MCP8365D——

MCP8365D DC-DC 2.5A

MCP8365D 4.5V 38V

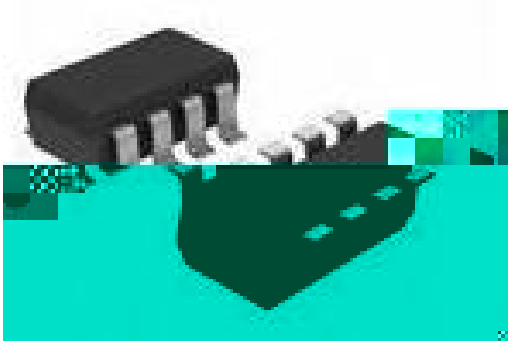
RDSON

MCP8365D

500kHz 2MHz

MCP8365D TSOT23-8

- / :110/70mΩ
- 4.5-38V
- 2.5A
-
-
- 500kHz 2MHz
- 1.5% 0.6V
-
-
-
- AEC-Q100
- RoHS



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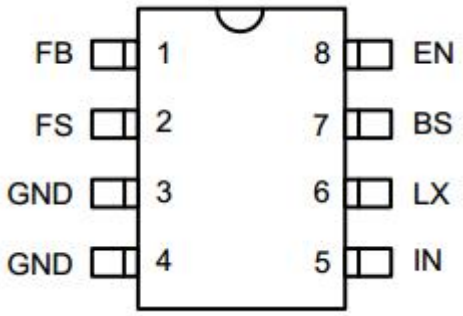
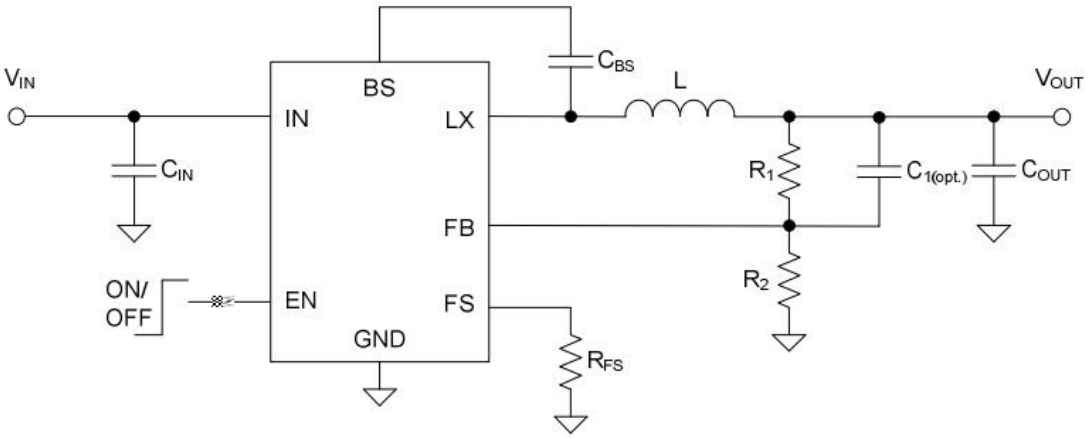


3-1 MCP8365D

3.1

PIN		
1	FB	3-1 Vout 0.6 1 *R1/R2*
2	FS	500kHz 2MHz F_{SW} $10^5/R_{FS}$kHz KΩ
3 4	GND	
5	IN	≥4.7uF
6	LX	
7	BS	10nF LX
8	EN	En



3-2 MCP8365D

4.1 T_A=25

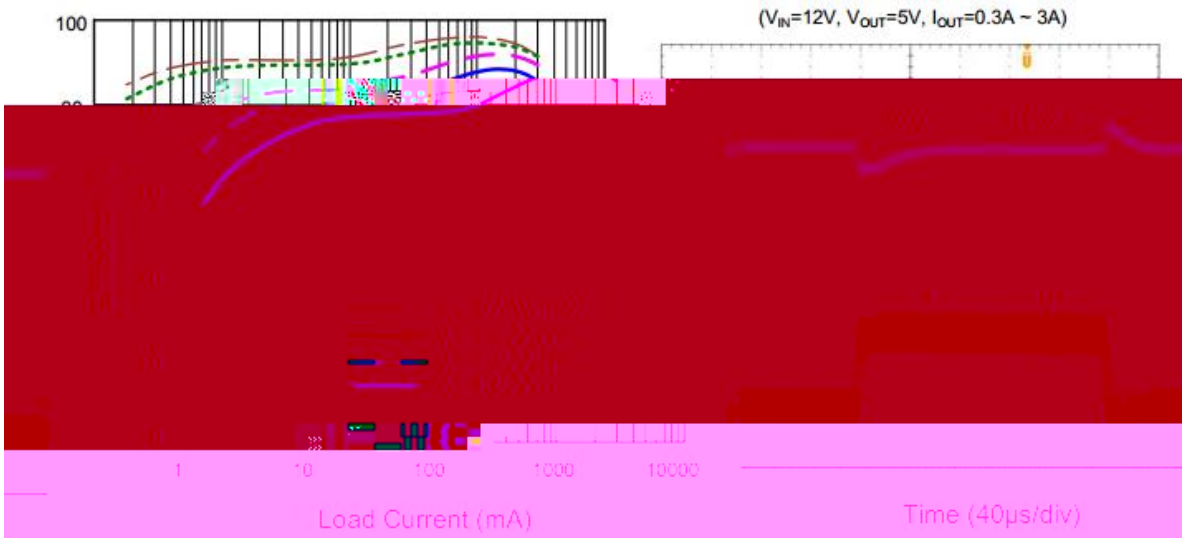
		Min	Typ	Max		
	V_{IN}	-0.3	-	38	V	
LX FB EN FS		-0.3	-	38	V	
BS-LX		-0.3		4	V	
	P_D			2	W	T_A=25
	θ JA			60.2	° C/W	
	θ JC			11.2	° C/W	
	Tj	-	-	150		
				260		
	Tstg	-40	-	150		

4.2 3-2 V_{IN}=12V V_{OUT}=5V

C_{OUT}=47uF T_A=25 I_{OUT}=1A

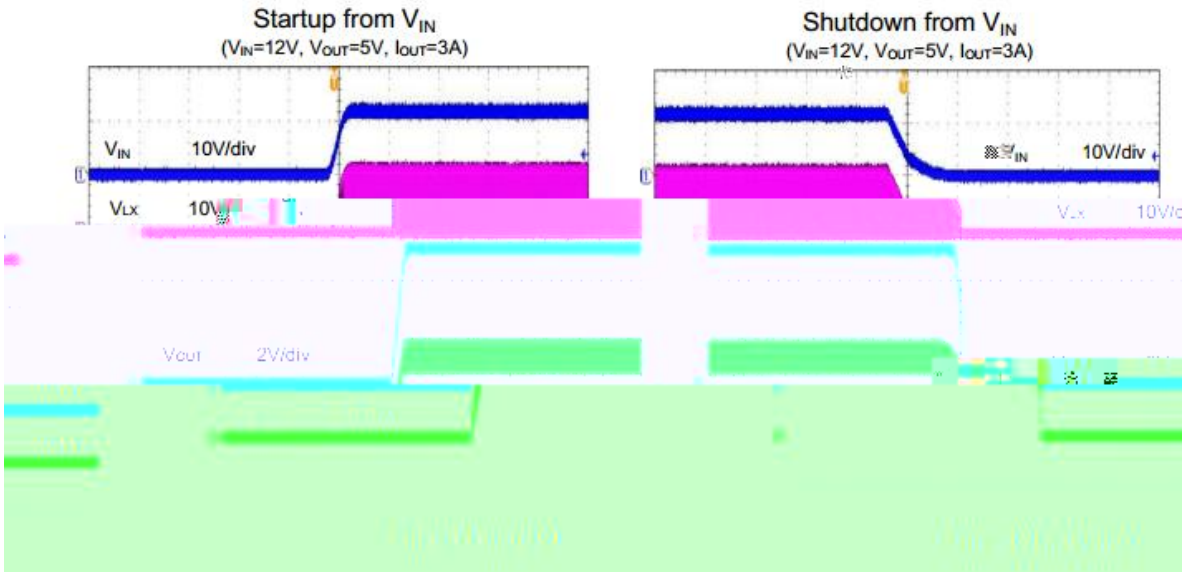
4.2 MCP8365D

	Min	Typ	Max		
V_{IN}	4.5		38	V	
I_Q			20	uA	I_{OUT}=0 V_{FB}=V_{REF} × 105%
I_{SHDN}		1	4	uA	EN=0
V_{REF}	0.59	0.6	0.61	V	
I_{FB}	-				



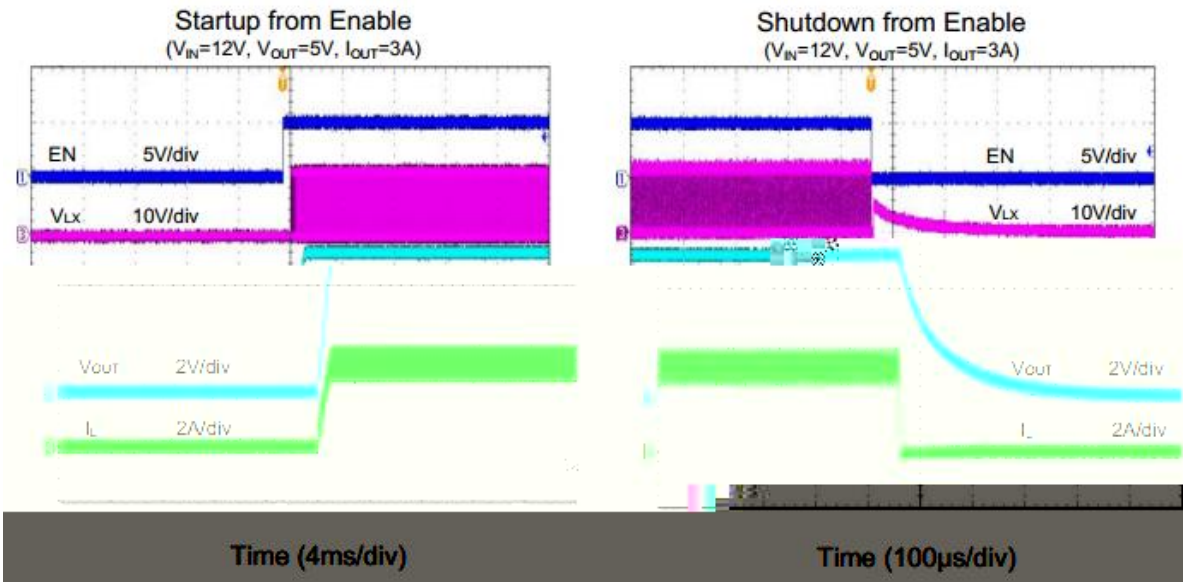
5-1 V_{OUT}=5V

5-2 V_{OUT}=5V



5-3

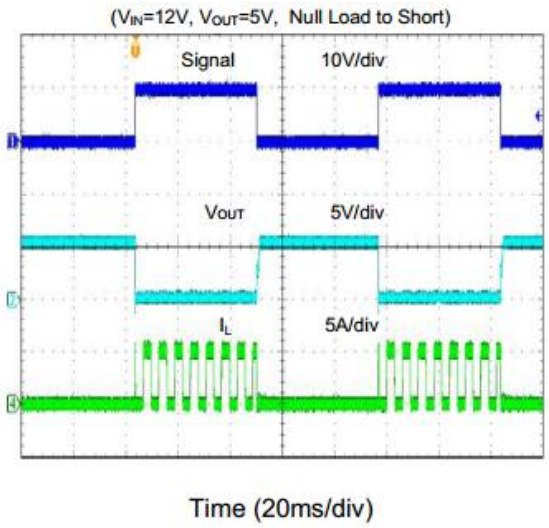
5-4


Startup from Enable
(VIN=12V, VOUT=5V, IOUT=3A)
EN 5V/div
VLX 10V/div
VOUT 2V/div
IL 2A/div
Time (4ms/div)

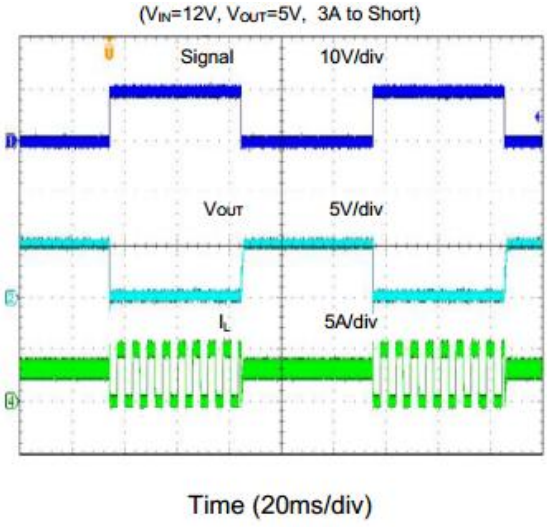
5-5

Shutdown from Enable
(VIN=12V, VOUT=5V, IOUT=3A)
EN 5V/div
VLX 10V/div
VOUT 2V/div
IL 2A/div
Time (100µs/div)

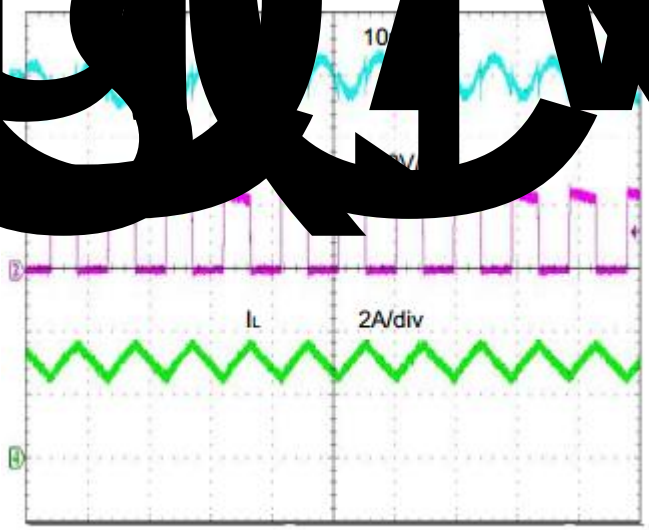
5-6


(VIN=12V, VOUT=5V, Null Load to Short)
Signal 10V/div
VOUT 5V/div
IL 5A/div
Time (20ms/div)

5-7


(VIN=12V, VOUT=5V, 3A to Short)
Signal 10V/div
VOUT 5V/div
IL 5A/div
Time (20ms/div)

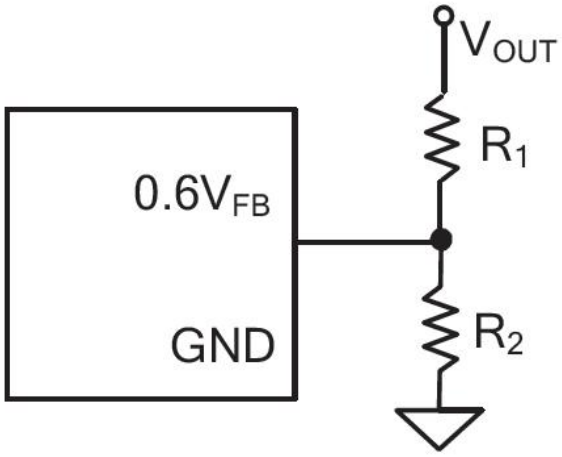
5-8



Time (2µs/div)

5-9

$$R_2 \quad \frac{0.6V}{V_{OUT} - 0.6V} R1 \qquad 6.1$$



6-1

CIN

C_{IN} 6.2

$$I_{CIN\_RMS} \quad I_{OUT} \quad \sqrt{D(1 \quad D)} \qquad (6.2)$$

IN GND X5R

C_{IN} 4.7uF

COUT

X5R 22uF

L

L 3

1 40%

6.3

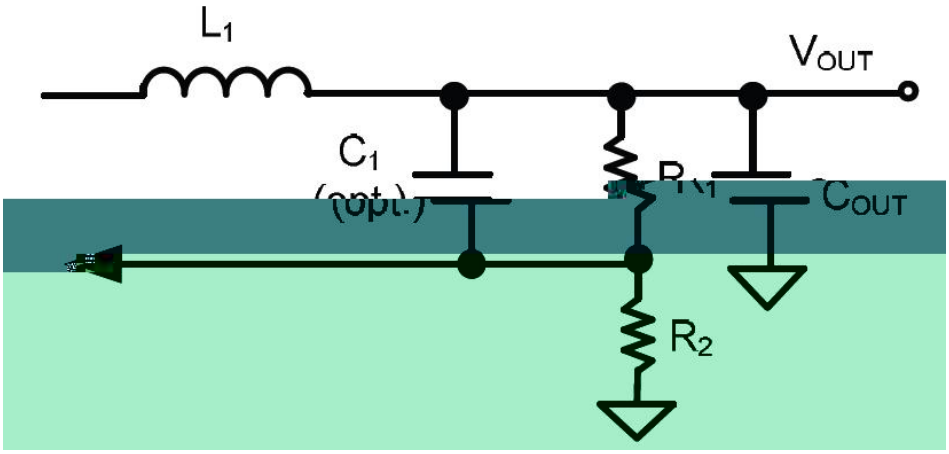
$$L \quad \frac{V_{OUT}\ 1 - V_{OUT}/V_{IN,MAX})}{F_{SW} \quad I_{OUT,MAX} \quad 40\%} \qquad 6.3$$

F_{SW} $I_{OUT\ MAX}$

2

$$I_{SAT\_MIN} \quad I_{OUT\_MAX} \quad \frac{V_{OUT}\ 1 - V_{OUT}/V_{IN\_MAX}}{2 \quad F_{SW} \quad L} \qquad 6.4$$

3



6-3

MCP8365D

CIN L R1 R2

1 PCB PCB

GND

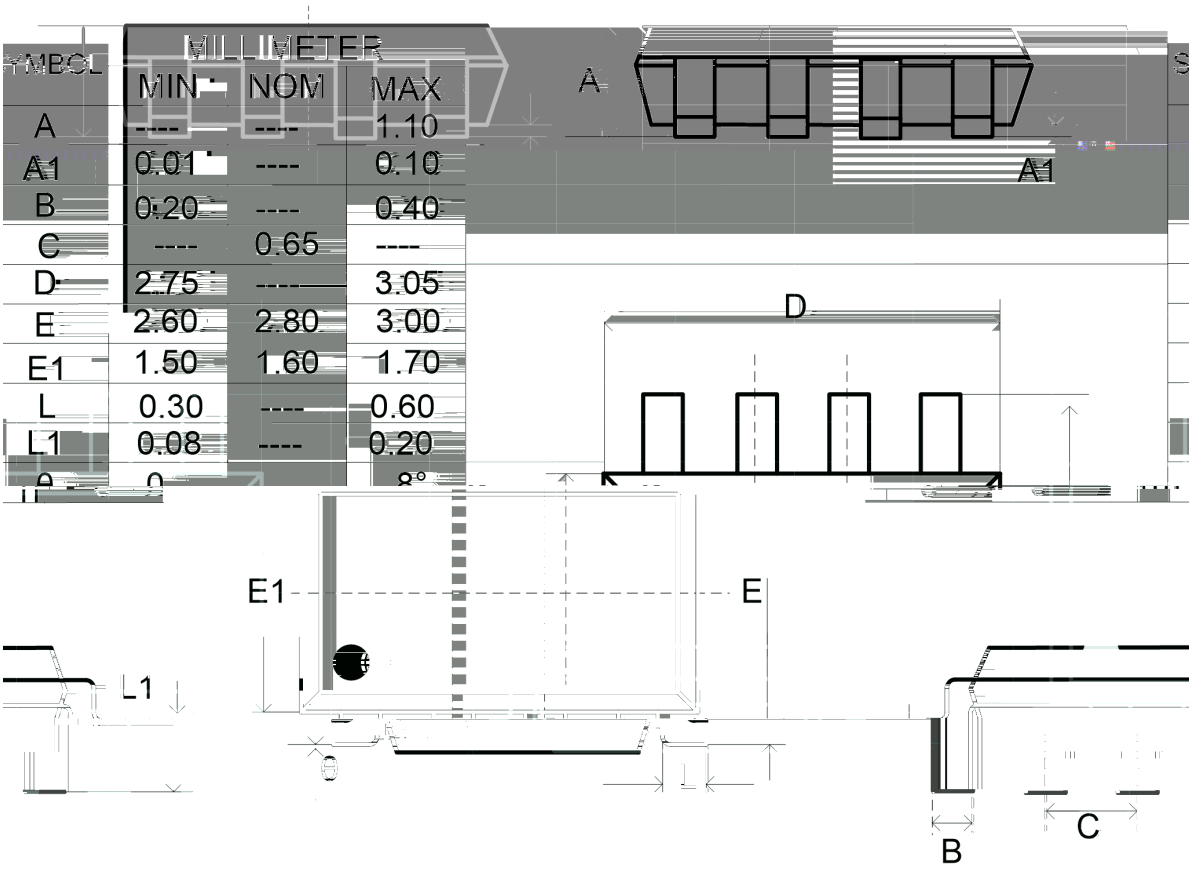
2 C_{IN} IN GND C_{IN} GND

3 LX

4 R1 R2 FB LX

5 EN PCB IN

EN GND 1MΩ


SYMBOL
MILLIMETER
MIN
NOM
MAX
A

1.10
A1
0.01

0.10
B
0.20

0.40
C

0.65

D
2.75

3.05
E
2.60
2.80
3.00
E1
1.50
1.60
1.70
L
0.30

0.60
L1
0.08

0.20
θ
0
8°
A
A1
D
E1
E
L1
B
C

MCP8365D	TSOT23-8	3k/