

STATE OF THE ART DC/DC BUCK CONVERTERS



Examples for 5V Rails

	Part No.	Vin [V]	Rds On HS/LS [mΩ]	Fsw [MHz]	COT	Iq [uA]	PG	EN	Pkg	Note
1A	MP2142	2.5-6.5	180/120	3	--	15	√	√	QFN 1x1.5	100% Duty Cycle
	MP2128	2.5-6.5	200/150	3	--	40	√	√	SOT235 / QFN 2x2	100% Duty Cycle p2p to MP2130
	MP2158	2.5-6.5	118/88	1.5	√	17	√	√	QFN 1.5x2	LL-Mode
	MP2159	2.5-6.5	118/88	1.5	√	17	√	√	SOT238	LL-Mode
2A	MP2144	2.5-6.0	90/60	1.2	√	40	√	√	SOT 238	LL-Mode
	MP2161	2.5-6.5	100/60	1.5	√	17	√	√	SOT238	LL-Mode
	MP2162	2.5-6.5	100/60	1.5	√	17	√	√	QFN 1.5x2	LL-Mode
3.0A	MP2143	2.5-6.0	80/40	1.2	√	40	√	√	SOT238	100% Duty Cycle
3.5A	MP2130	2.7-6.5	50/40	1.2	√	40	√	√	QFN 2x2	100% Duty Cycle

all devices with SOT238 package are p2p > interchangeable



Efficient Power Solutions for 5V Rails, Example

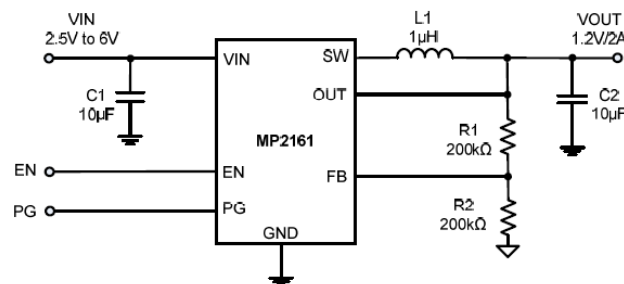
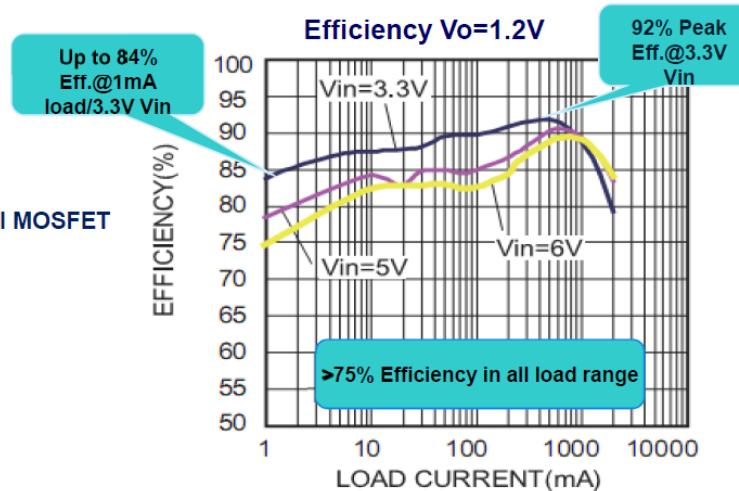
MPS[®] MP2159/61 – 1A/2A, 6V, 1.5MHz, COT, 17uA Iq, Syn Step-Down Switcher in 8-pin **TSOT23**

Key Features

- Wide 2.5V to 6V Operating Input Range
- Output Adjustable from 0.6V
- Up to 2A Output Current
- **Low Iq: 17uA**
- 100/60mΩ(2161) 118/88mΩ(2159) Rds(on) Internal MOSFET
- Default 1.5MHz Switching Frequency
- **EN and Power Good for Power Sequencing**
- **Constant-On-Time control mode**
- Cycle-by-Cycle Over Current Protection
- Short Circuit Protect with Hiccup Mode
- Stable with Low ESR Output Ceramic Capacitors
- **Available in TSOT23-8 package**

Benefits and Advantage

- Low Iq along w/ COT control mode → High Efficiency, especially @ light load
- COT → No need loop compensation
- Fast Transient with less and small output capacitor → reduce cost and board space (Stable with Low-ESR Output ceramic capacitor)
- Full Protection Functions
- Easy Circuit Setup (Stable without external compensation)



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Examples for 12V Rails

MPS® 4.5-16V, 1- 3.5A syncr. Buck Family

	Part No.	Vin	RDS on	Freq-Sync	Fsw [KHZ]	Ext. SS	AAM	PG	Pkg	Note
1A	MP1469	4.7-16	255/160	--	500	Int.	√ Int.	--	SOT23-6	Lowest cost solution
2A	MP1494	4.5-16	100/40	√	500	int.	√ ext adj.	--	TSOT23-8	p2p MP1495
	MP1496	4.5-16	100/40	√	500	√	--	--	TSOT23-8	p2p MP1497
	MP1474	4-5.16	100/40	√	500	Int.	√ Int.	√	TSOT23-8	Same as MP1494 with PG
	MP1498	4.5-16	100/40	√	1.4MHz	√	--	--	TSOT23-8	High Fsw-smaller inductor size, more cost effective
3A	MP1495	4.5-16	80/30	√	500	Int.	√ ext adj.	--	TSOT23-8	p2p MP1494
	MP1497	4.5-16	80/30	√	500	√	--	--	TSOT23-8	p2p MP1496
	MP1475	4.5-16	80/30	√	500	Int.	√ Int.	√	TSOT23-8	Same as MP1495 with PG
	MP2233	4.5-16	80/30	√	1.4MHz	√	--	--	TSOT23-8	P2p MP1498
4A	MP1499	4.5-16	75/25	√	500kHz	√	√ Int.	No	QFN10 2x3	Low cost, 5A peak, mid voltage solution



Efficient Power Solutions for 12V Rails, Example

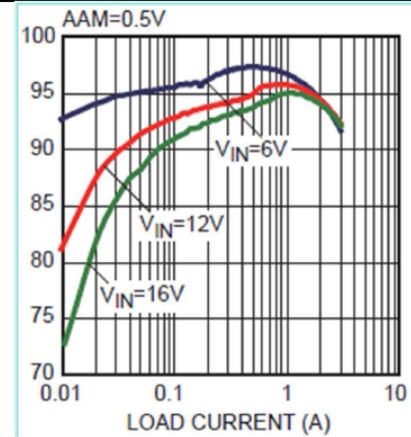
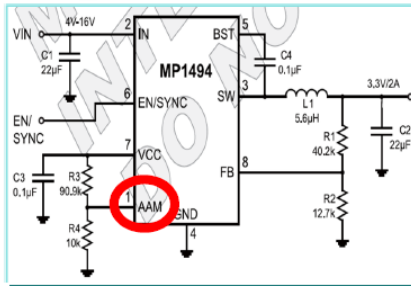
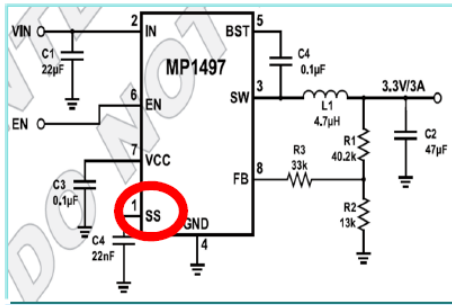
MPS[®] Fully Sync. Fix. Frequency Converter 16V/2A/3A

MP1494-5-6-7-8 & MP2233

Key Features

- **Synchronous Converter**
- High&Low Side Power MOSFETs integrated
- **Small package 8 Pin TSOT-23-8**
- **Programmable Soft Start or AAM (Light load Mode)**
- High Power Dissipation due of Flip Chip Technology
- Stable with Low ESR Ceramic Output Capacitors
- OCP Protection and Hiccup
- **Also available with PG option MP1475/MP1474**

Part Number	Input Voltage [V]	Freq. [KHz]	Freq. Sync.	Light load mode or ex. SS	Current [A]
MP1494	4.0 – 16	500	Yes	AAM	2.0
MP1496	4.0 – 16	500	--	ex. SS.	2.0
MP1498	4.0 – 16	1400	Yes	ex. SS.	2.0
MP2233	4.0 – 16	1400	Yes	ex. SS.	3.0
MP1495	4.0 – 16	500	Yes	AAM	3.0
MP1497	4.0 – 16	500	--	Ex. SS.	3.0



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Examples for 24V Rails

MPS[®] 36V/0.5-5.0A Buck Family

Part No.	Vin	Iout [A]	Fsw [MHz]	Iq [uA]	Rdson	ext. ss	Pkg	Note	AECQ
MP2451	3.3-36	0.6	2.0	230	500	int.	SOT23-6 QFN 2x2	3.3 & 5.0 fix Version soon available	Yes
MP2452	3.3-36	1.0	1.0	130	500	int.	QFN 2x3		
MP2454	3.3-36	0.6	2.3	50	200	√	MSOP 10 / QFN 3x3	Low Iq / POK delay / 99% Duty Cycle	Yes
MP4566	4.5-36	0.6	1.0	35	450	int.	QFN 2x3	Low Iq	
MP4458	4.5-36	1.0	4.0	100	300	int	QFN 3x3	prog. Swf up to 4MHZ	Yes
MP4459	4.5-36	1.5	4.0	100	150	int.	QFN 3x3	prog. Swf up to 4MHZ	Yes
MP4460	4.5-36	2.5	4.0	100	150	int.	QFN 3x3	prog. Swf up to 4MHZ	yes
MP4462	4.5-36	3.5	4.0	100	150	int.	QFN 3x3 / SO8	prog. Swf up to 4MHZ	Yes
MP4420	4.0-36	3.0	0.5	500	120/60	int	SOT 23-8 / SO8	PG & AAM	Yes
MP4470	4.5-36	5	COT	500	40/20	√	QFN 3x4	prog. Swf up to 1MHz	Yes

MP4458/59/60/62 are interchangeable, [p2p]

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Efficient Power Solutions for 24V Rails, Example



36V, 0.6A, 1MHz Buck Converter

MP4566 "Highest Efficiency Buck from MPS"

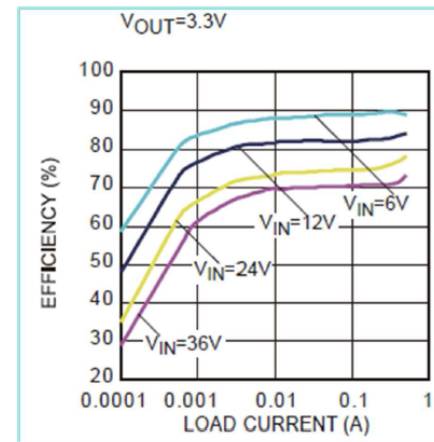
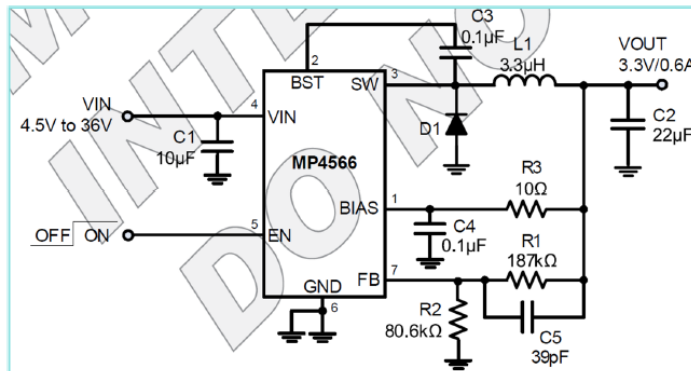
Only 35uA Quiescent Current

Key Features

- Wide Operating Input Range
- High Side High/Voltage Power MOSFET Integrated
- Burst Mode provides Highest Efficiency
- **Highest Light Load Efficiency Solution**
- table with Cermaic Output Caps
- **Precision Current Limit Without Sensing Resistor**
- Short Circuit Protection
- Under Voltage Lockout
- Internal Soft Start

Specifications

- Input Range: 4.5-36V
- Adj. Output: 1.0– 0.8xVin
- Fixed 1MHz Switching Frequency
- **73% Efficiency at 10mA, 24V Vin**
- **<1uA Standby Current**
- **Small Package QFN8 (2x3mm)**



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Examples for >24V Rails

MPS[®] 55V/0.5-3.0A Buck Family

Part No.	Vin	Iout [A]	Fsw [MHz]	Iq [uA]	Rdson [Ω]	ext. ss	Pkg	Note	AECQ
MP2459	4.5-55	0.5	0.48	730	1.0	int.	SOT23-6	fix 480KHz	tbd
MP4568	4.5-55	0.1		20	2.25/0.7		QFN 3x3	prog. Swf , high eff. at light load	tbd
MP4558	4.5-55	1.0	2.0	140	0.25	itn.	QFN 3x3 / SO8	prog. Swf up to 2MHZ	Yes
MP4559	4.5-55	1.5	2.0	120	0.25	Int.	QFN 3x3 / SO8	prog. Swf up to 2MHZ	Yes
MP4561	4.5-55	1.5	2.0	120	0.3	√	QFN 3x3	prog. Swf up to 2MHZ	Yes
MP4560	4.5-55	2.0	2.0	120	0.25	int.	QFN 3x3 / SO8	prog. Swf up to 2MHZ	Yes
MP4570	4.5-55	3.0	0.4	500	0.08/0.06	√	TSSOP20	ex. Bias, PG, sync 100KHz-1MHz	Yes

MP4558/59/60/62 are interchangeable, [p2p]



Efficient Power Solutions for 24V Rails, Example



55V, 1.0/1.5/2.0A, 2MHz adj. Buck Converter

MPQ4558/MPQ4561/MPQ4560

**Industrial Grad
High Voltage Buck Converter**

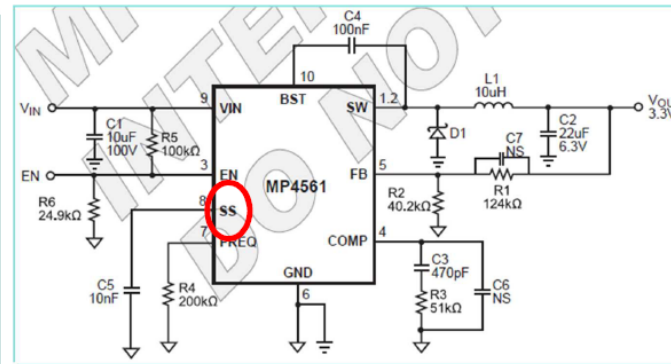
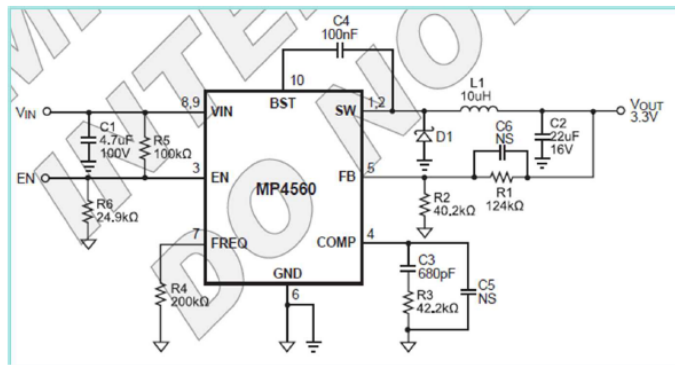
Key Features

- **Wide Operating Input Range**
- **Adj. Output Voltage**
- **int. SS MPQ4558/4560**
- **ex. SS MPQ4561**
- **Internal High Side Power MOSFET** for excellent Efficiency
- **Stable with Ceramic Capacitors**
- **Adj. Switching Frequency**
- **Thermal Shutdown**
- **Short Circuit Protection**

Specifications

Part Number	Input Voltage [V]	Frequency [MHz]	Rds ON [mΩ]	Current [A]
MPQ4558	4.5 - 55	Adj. - 2.0	250	1.0
MPQ4561	4.5 - 55	Adj. - 2.0	300	1.5
MPQ4560	4.5 - 55	Adj. - 2.0	250	2.0

- **Low Iq <120uA**
- **Output Voltage 0.8-52V**



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