

3A STEP-DOWN VOLTAGE SWITCHING REGULATOR

Descriptions

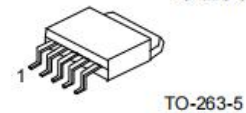
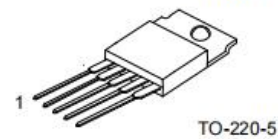
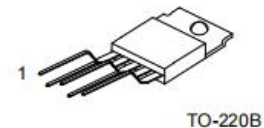
As a step-down (buck) switching regulator, the FDK2576_HV provides drives 3A load. The FDK2576_HV are simple because it only needs to use a minimum number of external components.

Frequency compensation and a fixed-frequency oscillator are in it. FDK2576_HV can perform with standard inductors, and simplifying the switch mode power supplies' design.

FDK2576_HV guarantees output load conditions and $\pm 10\%$ on the oscillator frequency. Its external shutdown is included with 50 μ A standby current. As well as thermal shutdown for full protection under fault conditions, the output switch has cycle by cycle current limiting.

Features

- Output Current 3A
- Input Voltage Range of 7V to 60V for FDK2576_HV
- Requires 4 External Components
- Very High Efficiency
- TTL Shutdown
- Thermal Shutdown
- Low Power Standby Mode
- Current Limit Protection
- Internal Oscillator: 52 kHz Fixed Frequency

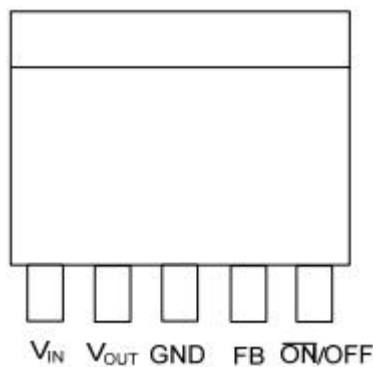


Order information

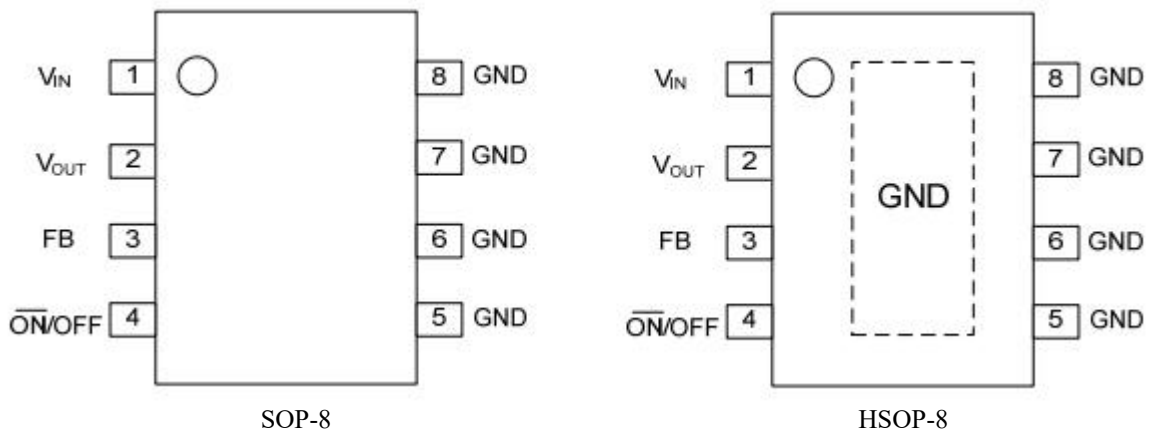
Mode	V _{OUT}	Package	Ordering Number
FDK2576_HV	5.0V/12V/ADJ	TO-220B	FDK2576HV-XXYTO-220BG/TR
		TO-220-5	FDK2576HV-XXYTO-220-5G/TR
		TO263-5	FDK2576HV-XXYTO263-5G/TR
		SOP-8	FDK2576HV-XXYSOP-8G/TR
		HSOP-8	FDK2576HV-XXYHSOP-8G/TR

Note: XX refer to Output Voltage

PIN CONFIGURATION



TO-220B/TO220-5/TO263-5



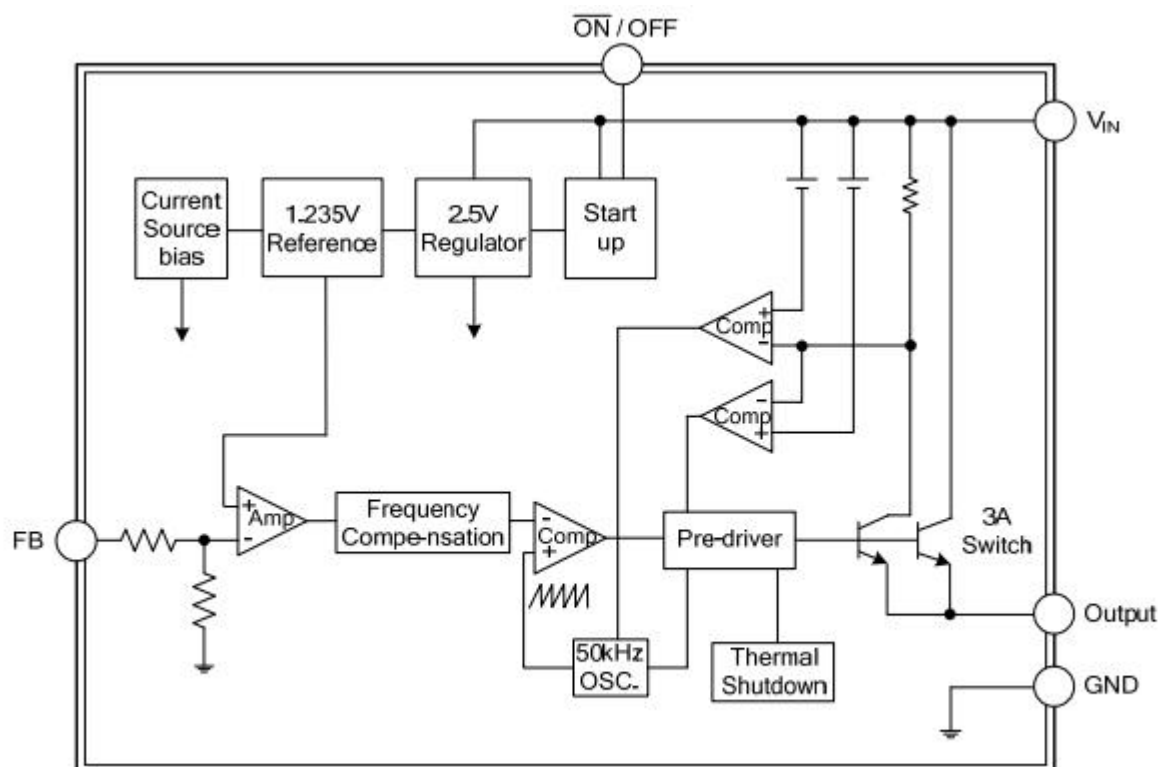
For SOP-8/HSOP-8

PIN NO.	PIN NAME	PIN DESCRIPTION
1	V _{IN}	Input voltage
2	V _{OUT}	Output voltage
3	FB	Feed back.
4	$\overline{\text{ON}} / \text{OFF}$	$\overline{\text{ON}} / \text{OFF}$ select pin, when connected to the ground the chip in operating normally. $\overline{\text{ON}} / \text{OFF}$ pin can't floating.
5,6,7,8	GND	Ground

For TO-220B/TO-220-5/TO-263-5

PIN NO.	PIN NAME	PIN DESCRIPTION
1	V _{IN}	Input voltage
2	V _{OUT}	Output voltage
3	GND	Ground
4	FB	Feed back.
5	$\overline{\text{ON}} / \text{OFF}$	$\overline{\text{ON}} / \text{OFF}$ select pin, when connected to the ground the chip in operating normally. $\overline{\text{ON}} / \text{OFF}$ pin can't floating.

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNITS
Supply Voltage	V _{CC}	60	V
Maximum Supply Voltage	V _{CC(MAX)}	65	V
$\overline{\text{ON}}$ / OFF Pin Input Voltage	V _{ON/OFF}	-0.3 ~ V _{IN}	V
Output Voltage to Ground (Steady State)	V _{OUT}	-1.0	V
Power Dissipation	P _D	Internally Limited	mW
Junction Temperature	T _J	+150	°C
Operating Temperature	T _{OPR}	-40 ~ +125	°C
Storage Temperature	T _{STG}	-65 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.
 Absolute maximum ratings are stress ratings only and functional device operation is not implied.

ELECTRICAL CHARACTERISTICS

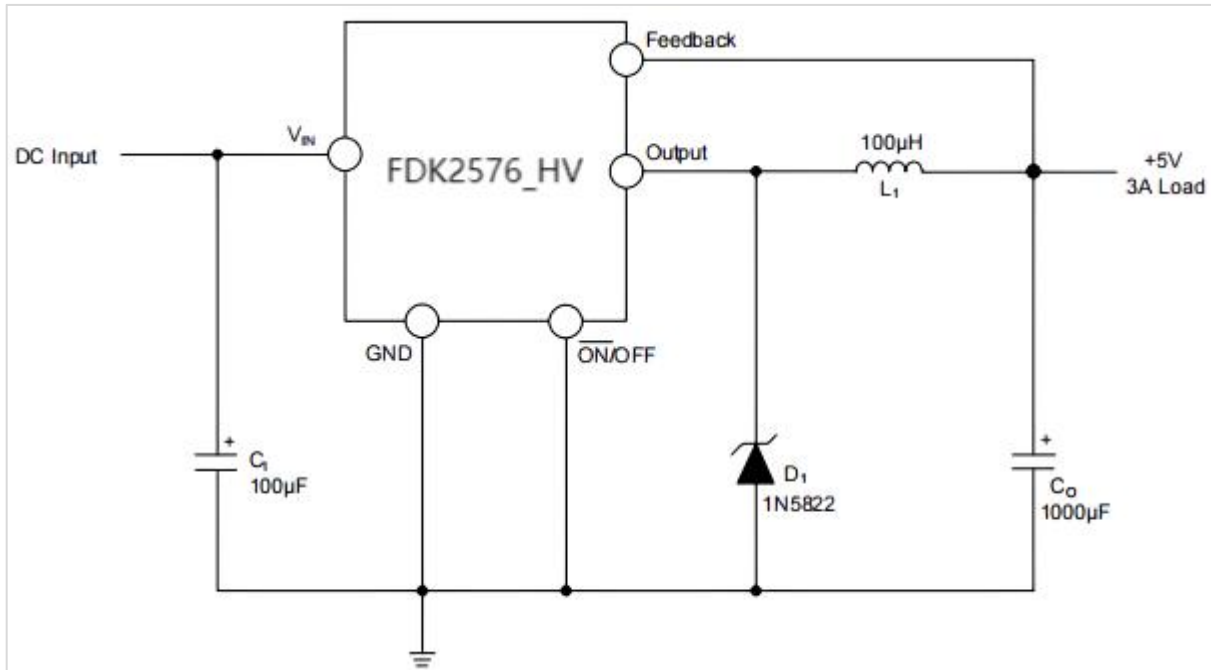
(T_J=25°C, When V_{OUT} = 3.3V & 5V & ADJ, V_{IN} = 12V; V_{OUT} = 12V, V_{IN} = 15V, V_{OUT} = 15V, V_{IN} = 18V, I_{LOAD}=500mA, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Feedback Voltage	V _{OUT}	7V ≤ V _{IN} ≤ 40V, 0.5A ≤ I _{LOAD} ≤ 3A	3.17	3.3	3.43	V
		8V ≤ V _{IN} ≤ 40V, 0.5A ≤ I _{LOAD} ≤ 3A	4.8	5.0	5.2	V
		15V ≤ V _{IN} ≤ 40V, 0.5A ≤ I _{LOAD} ≤ 3A	11.52	12.0	12.48	V
		18V ≤ V _{IN} ≤ 40V, 0.5A ≤ I _{LOAD} ≤ 3A	14.4	15	15.6	V
Efficiency	η	V _{IN} =9V, I _{LOAD} =3A		70		%
		V _{IN} =12V, I _{LOAD} =3A		77		%
		V _{IN} =15V, I _{LOAD} =3A		88		%
		V _{IN} =18V, I _{LOAD} =3A		88		%
FDK2576_HV - ADJ						
Feedback Voltage	V _{FB}	V _{IN} =12V, I _{LOAD} =0.5A, V _{OUT} =5V	1.180	1.23	1.279	V
		8V ≤ V _{IN} ≤ 40V, 0.5A ≤ I _{LOAD} ≤ 3.0A, V _{OUT} =5V	1.180	1.23	1.279	V
Efficiency	η	V _{IN} = 12 V, I _{LOAD} = 3.0 A, V _{OUT} = 5V		77		%
ALL OUTPUT VOLTAGE						
Oscillator Frequency	f _{OSC}	(Note 4)	42	52	63	kHz
Saturation Voltage	V _{SAT}	I _{OUT} =3A (Note 1)		1.4	1.8	V
Max Duty Cycle (ON)	DC	(Note 2)	93	98		%
Current Limit	I _{LIMIT}	(Note 1, 4)	3.5	5.8	6.9	A
Output Leakage Current	I _{I(LEAK)}	V _{IN} =40V, Output=-0.95V (Notes 3)			30	mA
		Output=0V			200	μA
Quiescent Current	I _Q	(Note 3)		5	10	mA
Standby Quiescent Current	I _{STBY}	$\overline{\text{ON}}$ / OFF Pin=5V (OFF)		50	200	μA
		V _{OUT} =0V	2.2			V
ON/OFF Pin Logic Input Level	V _{IH}	V _{OUT} =Nominal Output Voltage			1.0	V
	V _{IL}					
ON/OFF Pin Input Current	I _{IH}	$\overline{\text{ON}}$ / OFF Pin=5V (OFF)		12	30	μA
	I _{IL}	$\overline{\text{ON}}$ / OFF Pin=0V (ON)		0	10	μA

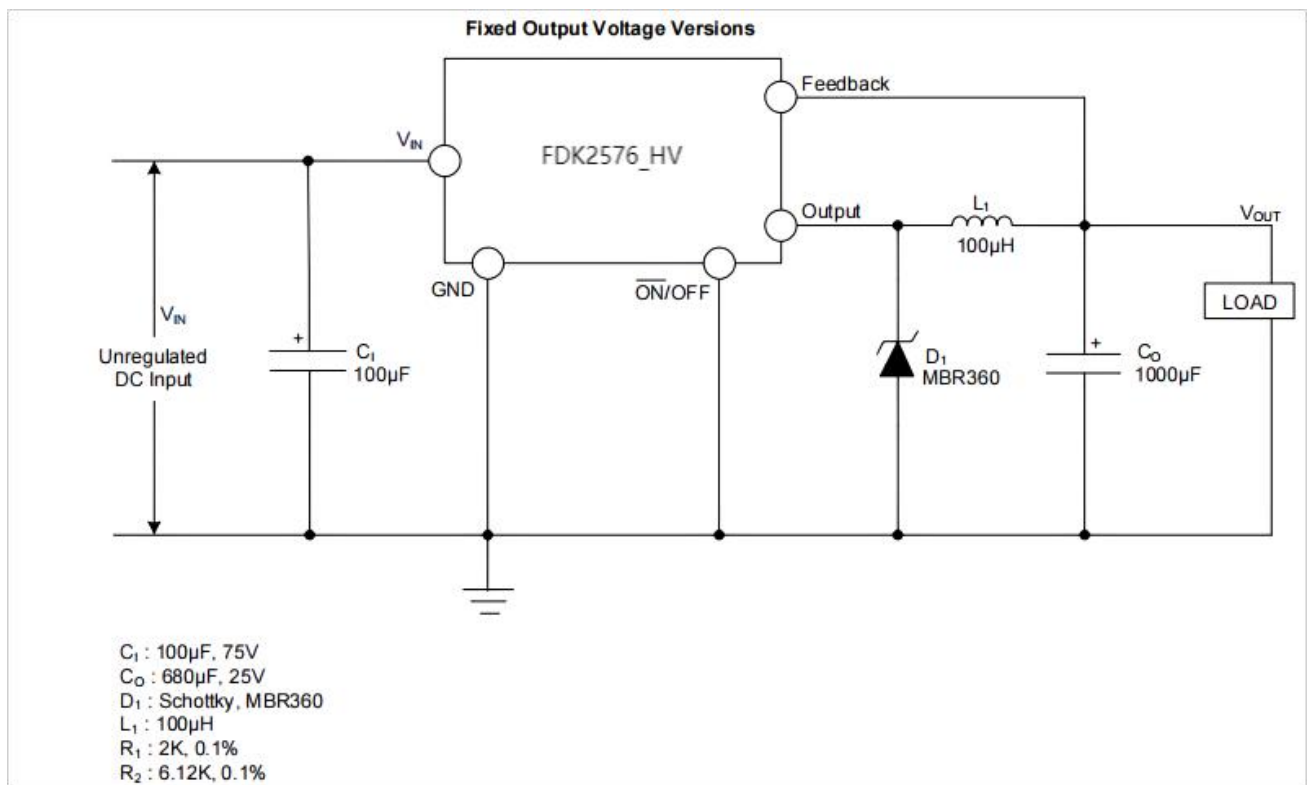
- Notes: 1. Output pin sourcing current. No diode, inductor or capacitor connected to output.
 2. Feedback pin removed from output and connected to 0V.
 3. Feedback pin removed from output and connected to +12V, to force the output transistor OFF.
 4. The oscillator frequency reduces to approximately 11 kHz in the event of an output short or an overload

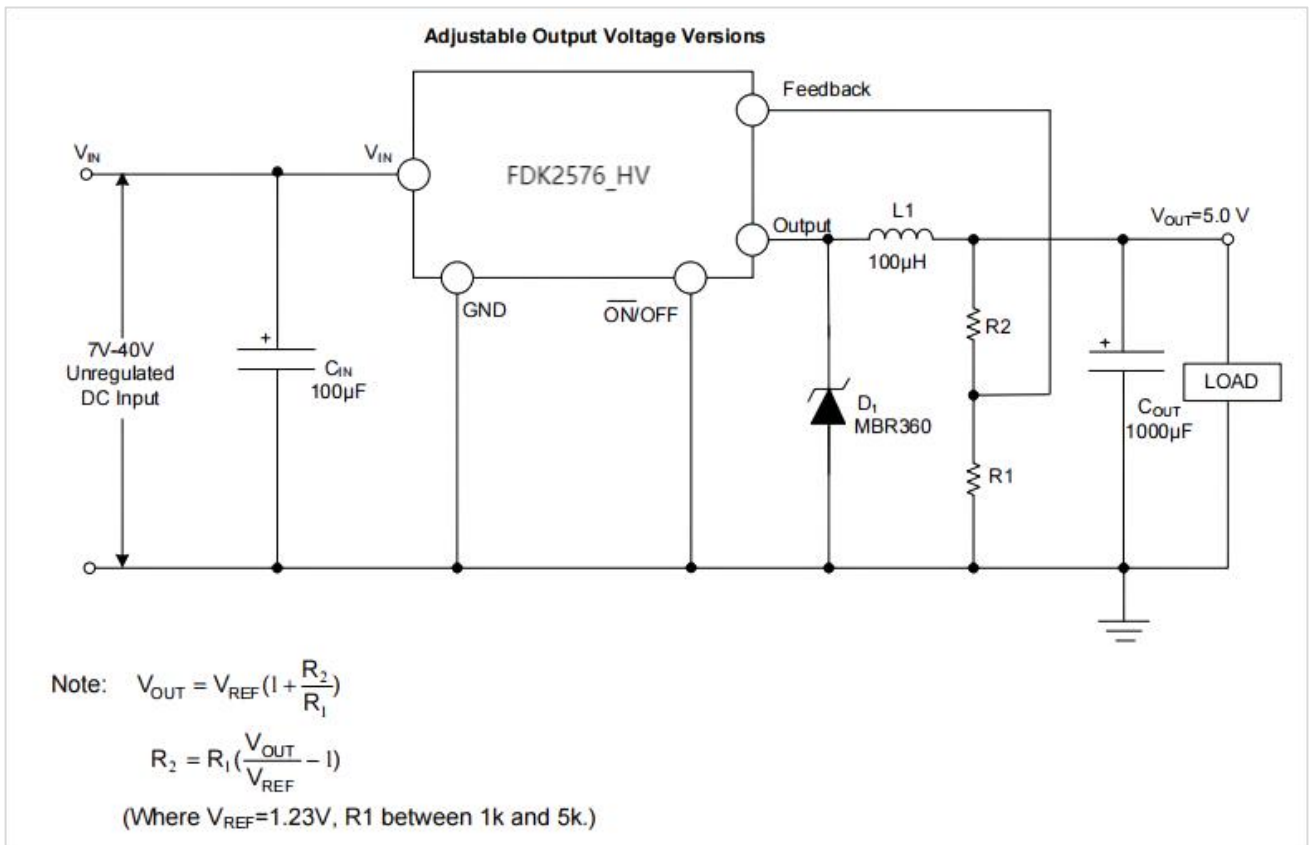
which causes the regulated output voltage to drop approximately 40% from the nominal output voltage. This self-protection feature lowers the Average power dissipation of FDK2576_HV by lowering the minimum duty cycle from 5% down to approximately 2%.

APPLICATION CIRCUIT



TYPICAL TEST CIRCUIT





TYPICAL APPLICATION CIRCUIT (TA=25°C, VCC=12V, unless otherwise specified)

