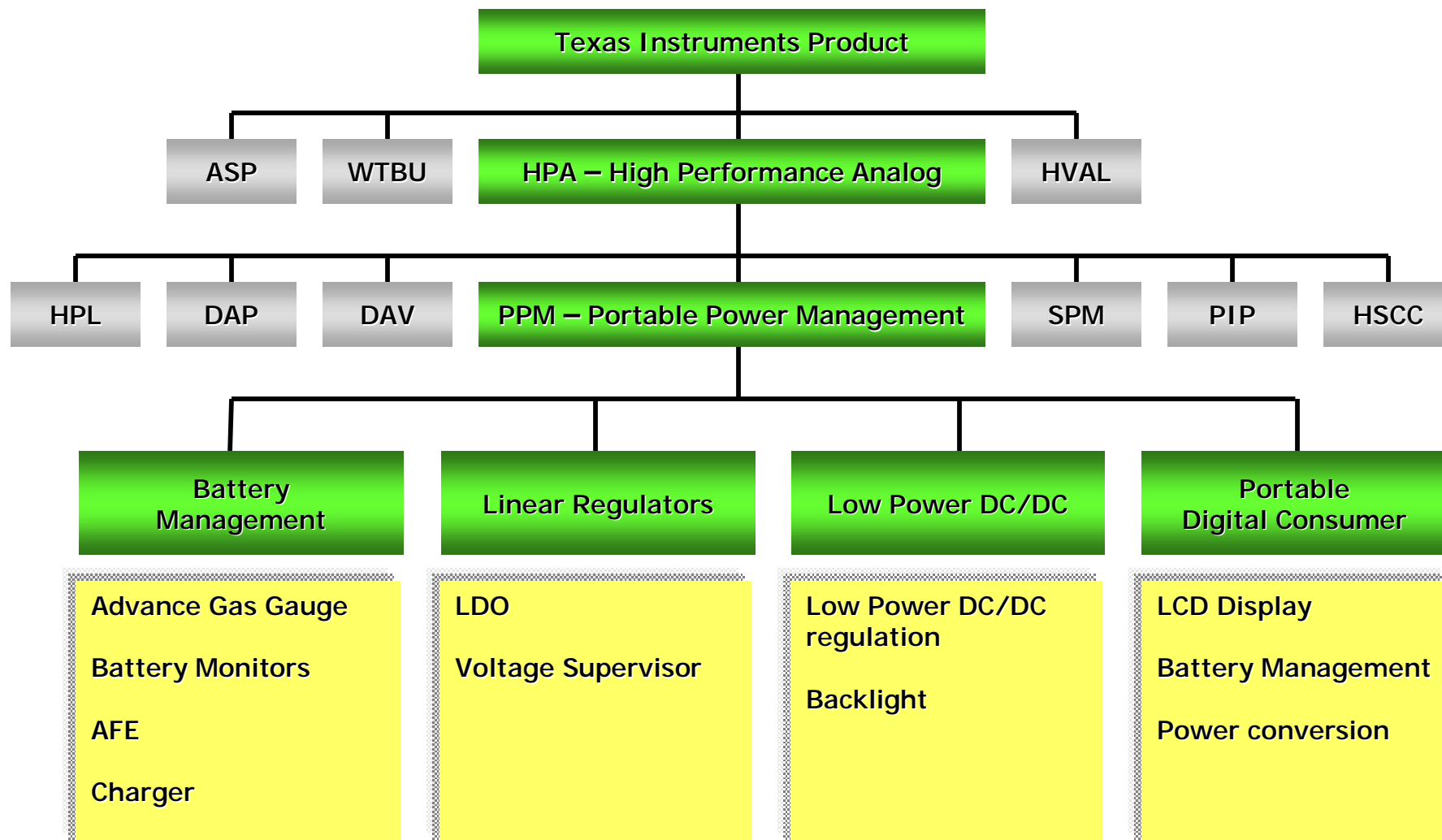


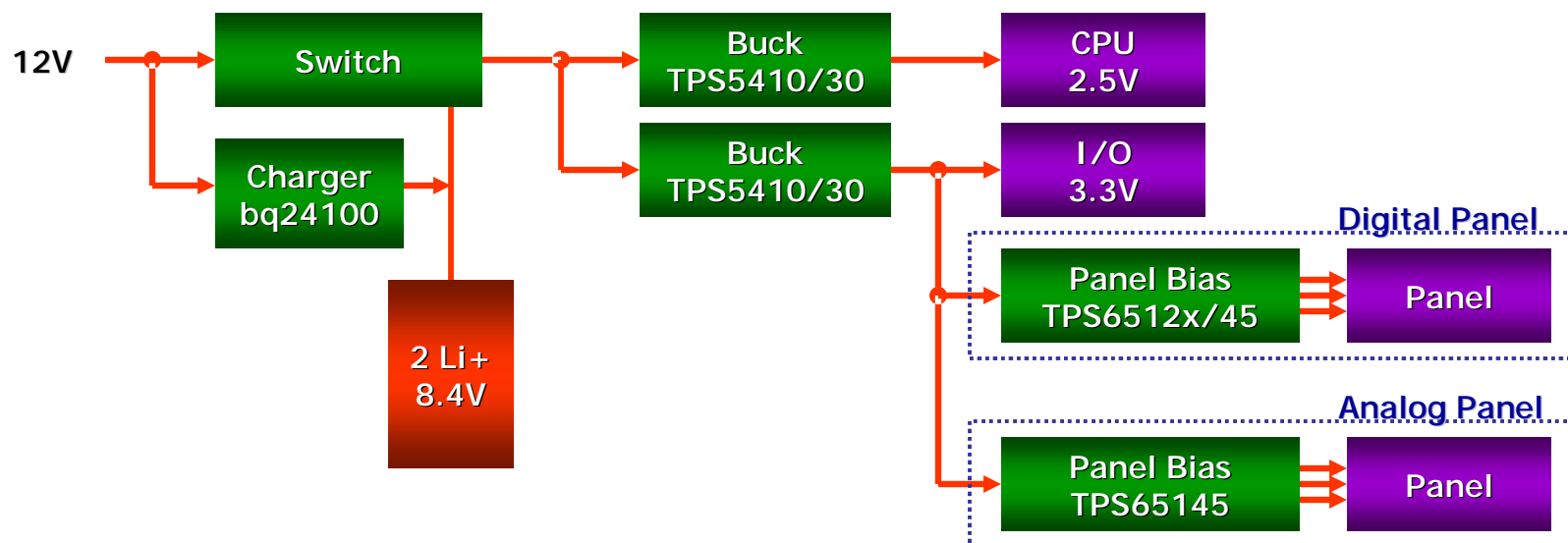
Power Solution for Portable DVD & Car Display

HPA/APR Mkt Dev
Dec 8, 2004

Organization Summary - Portable Power



Power Block Diagram



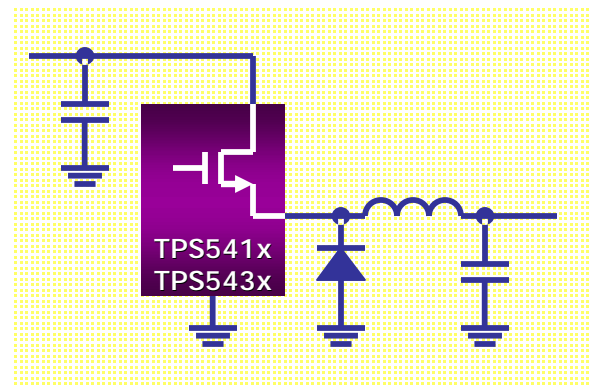
Application	Device	Description	Package	ES/RTP
Vcore & VIO	TPS5410	1.5A SWIFT Buck Regulator	SO8	Jan05
	TPS5430	3A SWIFT Buck Regulator	SO8	Jan05
LCD Bias	TPS65120	Triple output for LCD Bias	QFN16	Now
	TPS65145	4 CH output LCD Bias	TSSOP24/QFN24	Now
Charger	bq24100	Switching Li+ Charger	QFN20	Now

TPS541x/3x Step Down Regulator



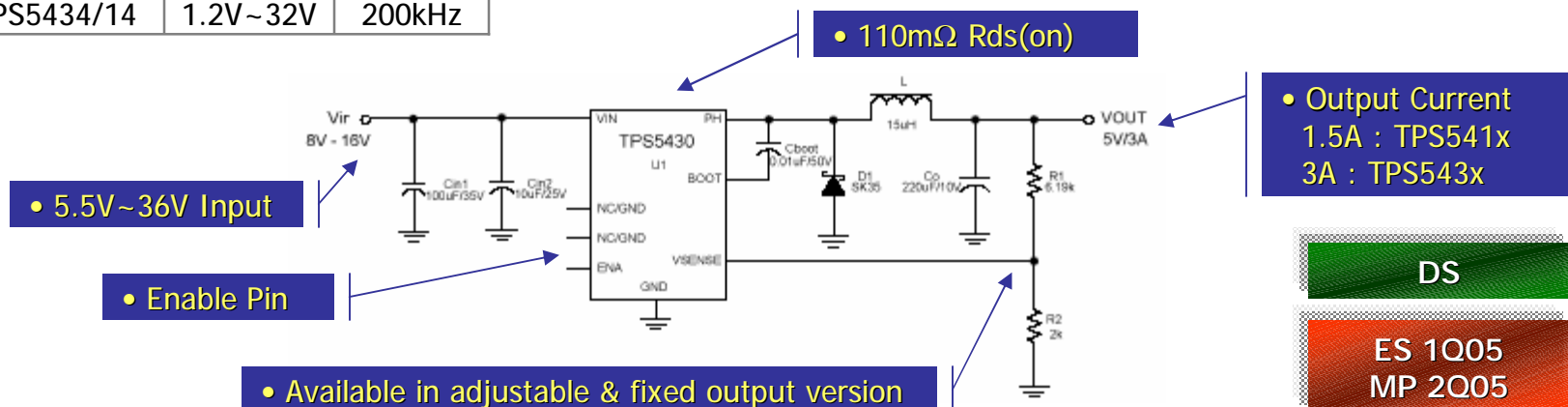
Features

- 5 Components for fixed output version
- Fixed 500kHz switching frequency, (200kHz for TPS54x4)
- Output voltage $\pm 1.5\%$ Accuracy
- Internal Softstart
- Internal Compensation
- SO8 and Thermal Enhanced SO8 package



TPS543x/1x Family (3A/1.5A)

Device	Voltage	Fsw
TPS5430/10	1.2V~32V	500kHz
TPS5431/11	3.3V	
TPS5432/12	5V	
TPS5433/13	12V	
TPS5434/14	1.2V~32V	200kHz



DS

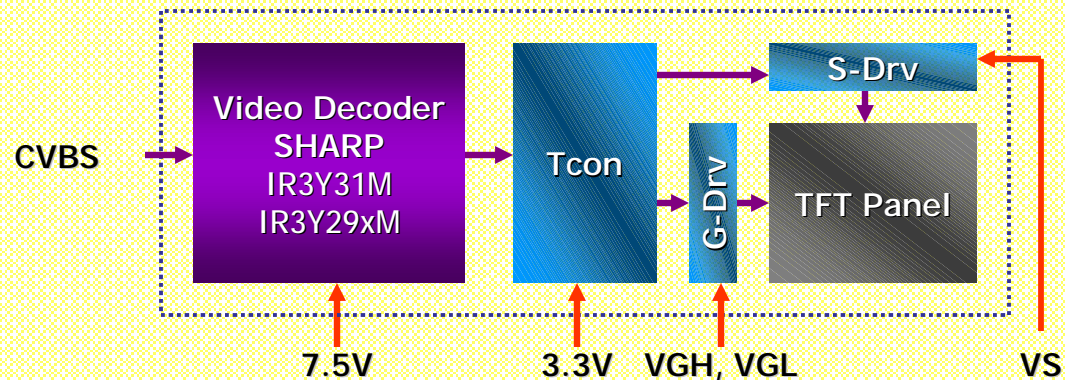
ES 1Q05
MP 2Q05

Solution Comparison

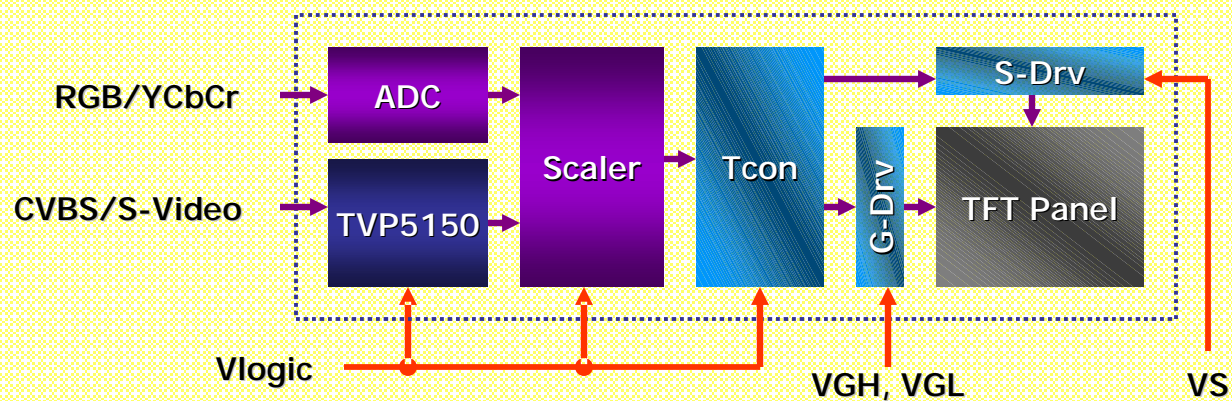
	TPS541x	TPS543x	ZA3020	MPS1410	TPS54xx Advantage
Package	SO8		SO8	SO8	
PowerPad	No	Yes	No	No	Good Thermal Dissipation
Input Range	5.5V~36V		4.75V~25V	4.75V~15V	Surge protection
Output Current	1.5A	3A	2A	2A	Flexible design
Output Voltage					
Fixed version	3.3V/5V/12V		N/A	N/A	Space & cost Saving, Higher precision
Adjustable	1.2V~32V		1.22V~21V	1.22V~13V	Flexible design
Rds(on)	110mW		180mW	220mW	Higher Efficiency
Fsw	500kHz/200kHz		380kHz	380kHz	Smaller LC component, Save cost
Compensation	Internal		External	External	Simple design, save space

LCD Bias Panel Power

Analog Panel



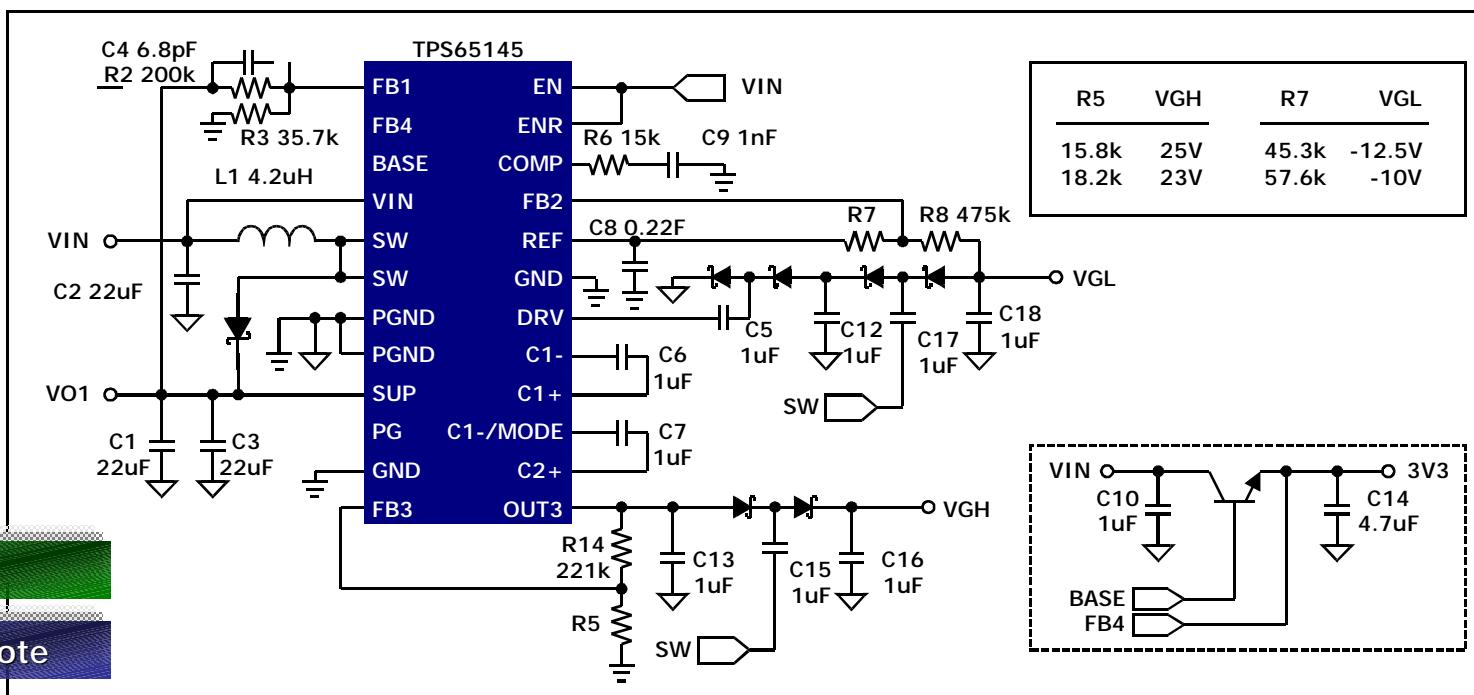
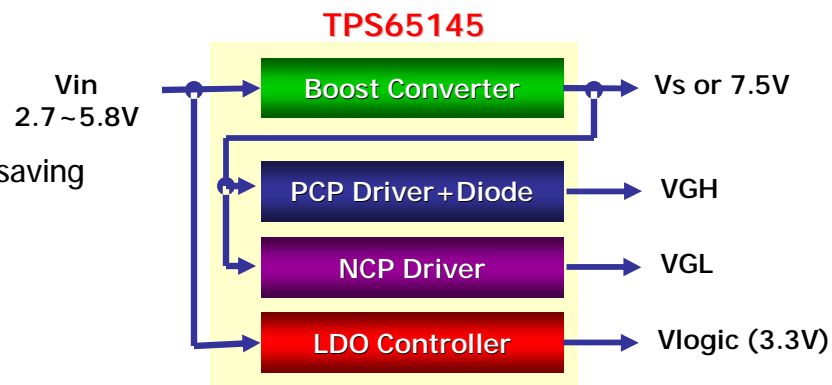
Digital Panel



Integrated Power Solution Design

Features

- ü 4 channel integrated solution
- ü 1.6MHz switching frequency, small inductor and space saving
- ü Regulated VGH & VGL output
- ü Integrated 2 stage PCP diodes (4 diodes totally)
- ü TSSOP24 & 4x4mm2 QFN24 package with PowerPAD



DS

App Note

TPS65120 - SFF LCD Panel Bias w/ Inductor

Features

- ▣ 4 Channel output
- ▣ Internal/External Sequencing
- ▣ Ultra-Small External Components
- ▣ Internal Softstart
- ▣ Output Short Circuit Protected
- ▣ 1 μ A Shutdown Current
- ▣ Ultra-Thin 16-Pin QFN Package (3x3mm/0.8mm max height)

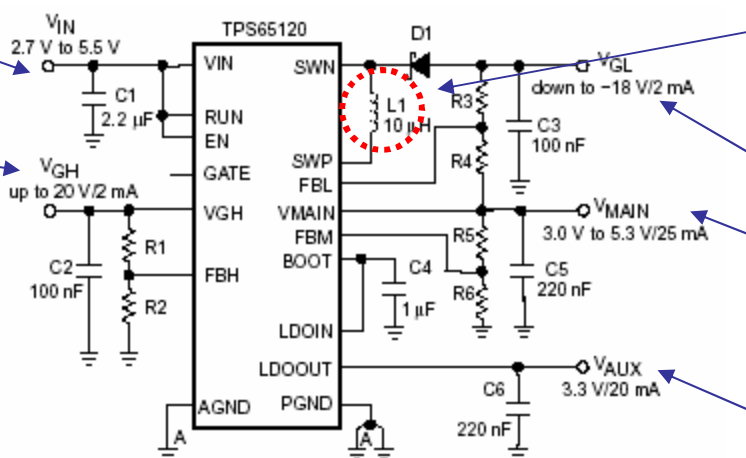
Device	LDO	Sequencing
TPS65120	3.3V	Vmain→VGL→VGH
TPS65121	2.5V	Vmain→VGL→VGH
TPS65122	1.8V	Vmain→VGL→VGH
TPS65123	No	Vmain→VGL→VGH
TPS65124	No	Programmable

• 2.7V~5.5V Input

• VGH : Up to 20V/2mA

DS

Available



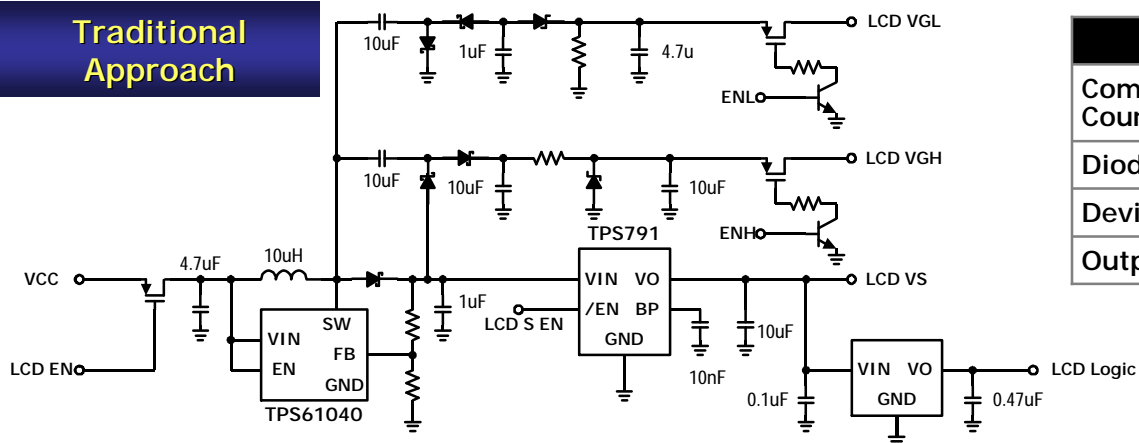
• Triple Output using One Tiny Inductor

• VGL : Down to -18V/2mA

• Vmain : 3.3V~5.3V/20mA
• LDO for post Regulation
• 85% Efficiency

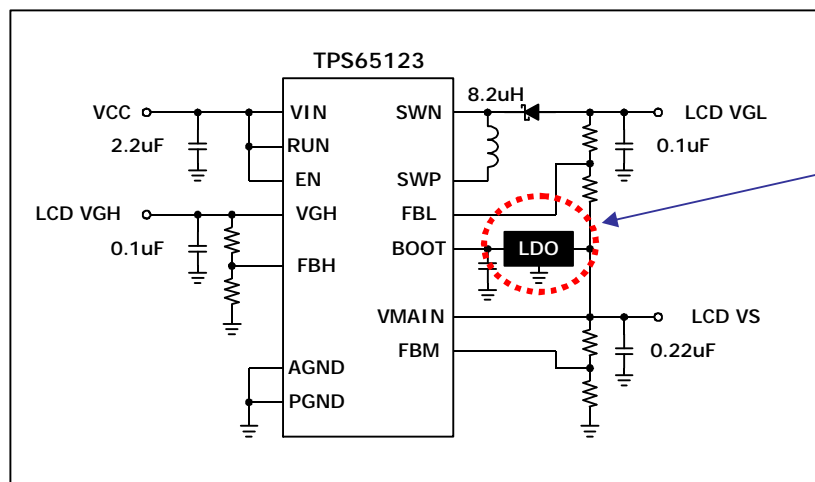
• Aux LDO for Tcon/Logic

Traditional Approach



	Discrete	TPS65120
Component Count	31	14
Diode/FET	7/5	1/0
Device	3	1
Output Cap	Big	Small

For $I_{main} > 25\text{mA}$



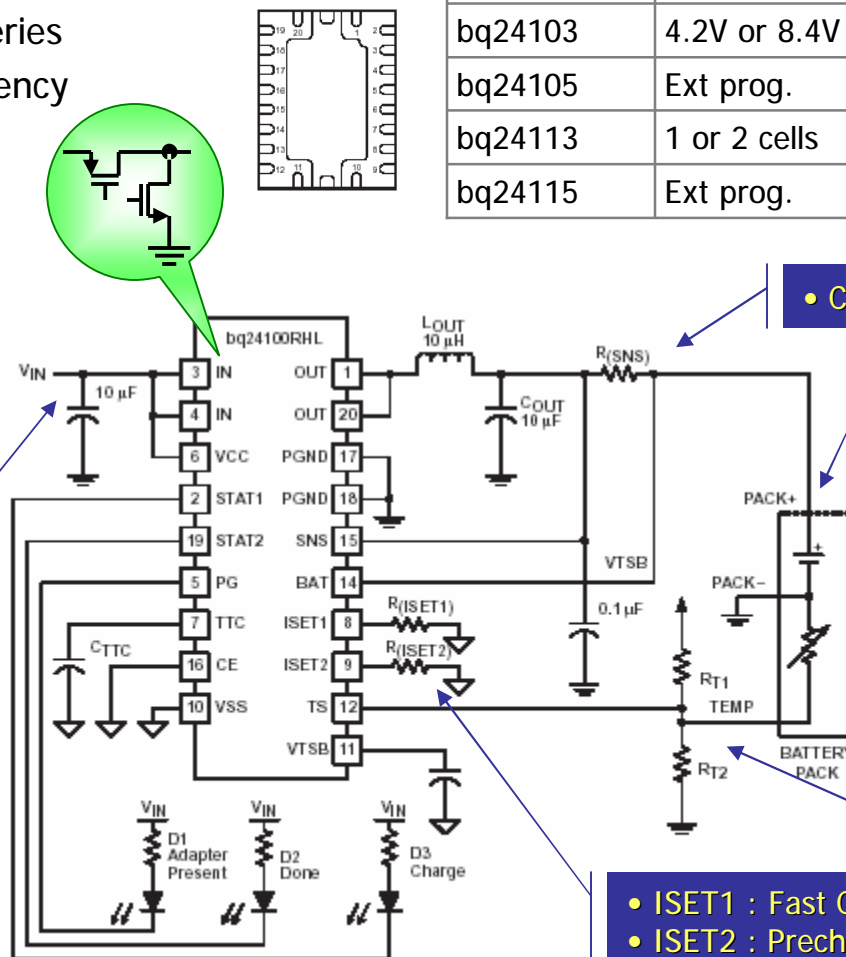
- External LDO for Output current >25mA
- TPS715, SC70, 50mA

bqSwitcher – bq24100, Switching Li+ /Li-Poly Charger

Features

- ▮ Sync. Buck Switching Charger
- ▮ Support 1/2/3 cells in series
- ▮ 1.1MHz Switching frequency
- ▮ Sleep Current <86μA
- ▮ 3.5x4.5 QFN20 package
- ▮ >90% Efficiency

Device	Li cell	Apps
bq24100	4.2V	Standalone
bq24103	4.2V or 8.4V	Standalone
bq24105	Ext prog.	Standalone
bq24113	1 or 2 cells	System Control
bq24115	Ext prog.	System Control



- 3.5V~16V Input Range
- Max 20V Rating

• Current Sense Resistor

• Up to 2A Charge Current

• Battery Temperature Sense

- ISET1 : Fast Charge
- ISET2 : Prechg/Taper current

Focus

- ▮ Single Li+, Ichg > 1A
- ▮ 2 Li+ Battery Pack
- ▮ Single Li+, High Vin

New PMP Selection Guide - 2004Q4



<http://www-s.ti.com/sc/techlit/slvt145.pdf>



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