

WL2821

Low noise, High PSRR, High speed, CMOS LDO

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Descriptions

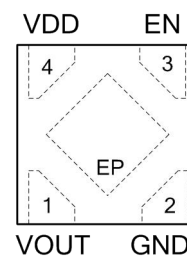
The WL2821 series is a high accuracy, low noise, high speed, low dropout CMOS Linear regulator with high ripple rejection. The devices offer a new level of cost effective performance in cellular phones, laptop and notebook computers, and other portable devices.

The WL2821 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.

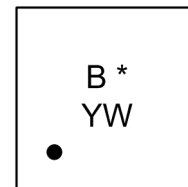
The WL2821 regulators are available in DFN1x1-4L Package. Standard products are Pb-free and Halogen-free.



DFN1X1-4L



Pin Configuration (Top View)



B: Device Code
*** : Voltage Code**
Y : Year Code
W: Week Code

For detail marking information, please see page 9.

Marking

Order Information

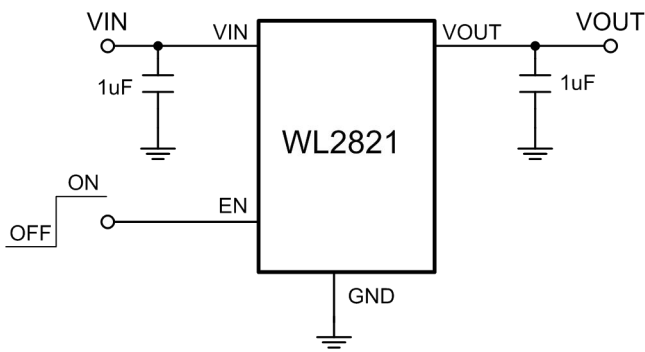
For detail order information, please see page 9.

Features

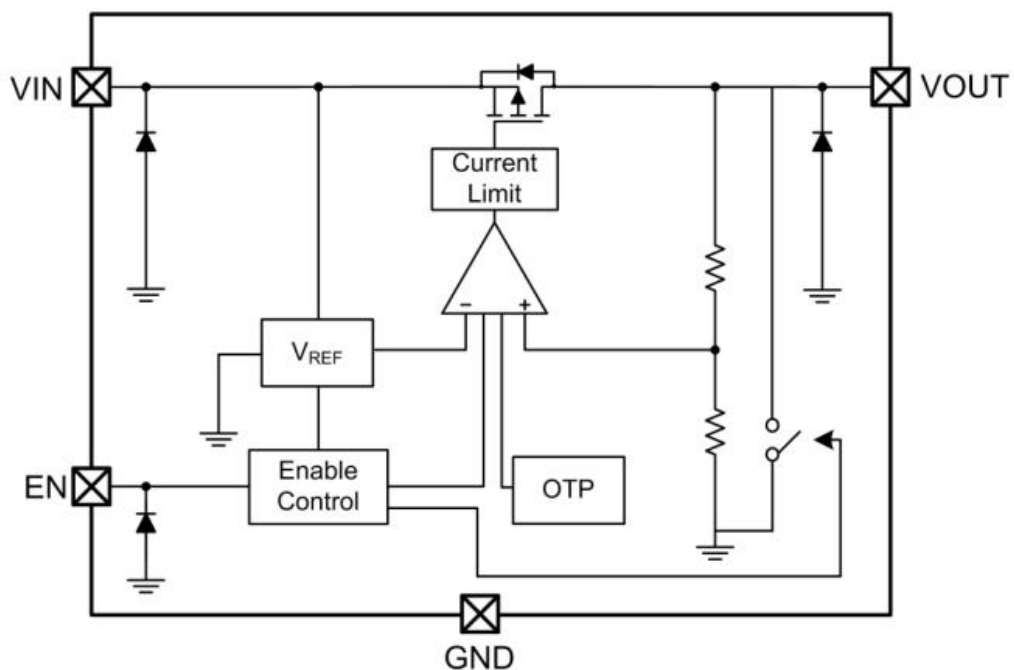
- Input voltage : 1.6V~5.5V
- Output range : 0.9V~3.3V
- Output current : 300mA Typ.
- PSRR : 70dB @ 217Hz
- Dropout voltage : 250mV @ I_{OUT}=300mA
- Quiescent current : 50μA Typ.
- Shut-down current : < 1μA
- Recommend capacitor : 1uF

Applications

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

Typical Application

Pin Description
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, $P_D@T_A=25^\circ\text{C}$	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	$^\circ\text{C}$	
Storage Temperature Range	-55 ~ 150	$^\circ\text{C}$	
Operating Junction Temperature Range	150	$^\circ\text{C}$	
ESD Ratings	HBM	8000	V
	MM	400	V

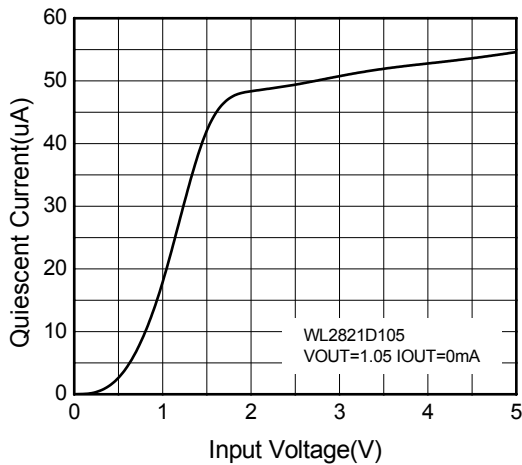
Recommend Operating Ratings

Parameter	Value	Unit
Operating Supply voltage	1.6~5.5	V
Operating Temperature Range	-40~85	$^\circ\text{C}$
Thermal Resistance, $R_{\theta JA}$ (DFN1x1-4L)	250	$^\circ\text{C/W}$

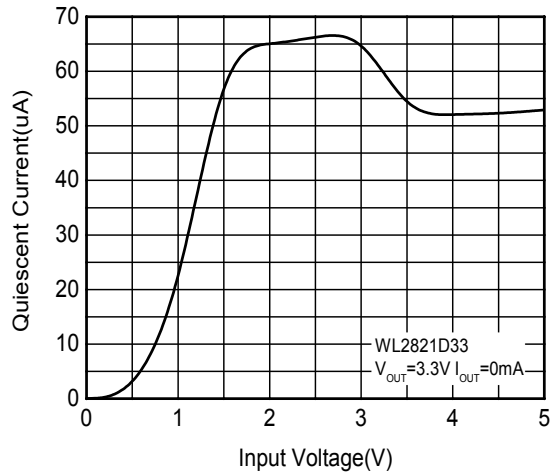
Electronics Characteristics (Ta=25°C, V_{IN}=V_{OUT}+1V, C_{IN}=C_{OUT}=1μF, unless otherwise noted)

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}		450		mA
Dropout Voltage	V _{DROP}	V _{OUT} = 3.3V, I _{OUT} = 300mA		200	240	mV
		2.5V < V _{OUT} ≤ 3.0V, I _{OUT} = 300mA		230	290	
		2.1V < V _{OUT} ≤ 2.5V, I _{OUT} = 300mA		270	350	
		1.8V < V _{OUT} ≤ 2.1V, I _{OUT} = 300mA		310	420	
		1.5V < V _{OUT} ≤ 1.8V, I _{OUT} = 300mA		370	530	
		1.2V < V _{OUT} ≤ 1.5V, I _{OUT} = 300mA		500	740	
		1.1V < V _{OUT} ≤ 1.2V, I _{OUT} = 300mA		630	800	
		1.0V < V _{OUT} ≤ 1.1V, I _{OUT} = 300mA		750	930	
		V _{OUT} = 0.9V, I _{OUT} = 300mA		790	1000	
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		50	70	μA
Short Current	I _{SHORT}	V _{EN} = V _{IN} , V _{OUT} Short to GND		150		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} = 1μF		100		μV _{RMS}
Thermal shutdown threshold	T _{SD}			160		°C
Thermal shutdown hysteresis	ΔT _{SD}			35		°C
Auto-discharge Nch Tr. ON Resistance	R _{LOW}	V _{IN} = 4.0V, V _{CE} = 0V		100		Ω

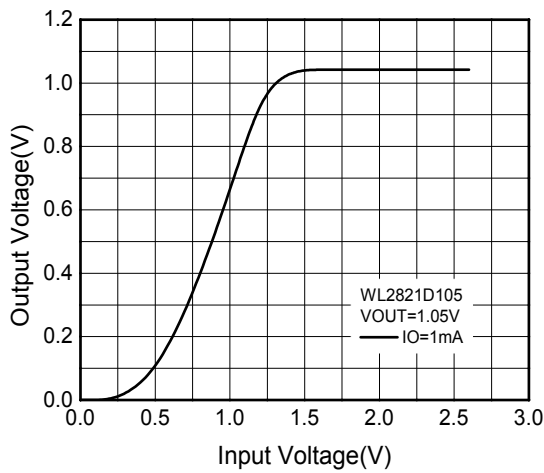
Typical characteristics ($T_a=25^\circ\text{C}$, $V_{IN}=2.5\text{V}$, $V_{OUT}=1.05\text{V}$, $C_{IN}=C_{OUT}=1\mu\text{F}$, unless otherwise noted)



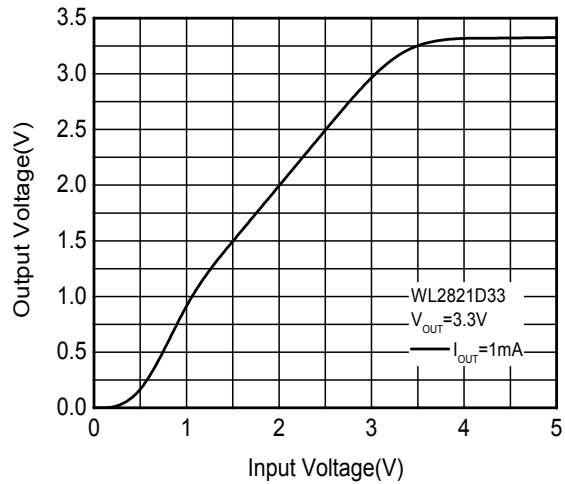
Quiescent current vs. Supply voltage



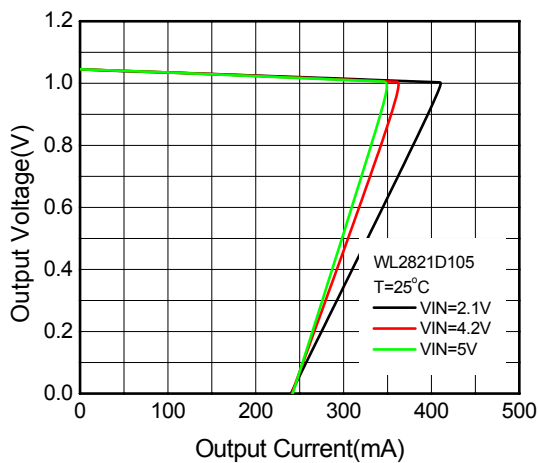
Quiescent current vs. Supply voltage



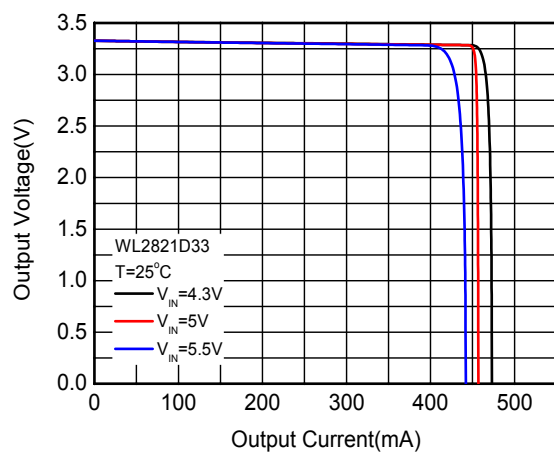
Output voltage vs. Supply voltage



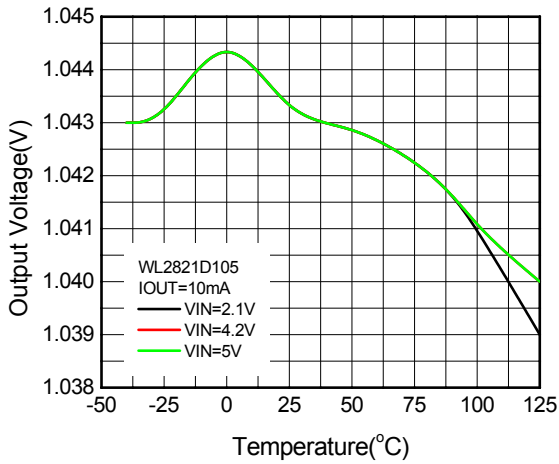
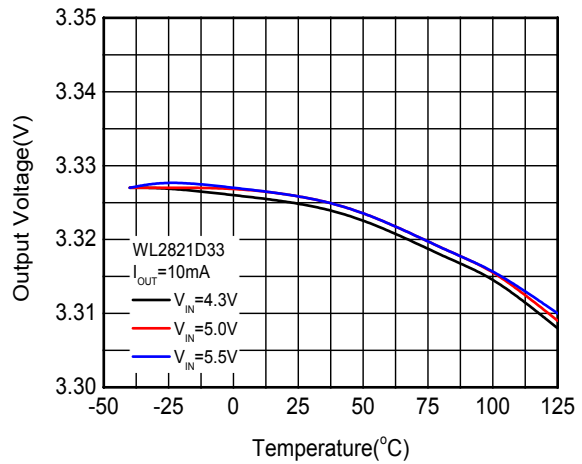
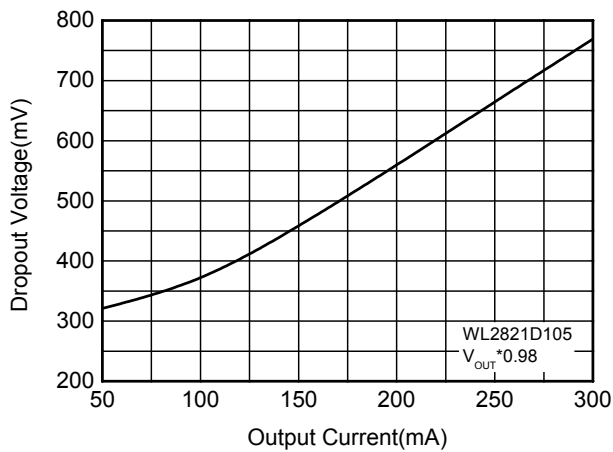
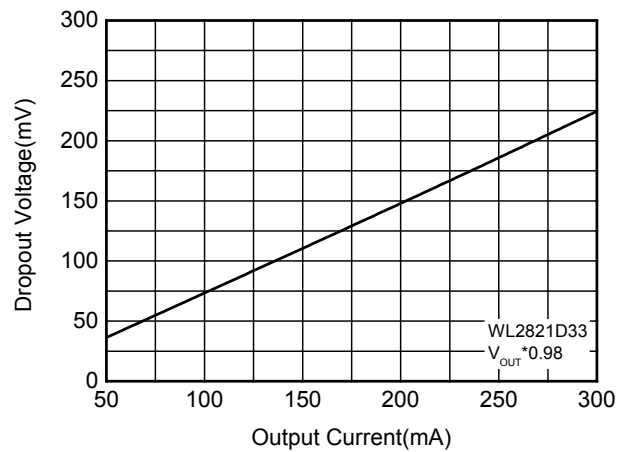
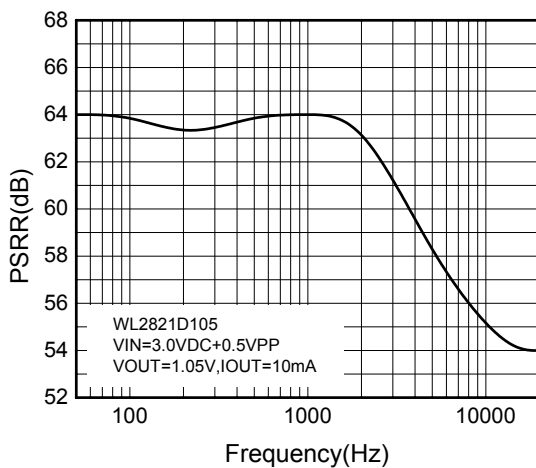
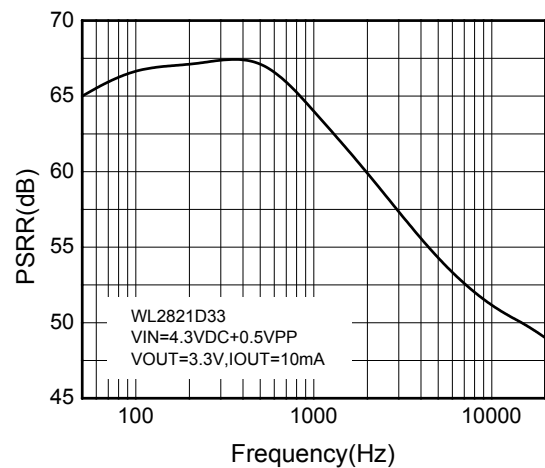
Output voltage vs. Supply voltage

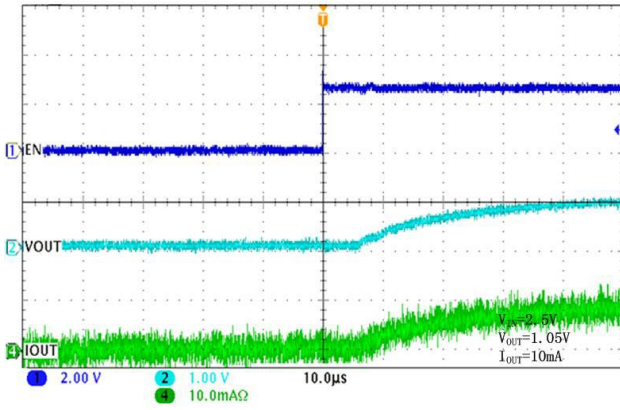
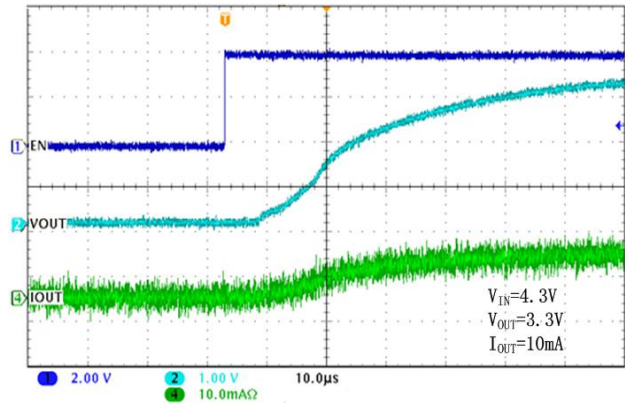
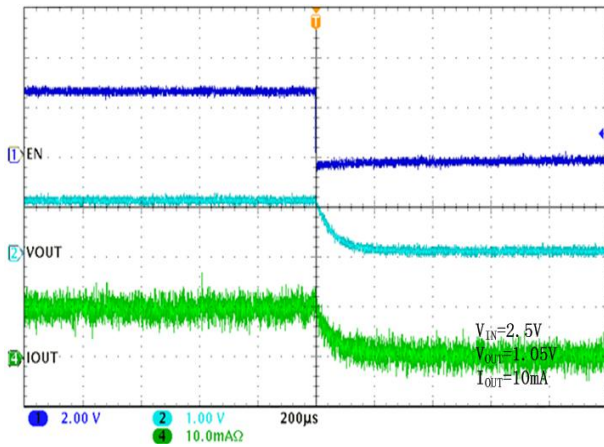
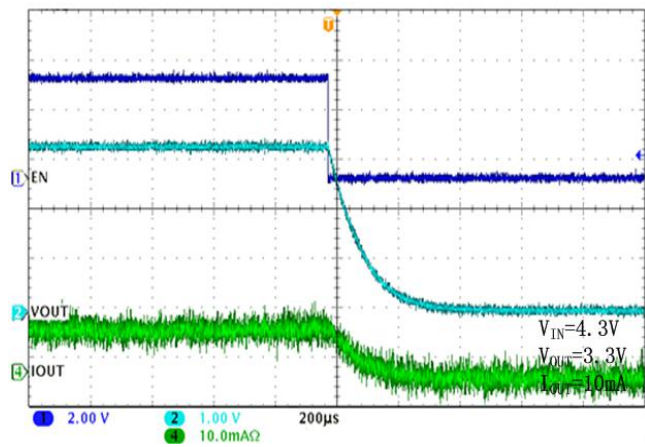
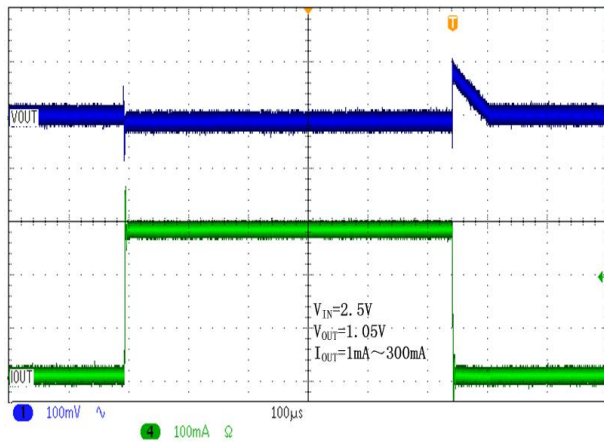
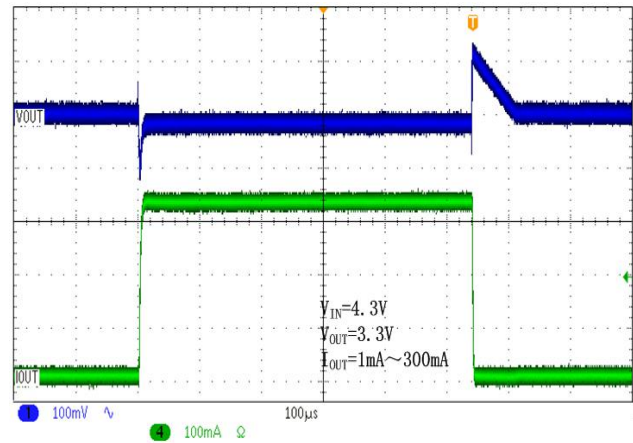


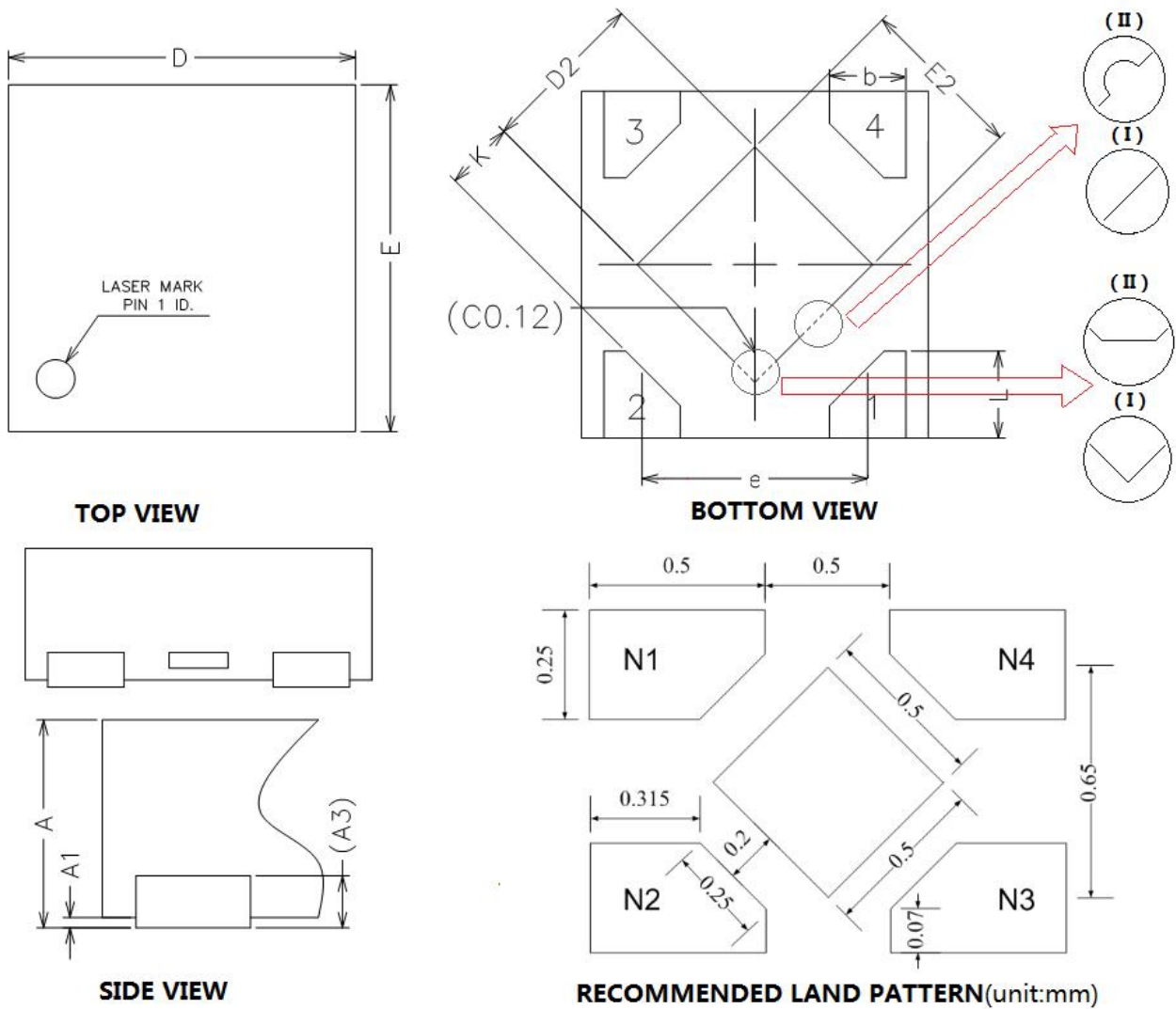
Output voltage vs. Output current



Output voltage vs. Output current


Output Voltage vs. Temperature

Output Voltage vs. Temperature

Dropout Voltage vs. Output Current

Dropout Voltage vs. Output Current

PSRR

PSRR


Soft Start form EN

Soft Start form EN

EN Shutdown

EN Shutdown

Load Step

Load Step

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
WL2821D105-4/TR	1.05	DFN1x1-4L	-40~+85°C	BC YW	Tape and Reel, 10000
WL2821D12-4/TR	1.2	DFN1x1-4L	-40~+85°C	BE YW	Tape and Reel, 10000
WL2821D18-4/TR	1.8	DFN1x1-4L	-40~+85°C	BH YW	Tape and Reel, 10000
WL2821D20-4/TR	2.0	DFN1x1-4L	-40~+85°C	BI YW	Tape and Reel, 10000
WL2821D33-4/TR	3.3	DFN1x1-4L	-40~+85°C	BN YW	Tape and Reel, 10000

Marking:

B: Device Code
*** : Voltage Code**
Y: Year Code
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