

TPU2013CSP4-1

Low Quiescent current Load Switch

WWW.TECHPUBLIC.COM

Features

- Wide Supply Voltage Range: 1.5V to 5.5V
- Quiescent current :290nA @ Typ
- Standby current : 70nA @ Typ
- Maximum Output current : 2A
- Enable Active High
- Typical Rdson 38mΩ @4.2V
- Thermal Shutdown Protection
- Current Limiting Protection
- Hot Plug-In Application(Soft start)
- Reverse Current Flow Blocking (no body diode)
- RoHS and Halogen free compliance
- ESD Protection: 2kV HBM, 200V MM
- Package CSP-4L

Applications

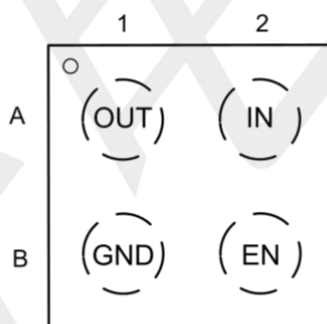
- Notebook and Desktop Computers
- High-Side Power Protection Switches
- Consumer Electronics
- Telecom Systems
- Digital TV
- USB Device Power Switch
- Motherboard USB Power Switch

General Description

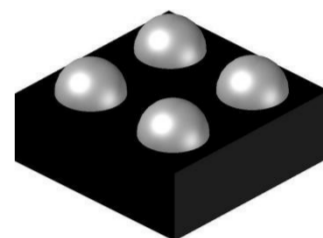
The is a single channel load switch with ultra-low on resistance MOSFET. It is designed for load switching applications with ultra-low quiescent current and ultra-low standby current .The device is controlled by external logic pin, allowing optimization of battery life, and portable device autonomy.

The contains a P-channel MOSFET that can operate over an input voltage range of 1.2V to 5.5V and can support a maximum continuous current of 2A.

The are available in a small 1 x 1mm CSP-4L Package. Standard products are Pb-free and Halogen-free.



Pin Configuration (Top View)



CSP- 4L

Pin Configurations

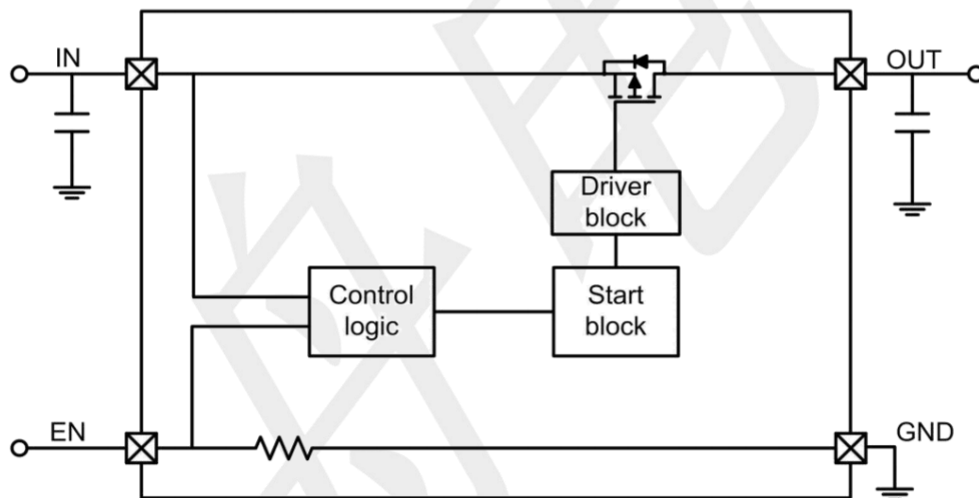
Pin Number	Pin Name	Pin Function
A1	VOUT	Output Voltage Pin.
A2	VIN	Power Supply Input. Connect this pin to external DC supply.
B1	GND	Ground.
B2	EN	Enable (Active high)

Absolute Maximum Ratings

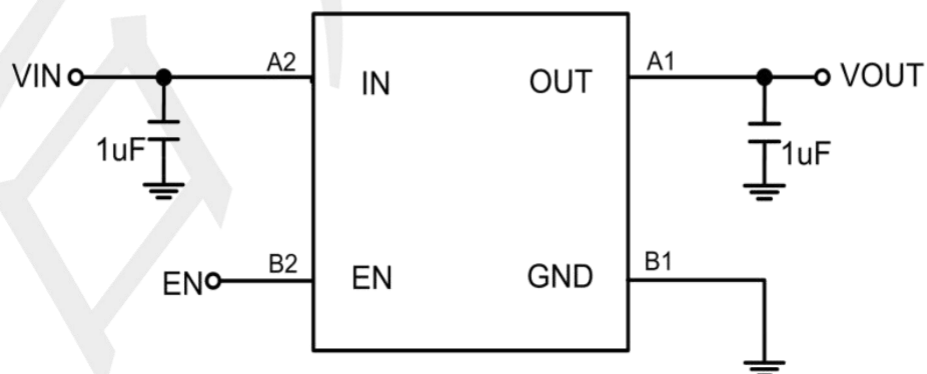
over operating free-air temperature range (unless otherwise noted)

		MIN	MAX	UNIT
VIN	Continuous input voltage range	-0.3	6.5	V
VOU	Output voltage range	-0.3	6.5	
EN	EN pin voltage range	-0.3	6.5	
ESD HBM	Human Body ESD Protection	2000		
ESD MM	Machine Model ESD Protection	200		
Temperature	Junction Temperature , TJ	-40	125	°C
	Storage, Tstg	-65	150	
LT	Lead Temperature	260		

BLOCK DIAGRAM



Typical Application Circuit



TPU2013CSP4-1

Low Quiescent current Load Switch

WWW.TECHPUBLIC.COM

Recommend Operating Ratings

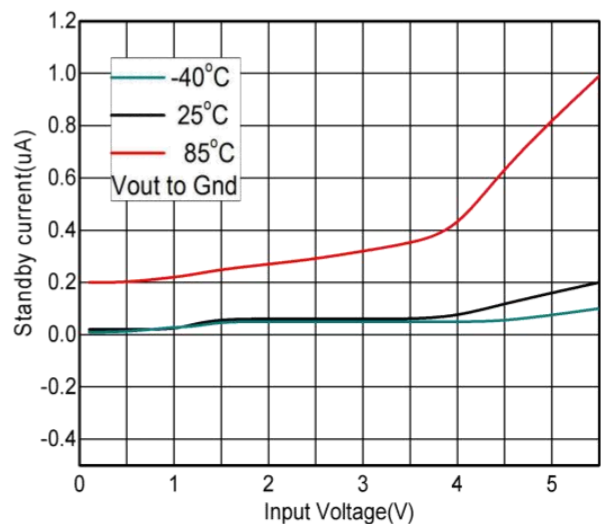
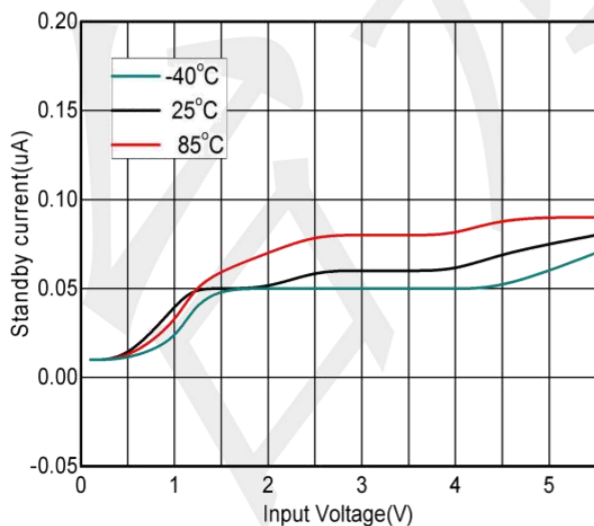
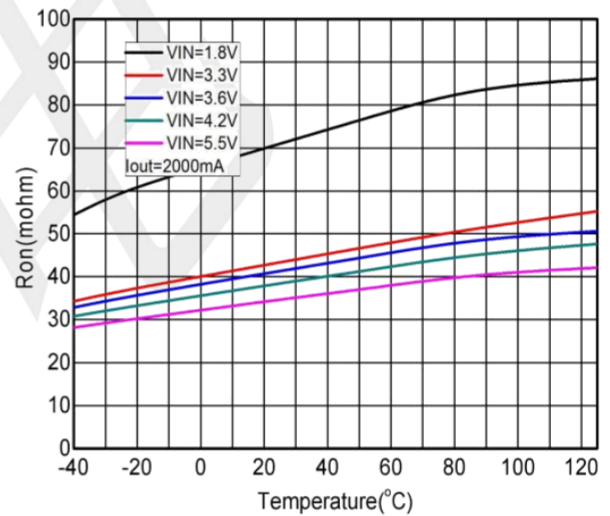
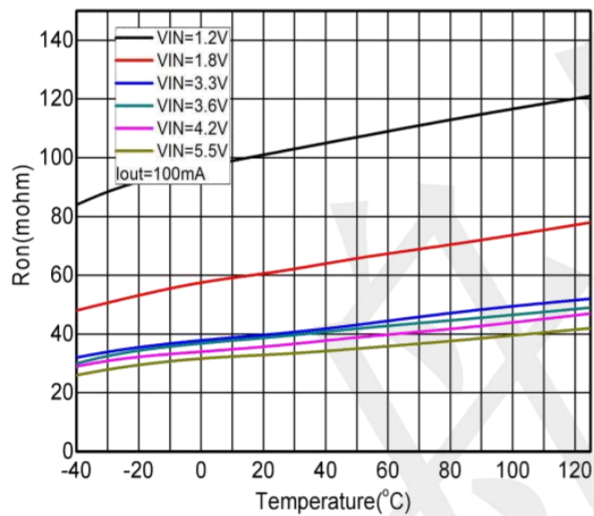
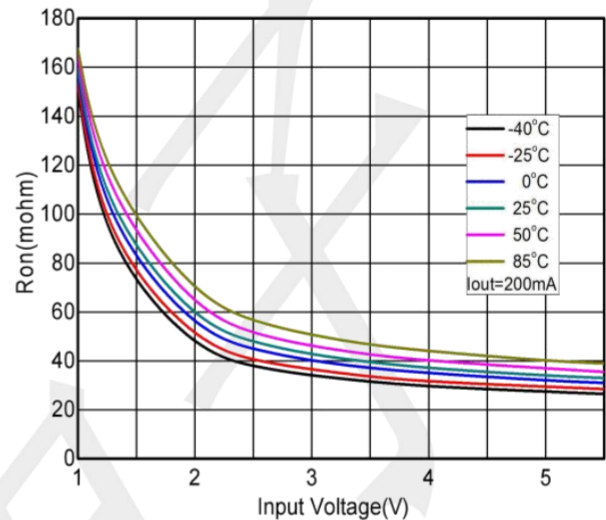
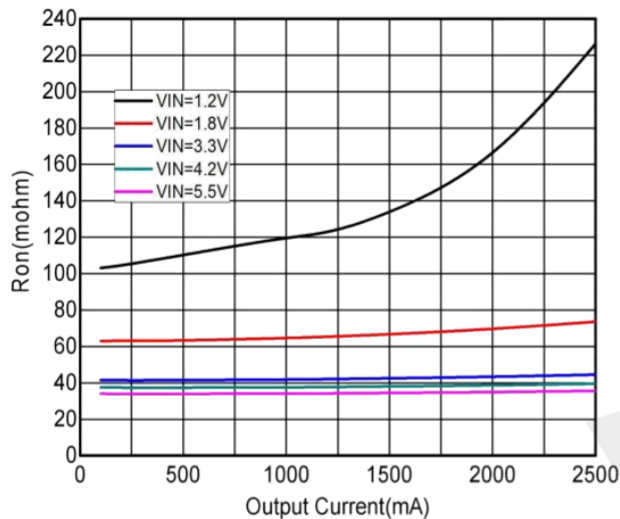
Parameter	Value	Unit
Operating Power voltage	1.5~5.5	V
Enable Voltage	0~5.5	V
Maximum DC current	2	A
Operating ambient temperature	-40~85	°C
Operating Junction temperature	-40~125	°C
Decoupling input capacitor	1	uF
Decoupling output capacitor	1	uF
Power Dissipation Rating(25 °C,WLCSP package)	0.5	W
Power Dissipation Rating(85 °C,WLCSP package)	0.2	W
Thermal Resistance, R _{θJA} (CSP-4L)	100	°C/W

Electrical Characteristics

(Ta=25°C, V_{IN}=5V, C_{IN}=C_{OUT}=1μF, unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Input Voltage	V _{IN}		--	--	5.5	V
Static drain-source on-state resistance	R _{DS(on)}	V _{IN} =5.5, I _{OUT} =200mA	--	34	42	mΩ
		V _{IN} =4.2, I _{OUT} =200mA	--	38	47	
		V _{IN} =3.3, I _{OUT} =200mA	--	42	52	
		V _{IN} =1.8, I _{OUT} =200mA	--	62	88	
		V _{IN} =1.2, I _{OUT} =200mA	--	104	250	
EN logic high voltage	V _{ENH}		0.9	--	--	V
EN logic low voltage	V _{ENL}		--	--	0.5	V
EN pull down resistor	R _{PD}		--	8	--	MΩ
Standby current	I _{STD}	EN=Low, No load	--	70	--	nA
Quiescent current	I _Q	EN=High, No load	--	290	--	nA
Enable time	T _{EN}	RL=25ohm	--	35	--	μs
Output rise time	T _R	RL=25ohm	--	25	--	μs
ON time(T _{EN} +T _R)	T _{ON}	RL=25ohm	--	60	--	μs
Output fall time	T _F	RL=25ohm	--	58	--	μs

Typical characteristics



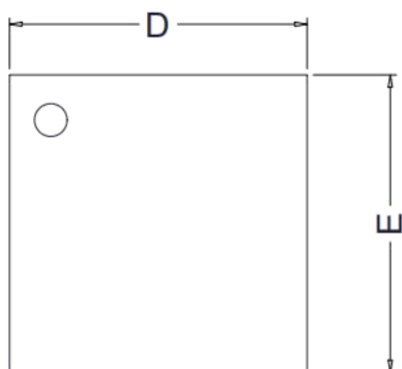
TPU2013CSP4-1

Low Quiescent current Load Switch

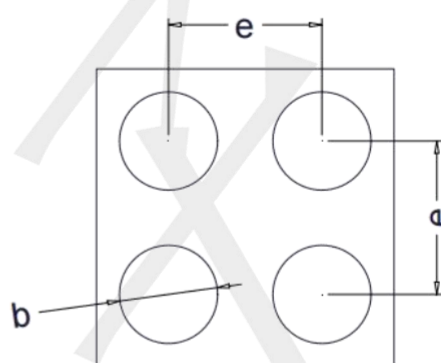
WWW.TECHPUBLIC.COM

Package information

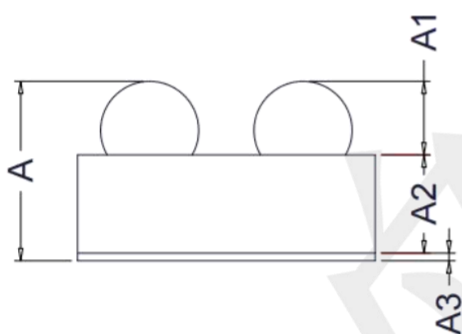
CSP-4L



TOP VIEW



BOTTOM VIEW



SIDE VIEW

Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.55	0.58	0.62
A1	0.22	0.24	0.26
A2	0.30	0.32	0.34
A3	0.02		0.03
D	0.94	0.97	1.00
E	0.94	0.97	1.00
e	0.50BSC		
b	0.30	0.32	0.34