USB Host Charger Identification

General Description

The SLG55570A is a USB host charger (dedicated charger) identification circuit. The device supports both the latest USB Battery Charging Specification Revision 1.2 including data contact detection and a set resistor bias for Apple* compliant devices as well as legacy USB D+/D- short detection using data line pull-up.

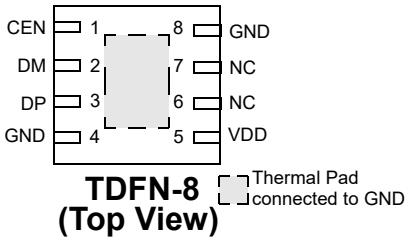
Features

- Low Supply Current
- Automatic Current-Limit Switch Control
- Automatic USB Charger Identification Circuit
- Apple iPad* @ 2.4 A charging current support
- Chinese Telecom Standard YD/T 1591-2009 specification support
- Samsung Galaxy Tab** charge scheme support
- Pb-Free / RoHS Compliant / Halogen-Free
- TDFN-8 Package

Target Applications

- Power bank
- Car charger
- USB universal wall charger

Pin Configuration - SLG55570A

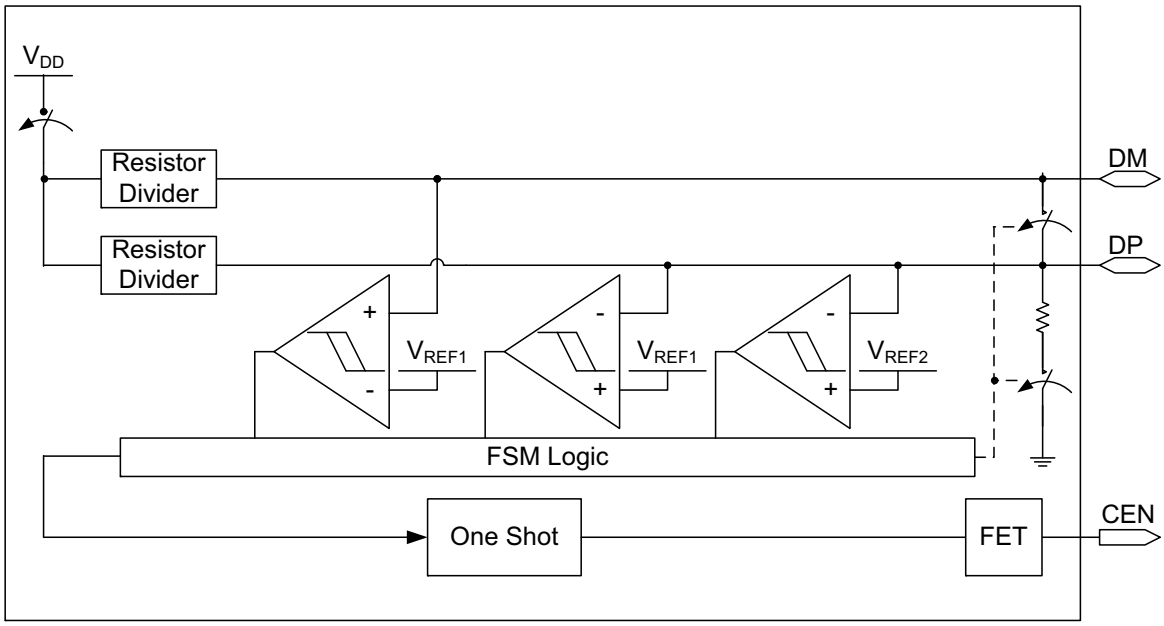


TDFN-8
(Top View)

* Apple iPhone, iPad and iPod are trademarks of Apple Inc., registered in the U.S. and other countries.

** Samsung Galaxy Tab are trademarks of Samsung Electronics, registered in Korea and other countries.

Block Diagram



Pin Description - SLG55570A

Pin #	Pin Name	Type	Pin Description
1	CEN	Output	N-FET Open Drain Output. Current Limit Switch (CLS) Control Output. CEN will be low for 2 seconds (typ). Requires a pull up resistor.
2	DM	Input/Output	USB Connector D-
3	DP	Input/Output	USB Connector D+
4	GND	GND	Ground
5	VDD	PWR	Power Supply. Connect a 0.1µF capacitor between VDD and GND as close as possible to the device.
6	NC	NC	No Connect
7	NC	NC	No Connect
8	GND	GND	Ground
9	Thermal Pad	GND	Ground (Must connect to Ground)

Ordering Information

Part Number	Type
SLG55570AV	TDFN-8
SLG55570AVTR	TDFN-8 - Tape and Reel

Absolute Maximum Ratings

Parameter	Min.	Max.	Unit
Supply Voltage	-0.3	6.0	V
Continuous Current into any terminal	-30	+30	mA
Continuous Power Dissipation	--	954	mW
Operating Temperature Range	-40	85	°C
Junction Temperature		150	°C
Storage Temperature Range	-65	150	°C
Lead Temperature (Soldering, 10s)		260	°C

Note: Stresses greater than those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

Electrical Characteristics - Power Supply

V_{DD} = 4.75 V to 5.25 V, T_A = 25°C (unless specified otherwise)

Parameter	Description	Condition/Note	Min.	Typ.	Max.	Unit
V_{DD}	Power Supply Range		4.75	--	5.25	V
I_{DD}	Supply Current V_{DD} = 5V		--	140	160	µA

Electrical Characteristics - Dynamic Performance

V_{DD} = 4.75 V to 5.25 V, T_A = 25°C (unless specified otherwise)

Parameter	Description	Condition/Note	Min.	Typ.	Max.	Unit
C_{ON}	DP/DM On-Capacitance	f = 240MHz	--‘	4.0	5.5	pF

Electrical Characteristics - Internal Resistors

V_{DD} = 4.75 V to 5.25 V, T_A = 25°C (unless specified otherwise)

Parameter	Description	Condition/Note	Min.	Typ.	Max.	Unit
R_{PD}	DP/DM Short Pull-down		350	500	700	kΩ
RT_{RP}	RP1/RP2 Ratio		0.8544	0.863	0.872	Ratio
R_{RP}	RP1 + RP2 Resistance		69.75	93.0	115.18	kΩ
RT_{RM}	RM1/RM2 Ratio		0.8544	0.863	0.872	Ratio
R_{RM}	RM1 + RM2 Resistance		69.75	93.0	115.18	kΩ

Electrical Characteristics - CEN Output

V_{DD} = 4.75 V to 5.25 V, T_A = 25°C (unless specified otherwise)

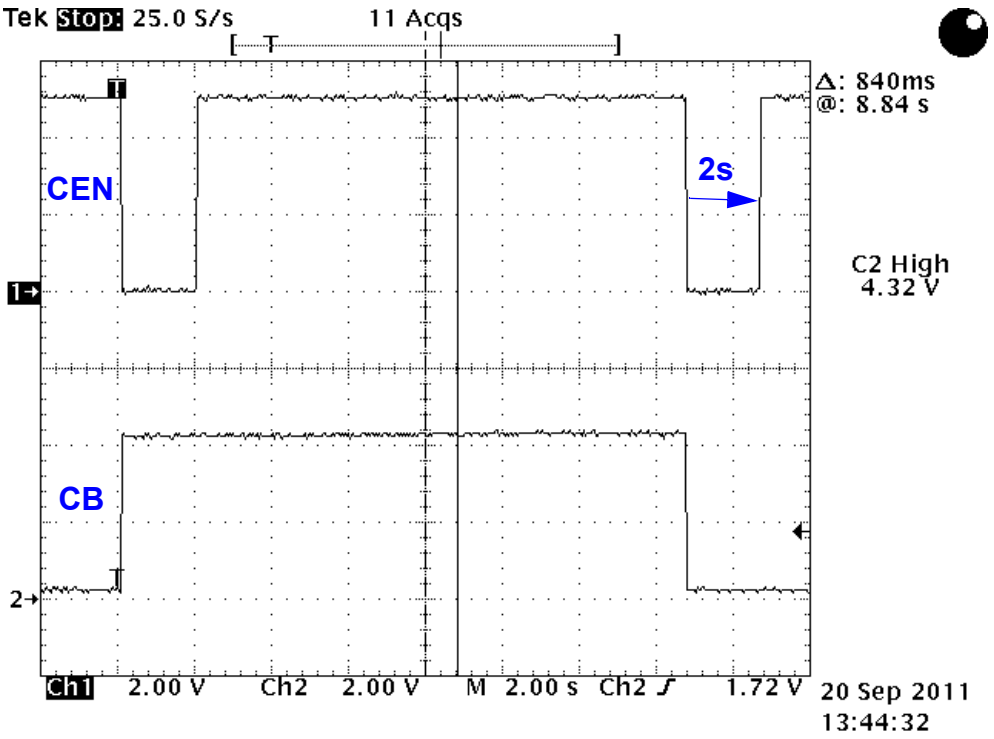
Parameter	Description	Condition/Note	Min.	Typ.	Max.	Unit
T_{VBT}	V_{BUS} Toggle Time		1.5	2.0	2.5	s
V_{OL_CEN}	CEN Output Logic Low Voltage		--	--	0.4	V
I_{OUT_CEN}	CEN Output Leakage Current	V_{DD} = 5.5V V_{CEN} = 5.5V or CEN deasserted	--	--	1	µA

Electrical Characteristics - ESD Protection

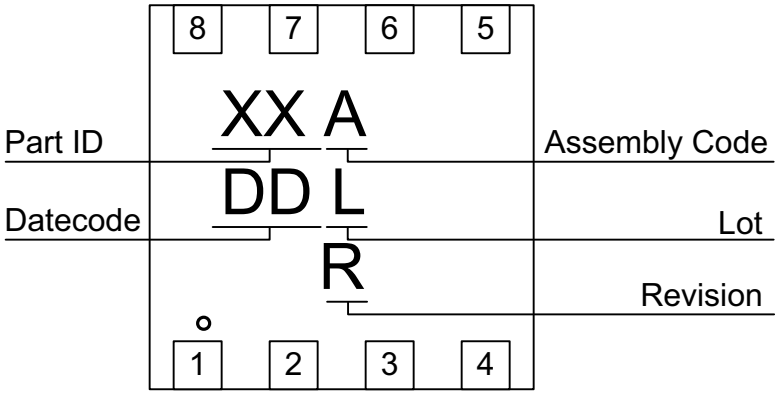
V_{DD} = 4.75 V to 5.25 V, T_A = 25°C (unless specified otherwise)

Parameter	Description	Condition/Note	Min.	Typ.	Max.	Unit
V_{ESD}	ESD Protection Level (DP and DM Only)	Human Body Model	--	±8	--	kV
V_{ESD}	ESD Protection Level (All other pins)	Human Body Model	--	±2	--	kV

CEN Function Waveform



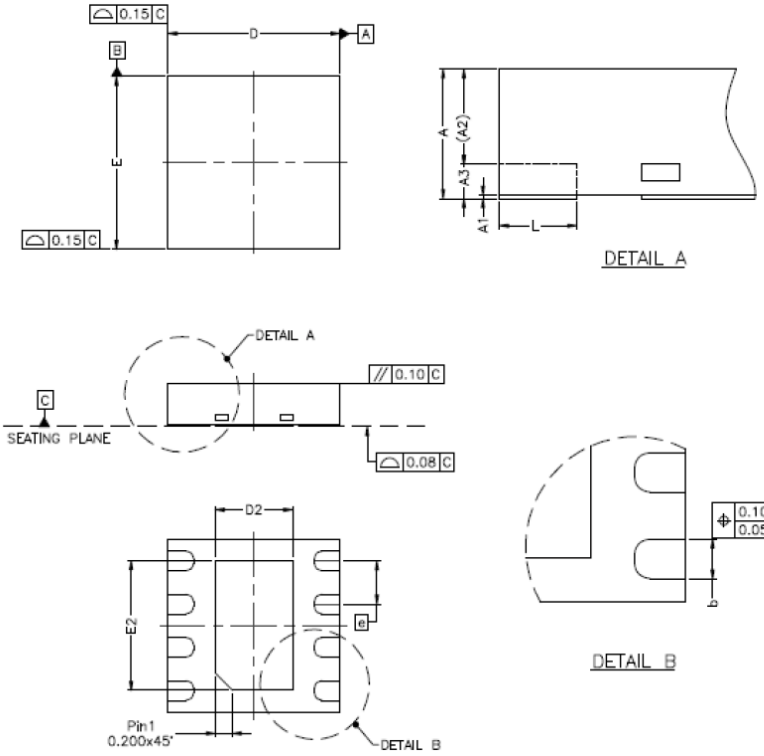
Package Top Marking System Definition



XX – Part ID Field: identifies the specific device configuration
A – Assembly Code Field: Assembly Location of the device.
DD – Date Code Field: Coded date of manufacture
L – Lot Code: Designates Lot #
R – Revision Code: Device Revision

Package Drawing and Dimensions

8 Lead TDFN Package
JEDEC MO-229, Variation WCCD



SYMBOL	DIMENSION (MM)			DIMENSION (MIL)		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.70	0.75	0.80	28	30	31
A1	0.00	0.02	0.05	0	1	2
A2	0	0.55	0.80	0	22	31
A3	–	0.20	–	–	8	–
b	0.18	0.25	0.30	7	10	12
D	1.90	2.00	2.10	74	79	83
D1		–			–	
D2	0.75	0.90	1.05	30	35	41
E	1.90	2.00	2.10	75	79	83
E1		–			–	
E2	1.50	1.65	1.70	53	59	65
e		0.50 BSC			20 BSC	
L	0.25	0.30	0.35	10	12	14

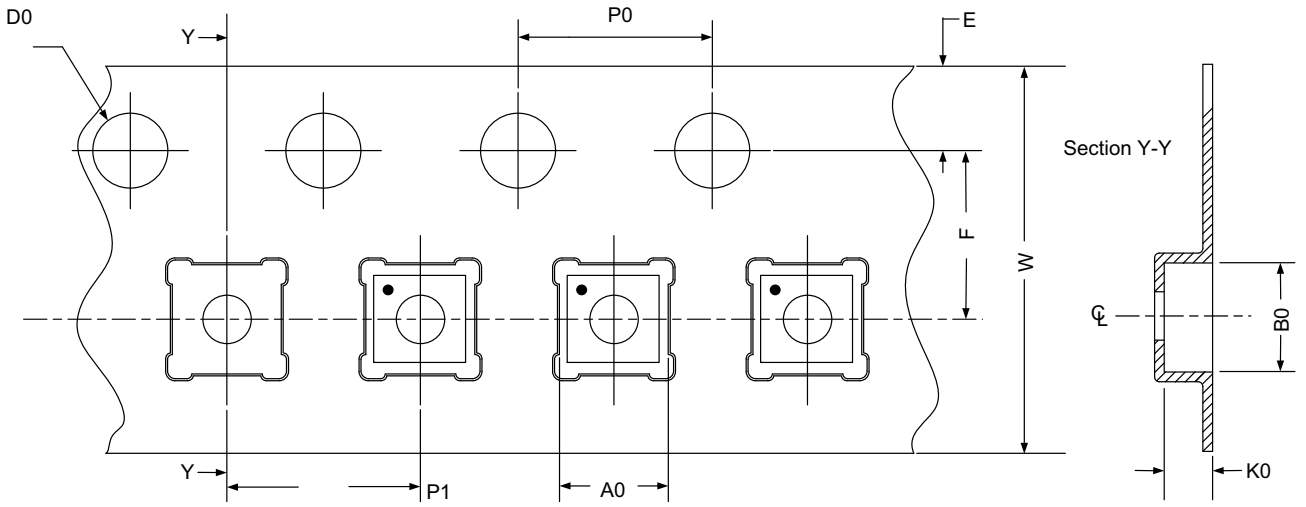
NOTE :
1. REFER TO JEDEC STD: MO–229.
2. DIMENSION "b" APPLIES TO METALLIZED TERMINAL AND IS MEASURED BETWEEN 0.15MM AND 0.30MM FROM THE TERMINAL TIP. IF THE TERMINAL HAS OPTIONAL RADIUS ON THE OTHER END OF THE TERMINAL, THE DIMENSION B SHOULD NOT BE MEASURED IN THAT RADIUS AREA.

Tape and Reel Specifications

Package Type	# of Pins	Nominal Package Size [mm]	Max Units		Reel & Hub Size [mm]	Leader (min)		Trailer (min)		Tape Width [mm]	Part Pitch [mm]
			per Reel	per Box		Pockets	Length [mm]	Pockets	Length [mm]		
TDFN 8L Green	8	2 x 2 x 0.75	3,000	3,000	178 / 60	100	400	100	400	8	4

Carrier Tape Drawing and Dimensions

Package Type	Pocket BTM Length	Pocket BTM Width	Pocket Depth	Index Hole Pitch	Pocket Pitch	Index Hole Diameter	Index Hole to Tape Edge	Index Hole to Pocket Center	Tape Width
	A0	B0	K0	P0	P1	D0	E	F	W
TDFN 8L Green	2.3	2.3	1.05	4	4	1.55	1.75	3.5	8



Refer to EIA-481 specification

Recommended Reflow Soldering Profile

Please see IPC/JEDEC J-STD-020: latest revision for reflow profile based on package volume of 3.00 mm^3 (nominal). More information can be found at www.jedec.org.

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