chip (SBC)				
			Lite LDO SBC	Lite DCDC SBC	MR+ SBC	DCDC SBC	MCP+ SBC
			TLE946x(-3)ES 150mA (5V/3.3V)	TLE947x(-3)ES 500mA (5V/3.3V)	TLE926x(-3)BQX ≥250mA (5V/3.3V)	TLE927xQX 750mA (5V/3.3V)	TLE9278(-3)BQX 750mA (5V/3.3V)
2 nd Gen	TC33 series	200mA @ 3.3V 132mA @ 5V	√ ⁽²⁾	√	√	√	√
	TC33 series (ADAS variant)	381mA @ 3.3V 252mA @ 5V		√	√ ⁽¹⁾	√	√
	TC35 series	576mA @ 3.3V 380mA @ 5V		√ ⁽²⁾		√	√
	TC36 series	333mA @ 3.3V 240mA @ 5V		√	√ ⁽¹⁾	√	√
	TC37 series	370mA @ 3.3V 244mA @ 5V		√	√ ⁽¹⁾	√	√
	TC38 series	515mA @ 3.3V 340mA @ 5V		√ ⁽²⁾		√	√
	TC39 series	758mA @ 3.3V 500mA @ 5V		√ ⁽²⁾		√ ⁽²⁾	√ ⁽²⁾
	TC39 series (ADAS variant)	679 mA @ 3.3V (T _J = 125°C) 448 mA @ 5V (T _J = 125°C)		√ ⁽²⁾		√ ⁽²⁾	√ ⁽²⁾

Note:

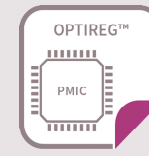
√⁽¹⁾ Supply feasible in combination with load sharing on VCC3

√⁽²⁾ Supply feasible depending on the use case of the μC

Based on **Maximum Power Dissipation** (at real power pattern) see datasheet parameter PD SR (T_J = 150°C);
Current Value = Power Dissipation / Voltage Level;

Further support and calculation tools under www.infineon.com/SBC
and www.infineon.com/AURIX™

Mapping OPTIREG™ PMIC with AURIX™ 2G Microcontroller



Infineon AURIX™ Family		Maximum Power Dissipation (real power pattern)	OPTIREG™ PMIC			
			ISO26262 compliant	ISO26262 compliant		
			TLF35584/5Q*	TLF35584/5Q* w/ TLF11251	TLF30681QV	TLF30682QV
2 nd Gen	TC33 series	200mA @ 3.3V 132mA @ 5V	√	√	√	√
	TC33 series (ADAS variant)	381mA @ 3.3V 252mA @ 5V	√	√	√	√
	TC35 series	576mA @ 3.3V 380mA @ 5V	√	√	√	√
	TC36 series	333mA @ 3.3V 240mA @ 5V	√	√	√	√
	TC37 series	370mA @ 3.3V 244mA @ 5V	√	√	√	√
	TC38 series	515mA @ 3.3V 340mA @ 5V	√ ²⁾	√	√ ²⁾	√
	TC39 series	758mA @ 3.3V 500mA @ 5V	√ ²⁾	√	√ ²⁾	√
	TC39 series (ADAS variant)	679 mA @ 3.3V (T _J = 125°C) 448 mA @ 5V (T _J = 125°C)	√ ²⁾	√	√ ²⁾	√

Note:

√¹⁾ Supply feasible in combination with load sharing on VCC3

√²⁾ Supply feasible depending on the use case of the μC

Based on **Maximum Power Dissipation** (at real power pattern) see datasheet parameter PD SR (T_J = 150°C);
Current Value = Power Dissipation / Voltage Level;

Further support and calculation tools under www.infineon.com/SBC
www.infineon.com/OPTIREG™ and www.infineon.com/AURIX™

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