



DIGITAL PWM IC

1.0 General Description

The G5178 is a high performance AC/DC power supply controller which uses digital control technology to build peak current mode PWM flyback power supplies. The device together with an external active device (depletion mode NFET or NPN BJT) provides a fast start-up meanwhile achieving ultra-low no-load power consumption. The device directly drives a power BJT and operates in quasi-resonant mode to provide high efficiency along with a number of key built-in protection features while minimizing the external component count, simplifying EMI design and lowering the total bill of material cost.

The G5178 removes the need for secondary feedback circuitry while achieving excellent line and load regulation. It also eliminates the need for loop compensation components while maintaining stability over all operating conditions. Pulse-by-pulse waveform analysis allows for a loop response that is much faster than traditional solutions, resulting in improved dynamic load response, for both one-time and repetitive load transient. The built-in power limit function enables optimized transformer design in universal off-line applications and allows for a wide input voltage range.

Global Semiconductor's innovative proprietary technology ensures that power supplies built with the G5178 can achieve both highest average efficiency and zero no-load power consumption, and have fast dynamic load response in a compact form factor. The active start-up scheme enables shortest possible start-up time without sacrificing no-load power loss.

Features

- ◆ Very tight constant voltage and constant current regulation over entire operating range
- ◆ Zero power consumption at no-load with lowest system cost (< 5mW at 230Vac with typical application circuit)
- ◆ Intelligent low power management achieves ultra-low operating current at no-load
- ◆ Complies with EPA 2.0 energy-efficiency specifications with ample margin
- ◆ Intrinsically low common mode noise
- ◆ Adaptive multi-mode PWM/PFM control improves efficiency
- ◆ Quasi-resonant operation for highest overall efficiency
- ◆ Direct drive of low-cost BJT switch
- ◆ Dynamic base current control
- ◆ No external compensation components required
- ◆ Primary-side feedback eliminates opto-isolators and simplifies design
- ◆ Optimized 72 kHz PWM switching frequency achieves best size and efficiency
- ◆ Built-in soft start
- ◆ Built-in short circuit protection and output overvoltage protection
- ◆ Built-in current sense resistor short circuit protection
- ◆ No audible noise over entire operating

Applications

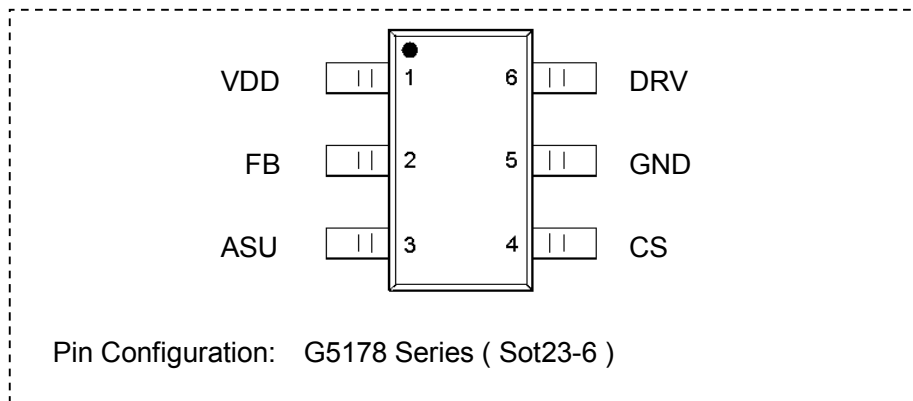
- Compact low power AC/DC adapters/chargers for cell phones, PDAs, digital still cameras
- Linear AC/DC replacement

G5178

Low-Power Off-Line Digital Green-Mode PWM Controller

2.0 Products Information

2.1 Pin configuration



Pin Name	I/O	Description
VDD	P	Power supply for control logic.
FB	I	Analog Input Auxiliary voltage sense (used for primary regulation).
ASU	O	Control signal for active start-up device (BJT or depletion NFET).
CS	I	Analog Input Primary current sense. Used for cycle-by-cycle peak current control and limit.
GND	P	Ground.
DRV	O	Base drive for BJT.

2.2 Marking Information

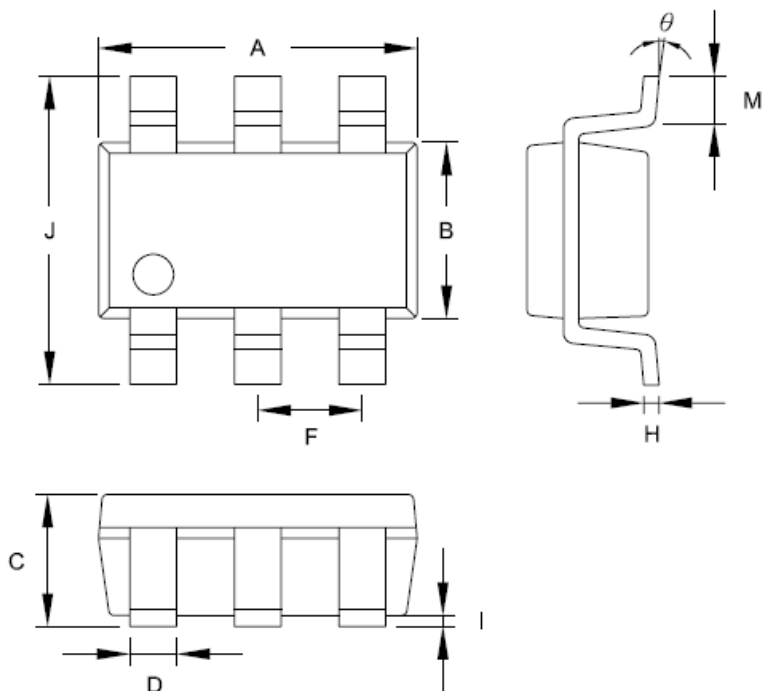
Part Number	Marking Information
G5178	GDXXX

2.3 Series description

Part Number	Description
G5178-00	Cable Comp = 0mV

3.0 Package Information

Sot23-6



Symbol	Dimension in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	2.692	3.099	0.106	0.122
B	1.397	1.803	0.055	0.071
C	--	1.450	--	0.057
D	0.300	0.500	0.012	0.020
F	0.95		0.037	
H	0.080	0.254	0.003	0.010
I	0.050	0.150	0.002	0.006
J	2.600	3.000	0.102	0.118
M	0.300	0.600	0.012	0.024
θ	0°	10°	0°	10°

Data and specifications subject to change without notice.

This product has been designed and qualified for Industrial Level and Lead-Free.

Qualification Standards can be found on GS's Web site.

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