



AAT4900

Buffered Power Half-Bridge

FastSwitch™

General Description

The AAT4900 FastSwitch™ is a member of AnalogicTech's Application Specific Power MOSFET™ (ASPM™) product family. It is a Buffered Power Half-Bridge, consisting of low on-resistance Power MOSFETs with integrated control logic. This device operates with inputs ranging from 2.7V to 5.5V, making it ideal for both 3V and 5V systems. The device is protected from shoot-through current with its own control circuitry. The AAT4900 is capable of very fast switching times and is ideal for use in high frequency DC to DC Converters. The quiescent supply current is a low 1mA (max) at 1MHz CLK frequency. In shutdown mode, the supply current decreases to 1µA max

The AAT4900 is available in 5 pin SOT-23 specified over -40 to 85°C.

Features

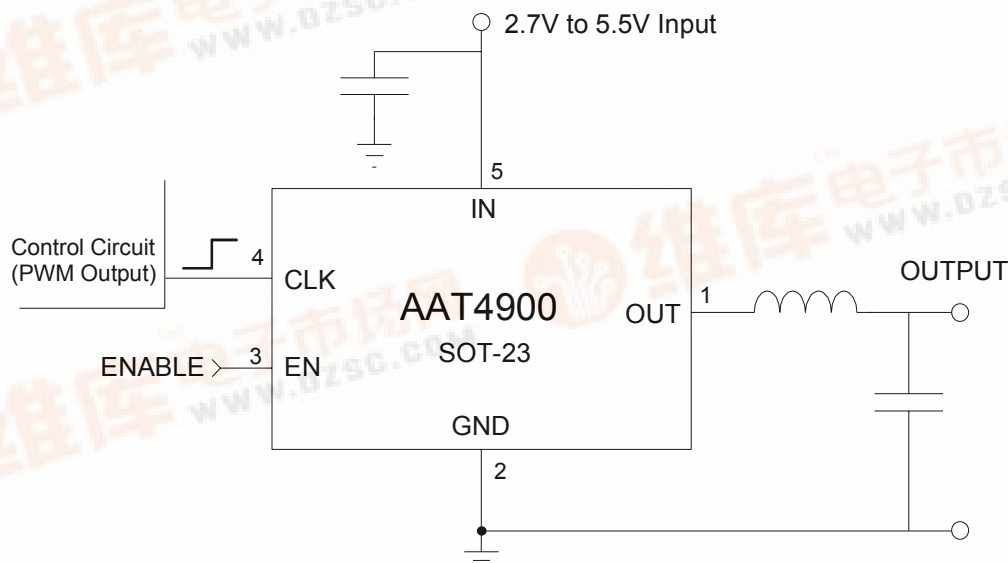
- 2.7V to 5.5V Input voltage range
- 120mΩ (typ) Switch $R_{DS(ON)}$
- Low quiescent current
 - 1µA (max) DC
 - 1mA (max) at 1MHz
- Only 2.5V needed for Control Signal Input
- Temp range -40 to 85°C
- 5 pin SOT-23 package

Applications

- High frequency DC/DC converters
- Low-side MOSFET gate driver

Typical Applications

DC/DC Converter Output Stage



Advanced Information

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

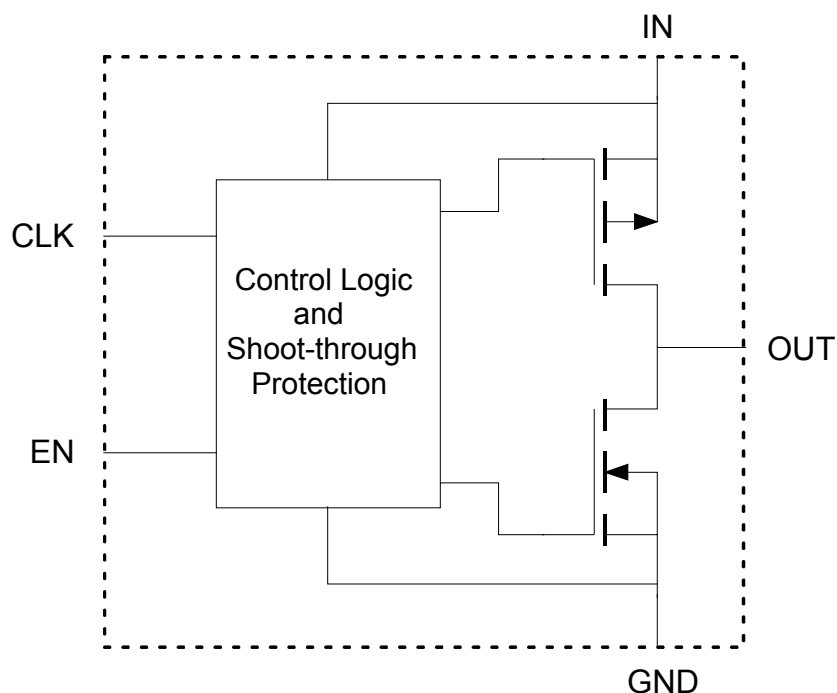
Symbol	Description	Value	Units
V_{IN}	IN to GND	-0.3 to 6	V
V_{EN}, V_{CLK}	EN, CLK to GND	-0.3 to $V_{IN}+0.3$	V
V_{OUT}	OUT to GND	-0.3 to $V_{IN}+0.3$	V
I_{MAX}	Maximum Continuous Switch Current	TBD	A
T_J	Operating Junction Temperature Range	-40 to 150	$^{\circ}\text{C}$
θ_{JA}	Maximum Thermal Resistance	260	$^{\circ}\text{C}/\text{W}$
P_D	Maximum Power Dissipation	380	mW
T_{LEAD}	Maximum Soldering Temperature (at Leads)	300	$^{\circ}\text{C}$

Note: Stresses above those listed in Absolute Maximum Ratings may cause permanent damage to the device. Functional operation at conditions other than the operating conditions specified is not implied. Only one Absolute Maximum rating should be applied at any one time.

Electrical Characteristics ($V_{IN} = 5\text{V}$, $T_A = -40$ to 85°C unless otherwise noted. Typical values are at $T_A=25^{\circ}\text{C}$)

Symbol	Description	Conditions	Min	Typ	Max	Units
V_{IN}	Operation Voltage		2.7		5.5	V
I_{QAC}	AC Quiescent Current	IN = 5V, EN = IN, CLK = 1MHz, $I_{OUT} = 0$			1	mA
I_{QDC}	DC Quiescent Current	IN = 5V, EN = IN, CLK = GND, $I_{OUT} = 0$			1	μA
$I_{Q(OFF)}$	Off-Supply Current	EN = CLK = GND IN = OUT = 5.5V			1	μA
$I_{SD(OFF)}$	Off-Switch Current	EN = GND, IN = 5.5V, $V_{OUT}=0$, or OUT = IN		0.03	15	μA
$R_{DS(ON)H}$	High Side MOSFET On Resistance	IN = 4.5V		120		m Ω
		IN = 3.0V		140		m Ω
$R_{DS(ON)L}$	Low Side MOSFET On Resistance	IN = 4.5V		120		m Ω
		IN = 3.0V		140		m Ω
V_{ONL}	CLK, EN Input low Voltage				0.8	V
V_{ONH}	CLK, EN Input High Voltage	IN = 2.7V to 3.6V	2.0			V
		IN = 4.5V to 5.5V	2.4			V
I_{SINK}	CLK, EN Input leakage	CLK, EN = 5.5v		0.01	1	μA
T_{BBM}	Break Before Make Time	CLK rising		5		ns
		CLK falling		5		ns
T_{ON-DLY}	CLK to OUT delay	CLK rising		60		ns
		CLK falling		80		ns
T_{HIZ}	EN to OUT HiZ delay	CLK = GND		75		ns
		CLK = IN		75		ns

Functional Block Diagram



Ordering Information

Package	Marking	Part Number	
		Bulk	Tape and Reel
SOT-23-5		N/A	AAT4900IGV-T1



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