



Over Voltage and Over Current Protection IC

General Description

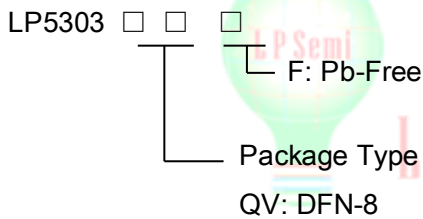
The LP5303 is an Over-Voltage-Protection (OVP) and programmable Over-Current-Protection (OCP) device. The device will switch off internal MOSFET to disconnect VIN to VOUT to protect load when any of input voltage, input current over the threshold. The Over temperature protection (OTP) function monitors chip temperature to protect the device.

The LP5303 is available in DFN-8 package. Standard products are Pb-free and Halogen-free.

Features

- ◆ Input Voltage Range: 3.5V to 36V
- ◆ Typical Output Power on Time: 9ms
- ◆ OVP Threshold: 6.1V
- ◆ OVP Threshold Time Less Than 1 μ s
- ◆ Current Limit up to 3A
- ◆ Low R_{DS(ON)} Internal Switches:130m Ω @ 5V /1A
- ◆ Output Discharge
- ◆ Thermal Fault Protection
- ◆ DFN-8 2x3mm Package
- ◆ RoHS Compliant and 100% Lead (Pb)-Free

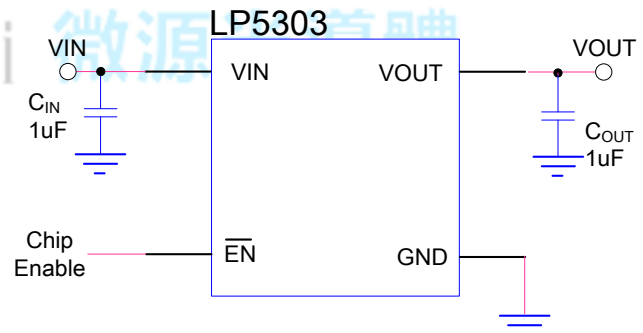
Order Information



Applications

- ✧ GPS
- ✧ PMP
- ✧ PAD
- ✧ MID
- ✧ Digital cameras, Digital Videos

Typical Application Circuit

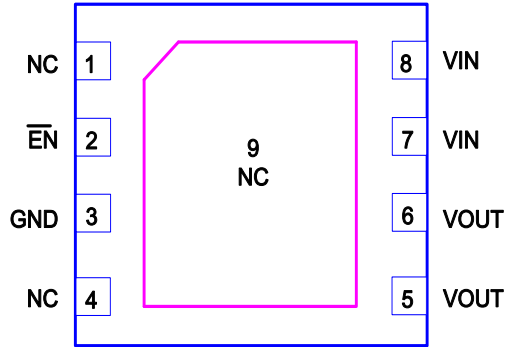


Marking Information

Device	Marking	Package	Shipping
LP5303QVF	LPS LP5303 YWX	DFN-8	4K/REEL
Marking indication: Y:Production year W:Production week X:Production batch			



Functional Pin Description

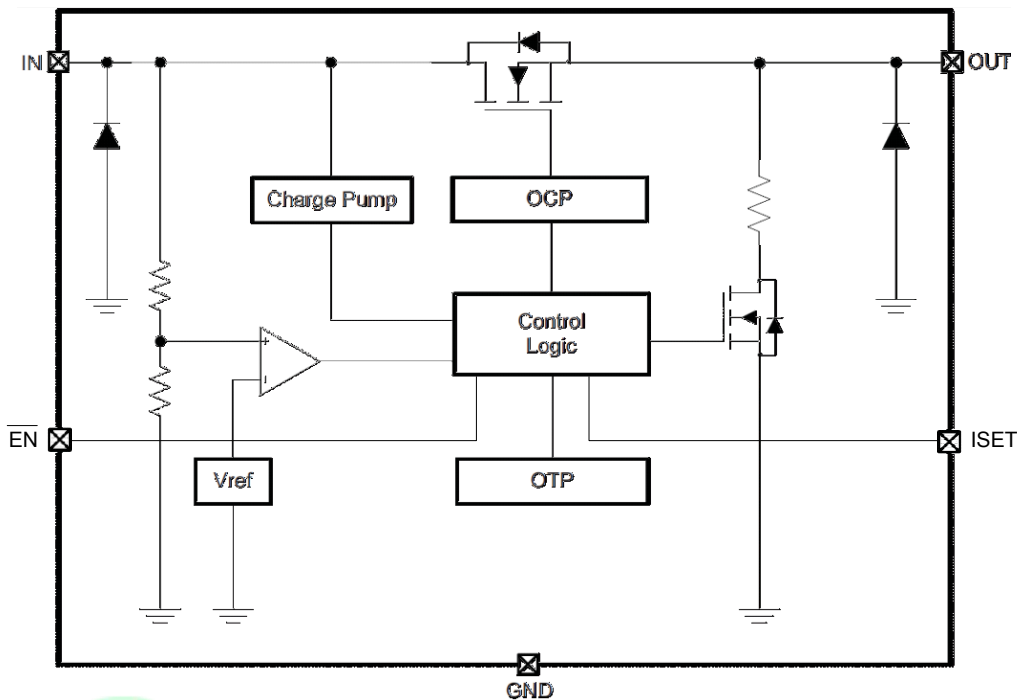


Pin Description

PIN	Name	Description
1,4	NC	No connector. These pin must be floating without connecting to GND or HIGH voltage.
2	$\overline{\text{EN}}$	Chip enable pin. Active low.
3,PAD	GND	Ground.
5,6	VOUT	Output pin.
7,8	VIN	Input pin. A 1uF low ESR ceramic capacitor or larger must be connected as close as to this pin. It is recommended to use 50V capacitor or according to application.



Function Diagram



Absolute Maximum Ratings ^{Note 1}

- ◇ Input Voltage to GND ----- 36V
- ◇ Output Voltage to GND ----- 6.5V
- ◇ Other Pin to GND ----- 6V
- ◇ Maximum Junction Temperature ----- 150°C
- ◇ Operating Ambient Temperature Range (T_A) ----- -40°C to 85°C
- ◇ Storage Temperature ----- -65°C to 165°C
- ◇ Maximum Soldering Temperature (at leads, 10 sec) ----- 260°C

Note 1. Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Thermal Information

- ◇ Maximum Power Dissipation (DFN-8, P_D, T_A=25°C) ----- 1.2W
- ◇ Thermal Resistance (DFN-8, θ_{JA}) ----- 80°C/W

ESD Susceptibility

- ◇ HBM(Human Body Mode) ----- 2KV
- ◇ MM(Machine Mode) ----- 200V



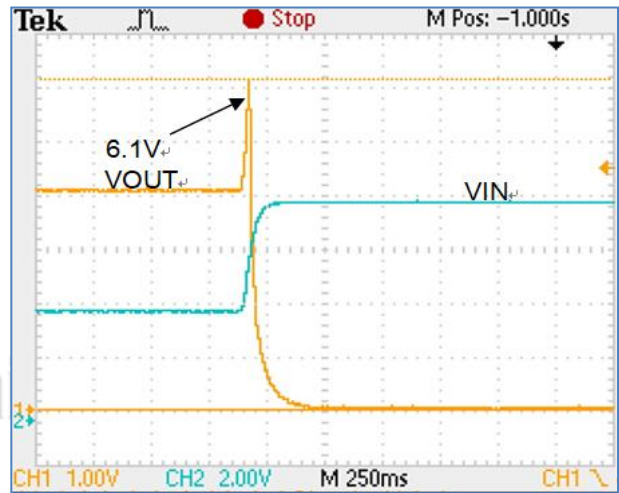
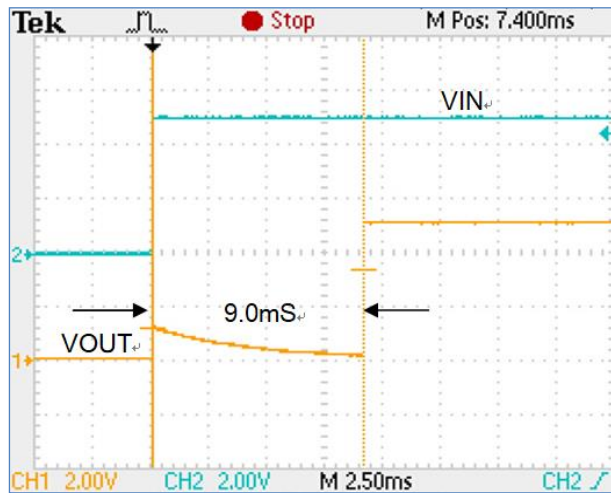
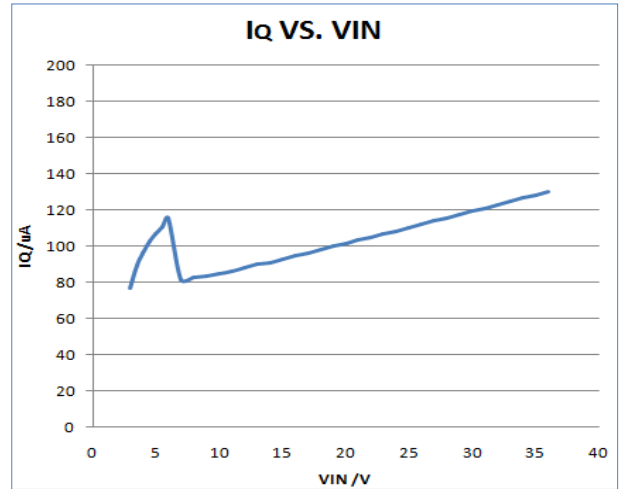
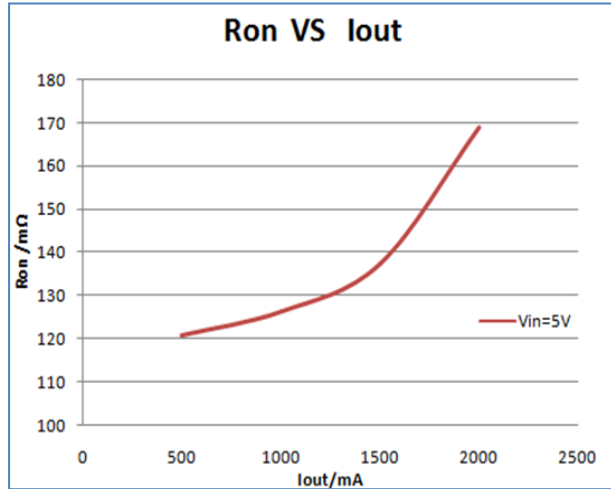
Electrical Characteristics

$V_{IN}=5V$, $T_A=25^{\circ}C$, unless otherwise noted

Symbol	Parameter	Condition	Min	Typ	Max	Units
DC characteristics and Power-ON-Reset						
V_{IN}	Input Voltage		3.5		36	V
I_Q	Input quiescent current	$V_{IN}=5V$		110		μA
R_{ON}	IN-to-OUT ON resistance	$V_{IN}=5V, I_{OUT}=1A$		130		m Ω
$R_{DISCHARGE}$	Output discharge resistance			4.3		k Ω
UVLO	Under voltage lock out threshold	V_{IN} increasing from 0~5V	2.6	2.8	3	V
$V_{HYS-UVLO}$	Under voltage lock out hysteresis	V_{IN} decreasing from 5~0V		500		mV
T_{ON}	Output power-on time	$V_{IN}=0 \rightarrow 5V$ to output ON		9		mS
Input Over-Voltage-Protection (OVP)						
V_{OVP}	OVP threshold	V_{IN} increasing from 5~7V	5.8	6.1	6.4	V
$V_{HYS-OVP}$	OVP hysteresis	V_{IN} decreasing from 7~5V		150		mV
T_{OVP}	OVP active time	$V_{IN}=5 \rightarrow 10V$			1	μs
$T_{ON(OVP)}$	OVP recovery time	$V_{IN}=10 \rightarrow 5V$ to output ON		9		ms
Input Over-Current-Protection (OCP)						
$I_{OCLIMIT}$	OCP LIMIT Current			3		A
T_{OCP}	OCP active time			30		ms
$T_{ON(OCP)}$	OCP recovery time			1		s
Over-Temperature-Protection (OTP)						
T_{OTP}	OTP threshold			150		$^{\circ}C$
T_{OTP_HYS}	OTP hysteresis			20		$^{\circ}C$

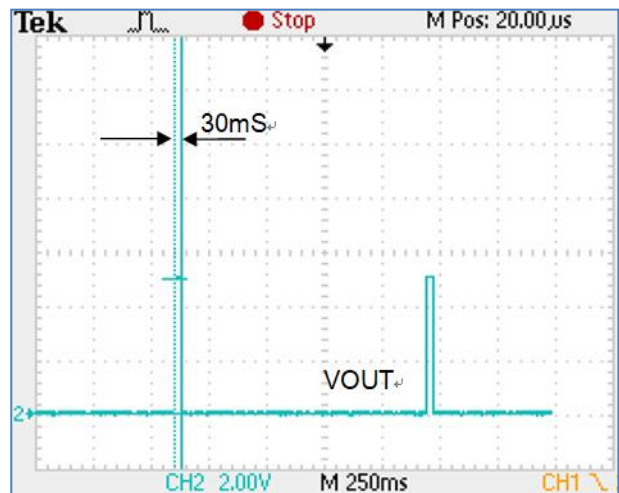
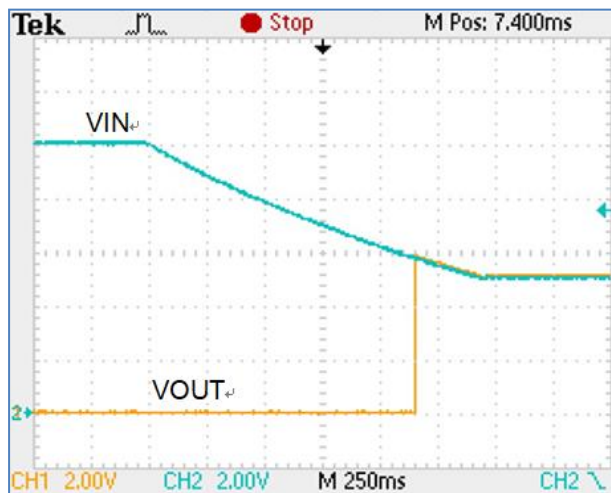


Typical Operating Characteristics



Turn on with $V_{EN}=0V$

OVP waveform



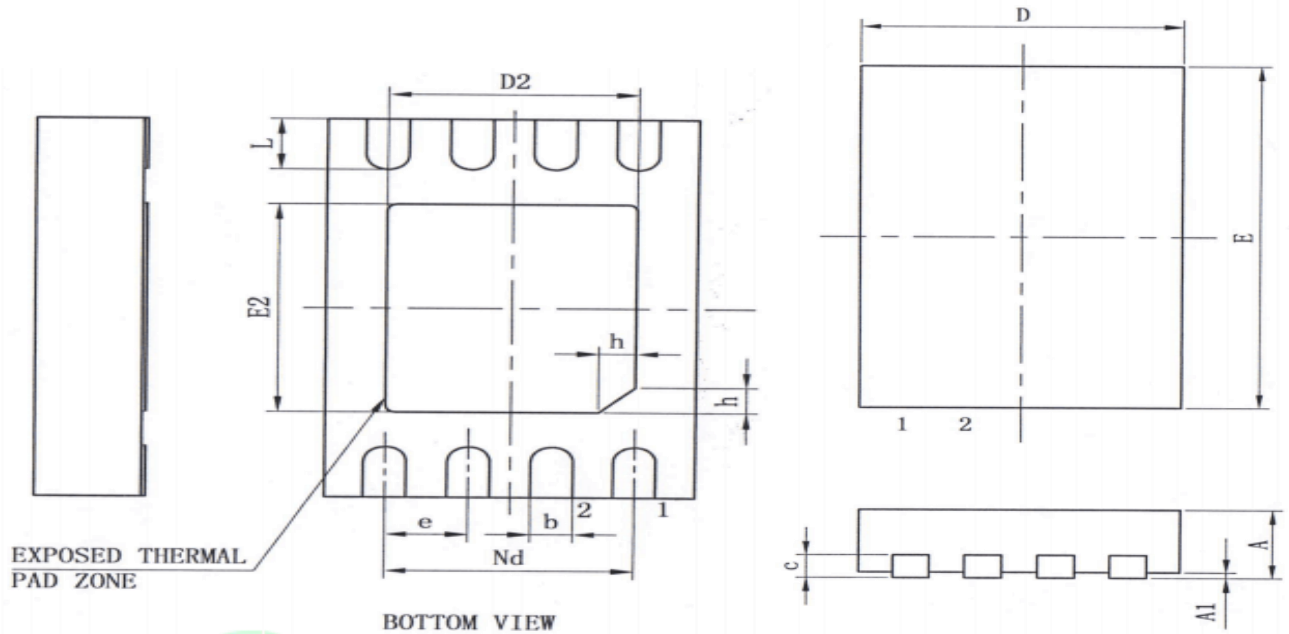
V_{IN} falling waveform

OCP detection time



Packaging Information

DFN-8



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	—	0.02	0.05
b	0.18	0.25	0.30
c	0.18	0.20	0.25
D	1.90	2.00	2.10
D2	1.40	1.50	1.60
e	0.50BSC		
Nd	1.50BSC		
E	2.90	3.00	3.10
E2	1.50	1.60	1.70
L	0.30	0.40	0.50
h	0.20	0.25	0.30