HT7810
PCMCIA Power Switch

Features

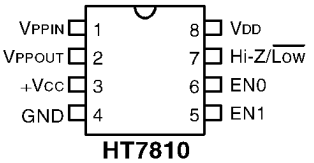
- Complete PCMCIA V_{PP} switch matrix in a single IC
- Digital selection of 0V, V_{CC}, V_{PP}, or high impedance output
- No V_{PPOUT} overshoot or switching transient
- Low power consumption
- 120mA V_{PP} (12V) of output current
- Optional active source clamp for zero volt condition
- 3.3V or 5V supply operation
- 8–pin DIP/SOP

General Description

The HT7810 is a PCMCIA (Personal Computer Memory Card International Association) power switch IC. It switches four voltages required by the PCMCIA card V_{PP} pins. The IC provides different system power supply to V_{PP} selectable from 0V, 3.3V, 5.0V, and 12.0V (± 5%). The output voltage is formed by two digital inputs. The current range can be up to 120mA.

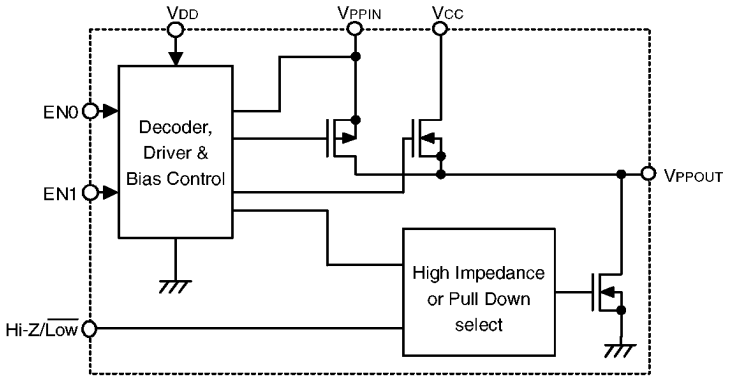
The HT7810 contains four control states, namely V_{PP}, V_{CC}, high impedance, and active low. An auxiliary control input of the IC determines the output state of V_{PPOUT} to be either a high impedance state or a low logic state.

Pin Assignment



HT7810
– 8 DIP/SOP

Block Diagram



Pin Description

Pin No.	Pin Name	I/O	Description
1	V_{PPIN}	I	The pin connects to system power supply +12V normally.
2	V_{PPOUT}	O	The pin connects to PCMCIA V_{PP} Pins under logic control. V_{PP} normally used for programming non-volatile solid state memory.
3	$+V_{CC}$	I	The pin connects to system power supply either 3.3V or 5V.
4	GND		Ground
5	EN1	I	The pin selects 0V, V_{CC}, V_{PP}, or high impedance output of V_{PPOUT} with EN0. (see function table)
6	EN0	I	The pin selects 0V, V_{CC}, VPP, or high impedance output of V_{PPOUT} with EN1. (see function table)
7	Hi–Z/$\overline{\text{Low}}$	I	The pin determines whether the high impedance state or low logic state output of V_{PPOUT}. (see function table)
8	V_{DD}	I	Positive power supply input.

Absolute Maximum Ratings

Storage Temperature.....–50°C to +125°C

Operating Temperature (Ambient) 0°C to 70°C

Supply Voltage, V_{PPIN} 15V

Input Voltages..... V_{SS}–0.3V to V_{DD}+0.3V

Output Cruuent

V_{PPOUT}=12V.....600mA

V_{PPOUT}=V_{CC}.....2.5mA

Electrical Characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit.
V_{IH}	Logic 1 Input Voltage	—	2.2	—	—	V
V_{IL}	Logic 0 Input Voltage	—	—	—	0.8	V
I_{IN}	Input Current	$0V<V_{IN}<V_{DD}$	—	—	±1	μA
V_{OL}	Clamp Low Output Voltage	EN0=EN1=HiZ=0, I_{SINK}=1.6mA	—	—	0.4	V
I_{OUT}, Hi–Z	High Impedance Output Leakage Current	EN0=EN1=0, HiZ=1 $0\le V_{PPOUT}\le 12V$	—	1	10	μA
R_{OC}	Clamp Low Output Resistance	Resistance to Ground. I_{SINK}=2mA EN0=EN1=0, HiZ=0	—	130	250	Ω
R_O	Switch Resistance, V_{PPOUT}=V_{CC}	I_{PPOUT}=–10mA (Sorucing)	—	5.5	9	Ω

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit.
Ro	Switch Resistance, V_{PPOUT}=V_{PPIN}	I_{PPOUT}=–100mA (Sourcing)	—	1.5	2	Ω
I_{DD}	V_{DD} Supply Current	—	—	—	1	μA
I_{CC}	Vcc Supply Current	I_{PPOUT}=0	—	—	1	μA
I_{PP}	I_{PP} Supply Current	V_{PPOUT}=0V or V_{PP}, I_{PPOUT}=0 V_{PPOUT1}=V_{PPOUT2}=V_{CC}	—	— 10	10 40	μA
V_{CC}	Operating Input Voltage	—	—	—	6	V
V_{DD}	Operating Input Voltage	—	2.8	—	6	V
V_{PPIN}	Operating Input Voltage	—	8.0	—	14.5	V

A.C. Characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit.
t_1	Delay+Rise Time	V_{PPOUT}=0V to 5V (Notes 3, 5)	—	15	50	μS
t_2	Delay+Rise Time	V_{PPOUT}=5V to 12V (Notes 3, 5)	—	12	50	μS
t_3	Delay+Fall Time	V_{PPOUT}=12V to 5V (Notes 3, 5)	—	25	75	μS
t_4	Delay+Fall Time	V_{PPOUT}=0V to 5V (Notes 3, 5)	—	45	100	μS
t_5	Output Turn-On Delay	VPPOUT=Hi–Z to 5V (Notes 4, 5)	—	10	50	μS
t_6	Output Turn-Off Delay	V_{PPOUT}=5V to Hi–Z (Notes 4, 5)	—	75	200	μS

Note 1: Functional operation above the absolute maximum stress ratings is not implied.

Note 2: Static-sensitive device. Store only in conductive containers. Handling personnel and equipment should be grounded to prevent damage from static discharge.

Note 3: With R_L=2.9kΩ and C_{OUT}=0.1μF on V_{PPOUT}.

Note 4: R_L=2.9kΩ. R_L is connected to V_{CC} during t_5, and is connected to ground during t_6.

Note 5: Rise and fall times are measured to 90% of the difference between initial and final values.

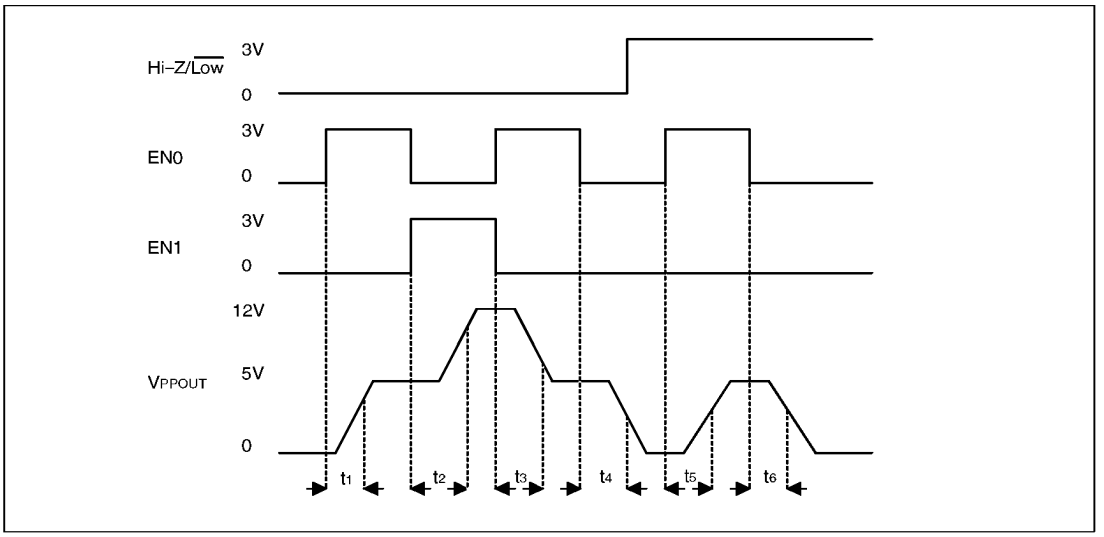
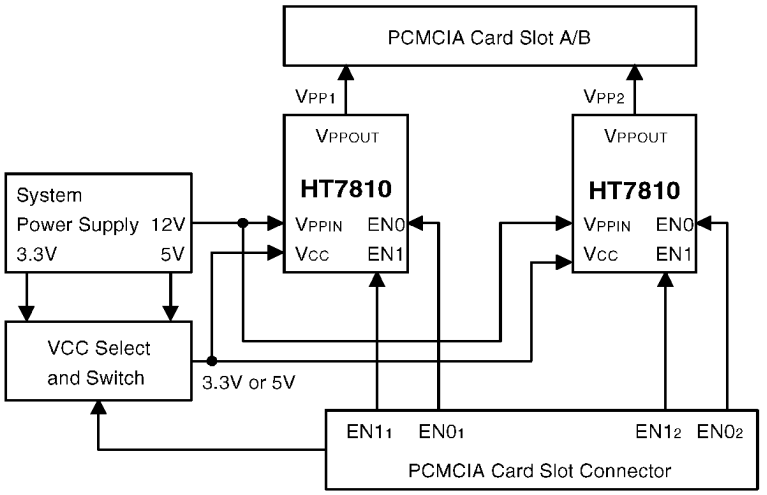


Figure1 Timing Diagram

Application Diagram



HT7810 Typical PCMCIA Application with Dual VCC (5.0V or 3.3V)

Application Circuit