

WL2825D

Ultra-Low I_Q , 150mA CMOS LDO Regulator

[Http://www.ovt.com](http://www.ovt.com)

Descriptions

The WL2825D series of CMOS low dropout regulators are designed specifically for portable battery-powered applications which require ultra-low quiescent current. The ultra-low consumption of typ. 600 nA ensures long battery life and dynamic transient boost feature improves device transient response for wireless communication applications.

The device is designed to work with a $1\mu\text{F}$ input and $1\mu\text{F}$ output ceramic capacitor (no separate noise Operation bypass capacitor is required).

The WL2825D regulators are available in standard DFN1x1-4L Package. Standard products are Pb-free and Halogen-free.

Features

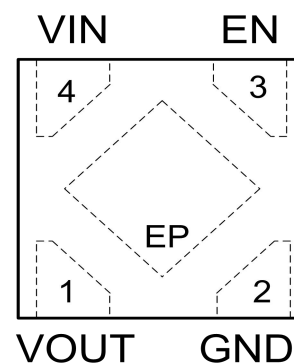
- Input Voltage Range :2.2V~5.5V
- Output Voltage Range :1.2V~3.6V
- Ultra-Low Quiescent current :Typ. 0.6 μA
- Low Dropout :Typ. 200mV at 150mA
- Output Voltage Tolerance : $\pm 1\%$
- Stable with $1\mu\text{F}$ Ceramic Input and Output capacitor
- Thermal-Overload Protection
- Active Discharge Option

Applications

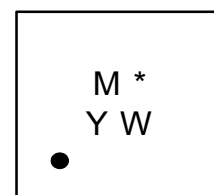
- Battery Powered Equipments
- Portable Communication Equipments
- Cameras, Image Sensors and Camcorders



DFN1X1-4L



Pin Configuration (Top View)



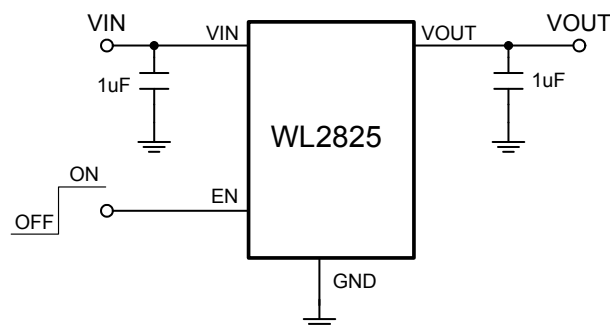
Marking

M : Device Code
*** : Voltage Code**
Y : Year Code
W: Week Codes

Order Information

For detail order information, please see page 8

Typical Application

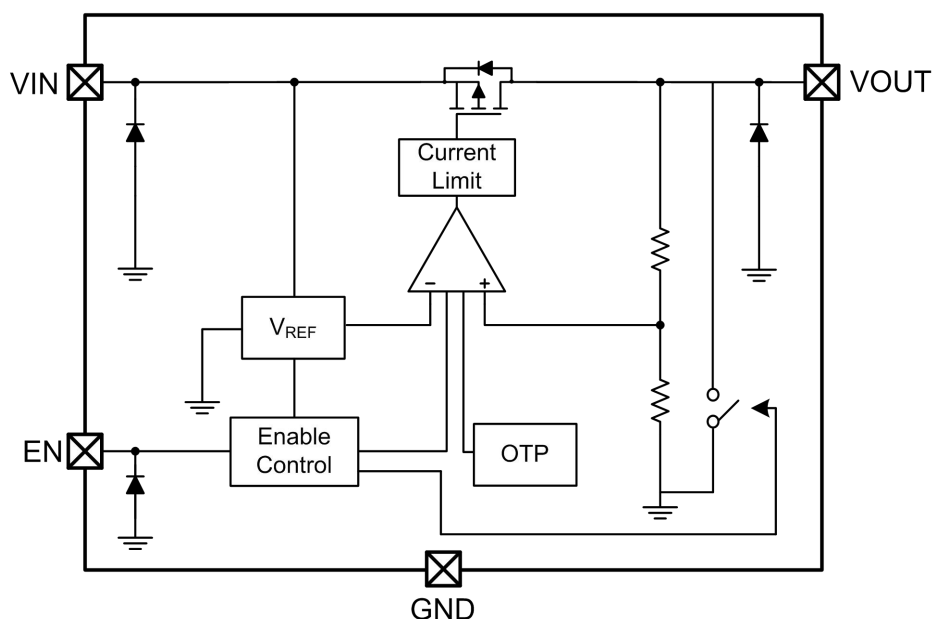


Note : The input and output capacitor must be located a distance of not more than 1 cm

PIN Functions

PIN	Symbol	Description
1	VOUT	Regulated output voltage. 1μF capacitor should be connected at this input
2	GND	Common ground connection
3	EN	Chip enable: Applying VEN < 0.4 V disables the regulator, Pulling VEN > 1.2 V enables the LDO.
4	VIN	Input voltage supply pin , 1μF capacitor should be connected at this input
EP		Expose pad can be tied to ground plane for better power dissipation

Block Diagram



Absolute Maximum Ratings

Parameter	Value	Unit
Power Dissipation, $P_D@T_A=25^{\circ}\text{C}$	Internally Limited	mW
V_{IN} Range	-0.3 ~ 6.0	V
V_{EN} Range	-0.3 to $V_{IN} + 0.3$	V
V_{OUT} Range	-0.3 to $V_{IN} + 0.3$	V
I_{OUT}	250	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	2000
	MM	200

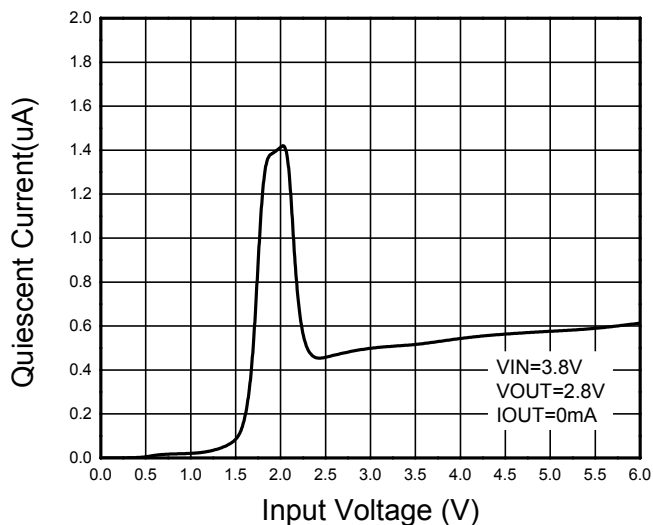
Recommend Operating Ratings

Parameter	Value	Unit
Operating Supply voltage	2.2 ~ 5.5	V
Operating Temperature Range	-40 ~ 85	$^{\circ}\text{C}$
Thermal Resistance, $R_{\theta JA}$	250	$^{\circ}\text{C/W}$

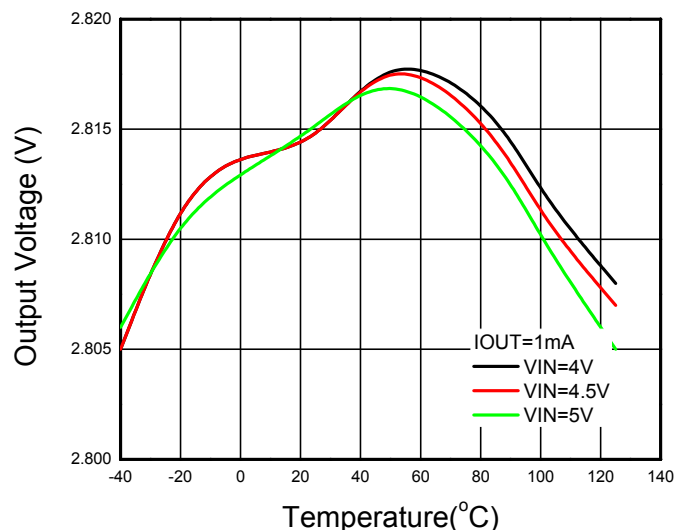
Electronics Characteristics ($V_{IN}=V_{OUT(NOM)}+1V$, $C_{IN}=C_{OUT}=1\mu F$, $V_{EN} = 1.2 V$. Typical values are at $T_a = +25^{\circ}C$, unless otherwise noted)

Parameter	Symbol	Condition		Min.	Typ.	Max.	Unit
Operating Input Voltage	V_{IN}			2.2		5.5	V
Output Voltage Accuracy	V_{OUT}	$V_{IN} = V_{OUT(NOM)} + 1 V$ $I_{OUT}=1mA$		-1		+1	%
Line Regulation	ΔV_{LINE}	$V_{IN}=2.2V\sim 5V$, $I_{OUT}=1mA$			3		mV
Load Regulation	ΔV_{Load}	$I_{OUT}=1\sim 150mA$			5		mV
Dropout Voltage		$V_{OUT}=2.8V_{(NOM)}$, $I_{OUT}=150mA$			200		mV
		$V_{OUT}=3.0V_{(NOM)}$, $I_{OUT}=150mA$			180		
		$V_{OUT}=3.3V_{(NOM)}$, $I_{OUT}=150mA$			160		
Output Current Limit	I_{LIM}	$V_{OUT} = 90\% V_{OUT(NOM)}$		150			mA
Short Current	I_{SHORT}	$V_{EN}=V_{IN}$, V_{OUT} Short to GND with 1Ω			265		mA
Quiescent Current	I_Q	$I_{OUT}=0mA$			0.6	1	μA
Shut-down Current	I_{SHDN}	$V_{EN} = 0V$, $V_{IN} = V_{OUT(NOM)} + 1 V$				0.1	μA
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 $5.5V$			0.01		μA
Power Supply Rejection Rate	PSRR	$I_{OUT} = 10mA$	$f=100Hz$		64		dB
			$f=1KHz$		60		
			$f=100KHz$		32		
			$f=1MHz$		42		
Output Voltage Noise	e_{NO}	10Hz to 100KHz,	$I_{OUT} = 0mA$		8		$\mu VRMS$
			$I_{OUT} = 10mA$		66		
Thermal shutdown threshold	T_{SDH}	Temperature rising			140		$^{\circ}C$
	T_{SDL}	Temperature falling			15		$^{\circ}C$
Under voltage lock out threshold	V_{UVLO}				2.05		V
Active Output Discharge Resistance	R_{LOW}	$V_{EN}<0.4V$			330		Ω

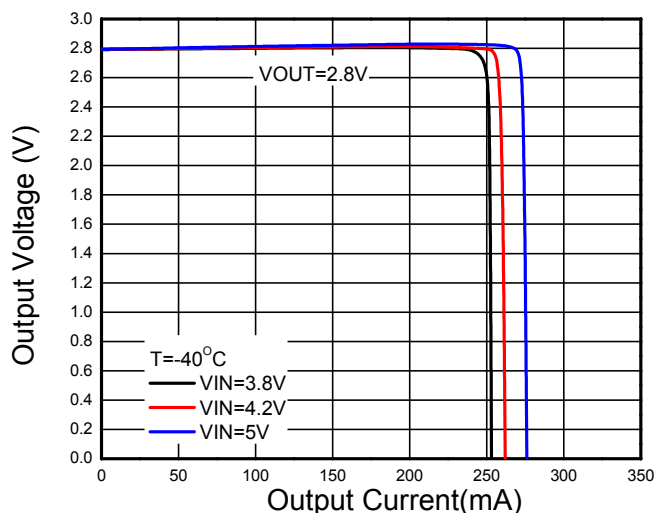
Typical characteristics ($T_a=25^\circ\text{C}$, $V_{IN}=V_{OUT(NOM)}+1\text{V}$, $C_{IN}=C_{OUT}=1\mu\text{F}$, unless otherwise noted)



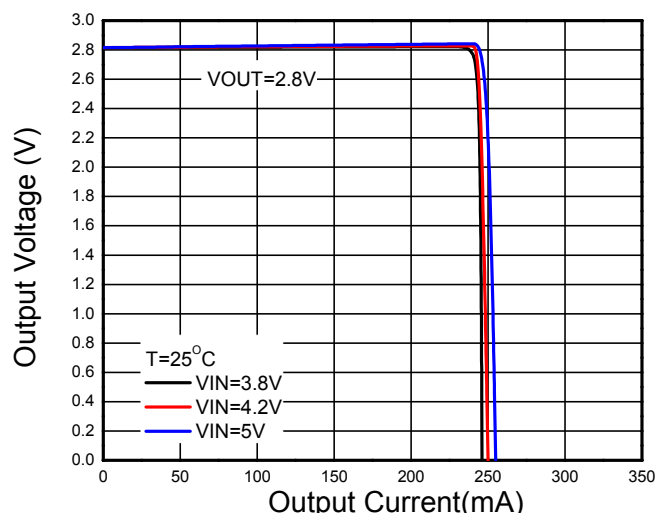
Quiescent Current vs. Input Voltage



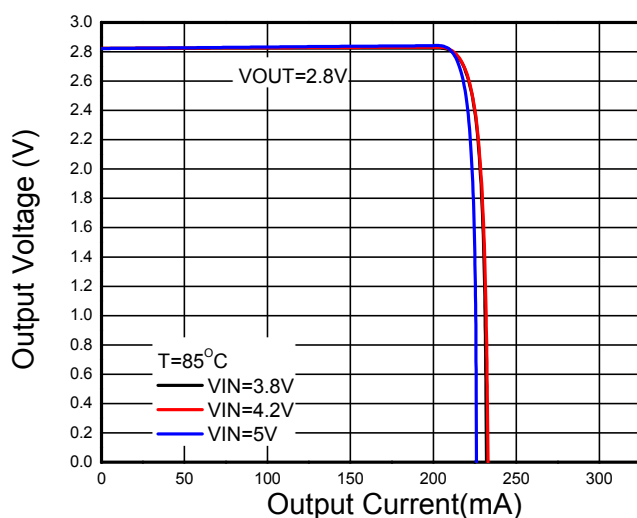
Output Voltage vs. Temperature



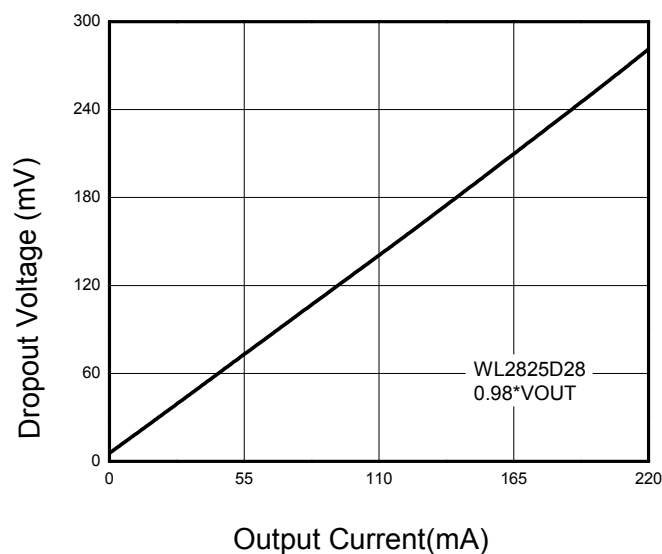
Output Voltage vs. Output Current



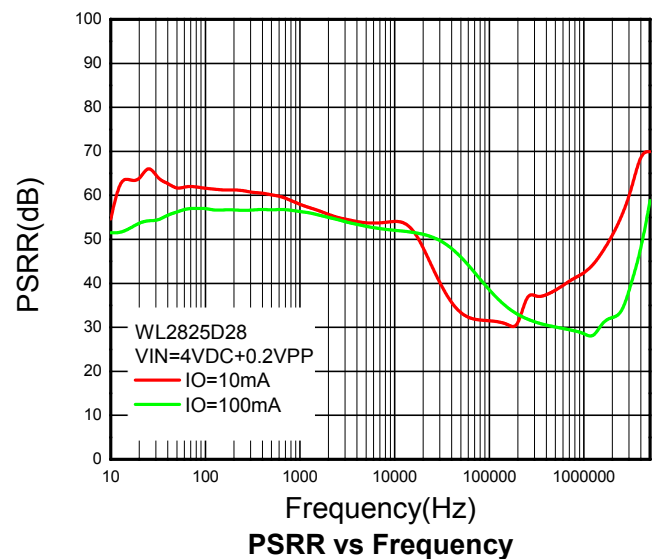
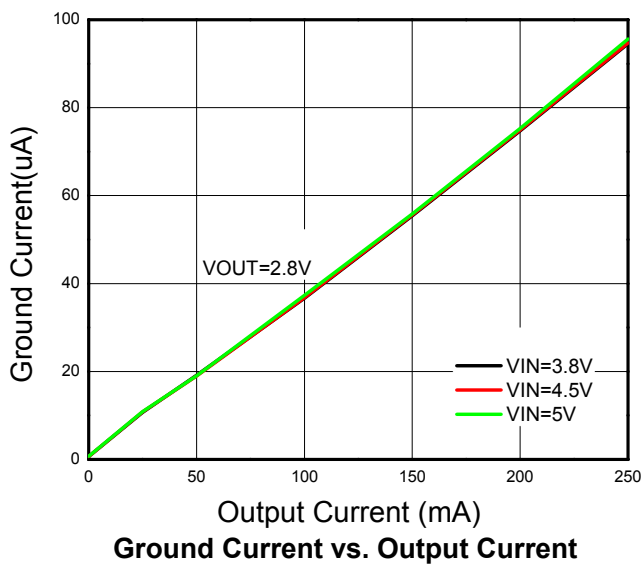
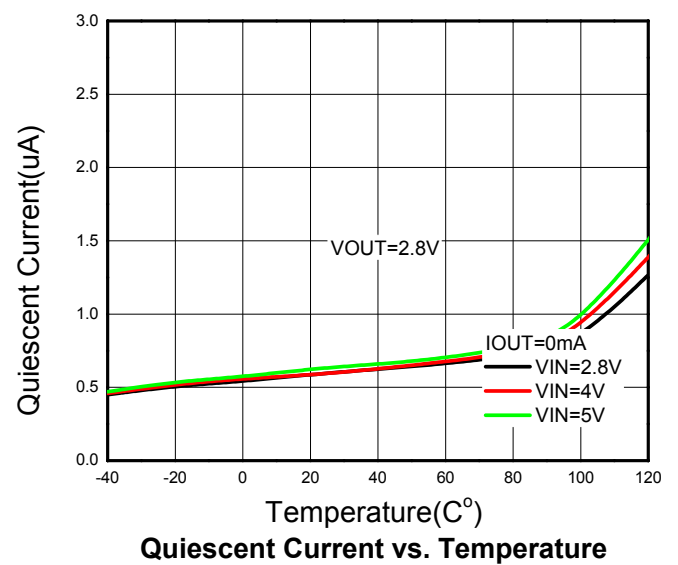
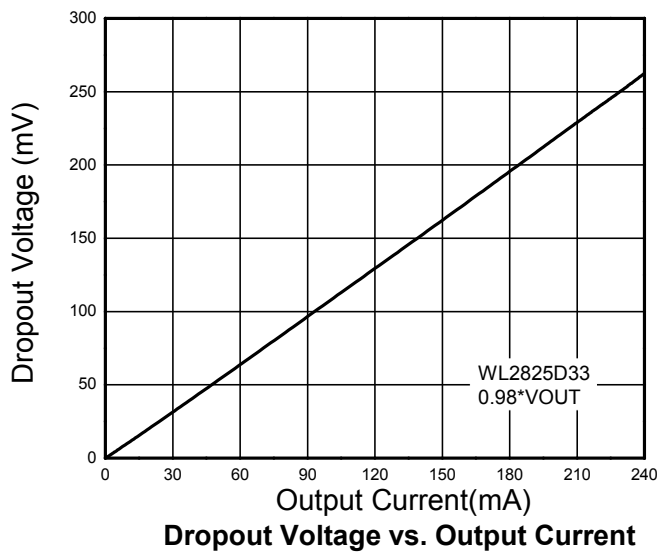
Output Voltage vs. Output Current



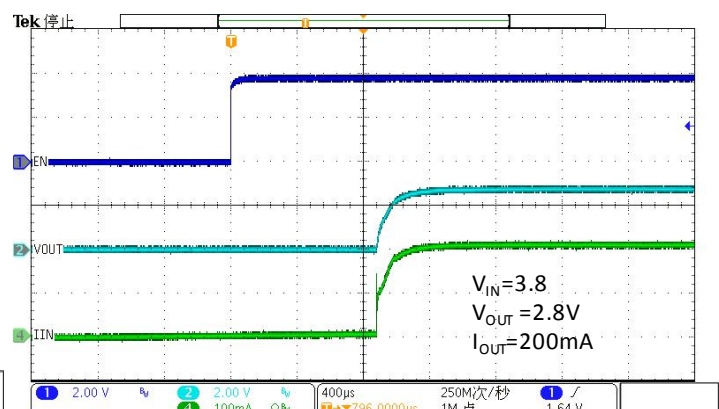
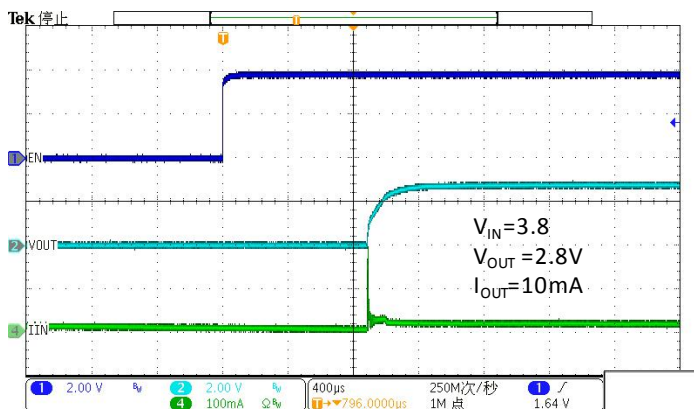
Output Voltage vs. Output Current



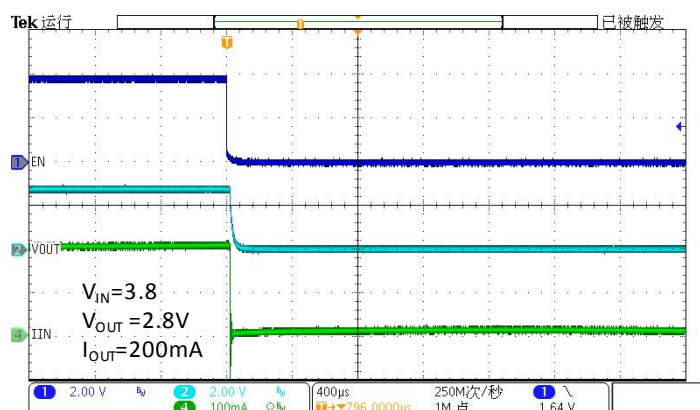
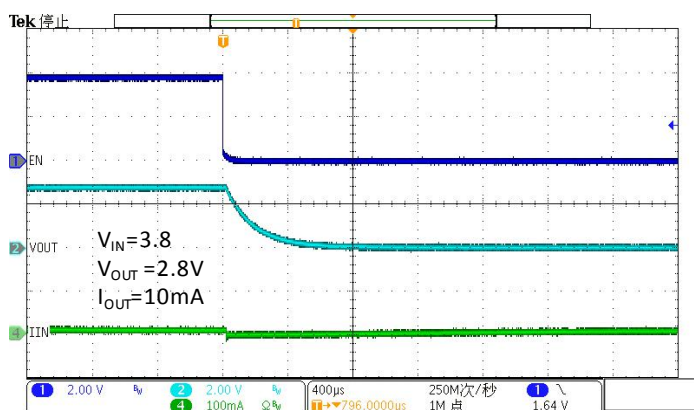
Dropout Voltage vs. Output Current



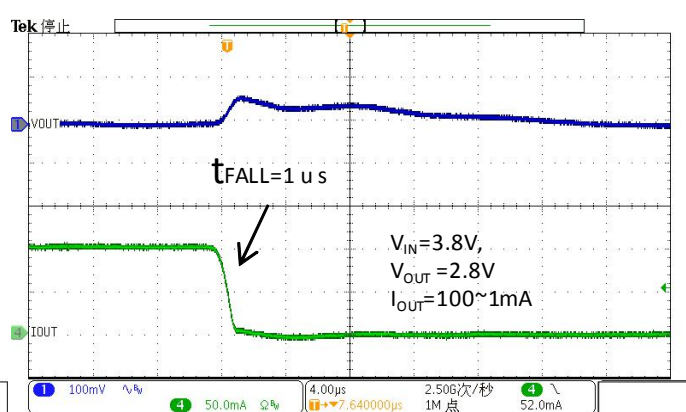
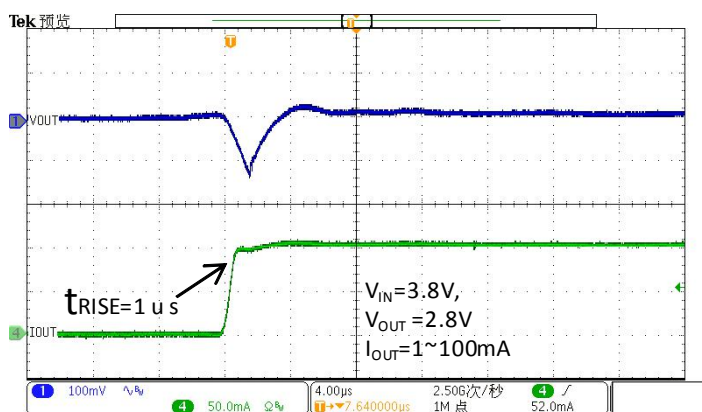
Soft-Start From EN



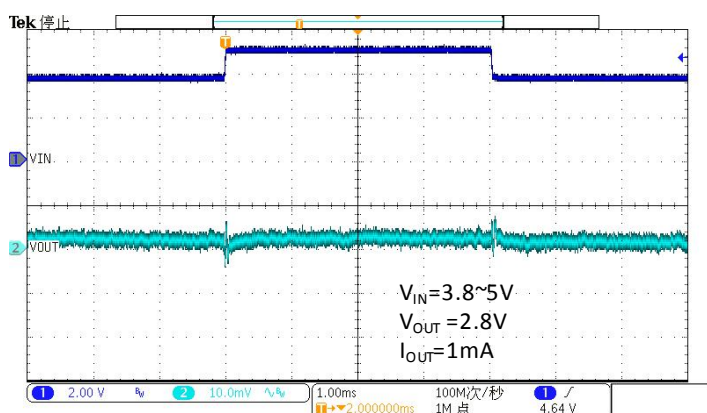
EN Shutdown



LOAD Transient



LINE Transient

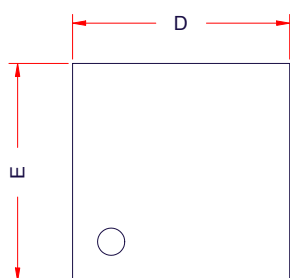
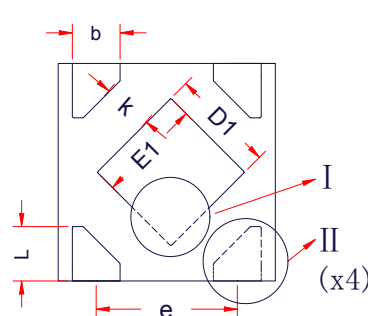
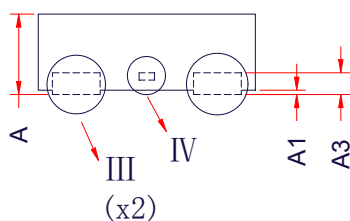
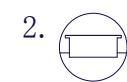


ORDER INFORMATION

Ordering No.	V _{OUT} (V)	Package	Operating Temperature	Marking	Shipping
WL2825D18-4/TR	1.8	DFN1x1-4L	-40~+85°C	MH YW	Tape and Reel, 10000
WL2825D25-4/TR	2.5	DFN1x1-4L	-40~+85°C	MK YW	Tape and Reel, 10000
WL2825D28-4/TR	2.8	DFN1x1-4L	-40~+85°C	ML YW	Tape and Reel, 10000
WL2825D30-4/TR	3.0	DFN1x1-4L	-40~+85°C	MM YW	Tape and Reel, 10000
WL2825D33-4/TR	3.3	DFN1x1-4L	-40~+85°C	MN YW	Tape and Reel, 10000

Marking

M : Device Code
***** : Voltage Code
Y : Year Code
W : Week Codes

PACKAGE OUTLINE DIMENSIONS
DFN1x1-4L

TOP VIEW

BOTTOM VIEW

SIDE VIEW


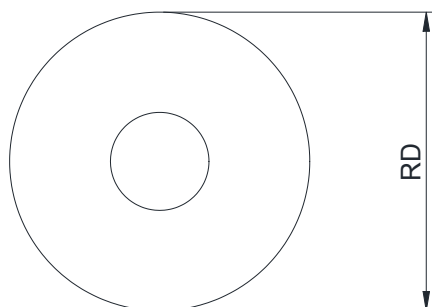
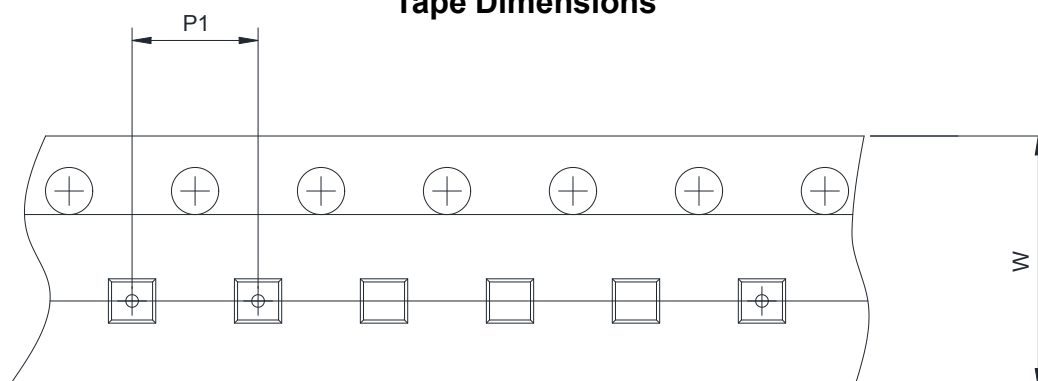
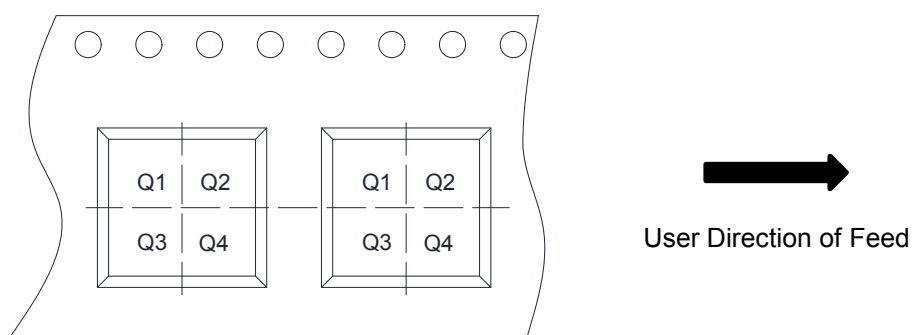
3. (N/A)



2. (N/A)



Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.32	0.37	0.42
A1	-	-	0.05
A3	0.10 Ref.		
b	0.17	0.22	0.28
L	0.17	-	0.30
D	0.95	1.00	1.05
E	0.95	1.00	1.05
D1	0.43	0.48	0.54
E1	0.43	0.48	0.54
K	0.14	-	-
e	0.65BSC		

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