



## Ultra-small 22.5 mΩ 2.5 A Integrated Power Switch with Reverse Blocking

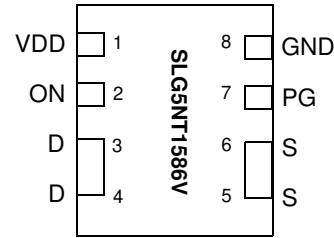
### General Description

The SLG5NT1586V is a 22.5 mΩ 2.5 A single-channel load switch that is able to switch 1 to 5 V power rails. The product is packaged in an ultra-small 1.0 x 1.6 mm package.

### Features

- 1.0 x 1.6 x 0.55 mm STDFN 8L package (2 fused pins for drain and 2 fused pins for source)
- Logic level ON pin capable of supporting 0.85 V CMOS Logic
- 22.5 mΩ RDS<sub>ON</sub> while supporting 2.5 A
- Power Good Output
- Pb-Free / Halogen-Free / RoHS compliant
- Operating Temperature: -40 °C to 85°C
- Operating Voltage: 1.5 V to 5.5 V

### Pin Configuration

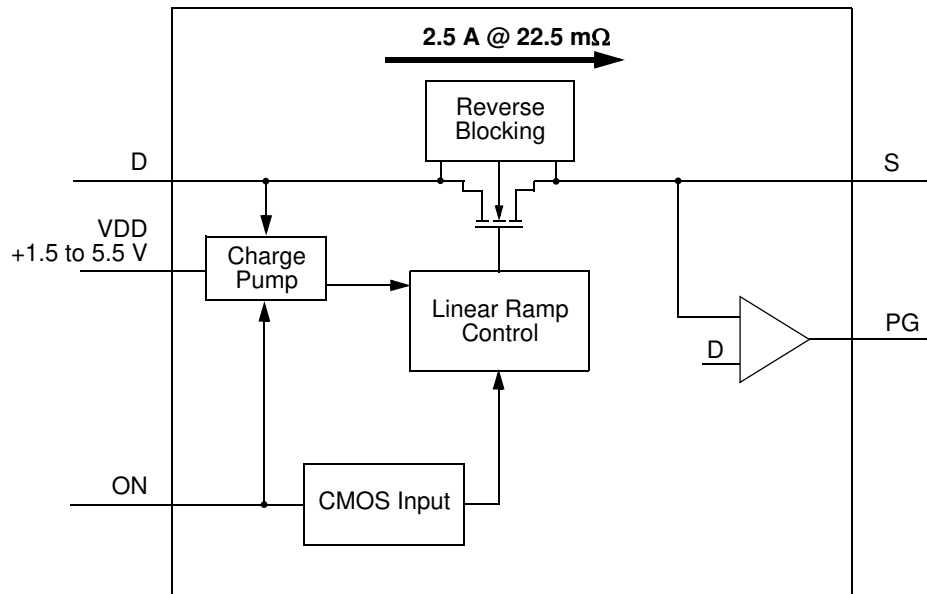


**8-pin STDFN**  
(Top View)

### Applications

- Notebook Power Rail Switching
- Tablet Power Rail Switching
- Smartphone Power Rail Switching

### Block Diagram





### Pin Description

Pin #	Pin Name	Type	Pin Description
1	VDD	PWR	VDD power for load switch control (1.5 V to 5.5 V)
2	ON	Input	Turns MOSFET ON (4 M $\Omega$ pull down resistor) CMOS input with VIL < 0.3 V, VIH > 0.85 V
3	D	MOSFET	Drain of Power MOSFET (fused with pin 4)
4	D	MOSFET	Drain of Power MOSFET (fused with pin 3)
5	S	MOSFET	Source of Power MOSFET (fused with pin 6)
6	S	MOSFET	Source of Power MOSFET (fused with pin 5)
7	PG	Output	Power Good Output. Active High. Pin drives HIGH when V <sub>OUT</sub> > 95% V <sub>IN</sub>
8	GND	GND	Ground

### Ordering Information

Part Number	Type	Production Flow
SLG5NT1586V	STDFN 8L	Industrial, -40 °C to 85 °C
SLG5NT1586VTR	STDFN 8L (Tape and Reel)	Industrial, -40 °C to 85 °C



## Absolute Maximum Ratings

Parameter	Description	Conditions	Min.	Typ.	Max.	Unit
V <sub>DD</sub>	Power Supply		--	--	7	V
T <sub>S</sub>	Storage Temperature		-65	--	150	°C
ESD <sub>HBM</sub>	ESD Protection	Human Body Model	2000	--	--	V
W <sub>DIS</sub>	Package Power Dissipation		--	--	0.4	W
MOSFET IDS <sub>PK</sub>	Peak Current from Drain to Source	For no more than 1 ms with 1% duty cycle	--	--	3.5	A

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

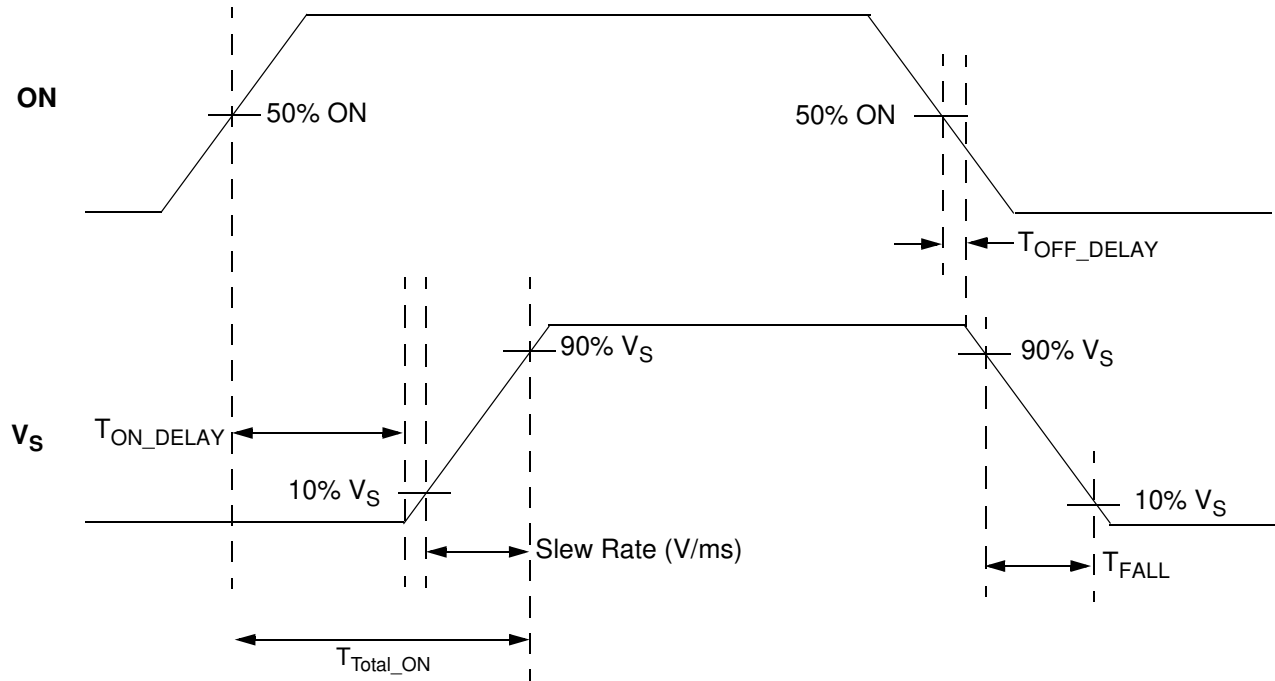
T<sub>A</sub> = -40 °C to 85 °C (unless otherwise stated)

Parameter	Description	Conditions	Min.	Typ.	Max.	Unit
V <sub>DD</sub>	Power Supply Voltage	-40 °C to 85 °C	1.5	--	5.5	V
I <sub>DD</sub>	Power Supply Current (PIN 1)	when OFF	--	--	1	μA
		when ON, No load	--	14	30	μA
RDS <sub>ON</sub>	Static Drain to Source ON Resistance	T <sub>A</sub> 25°C @ 100 mA	--	22.5	25	mΩ
		T <sub>A</sub> 70°C @ 100 mA	--	25.6	30	mΩ
		T <sub>A</sub> 85°C @ 100 mA	--	25.6	30	mΩ
IDS	Operating Current	V <sub>D</sub> = 1.0 V to 5.5 V	--	--	2.5	A
ISD <sub>LKG</sub>	ISD Leakage (Reverse Blocking Enabled)	V <sub>S</sub> = 1.0 V to 5.5 V, V <sub>D</sub> = 0 V, V <sub>DD</sub> = 0 V, @ 25°C	--	0.29	0.50	μA
		V <sub>S</sub> = 1.0 V to 5.5 V, V <sub>D</sub> = 0 V, V <sub>DD</sub> = 0 V, @ 85°C	--	0.85	1.30	μA
		V <sub>S</sub> = 1.0 V to 5.5 V, V <sub>D</sub> = 0 V, V <sub>DD</sub> = 0 V, @ -40°C	--	3.35	5.00	μA
V <sub>D</sub>	Drain Voltage		1.0	--	V <sub>DD</sub>	V
T <sub>ON_Delay</sub>	ON pin Delay Time	50% ON to Ramp Begin	0	300	500	μs
T <sub>Total_ON</sub>	Total Turn On Time	Example: V <sub>DD</sub> = V <sub>D</sub> = 5 V, Source_Cap = 10 μF, R <sub>L</sub> = 20 Ω	2.1	2.6	3.1	ms
T <sub>SLEWRATE</sub>	Slew Rate	Example: V <sub>DD</sub> = V <sub>D</sub> = 5 V, Source_Cap = 10 μF, R <sub>L</sub> = 20 Ω	1.4	1.95	2.2	V/ms
CAP <sub>SOURCE</sub>	Source Cap	Source to GND	--	--	500	μF
ON_V <sub>IH</sub>	High Input Voltage on ON pin		0.85	--	V <sub>DD</sub>	V
ON_V <sub>IL</sub>	Low Input Voltage on ON pin		-0.3	0	0.3	V
V <sub>OL</sub>	High Output Voltage on PG pin	V <sub>DD</sub> = 5 V, I <sub>OL</sub> = -0.1 mA	--	--	0.4	V
V <sub>OH</sub>	High Output Voltage on PG pin	V <sub>DD</sub> = 5 V, I <sub>OH</sub> = 0.1 mA	V <sub>DD</sub> -0.4	--	V <sub>DD</sub>	V
THERM <sub>ON</sub>	Thermal shutoff turn-on temperature		--	125	--	°C
THERM <sub>OFF</sub>	Thermal shutoff turn-off temperature		--	100	--	°C
THERM <sub>TIME</sub>	Thermal shutoff time		--	--	1	ms
T <sub>OFF_Delay</sub>	OFF Delay Time	50% ON to V <sub>S</sub> Fall, V <sub>DD</sub> = V <sub>D</sub> = 5 V	--	8	--	μs
PG <sub>TRIGGER</sub>	Power Good Trigger Level	V <sub>OUT</sub> % of V <sub>IN</sub>	--	92	--	%

Notes:  
1. Refer to table for configuration details.



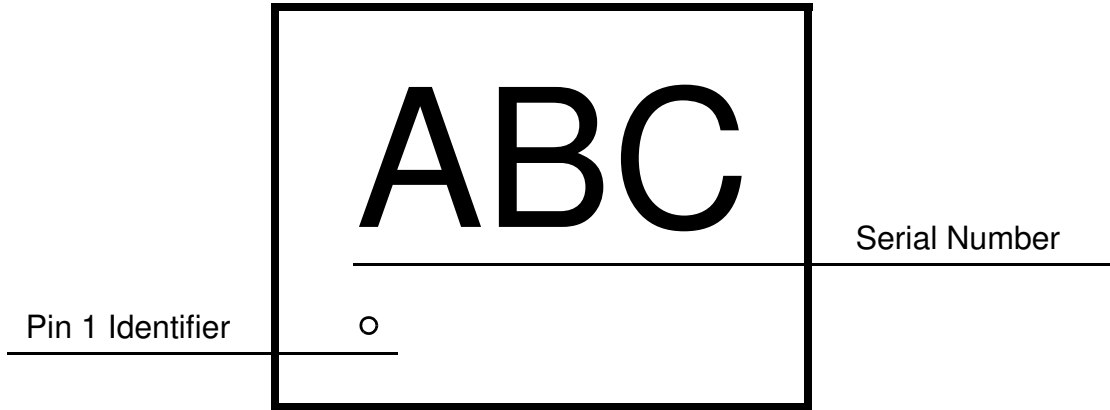
## $T_{Total\_ON}$ , $T_{ON\_Delay}$ and Slew Rate Measurement





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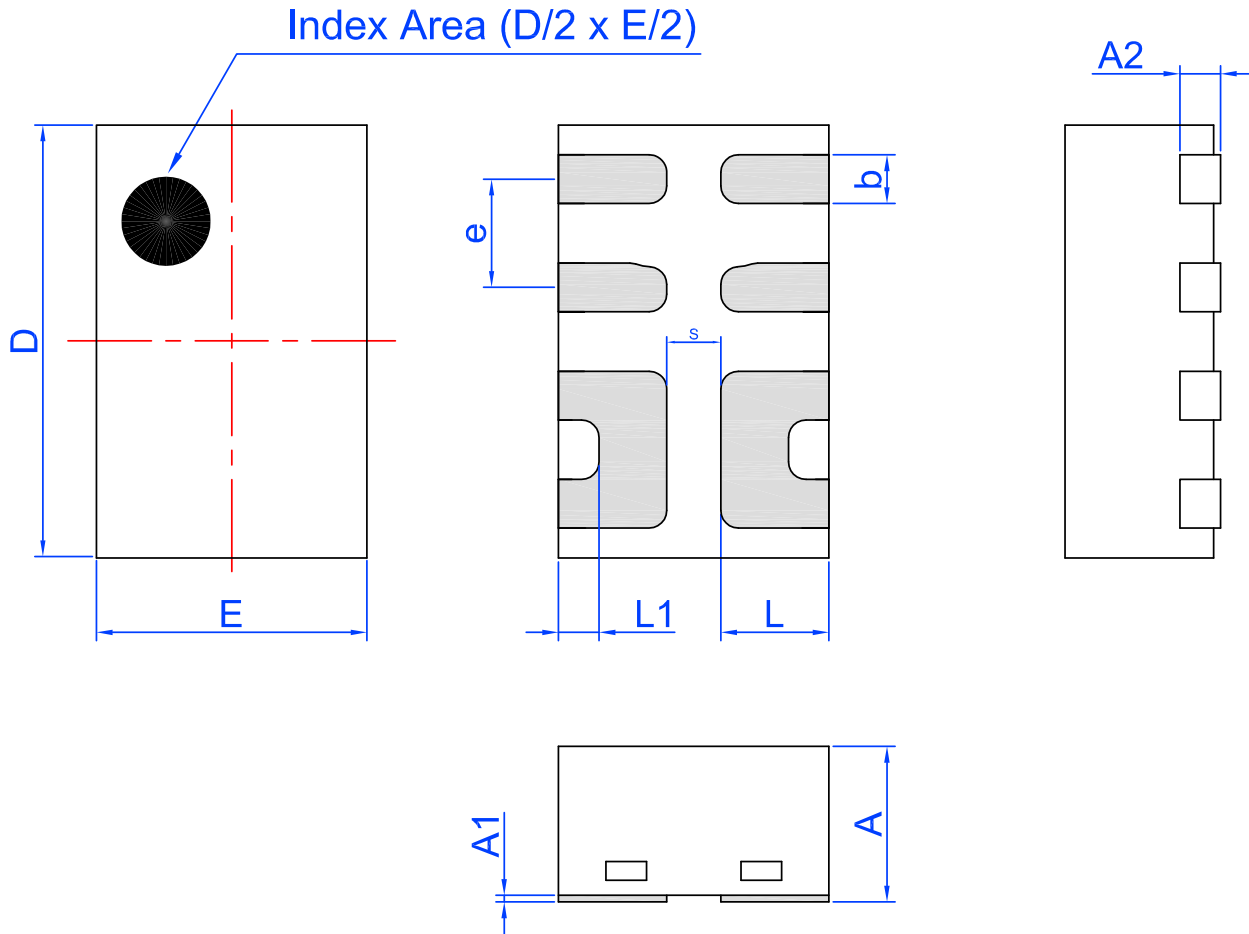
Package Top Marking System Definition





### Package Drawing and Dimensions

8 Lead STDFN Package 1.0 x 1.6 mm (Fused Lead)  
IC Net Weight: 0.0025 g



Unit: mm

Symbol	Min	Nom.	Max	Symbol	Min	Nom.	Max
A	0.50	0.55	0.60	D	1.55	1.60	1.65
A1	0.005	-	0.060	E	0.95	1.00	1.05
A2	0.10	0.15	0.20	L	0.35	0.40	0.45
b	0.13	0.18	0.23	L1	0.10	0.15	0.20
e	0.40 BSC			S	0.2 REF		

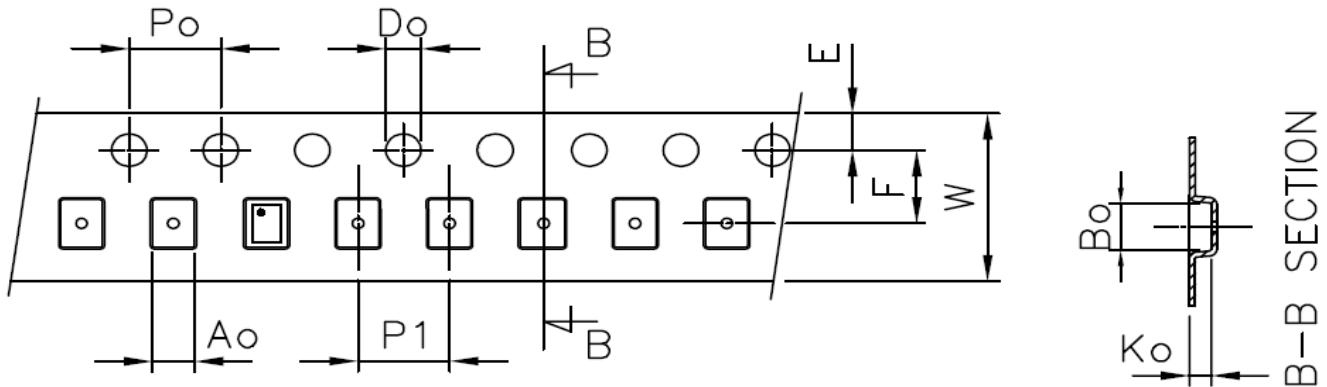


**Tape and Reel Specifications**

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]		
STDFN 8L 1x1.6mm 0.4P FC Green	8	1.0 x 1.6 x 0.55	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
STDFN 8L 1x1.6mm 0.4P FC Green	1.12	1.72	0.7	4	4	1.55	1.75	3.5	8



**Recommended Reflow Soldering Profile**

Please see IPC/JEDEC J-STD-020: latest revision for reflow profile based on package volume of 0.88 mm<sup>3</sup> (nominal). More information can be found at [www.jedec.org](http://www.jedec.org).



**Revision History**

Date	Version	Change
03/01/2016	1.00	Production Release