Primary Feedback PWM Controller for Flyback Application

Features

- Primary feedback control without secondary feedback signal
- Constant-Voltage(CV) and Constant-Current(CC) regulation
- Pulse by pulse Current Limiting
- Low start-up Current (6uA)
- Built-in soft start
- Wide VCC operation range
- VCC Over-Voltage Protection
- Output Over-Voltage Protection
- Cable Compensation for CV regulation
- SOT-26 package, with few external components needed

Description

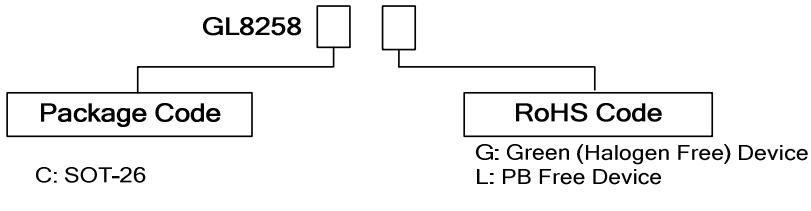
The GL8258 is an excellent primary side feedback controller. It's integrated constant voltage (CV) and constant current (CC) regulation functions. While it operates on CV mode, It minimizes the components counts and is available in a tiny SOT-26 package. Those make it an ideal design for low cost application.

It provides functions of low startup current, green-mode power-saving operation,. Also, the GL8258 is built-in the VCC over-voltage protection and FB pins to prevent the circuit being damaged from the abnormal conditions.

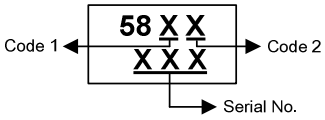
Application

- Low power adapter
- Cell phone charger
- Replacement for linear adapter

Ordering and Marking Information



SOT-26



Code 1	8	9	A	B		G	H	I	J
Year	2008	2009	2010	2011		2016	2017	2018	2019
Code 2	1	2	3	4		9	A	B	C
Month	Jan.	Feb.	Mar.	Apr.		Sep.	Oct.	Nov.	Dec.

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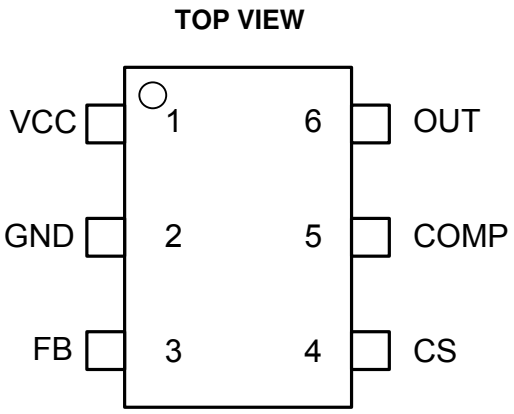
Pin Configuration



Pin Description

Pin No.	Name	Function
1	VCC	Power supply pin
2	GND	Ground
3	FB	Connecting to a resistor divider from aux. winding to ground, the resistor divider ratio determines the aux. winding and secondary output voltage
4	CS	Current sense pin, connect to sense the power transistor current
5	COMP	Voltage loop Gm error amplifier output, by connecting an R series with C to GND to stabilize the control loop
6	OUT	The output driver for driving the external power transistor

Absolute Maximum Ratings

Supply Voltage VCC ---------- 28V

COMP, FB, CS ---------- -0.3 ~ 7V

OUT ---------- -0.3~28V

Junction temperature ---------- 150°C

Operating ambient temperature ---------- -20°C to 85°C

Storage temperature range ---------- -65°C to 150°C

Package thermal resistance (SOT-26) ---------- 250°C/W

Power dissipation (SOT-26, at ambient temperature = 85°C) ---------- 250mW

Lead temperature (Soldering, 10sec) ---------- 260°C

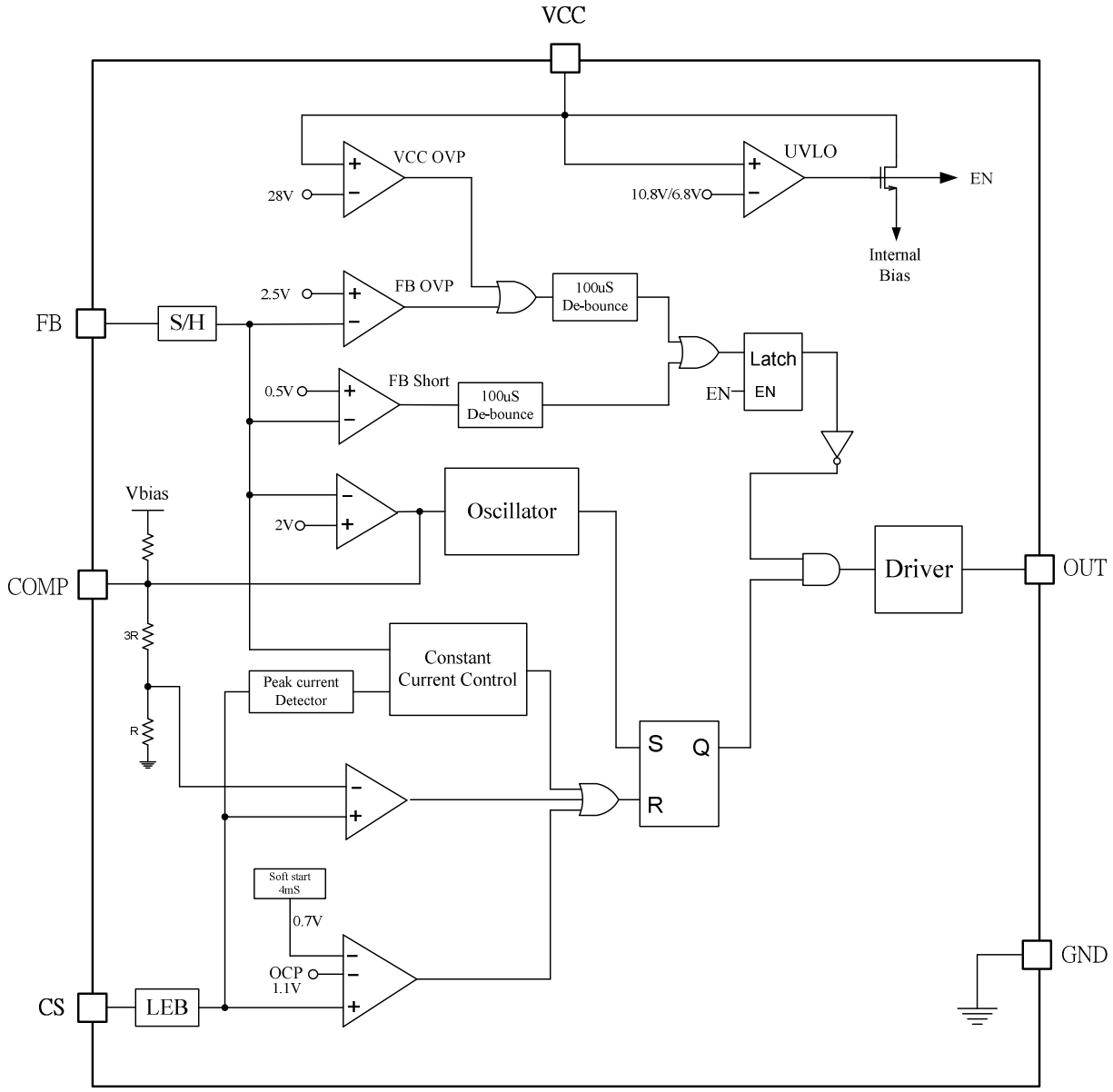
ESD voltage protection, human body model ---------- 3.0 KV

ESD voltage protection, machine model ---------- 300 V

Recommended Operating Conditions

Item	Min.	Max.	Unit
Supply voltage VCC	7	20	V

Block Diagram



Electrical Characteristics (VCC = 15V, TA = 25℃, unless otherwise specified.)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
VCC SECTION						
Continuously operating voltage	V_{OP}				25	V
On threshold voltage	V_{TH-ON}		9.8	10.8	11.8	V
Off threshold voltage	V_{TH-OFF}		6.3	6.8	7.3	V
Start-up current	I_{cc-ST}	VCC = 9V	2	6	10	uA
Operating supply current	I_{cc-OP}		0.8	1.5	2.0	mA
OSCILLATOR SECTION						
Normal PWM frequency	F_{OSC}		38.8	40	41.2	KHz
Green mode min frequency				2.5k		KHz
Minimum frequency at no-load	$F_{OSC-N-MIN}$			312		Hz
Maximum duty cycle	DCY_{MAX}		65	70	75	%
Jitter range				+/-3		%
ERROR AMPLIFIER						
Output source current				40		uA
Output sink current				40		uA
Maximum output voltage				5		V
Minimum output voltage				0.5		V
Green mode start voltage				1.7		V
Burst mode start voltage				0.7		V
CURRENT-SENSE SECTION						
Input Impedance			1			mΩ
Peak current limitation			1.0	1.1	1.2	V
Propagation delay				150		nS
FB PIN						
Feedback input voltage			1.97	2	2.03	v
Vfb variation versus vcc deviation				1		%
Input Bias current	I_{BVS}			-0.3	-2	uA
FB OVP			2.4	2.5	2.6	V
OUT SECTION						
Output low level		VCC = 15V, Io = 20mA			1	V
Output high level		VCC = 15V, Io = 20mA	8			V
Rising time		load capacitance = 1000pF		250		nS

Falling time		load capacitance = 1000pF		70		nS
Soft start				4		mS

Application Information

The GR8258 is a primary feedback PWM controller for flyback converter application. It is suitable for low output wattage below 5W and small size AC/DC converter. It is required only very few external components to achieve application. The typical application circuit is shown in below Fig.1.

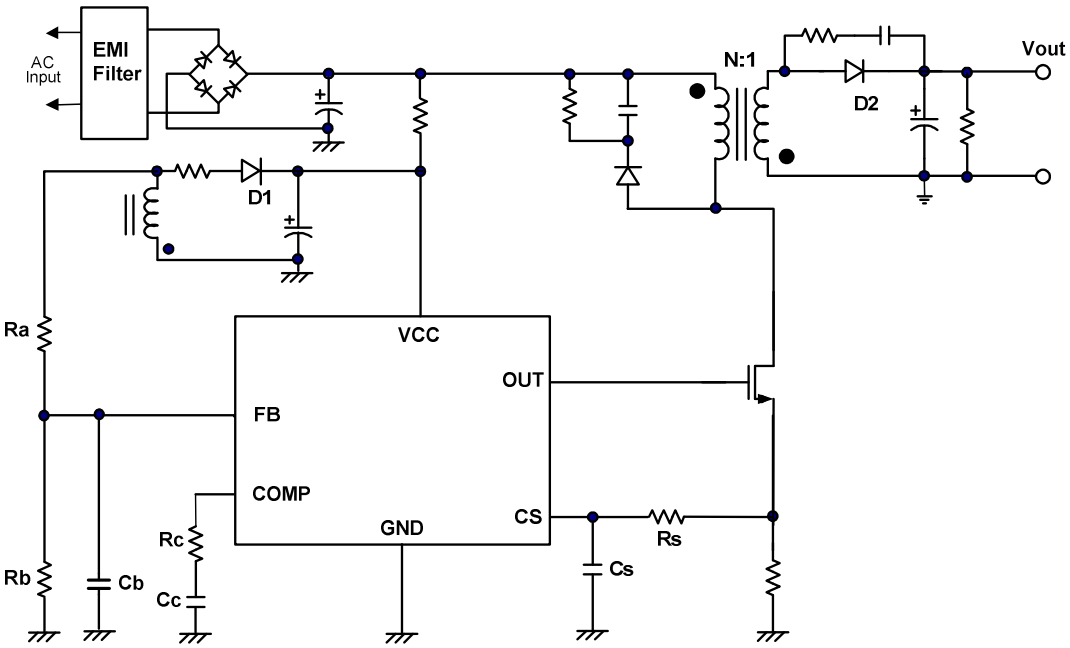
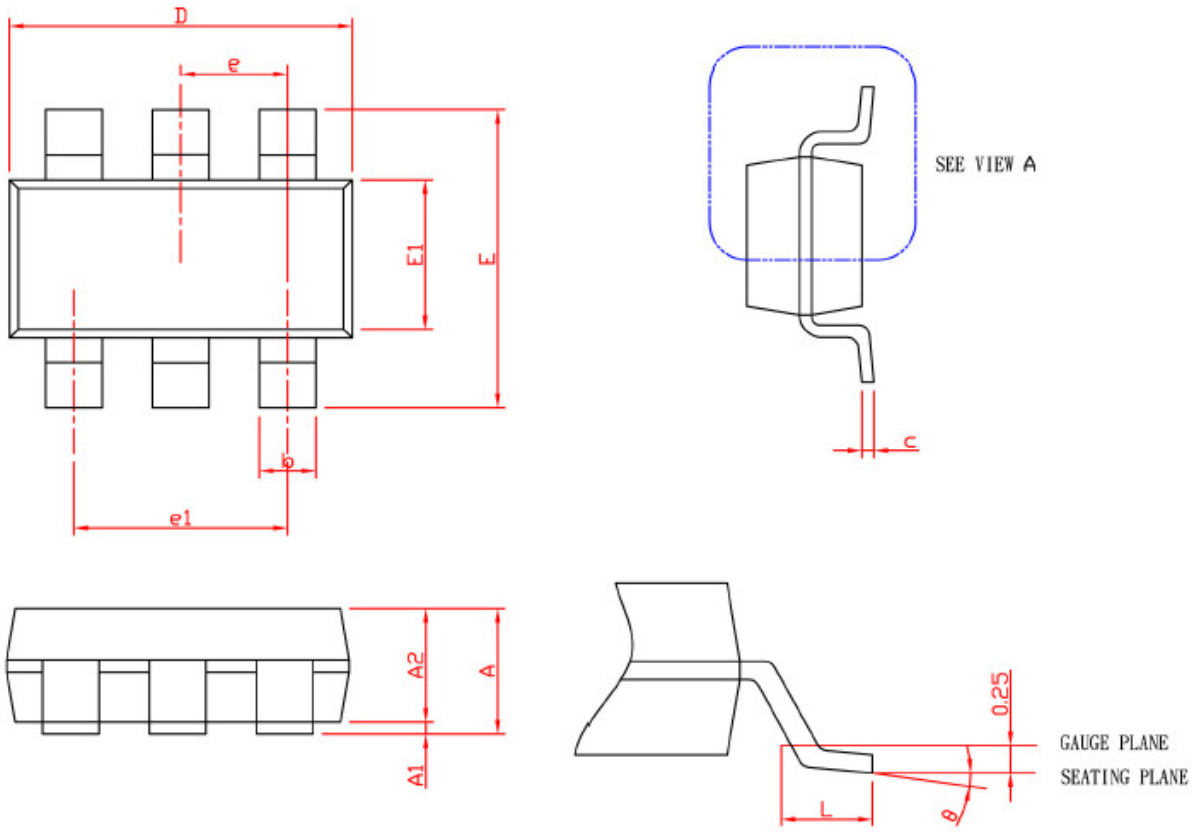


Fig.1

Package Information

SOT-26



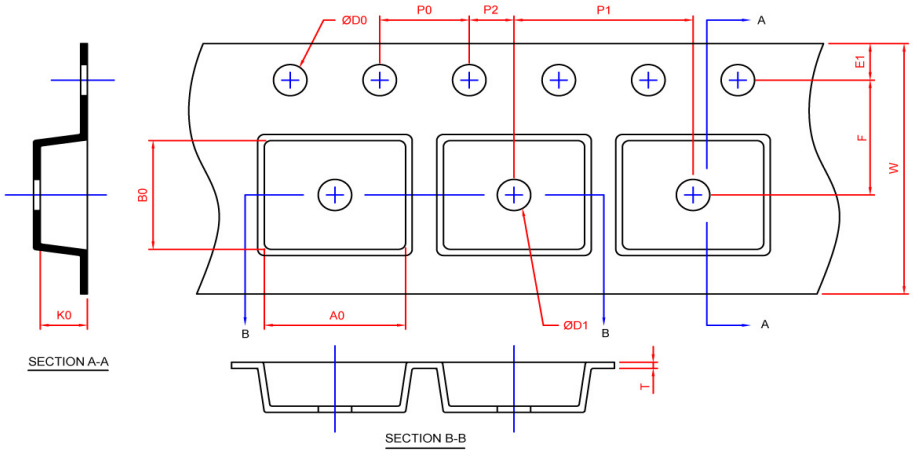
SYMBOL	SOT-26			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A		1.45		0.057
A1	0.00	0.15	0.000	0.006
A2	0.90	1.30	0.035	0.051
b	0.30	0.50	0.012	0.020
c	0.08	0.22	0.003	0.009
D	2.70	3.10	0.106	0.122
E	2.60	3.00	0.102	0.118
E1	1.40	1.80	0.055	0.071
e	0.95 BSC		0.037 BSC	
e1	1.90 BSC		0.075 BSC	
L	0.30	0.60	0.012	0.024
θ	0°	8°	0°	8°

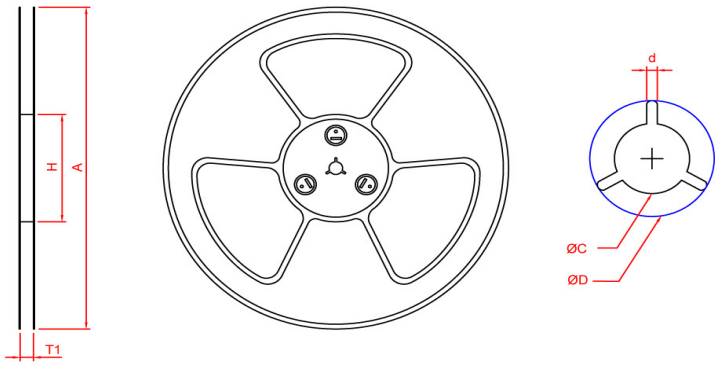
Note: 1. Followed from JEDEC TO-178 AB.

2. Dimension D and E1 do not include mold flash, protrusions or gate burrs. Mold flash, protrusions or gate burrs shall not exceed 10 mil per side

Carrier Tape & Reel Dimensions

SOT-26





Application	A	H	T1	C	d	D	W	E1	F
SOT-26	178.0±2.00	50 MIN.	8.4+2.00 -0.00	13.0+0.50 -0.20	1.5 MIN.	20.2 MIN.	8.0±0.30	1.75±0.10	3.5±0.05
	P0	**P1**	**P2**	**D0**	**D1**	**T**	**A0**	**B0**	**K0**
	4.0±0.10	4.0±0.10	2.0±0.05	1.5+0.10 -0.00	1.0 MIN.	0.6+0.00 -0.40	3.20±0.20	3.10±0.20	1.50±0.20

Application	Carrier Width	Cover Tape Width	Devices Per Reel
SOT -26	8	5.3	3000

Tape and Specification Reel

SOT 26