

iW620 Product Brief

Quick Charge 2.0 USB Interface Controller

1.0 Features

- Supports Qualcomm® Quick Charge 2.0 (QC2.0) High Voltage Dedicated Charging Port (HVDCP) Class A with voltage configuration of 5V, 9V, and 12V
- Backward compatible with USB Battery Charging Specification Revision 1.2 (USB BC1.2) Dedicated Charging Port (DCP)
- Programmable active fast discharge from 9V/12V to 5V at USB cable unplug or from a high voltage level to a lower level upon request with built-in switch or external switch
- Normally OFF state with $<120\mu\text{A}$ cut-off current during 5V steady-state operation to achieve $<30\text{mW}$ power consumption at no load
- Wide operating voltage range from 3V to 25V
- Built-in opto-coupler LED driver with minimum driving current of 2mA
- 6-lead SOT-23 package

2.0 Description

The iW620 is a Qualcomm® QC2.0 compatible USB adaptive voltage position controller for use in HVDCP AC/DC chargers/adapters. The device allows fast charging of QC2.0-enabled portable devices (PDs). The iW620 resides on the secondary side of an AC/DC power supply and allows the adapter to be configured for 5V, 9V, or 12V output depending on the voltage requested by the PD. It can be used in iWatt's primary-side controlled AC/DC systems to achieve fast voltage transition, low no-load power consumption and fast dynamic load response. The iW620 eliminates shunt regulator and loop compensation components at the secondary side and it has a built-in opto-coupler LED driver to minimize the bill of material cost.

iWatt's innovative proprietary technology ensures that power supplies designed with the iW620 and iWatt's primary-side controller can achieve 5V/9V/12V output voltage configuration, low no-load power consumption with 5V output, and fast dynamic load response in typical quick charge AC/DC charger/adapter designs.

3.0 Applications

- Fast-charging AC/DC chargers/adapters for smart phones, tablets, and other portable devices

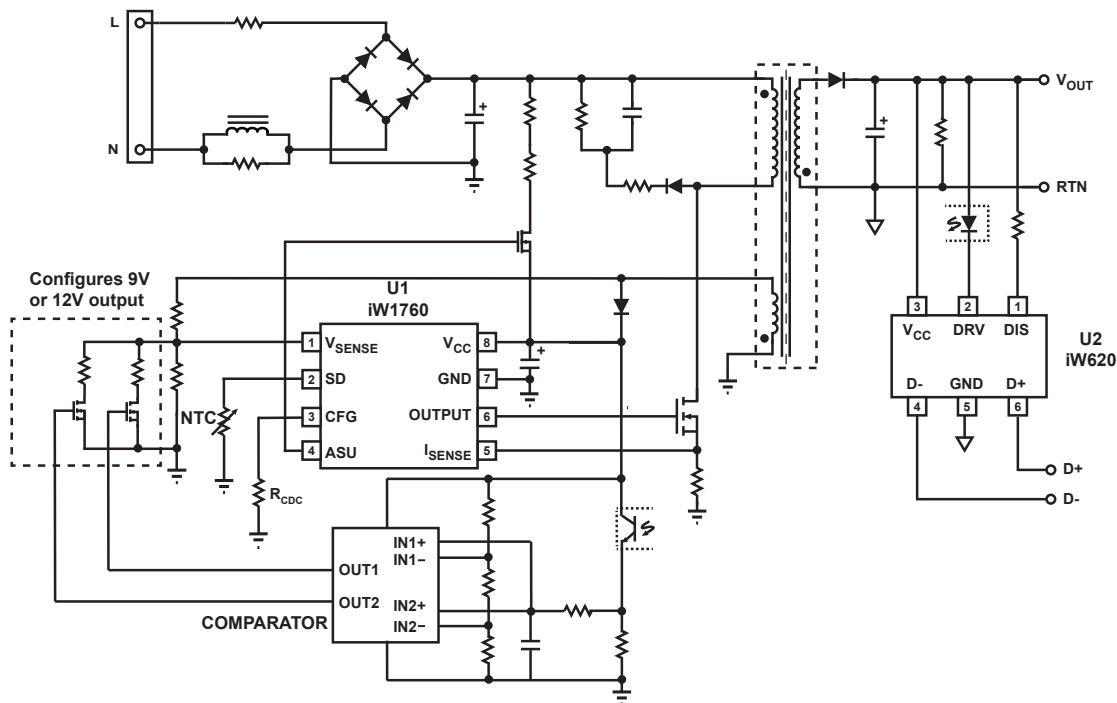


Figure 3.1: iW620 Typical Application Circuit for 3-Level Output Voltage
(Using iW1760 as Primary-Side Controller. Achieving Low No-Load Power Consumption)

iW620 Product Brief

Quick Charge 2.0 USB Interface Controller

4.0 Pinout Description

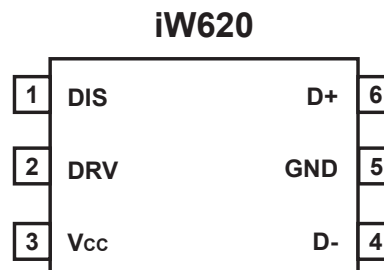


Figure 4.1: 6 Lead SOT-23 Package

Pin #	Name	Type	Pin Description
1	DIS	Analog Output	Discharging circuit and external FET drive. Used for fast discharging of output capacitor. Also can be used for driving external FET.
2	DRV	Analog Output	External circuit drive. Can be used for opto-coupler LED drive with automatic current limiting.
3	V _{cc}	Power Supply	IC power supply.
4	D-	Analog Input	USB D- signal.
5	GND	Ground	Ground.
6	D+	Analog Input	USB D+ signal.

5.0 Absolute Maximum Ratings

Absolute maximum ratings are the parameter values or ranges which can cause permanent damage if exceeded.

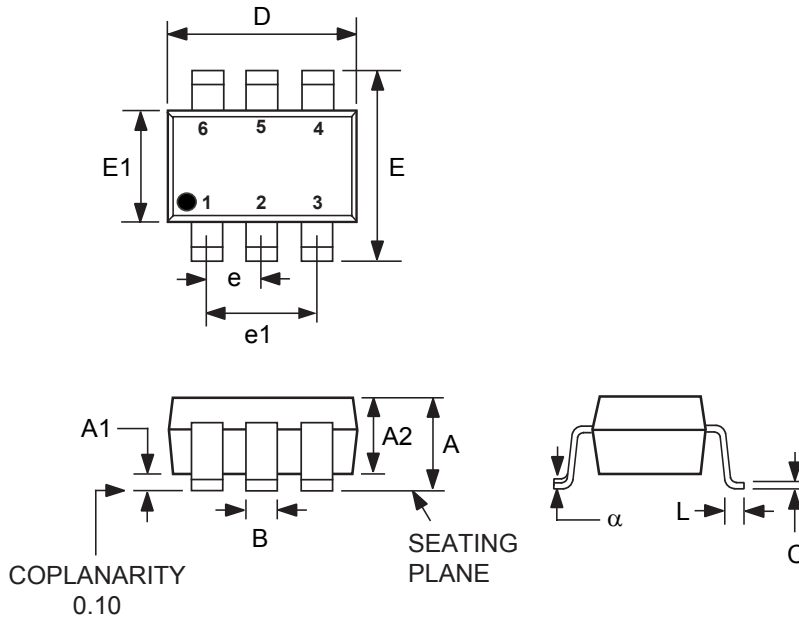
Parameter	Symbol	Value	Units
DIS (pin 1) voltage	V _{DIS}	30	V
DRV (pin 2) voltage	V _{DRV}	30	V
V _{cc} (pin 3) voltage	V _{CC}	30	V
D- (pin 4) voltage	V _{D-}	-0.3 to 7	V
D+ (pin 6) voltage	V _{D+}	-0.3 to 7	V
Continuous DC current at DRV pin (V _{DRV} = 11V)	I _{DRV}	25	mA
Continuous DC supply current at V _{cc} pin (V _{cc} = 12V)	I _{VCC}	25	mA
Peak current at DIS pin (V _{DIS} = 12V)	I _{DIS}	600	mA
Maximum junction temperature	T _{JMAX}	150	°C
ESD rating per JEDEC JESD22-A114 (D+ and D- pins)		4,000	V
ESD rating per JEDEC JESD22-A114 (all other pins)		2,000	V

iW620 Product Brief

Quick Charge 2.0 USB Interface Controller

6.0 Physical Dimensions

6-Lead SOT Package



Symbol	Millimeters	
	MIN	MAX
A	-	1.45
A1	0.00	0.15
A2	0.90	1.30
B	0.30	0.50
C	0.08	0.22
D	2.90 BSC	
E	2.80 BSC	
E1	1.60 BSC	
e	0.95 BSC	
e1	1.90 BSC	
L	0.30	0.60
α	0°	8°

Compliant to JEDEC Standard MO-178AB

Controlling dimensions are in millimeters

This package is RoHS compliant and Halide free.

Soldering Temperature Resistance:

- [a] Package is IPC/JEDEC Std 020D Moisture Sensitivity Level 1
- [b] Package exceeds JEDEC Std No. 22-A111 for Solder Immersion Resistance; packages can withstand 10 s immersion < 260°C

Dimension D does not include mold flash, protrusions or gate burrs. Mold flash, protrusions or gate burrs shall not exceed 0.25 mm per side.

The package top may be smaller than the package bottom. Dimensions D and E1 are determined at the outermost extremes of the plastic body exclusive of mold flash, tie bar burrs and interlead flash, but including any mismatch between top and bottom of the plastic body.

7.0 Ordering Information

Part Number	Options	Package	Description
iW620-00	5V/9V/12V configuration, internal 3k Ω dynamic preload turned on at 5V	SOT-23	Tape & Reel ¹
iW620-01	5V/9V/12V configuration, no internal dynamic preload resistor	SOT-23	Tape & Reel ¹
iW620-04	5V/9V configuration, internal 3k Ω dynamic preload turned on at 5V	SOT-23	Tape & Reel ¹
iW620-05	5V/9V configuration, no internal dynamic preload resistor	SOT-23	Tape & Reel ¹

Note 1: Tape & Reel packing quantity is 3,000 per reel. Minimum ordering quantity is 3,000.

iW620 Product Brief

Quick Charge 2.0 USB Interface Controller



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iWatt semiconductors are typically used in power supplies in which high voltages are present during operation. High-voltage safety precautions should be observed in design and operation to minimize the chance of injury.