WL2810

Low noise, High PSRR, High speed, CMOS LDO

Http://www.sh-willsemi.com

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.

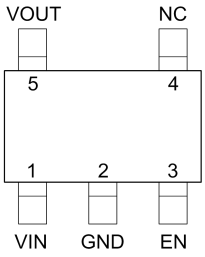
The WL2810 regulators are available in standard SOT-353 package and DFN1x1-4L Package. Standard products are Pb-free and Halogen-free.

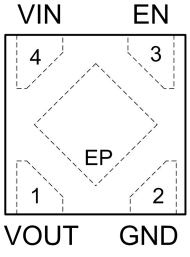


SOT-353



DFN1X1-4L

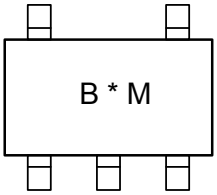




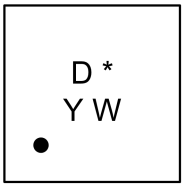
Pin Configuration (Top View)

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 : 42μA Typ.
- Shut-down current : < 1μA
- Recommend capacitor : 1uF



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



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

For detail marking information, please see page 10.

Marking

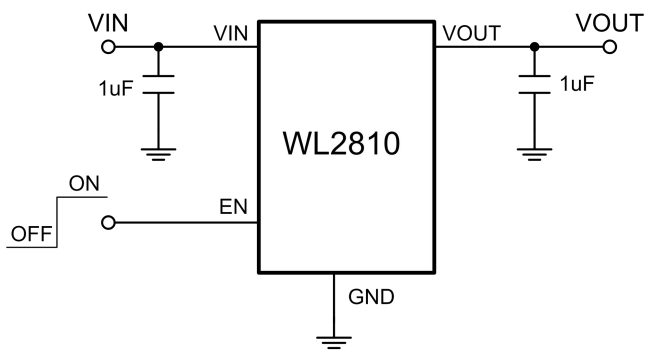
Applications

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

Order Information

For detail order information, please see page 10.

Typical Application



Pin Description

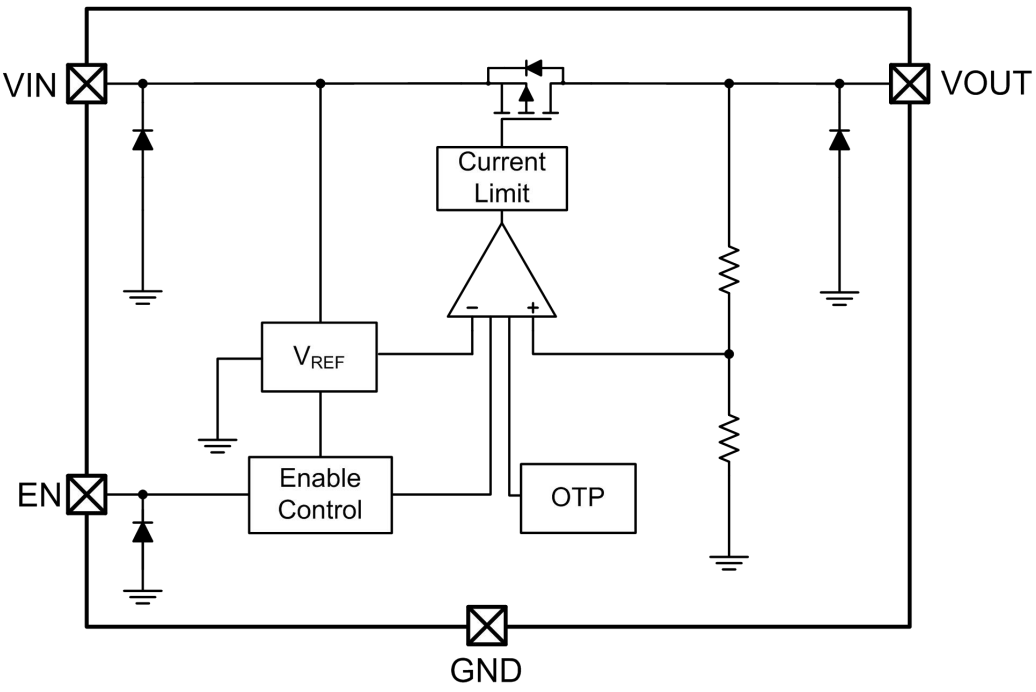
SOT-353

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°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

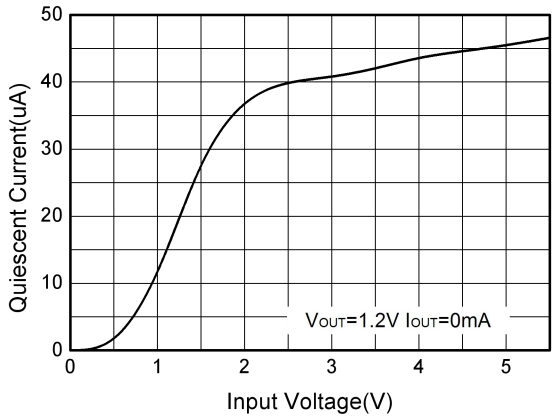
Recommend Operating Ratings

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

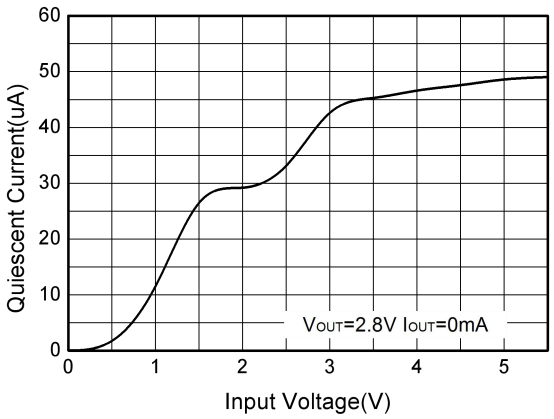
Electronics Characteristics (T_a=25°C, V_{IN}=V_{OUT}+1V, C_{IN}=C_{OUT}=1uF, unless otherwise noted)

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}	V_{OUT}	1.03 V_{OUT}	V
		V_{OUT}>1.5V, I_{OUT}=1mA	0.98 V_{OUT}	V_{OUT}	1.02 V_{OUT}	
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	Vin-min=2.2V			
Line Regulation	△V_{LINE}	V_{IN}=2.7~5.5V, I_{OUT}=1mA		0.01	0.1	%/V
Load Regulation	△V_{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 ,Iout=10mA		70		dB
		V_{IN}=(V_{OUT}+1V)$_{DC}$+0.5V_{P-P} F=10KHz, Iout=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}=1μF		55		$μV_{RMS}$
Thermal shutdown threshold	T_{SD}			165		°C
Thermal shutdown hysteresis	△ T_{SD}			30		°C

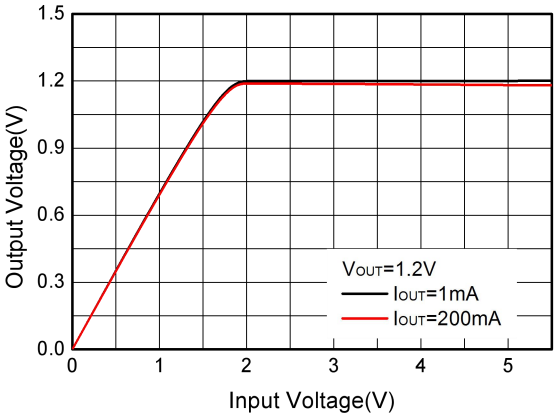
Typical characteristics (Ta=25°C, V_{IN}=3.8V, V_{OUT} = 2.8V C_{IN}=C_{OUT}=1uF, unless otherwise noted)



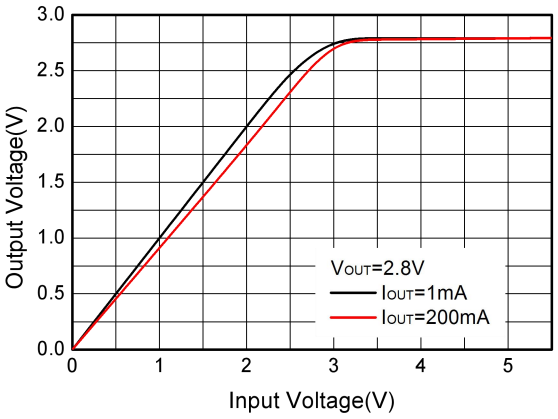
Quiescent current vs. Supply voltage



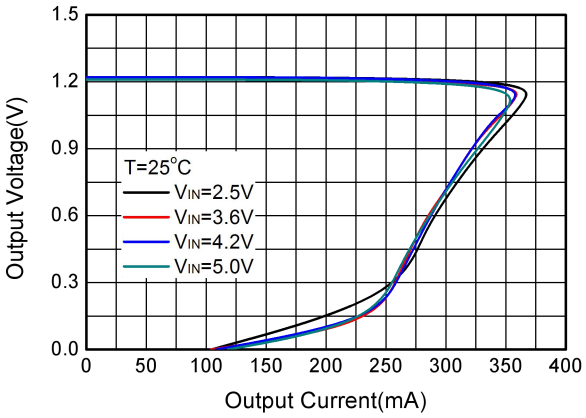
Quiescent current vs. Supply voltage



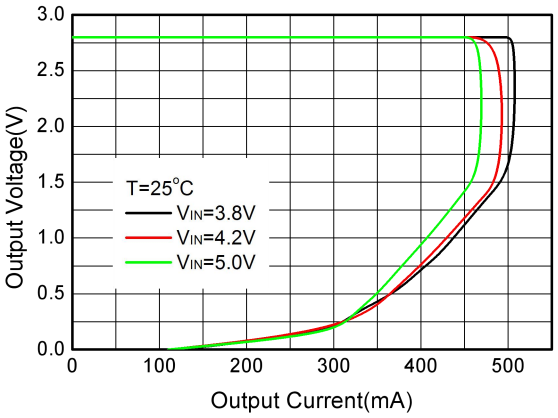
Output voltage vs. Supply voltage



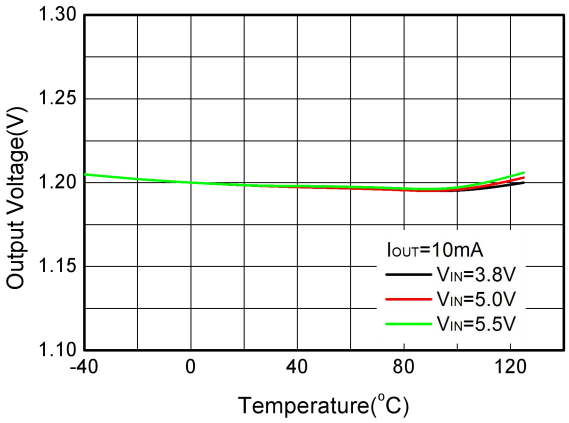
Output voltage vs. Supply voltage



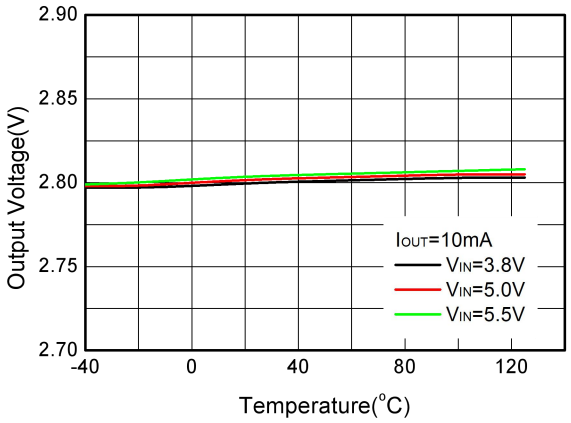
Output voltage vs. Output current



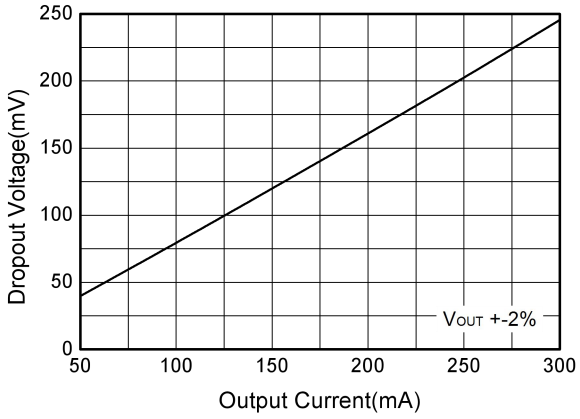
Output voltage vs. Output current



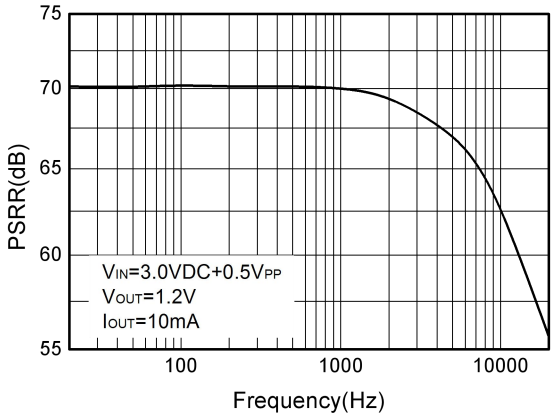
Output Voltage vs. Temperature



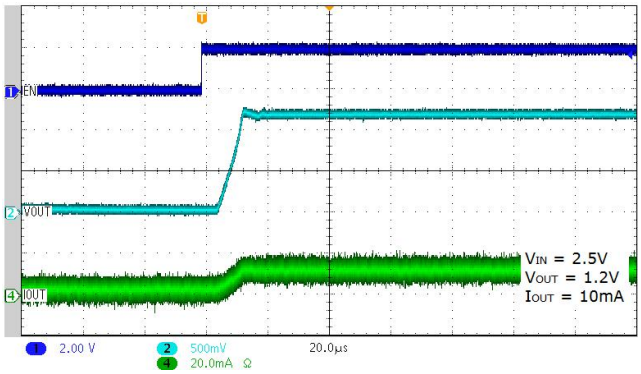
Output Voltage vs. Temperature



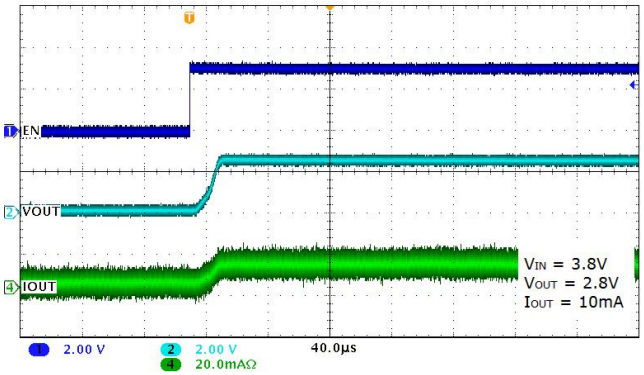
Dropout Voltage vs. Output Current



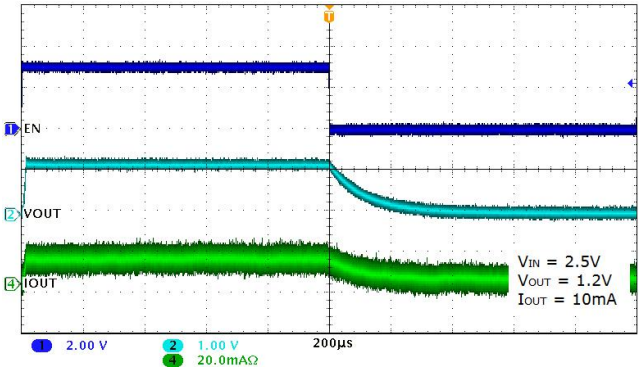
PSRR



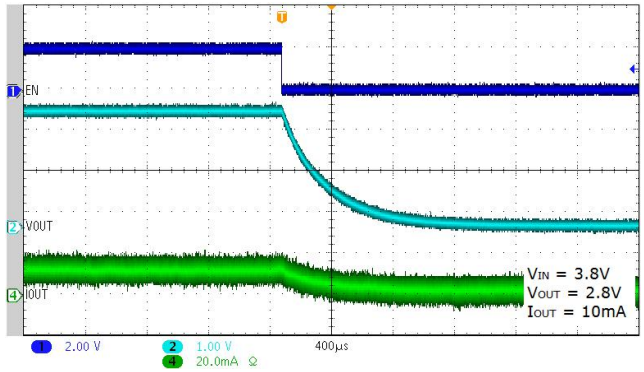
Soft Start form EN



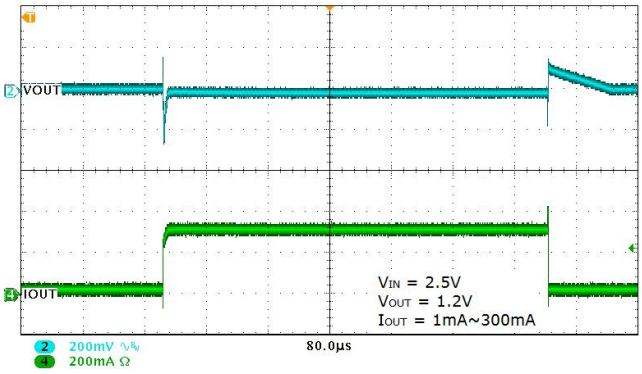
Soft Start form EN



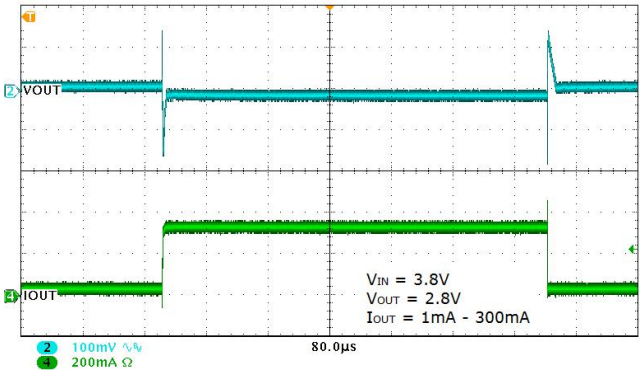
EN Shutdown



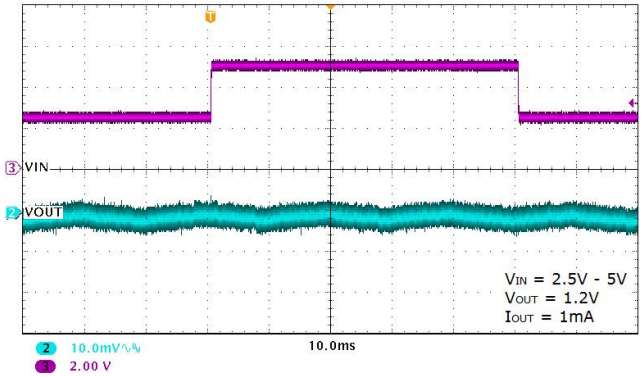
EN Shutdown



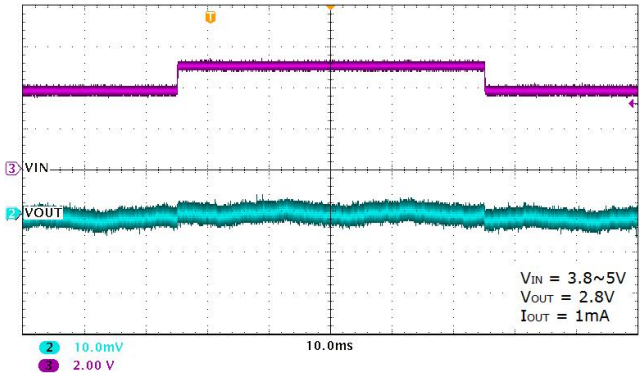
Load Step



Load Step



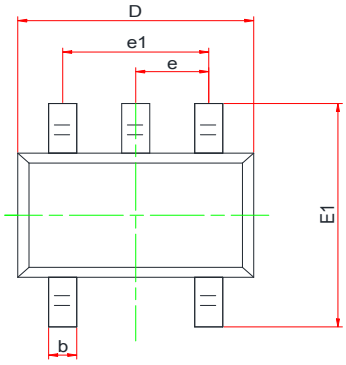
Line Step



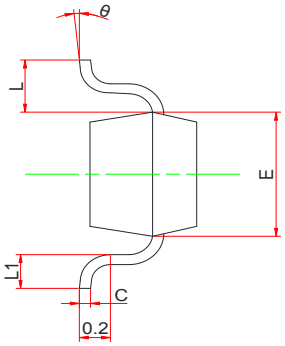
Line Step

PACKAGE OUTLINE DIMENSIONS

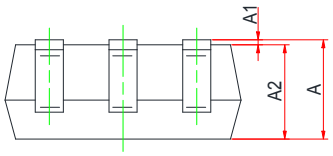
SOT-353



TOP VIEW



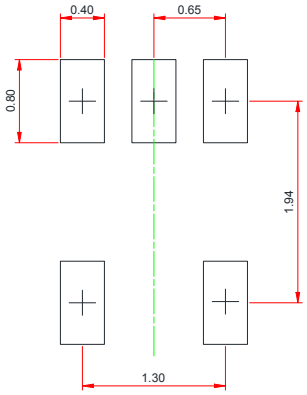
SIDE VIEW



SIDE VIEW

Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.85	-	1.10
A1	0.00	-	0.10
A2	0.80	0.90	1.00
b	0.15	0.25	0.35
c	0.08	-	0.15
D	2.00	2.10	2.20
E	1.15	1.25	1.35
E1	2.15	2.30	2.45
e	0.65 Typ.		
e1	1.20	1.30	1.40
L	0.50 Ref.		
L1	0.26	0.36	0.46
θ	0 °	-	8 °

Recommend PCB Layout (Unit: mm)

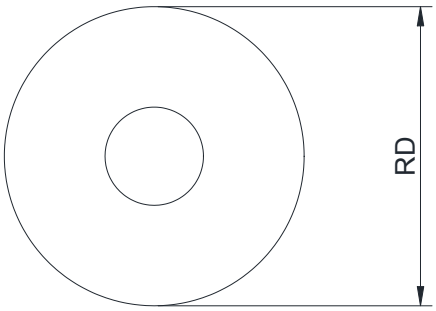


Notes:

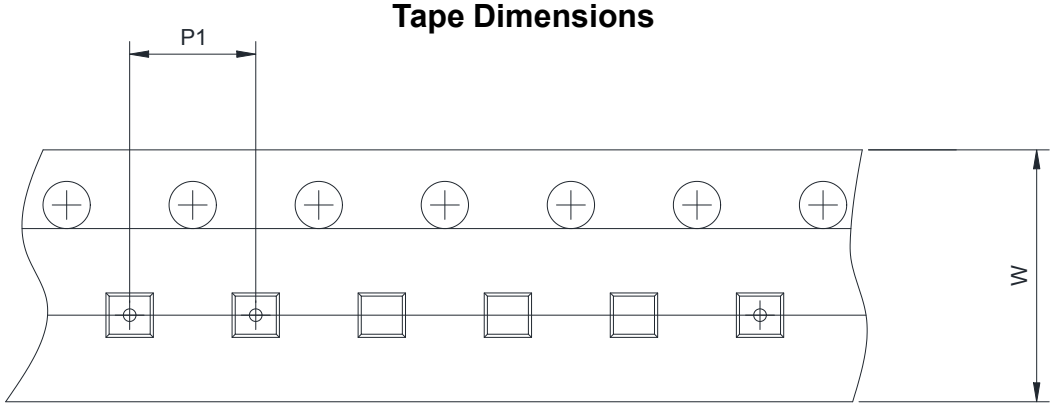
This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

TAPE AND REEL INFORMATION

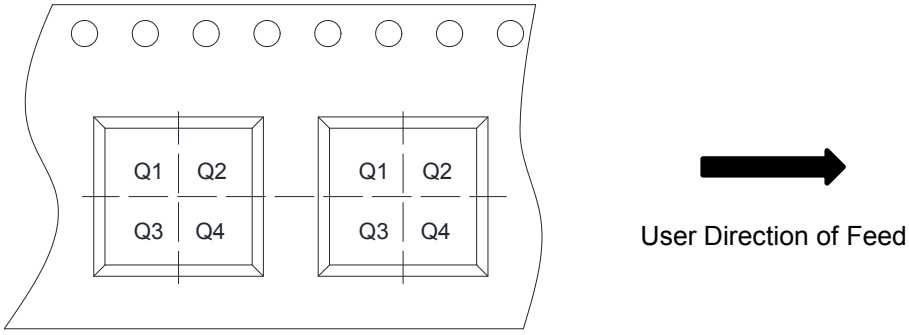
Reel Dimensions



Tape Dimensions



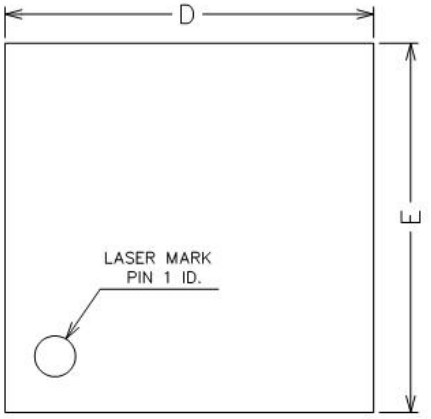
Quadrant Assignments For PIN1 Orientation In Tape



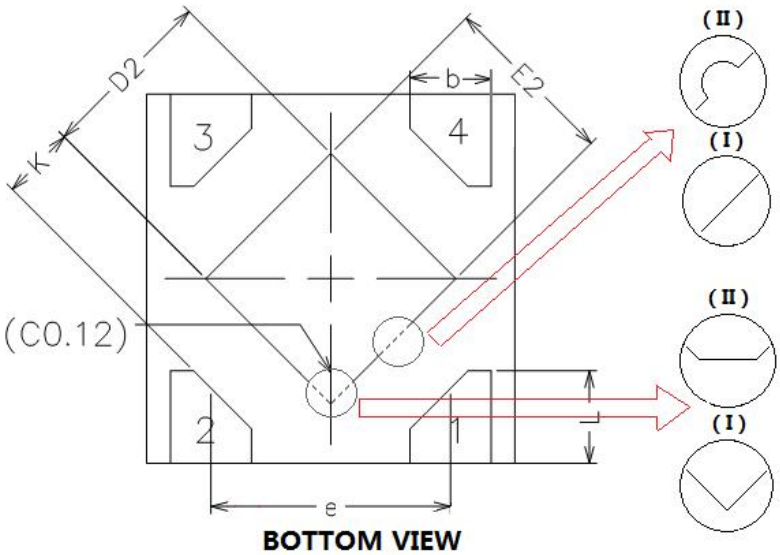
RD	Reel Dimension	☑ 7inch ☐ 13inch
W	Overall width of the carrier tape	☑ 8mm ☐ 12mm
P1	Pitch between successive cavity centers	☐ 2mm ☑ 4mm ☐ 8mm
Pin1	Pin1 Quadrant	☐ Q1 ☐ Q2 ☑ Q3 ☐ Q4

Packaging Information

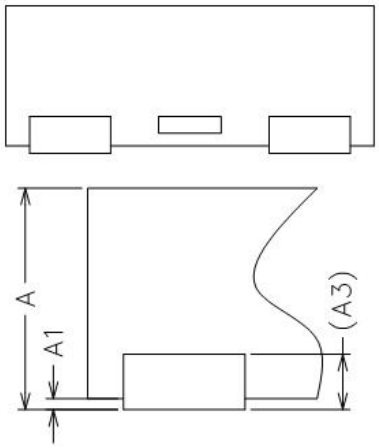
DFN1x1-4L



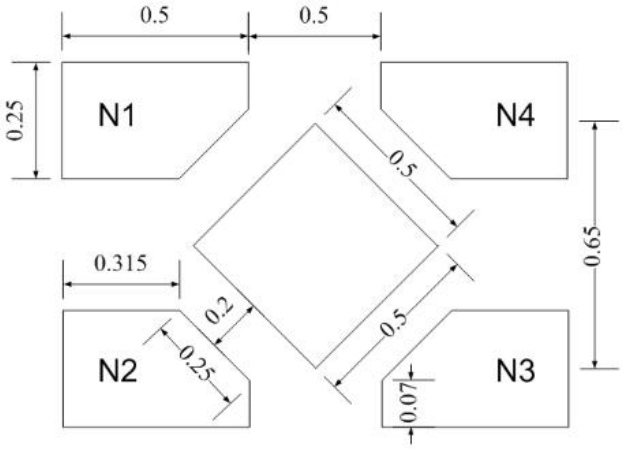
TOP VIEW



BOTTOM VIEW



SIDE VIEW

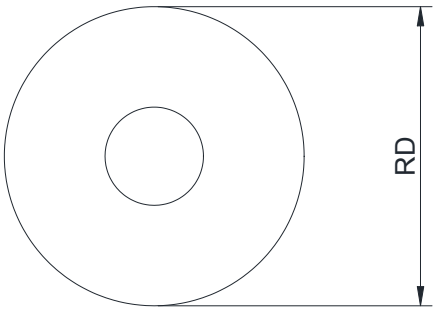


RECOMMENDED LAND PATTERN(unit:mm)

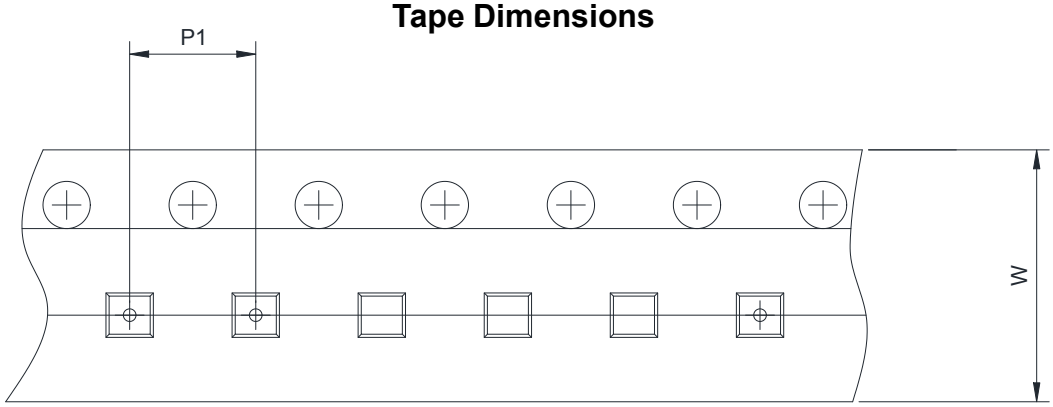
Symbol	Dimensions In Millimeters		
	Min.	**Typ.**	**Max.**
A	0.34	0.37	0.40
A1	0.00	0.02	0.105
A3		0.10 REF	
b	0.17	0.22	0.27
D	0.95	1.00	1.05
E	0.95	1.00	1.05
D2	0.43	0.48	0.53
E2	0.43	0.48	0.53
L	0.20	0.25	0.30
e	0.60	0.65	0.70
K	0.15	-	-

TAPE AND REEL INFORMATION

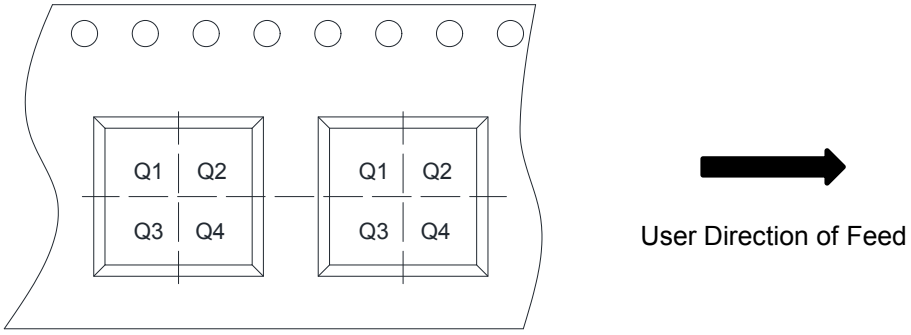
Reel Dimensions



Tape Dimensions



Quadrant Assignments For PIN1 Orientation In Tape



RD	Reel Dimension	☑ 7inch ☐ 13inch
W	Overall width of the carrier tape	☑ 8mm ☐ 12mm ☐ 16mm
P1	Pitch between successive cavity centers	☑ 2mm ☐ 4mm ☐ 8mm
Pin1	Pin1 Quadrant	☑ Q1 ☐ Q2 ☐ Q3 ☐ Q4

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