

WL2810

Low noise, High PSRR, High speed, CMOS LDO

Descriptions

The WL2810 series is a high accuracy, low noise, high speed, low dropout CMOS Linear regulator with high ripple rejection. The devices offer a new level of cost effective performance in cellular phones, laptop and notebook computers, and other portable devices.

The WL2810 has the fold-back maximum output current which depends on the output voltage. So the current limit functions both as a short circuit protection and as an output current limiter.

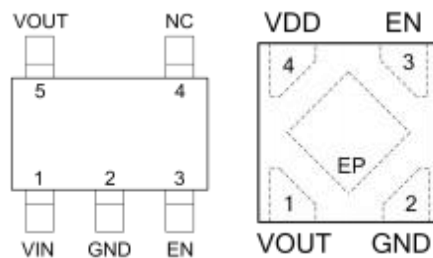
The WL2810 regulators are available in standard SOT-353 package and DFN1x1-4L Package. Standard products are Pb-free and Halogen-free.



SOT-353



DFN1X1-4L



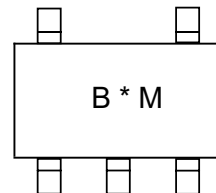
Pin Configuration (Top View)

Features

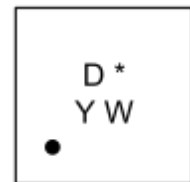
- Input voltage : 2.2V~5.5V
- Output range : 1.0V~3.3V
- Output current : 300mA
- PSRR : 70dB @ 217Hz
- Dropout voltage : 250mV @ I_{OUT}=300mA
- Quiescent current : 42 μA Typ.
- Shut-down current : < 1 μA
- Recommend capacitor : 1uF

Applications

- MP3/MP4 Players
- Cellphones, radiophone, digital cameras
- Bluetooth, wireless handsets
- Others portable electronics device



B : Package Code
***** : Voltage Code
M : Month(A~L)



D : Package Code
***** : Voltage Code
Y : Year Code
W : Week Code

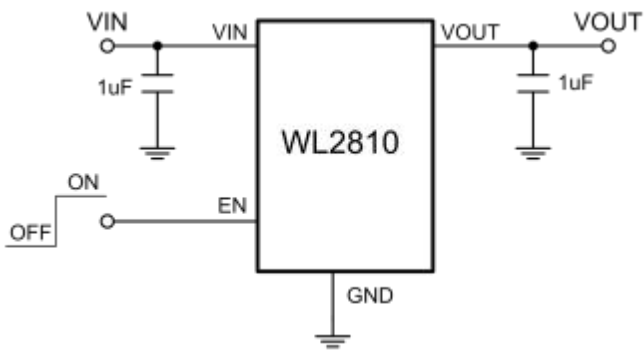
For detail marking information, please see page 10.

Marking

Order Information

For detail order information, please see page 10.

Typical Application



Pin Description

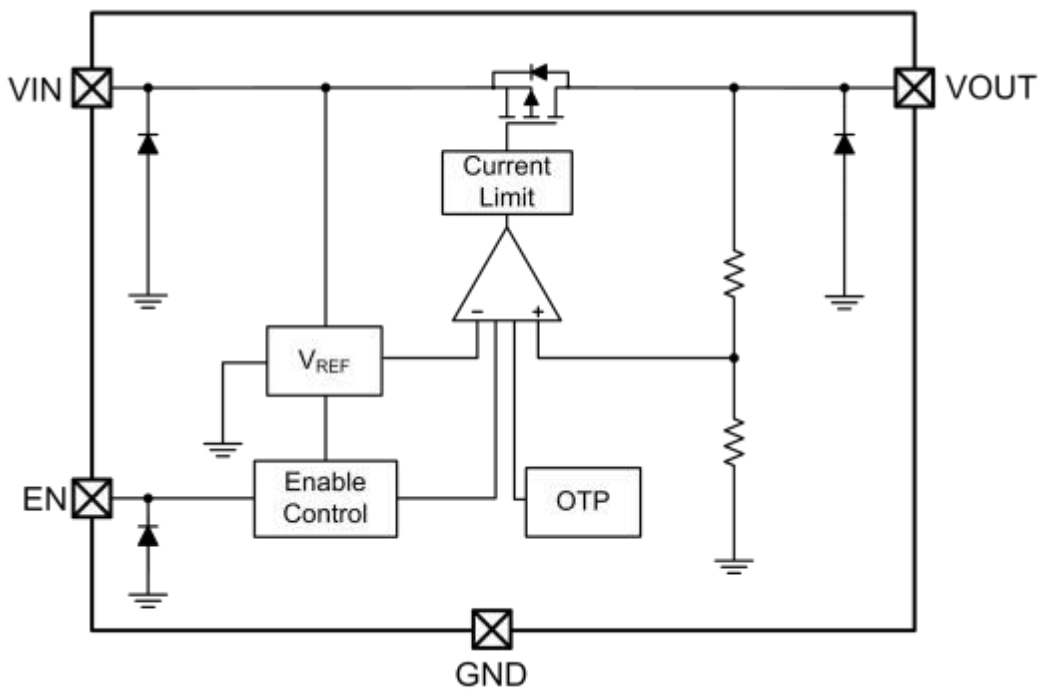
SOT-353

PIN	Symbol	Description
1	VIN	Input
2	GND	Ground
3	EN	Enable (Active high)
4	NC	Not connected
5	VOUT	Output

DFN1X1-4L

PIN	Symbol	Description
1	VOUT	Output
2	GND	Ground
3	EN	Enable (Active high)
4	VIN	Input
EP		GND level, this pin must connect to GND.

Block Diagram



Absolute Maximum Ratings

Parameter	Value	Unit	
Power Dissipation, $P_D@T_A=25\text{C}$	400	mW	
V_{IN} Range	-0.3~6.5	V	
V_{EN} Range	-0.3 ~ V_{IN}	V	
V_{OUT} Range	-0.3 ~ V_{IN}	V	
I_{OUT}	400	mA	
Lead Temperature Range	260	°C	
Storage Temperature Range	-55 ~ 150	°C	
Operating Junction Temperature Range	150	°C	
ESD Ratings	HBM	8000	V
	MM	400	V

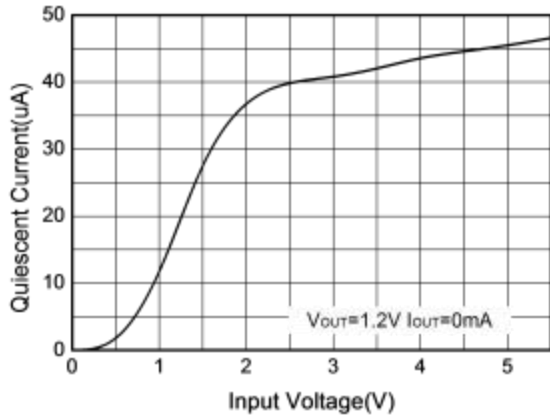
Recommend Operating Ratings

Parameter	Value	Unit
Operating Supply voltage	2.2~5.5	V
Operating Temperature Range	-40~85	°C
Thermal Resistance, $R_{\theta JA}$ (SOT-353)	250	°C/W
Thermal Resistance, $R_{\theta JA}$ (DFN1x1-4L)	250	°C/W

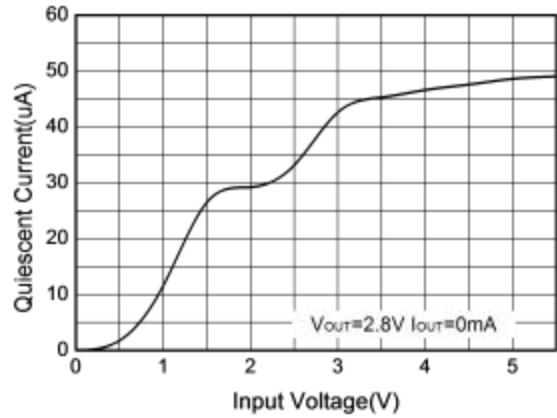
Electronics Characteristics (Ta=25°C, VIN=VOUT+1V, CIN=COUT=1uF, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output Voltage	V _{OUT}	V _{OUT} ≤ 1.5V, V _{IN} =2.7V, I _{OUT} =1mA	0.97	V _{OUT}	1.03	V
		V _{OUT} > 1.5V, I _{OUT} =1mA	0.98	V _{OUT}	1.02	
Current Limit	I _{LIM}	V _{EN} =V _{IN}	300			mA
Dropout Voltage	V _{DROP}	V _{OUT} =3.3V, I _{OUT} =300mA		220	330	mV
		V _{OUT} =3.0V, I _{OUT} =300mA		240	360	
		V _{OUT} =2.8V, I _{OUT} =300mA		250	375	
		V _{OUT} =2.5V, I _{OUT} =300mA		280	420	
		V _{OUT} =1.8V, I _{OUT} =300mA		400	600	
		V _{OUT} ≤ 1.5V, I _{OUT} =300mA	V _{in-min} =2.2V			
Line Regulation	ΔV _{LINE}	V _{IN} =2.7~5.5V, I _{OUT} =1mA		0.01	0.1	%/V
Load Regulation	ΔV _{Load}	V _{OUT} =2.8V, I _{OUT} =1~300mA		10	30	mV
Quiescent Current	I _Q	V _{OUT} =2.8V, I _{OUT} =0		42	70	μA
Short Current	I _{SHORT}	V _{EN} =V _{IN} , V _{OUT} Short to GND with 1Ω		80		mA
Shut-down Current	I _{SHDN}	V _{EN} =0V			1.0	μA
Power Supply Rejection Rate	PSRR	V _{IN} =(V _{OUT} +1V) _{DC} +0.5V _{P-P} F=217Hz, I _{OUT} =10mA		70		dB
		V _{IN} =(V _{OUT} +1V) _{DC} +0.5V _{P-P} F=10KHz, I _{OUT} =10mA		60		
EN logic high voltage	V _{ENH}	V _{IN} =5.5V, I _{OUT} =1mA	1.2			V
EN logic low voltage	V _{ENL}	V _{IN} =5.5V, V _{OUT} =0V			0.4	V
EN Input Current	I _{EN}	V _{EN} = 0 to 5.5V			1.0	μA
Output Noise Voltage	e _{NO}	10Hz to 100KHz, C _{OUT} =1 μ F		55		μV _{RMS}
Thermal shutdown threshold	T _{SD}			165		°C
Thermal shutdown hysteresis	Δ T _{SD}			30		°C

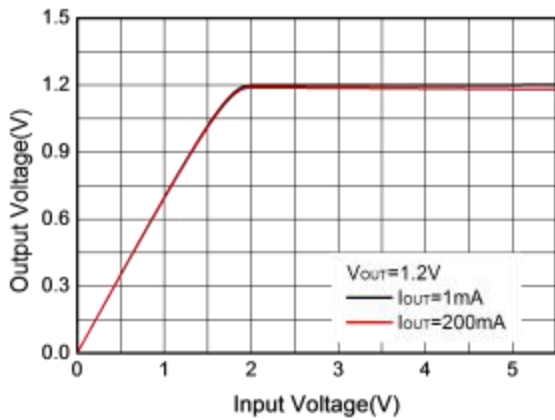
Typical characteristics ($T_a=25^\circ\text{C}$, $V_{IN}=3.8\text{V}$, $V_{OUT} = 2.8\text{V}$ $C_{IN}=C_{OUT}=1\mu\text{F}$, unless otherwise noted)



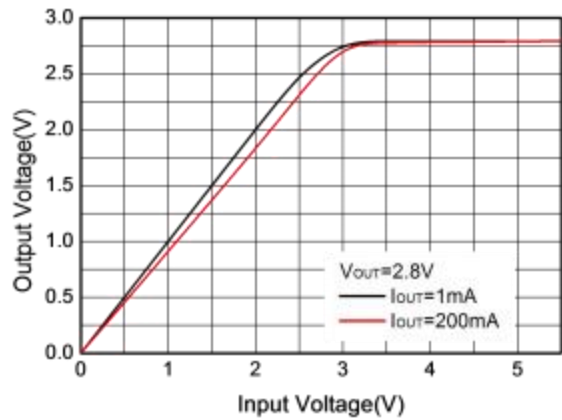
Quiescent current vs. Supply voltage



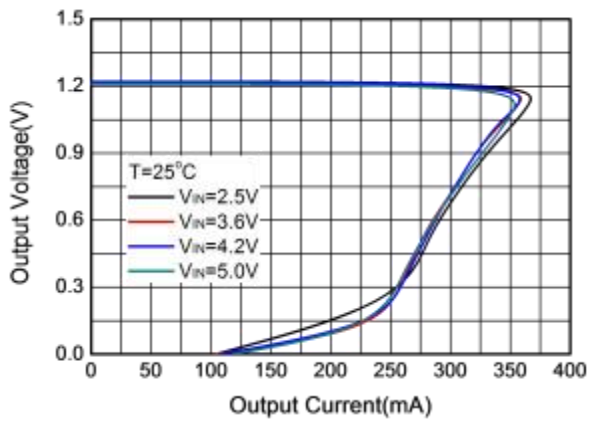
Quiescent current vs. Supply voltage



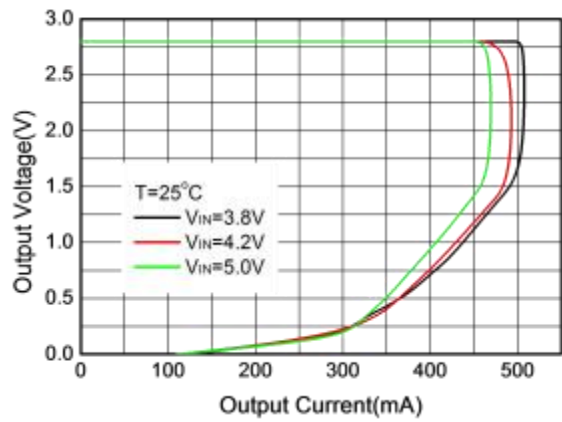
Output voltage vs. Supply voltage



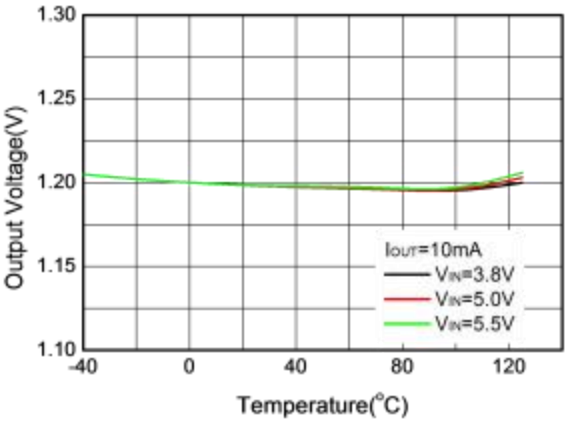
Output voltage vs. Supply voltage



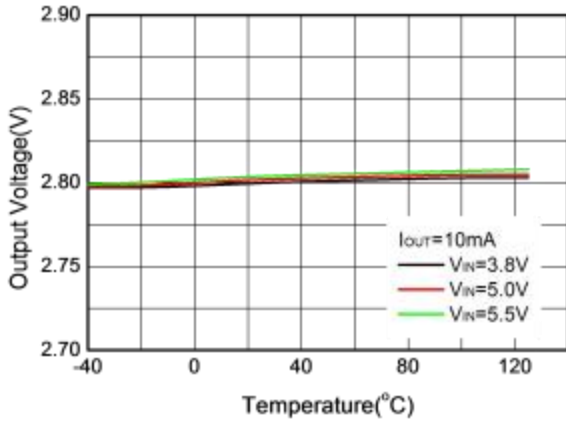
Output voltage vs. Output current



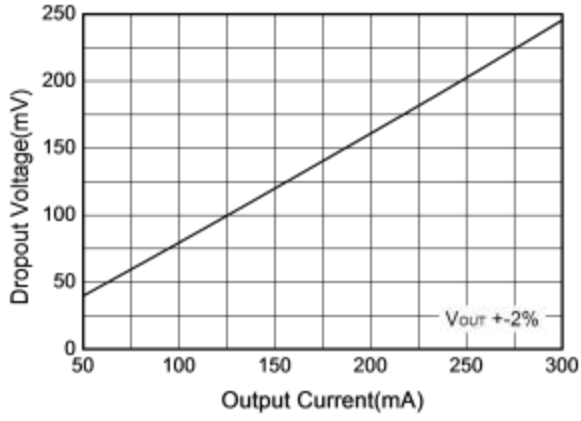
Output voltage vs. Output current



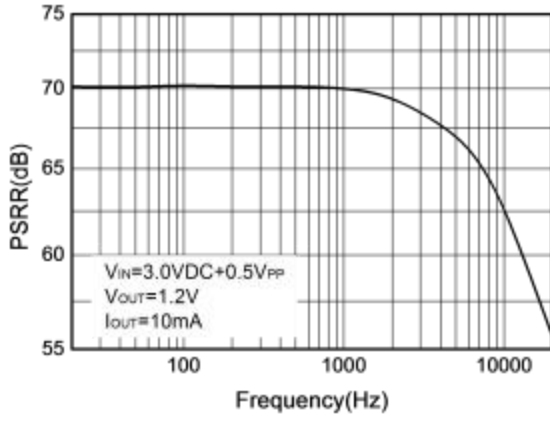
Output Voltage vs. Temperature



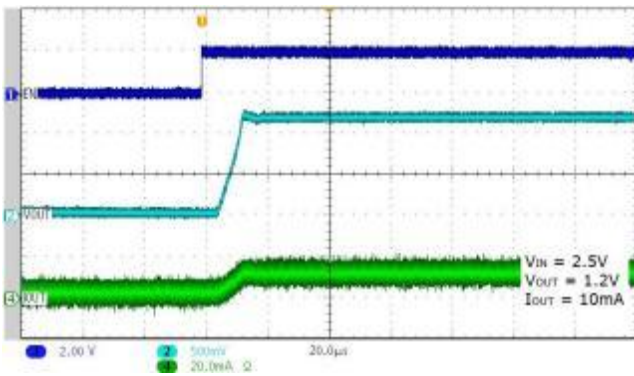
Output Voltage vs. Temperature



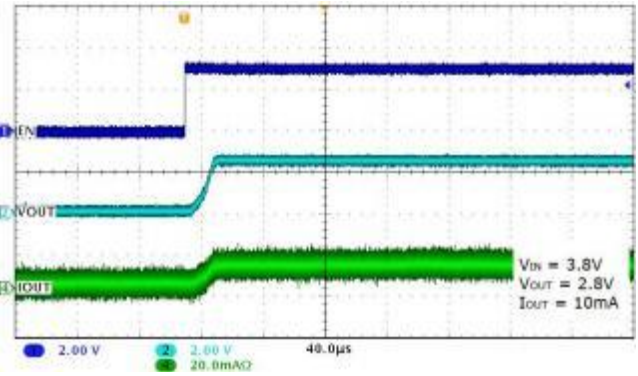
Dropout Voltage vs. Output Current



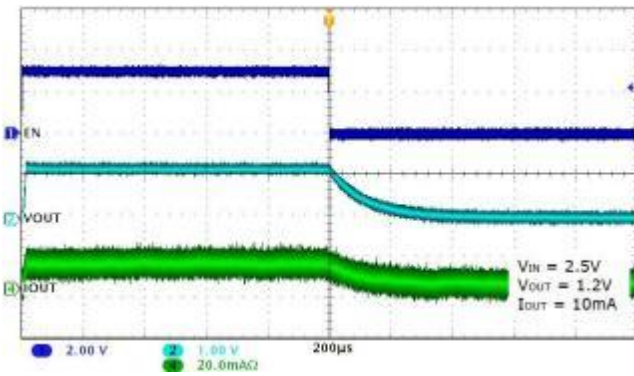
PSRR



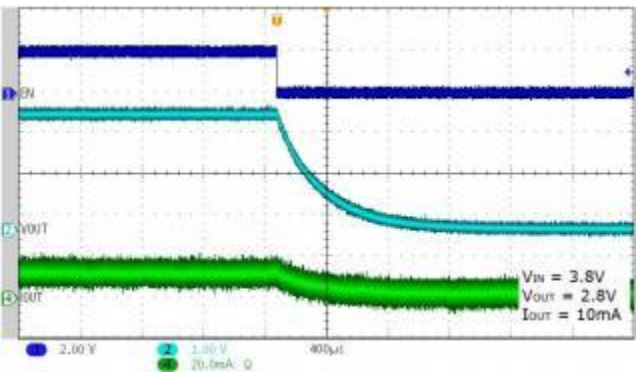
Soft Start form EN



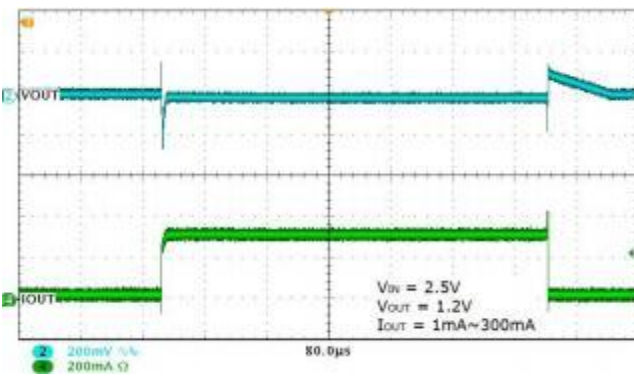
Soft Start form EN



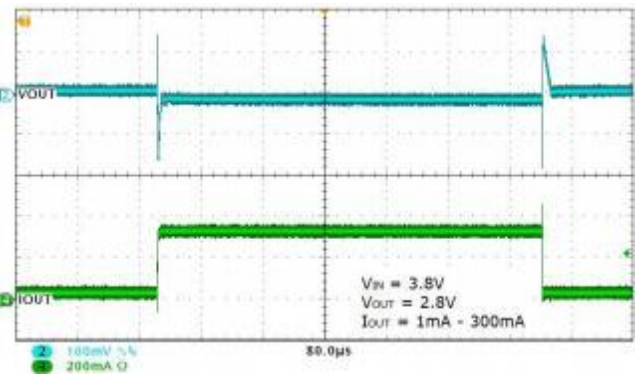
EN Shutdown



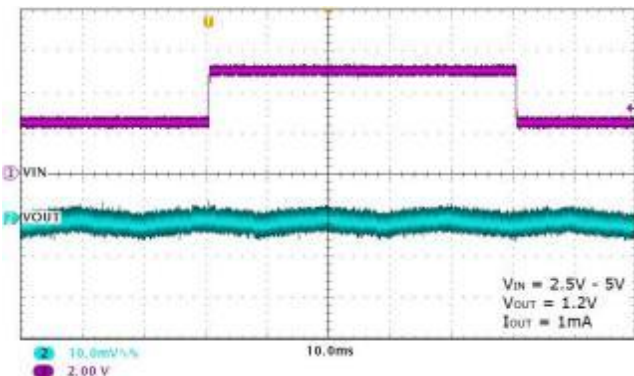
EN Shutdown



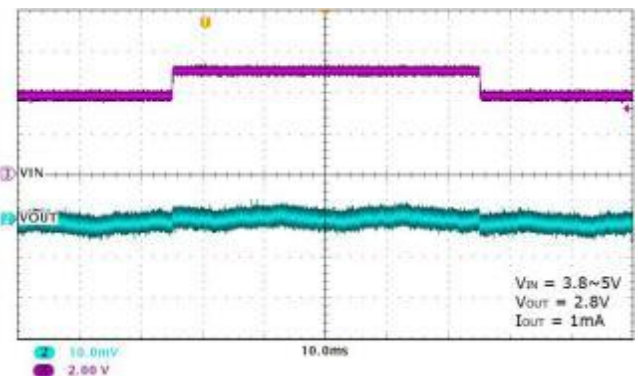
Load Step



Load Step



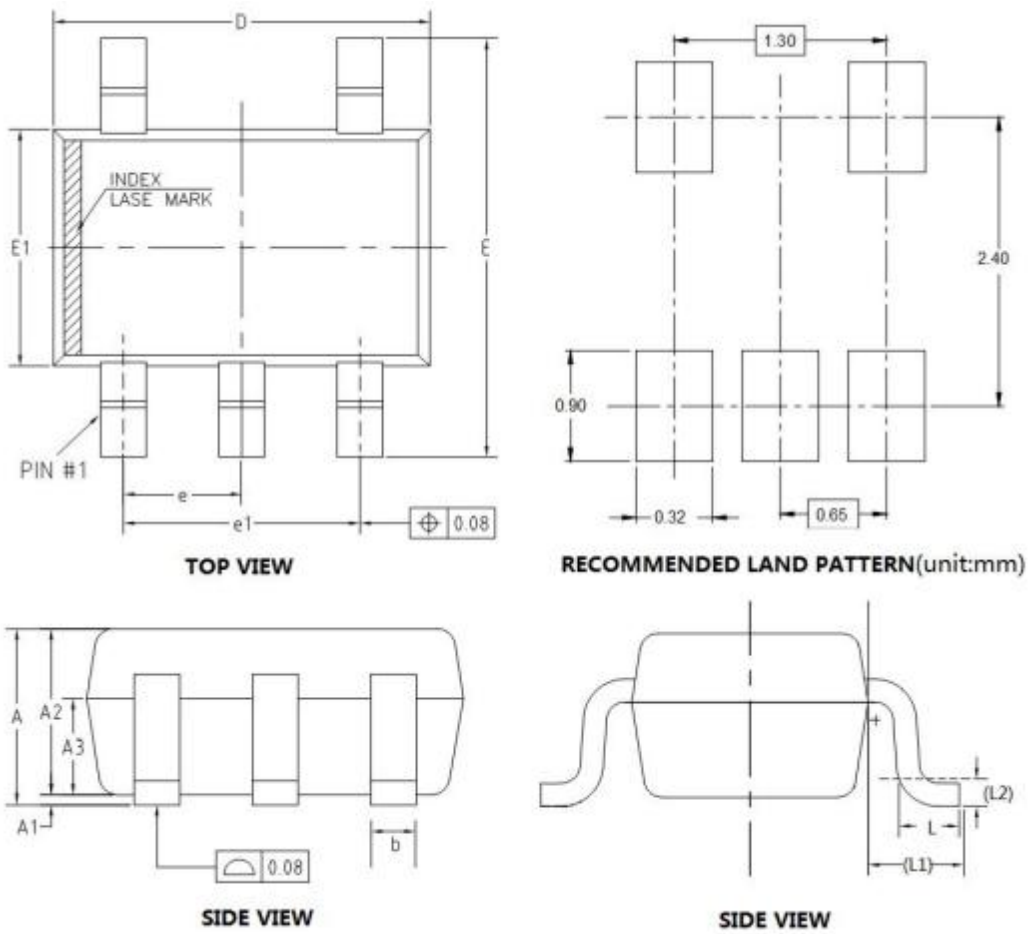
Line Step



Line Step

Packaging Information

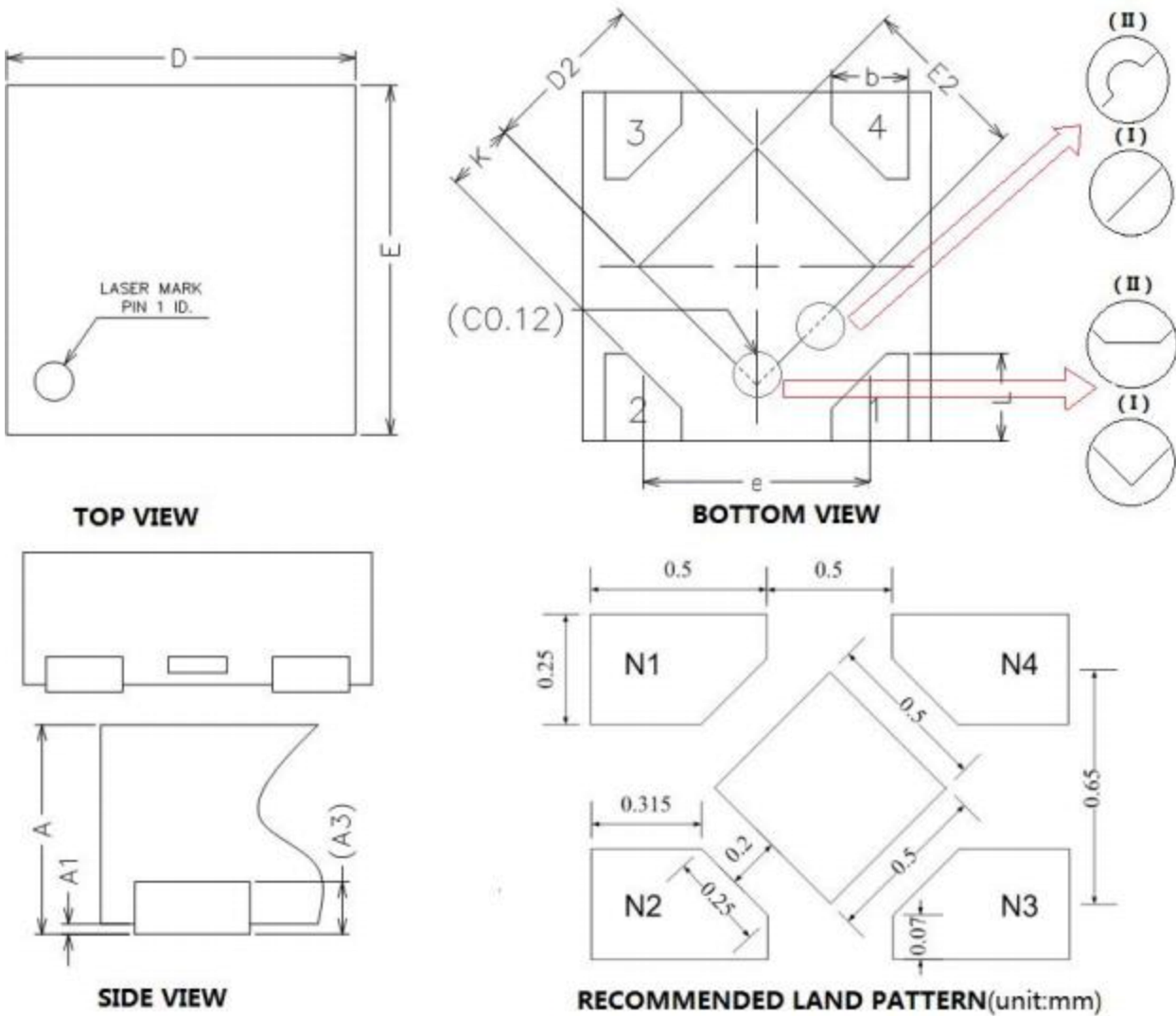
SOT-353



Symbol	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	0.85	-	1.05
A1	0.00	-	0.10
A2	0.80	0.90	1.00
A3	0.47	0.52	0.57
b	0.22	-	0.29
D	2.02	2.07	2.12
E	2.20	2.30	2.40
E1	1.25	1.30	1.35
e	0.65 BSC		
e1	1.30 BSC		
L	0.28	0.33	0.38
L1	0.50 REF		
L2	0.15 BSC		

Packaging Information

DFN1x1-4L



Symbol	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	0.34	0.37	0.40
A1	0.00	0.02	0.105
A3	0.10 REF		
b	0.17	0.22	0.27
D	0.95	1.00	1.05
E	0.95	1.00	1.05
D2	0.43	0.48	0.53
E2	0.43	0.48	0.53
L	0.20	0.25	0.30
e	0.60	0.65	0.70
K	0.15	-	-

ORDER INFORMATION

Ordering No.	Vout (V)	Package	Operating Temperature	Marking	Shipping
WL2810B12-5/TR	1.2	SOT-353	-40~+85°C	BEM	Tape and Reel, 3000
WL2810B15-5/TR	1.5	SOT-353	-40~+85°C	BGM	Tape and Reel, 3000
WL2810B18-5/TR	1.8	SOT-353	-40~+85°C	BHM	Tape and Reel, 3000
WL2810B28-5/TR	2.8	SOT-353	-40~+85°C	BLM	Tape and Reel, 3000
WL2810B30-5/TR	3.0	SOT-353	-40~+85°C	BMM	Tape and Reel, 3000
WL2810B33-5/TR	3.3	SOT-353	-40~+85°C	BNM	Tape and Reel, 3000
WL2810D10-4/TR	1.0	DFN1x1-4L	-40~+85°C	DB YW	Tape and Reel, 10000
WL2810D105-4/TR	1.05	DFN1x1-4L	-40~+85°C	DC YW	Tape and Reel, 10000
WL2810D12-4/TR	1.2	DFN1x1-4L	-40~+85°C	DE YW	Tape and Reel, 10000
WL2810D13-4/TR	1.3	DFN1x1-4L	-40~+85°C	DF YW	Tape and Reel, 10000
WL2810D15-4/TR	1.5	DFN1x1-4L	-40~+85°C	DG YW	Tape and Reel, 10000
WL2810D18-4/TR	1.8	DFN1x1-4L	-40~+85°C	DH YW	Tape and Reel, 10000
WL2810D25-4/TR	2.5	DFN1x1-4L	-40~+85°C	DK YW	Tape and Reel, 10000
WL2810D28-4/TR	2.8	DFN1x1-4L	-40~+85°C	DL YW	Tape and Reel, 10000
WL2810D30-4/TR	3.0	DFN1x1-4L	-40~+85°C	DM YW	Tape and Reel, 10000
WL2810D33-4/TR	3.3	DFN1x1-4L	-40~+85°C	DN YW	Tape and Reel, 10000

Marking:

- B* = Device Code
- D* = Device Code
- M = Month
- Y = Year
- W = Week