MAX17220-MAX17225
Boost converter

MAX17220 400mV to 5.5V Input, nanoPower Synchronous Boost Converter with True Shutdown | Maxim Integrated

Features required by the converter for SLB

SLB

IN

1.8V～2.8V

Boost converter

OUT

ex. 3.3V

Load

CPU etc

Low operating energy during shutdown

No reverse flow from OUT⇒IN

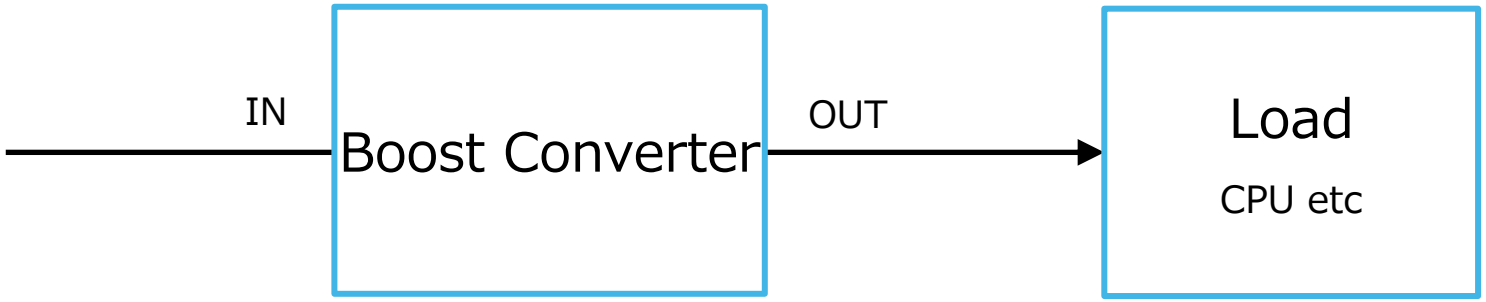
Wide Vin range

Output disconnect during shutdown

Vin > Vout operation (Buck mode)

MAX1722x Schematic, Package

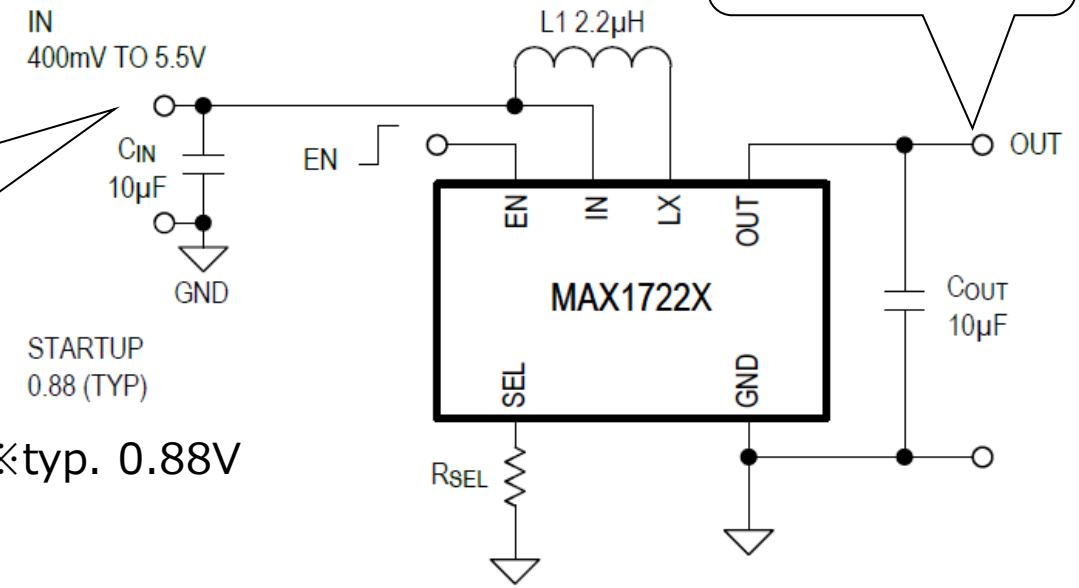
SLB



Vout range
1.8V～5V

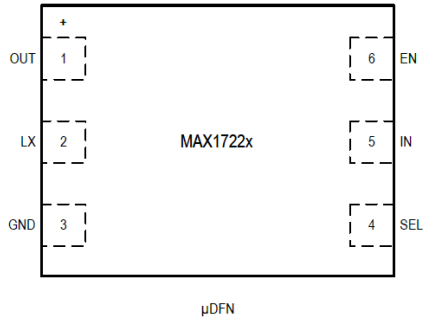
Vin Range
0.95V～5.5V

※ See page7



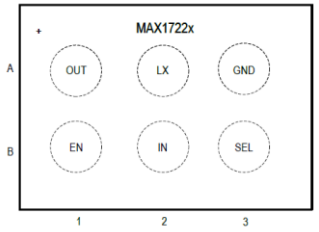
※typ. 0.88V

1.95x1.95
Package



µDFN

1.41x0.88
Packcage



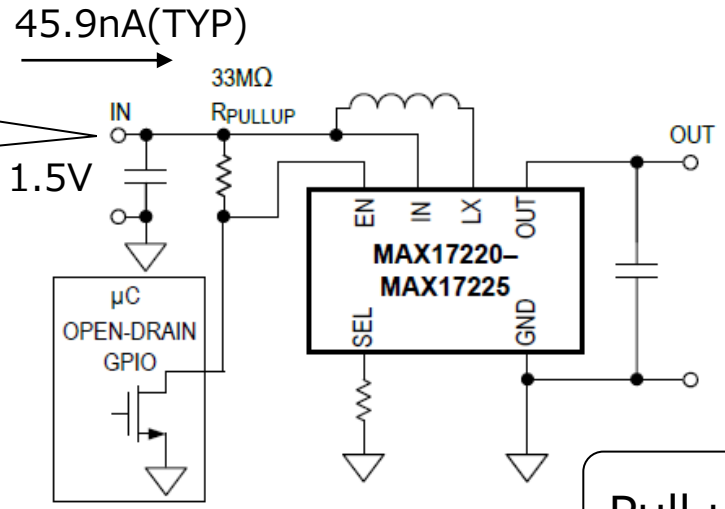
Unit (mm)

The total system shutdown current

SLB

IN → Boost converter → OUT → Load (CPU etc)

The total system shutdown current (45.9nA)



Shutdown current (TYP)

Pull up current

$$I_{SD\_TOTAL\_SYSTEM} = I_{SD\_TOTAL} + \frac{V_{IN}}{R_{PULLUP}} = 0.5nA + \frac{1.5}{33M\Omega} = 45.9nA$$

Output disconnect

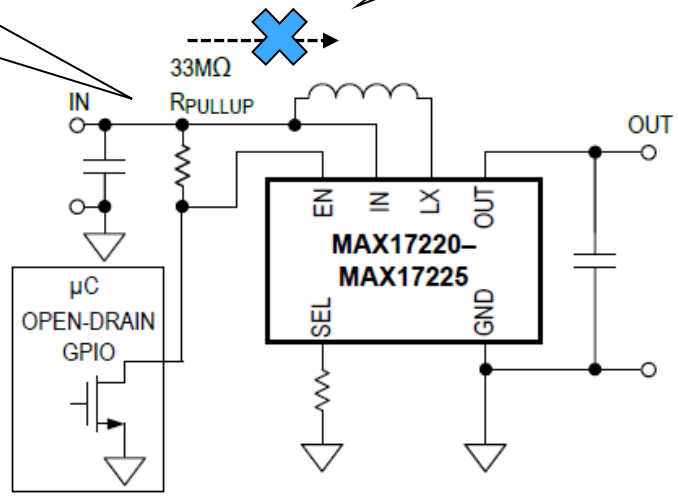
SLB

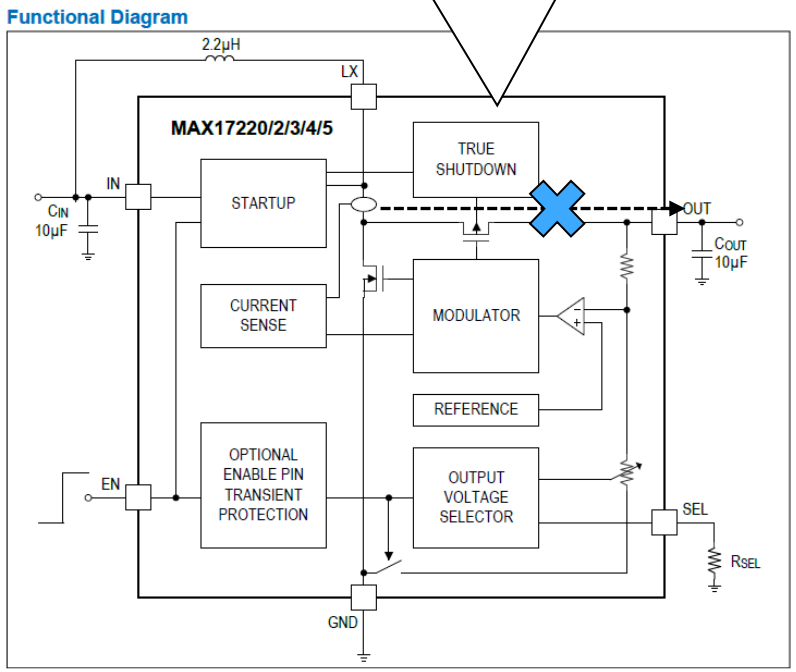
IN → Boost converter → OUT → Load (CPU etc)

OFF when shutdown (Not flowing from IN⇒OUT)

Output disconnect

No external switch is required.





Make the application smaller

SLB

IN → Boost converter → OUT → Load (CPU etc)

Selectable

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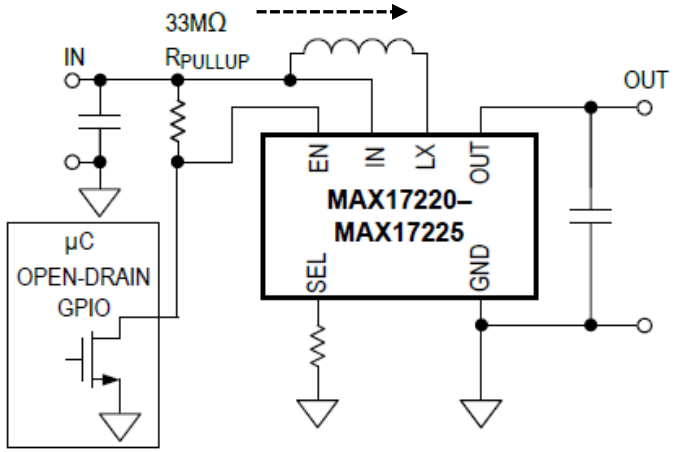
Difference between MAX17220～17225



Ordering Information

PART NUMBER	TEMPERATURE RANGE	PIN-PACKAGE	INPUT PEAK CURRENT IPEAK	TRUE SHUTDOWN	ENABLE TRANSIENT PROTECTION (ETP)
MAX17220ENT+	-40°C to +85°C	6 WLP	225mA	Yes	Yes
MAX17221ENT+	-40°C to +85°C	6 WLP	225mA	Yes	No
MAX17222ENT+	-40°C to +85°C	6 WLP	0.5A	Yes	Yes
MAX17223ENT+	-40°C to +85°C	6 WLP	0.5A	Yes	No
MAX17224ENT+	-40°C to +85°C	6 WLP	1A	Yes	Yes
MAX17225ENT+	-40°C to +85°C	6 WLP	1A	Yes	No
MAX17220ELT+	-40°C to +85°C	6 µDFN	225mA	Yes	Yes
MAX17221ELT+T	-40°C to +85°C	6 µDFN	225mA	Yes	No
MAX17221ELT+	-40°C to +85°C	6 µDFN	225mA	Yes	No
MAX17222ELT+	-40°C to +85°C	6 µDFN	0.5A	Yes	Yes
MAX17223ELT+	-40°C to +85°C	6 µDFN	0.5A	Yes	No
MAX17224ELT+	-40°C to +85°C	6 µDFN	1A	Yes	Yes
MAX17225ELT+	-40°C to +85°C	6 µDFN	1A	Yes	No
MAX17220ALT+	-40°C to +125°C	6 µDFN	225mA	Yes	Yes
MAX17222ALT+	-40°C to +125°C	6 µDFN	500mA	Yes	Yes
MAX17223ALT+	-40°C to +125°C	6 µDFN	500mA	Yes	No
MAX17224ALT+	-40°C to +125°C	6 µDFN	1A	Yes	Yes
MAX17225ALT+	-40°C to +125°C	6 µDFN	1A	Yes	No

ETP (enable transient protection)

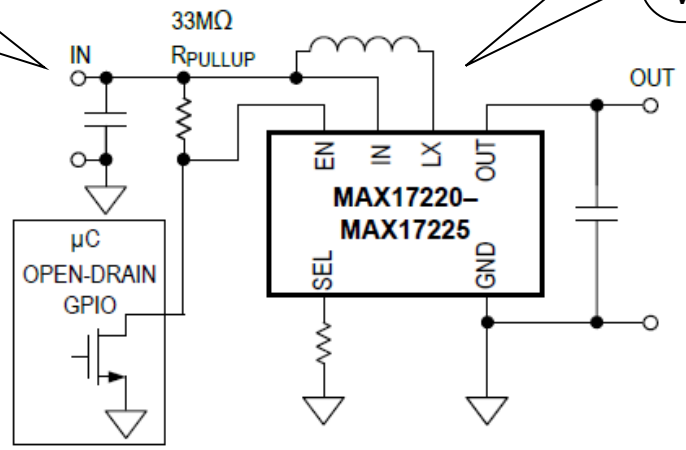
SLB

IN → Boost converter → OUT → Load

CPU etc

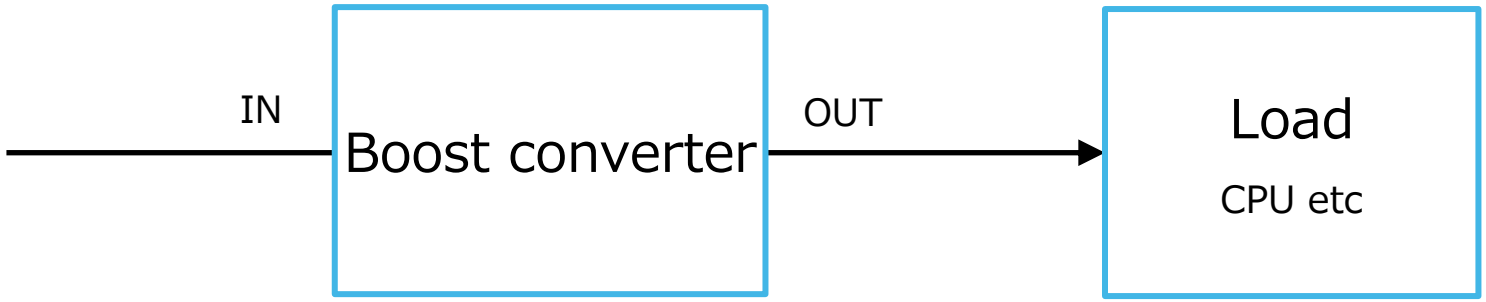
Keep working until 400mVin after start-up

MAX17220
MAX17222
MAX17224
w/ETP function

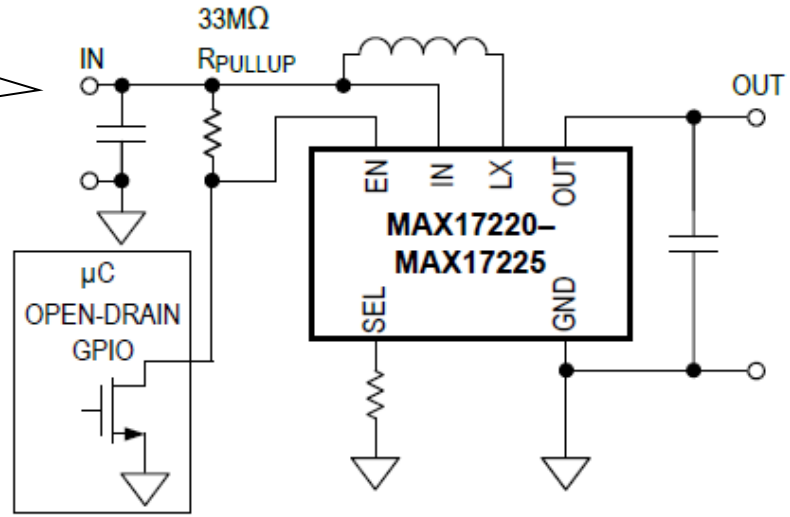


When Vin > Vout

SLB



When Vin is higher than Vout (Buck mode)

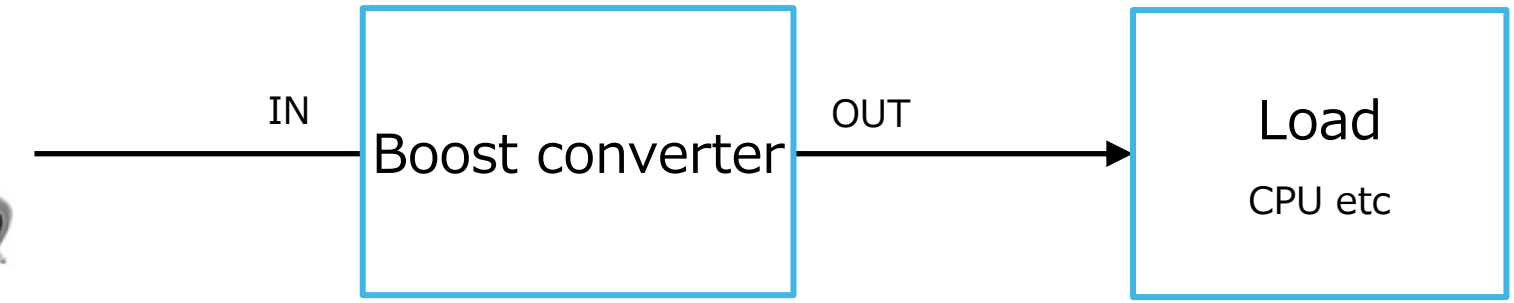


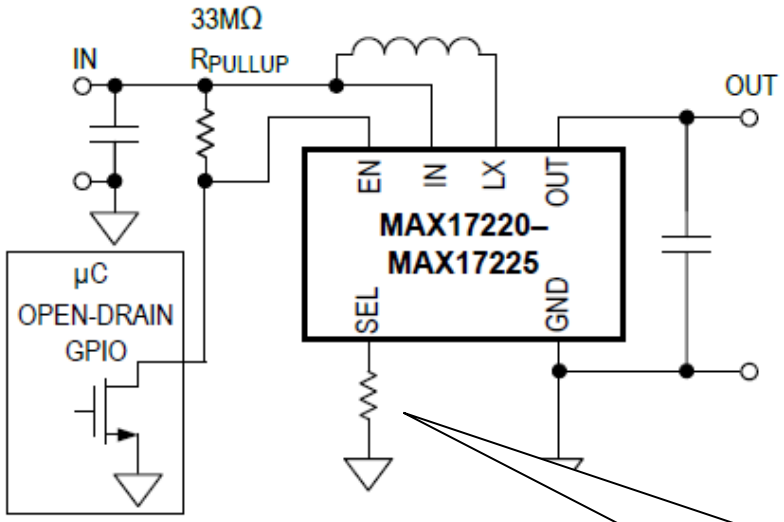
Vout = Vin – Vdiode

Vdiode
Light load: “0.2V
Heavy Load: “0.7V

How to set Vout

SLB





Set Vout based on Rsel

R_{SEL} Selection Table

V_{OUT} (V)	STD RES 1% (kΩ)
1.8	OPEN
1.9	909
2.0	768
2.1	634
2.2	536
2.3	452
2.4	383
2.5	324
2.6	267
3.3	80.6
3.4	66.5
3.5	56.2
3.6	47.5
3.7	40.2
3.8	34
3.9	28
4.0	23.7
4.1	20
4.2	16.9
4.3	14
4.4	11.8
4.5	10
4.6	8.45
4.7	7.15
4.8	5.9
4.9	4.99
5.0	SHORT

226
191
162
133
113
95.3

Maximum Power output (by Vin, Vout, L)

(MAX17222ELT+, IN = 1.5V, OUT = 3V, L = 2.2µH Coilcraft® XFL4020-222, C_{IN} = 10µF, C_{OUT} = 10µF, T_A = +25°C, unless otherwise noted.)