

WL2863C

Ultra-Low Noise, High PSRR LDO, 250mA Linear Regulator for RF and Analog Circuits

Descriptions

The WL2863C is a linear regulator capable of supplying 250-mA output current. Designed to meet the requirements of RF and analog circuits, the WL2863C device provides low noise, high PSRR, low quiescent current and very good load /line transients.

The device is designed to work with a 1 μ F input and 1 μ F output ceramic capacitor (no separate noise Operation bypass capacitor is required).

The WL2863C regulators are available in standard CSP-4L Package. Standard products are Pb-free and Halogen-free.

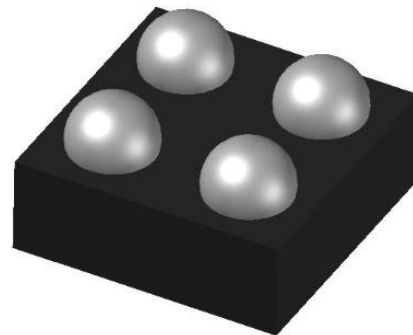
Features

- Input Voltage Range :2.2V~5.5V
- Output Voltage Range :1.2V~4.3V
- Output current :250mA
- PSRR :Typ.100dB at 10mA, f=1KHz
:Typ. 45dB at 10mA , f=1MHz
- Low Dropout :Typ. 115mV at 250mA
- Quiescent current :Typ. 22 μ A
- Low Output Voltage Noise:Typ. 6 μ VRMS
- Output Voltage Tolerance : \pm 2%
- Shutdown Current :Typ. 0.01 μ A
- UVLO Threshold(V) :Typ. 2.05V
- Recommend capacitor :1uF
- Stable with 1 μ F Ceramic Input and Output capacitor
- No Noise Bypass Capacitor Required
- Thermal-Overload Protection

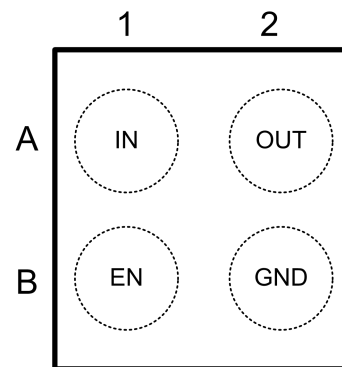
Applications

- Cell phones , radiophone, digital cameras
- Bluetooth, wireless handsets
- HiFi products
- Others portable electronic device

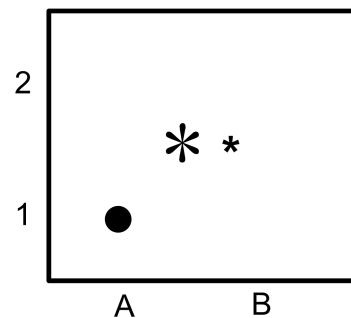
<http://www.ovt.com>



CSP-4L



Pin Configuration (Top View)



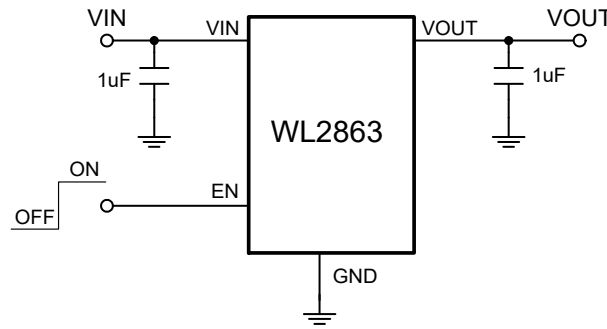
Marking

- * : Voltage Code
- * : Month Code

Order Information

For detail order information, please see page 8

Typical Application

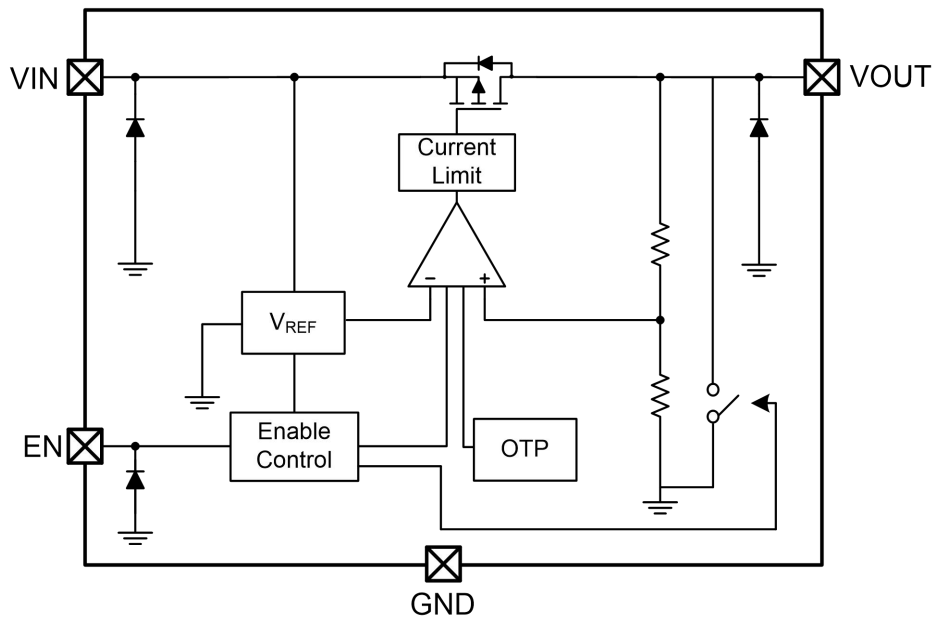


Note : The input and output capacitor must be located a distance of not more than 1 cm

PIN Functions

PIN	Symbol	Description
A1	IN	Input voltage supply pin , 1µF capacitor should be connected at this input
A2	OUT	Regulated output voltage. 1µF capacitor should be connected at this input
B1	EN	Chip enable: Applying $V_{EN} < 0.4\text{ V}$ disables the regulator, Pulling $V_{EN} > 1.2\text{ V}$ enables the LDO.
B2	GND	Common ground connection

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}	300	mA	
Lead Temperature Range	260	°C	
Moisture Sensitivity Level	Level-1		
Storage Temperature Range	-55 ~ 150	°C	
Operating Junction Temperature Range	150	°C	
ESD Ratings	HBM	2000	V
	MM	200	V

Recommend Operating Ratings

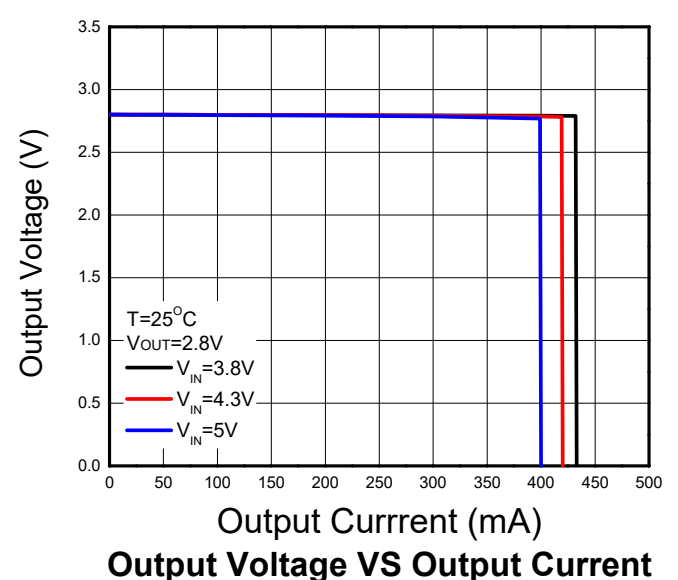
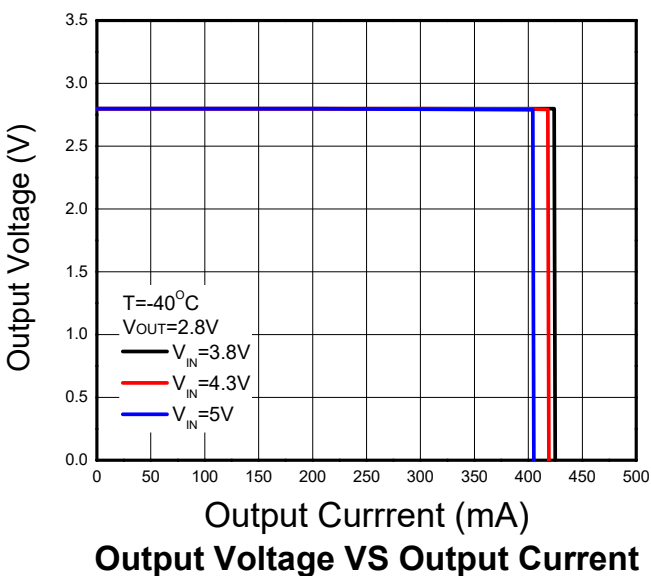
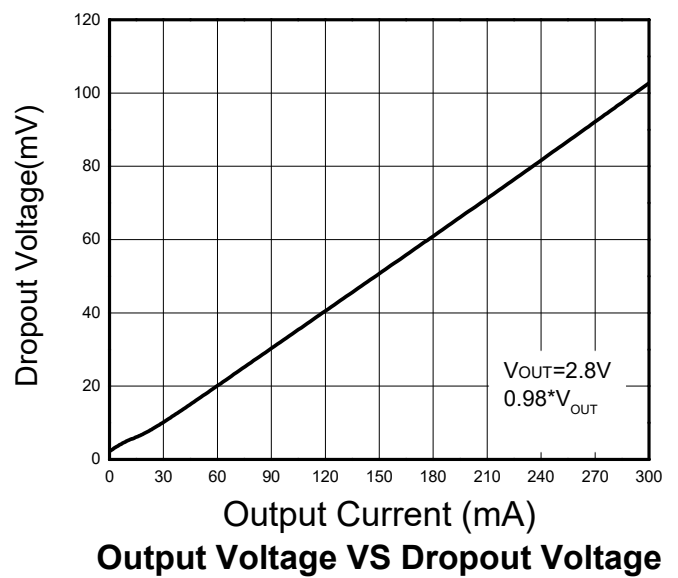
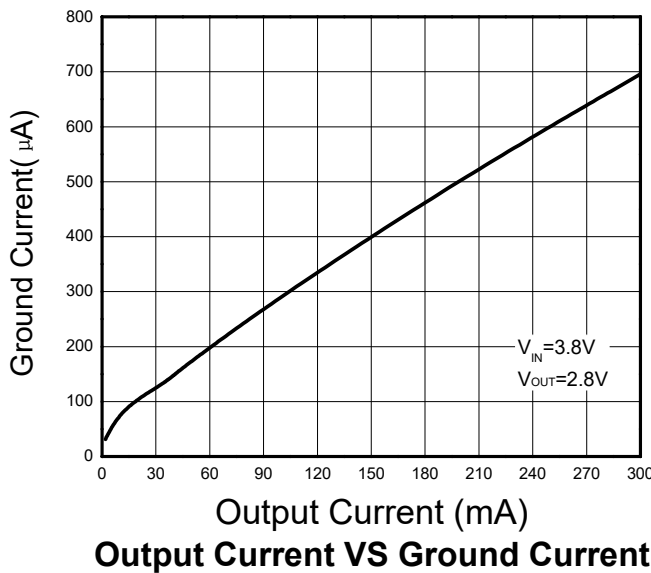
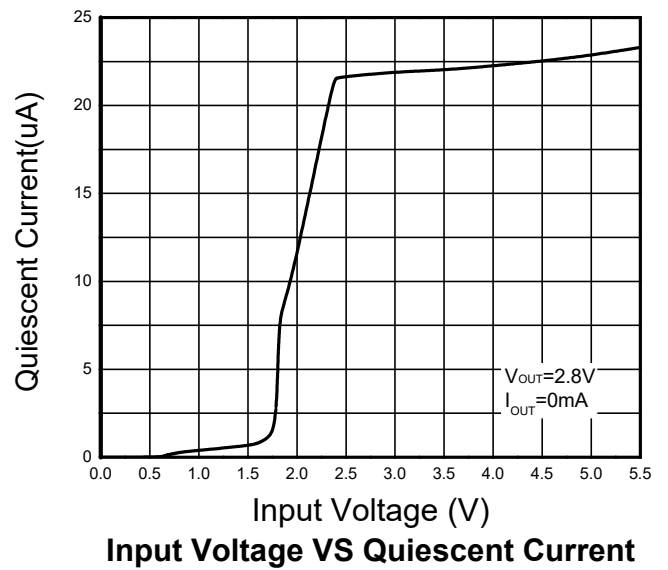
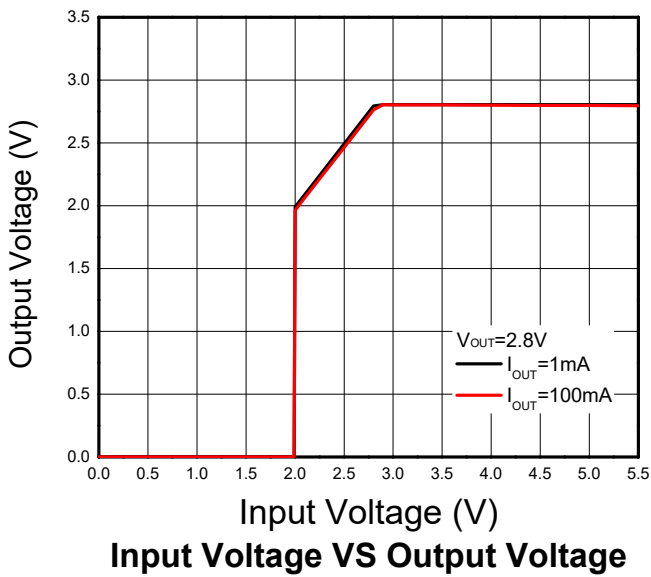
Parameter	Value	Unit
Operating Input Voltage Range ⁽¹⁾	2.2~5.5	V
Operating Output Voltage Range	1.2~4.3	V
Operating Temperature Range	-40~85	°C
Thermal Resistance, $R_{\theta JA}$	250	°C/W

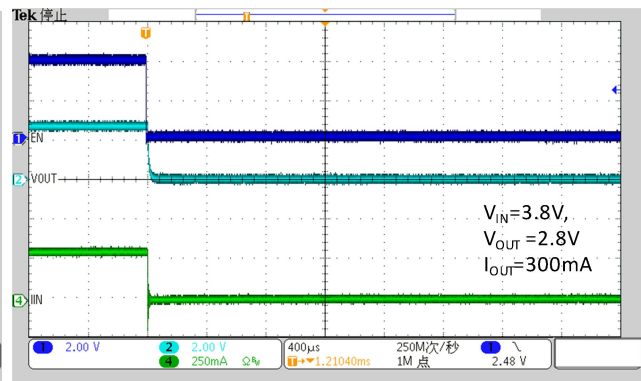
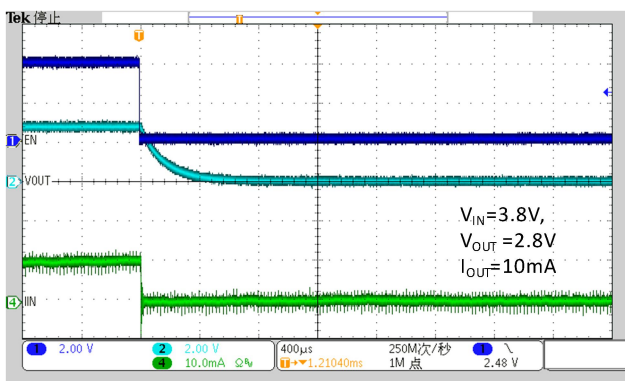
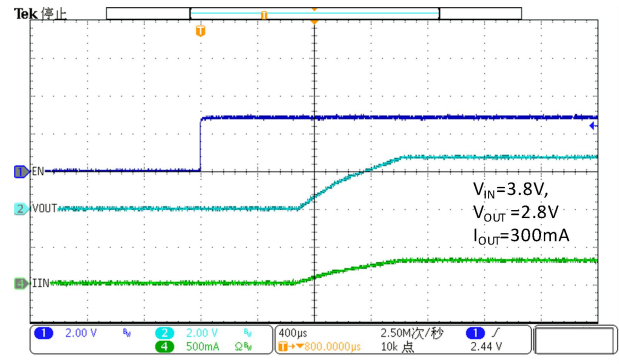
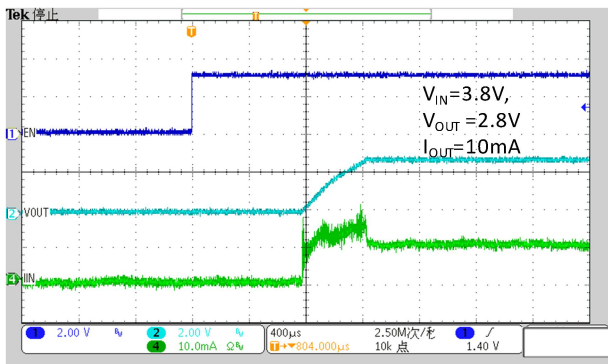
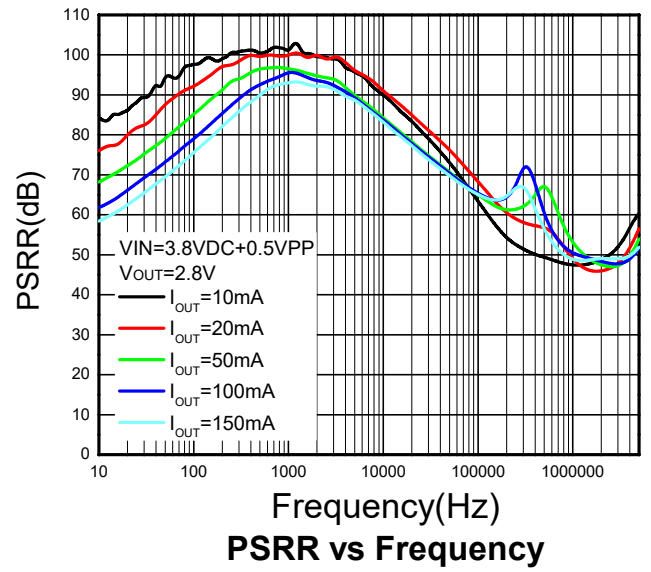
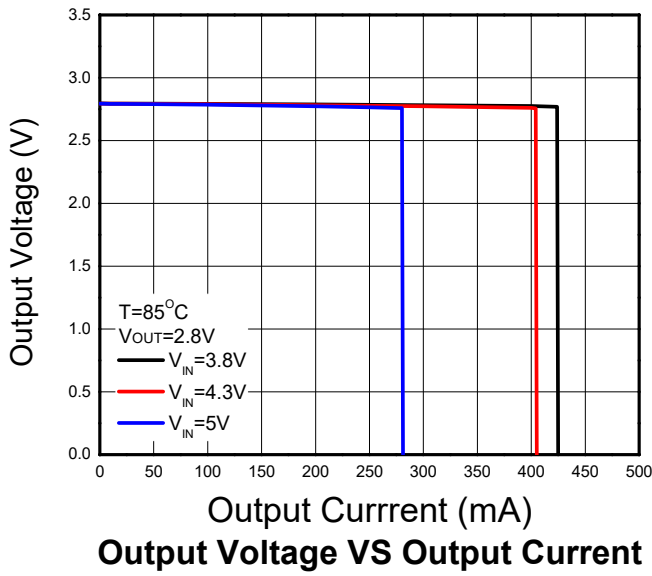
(1) In order to achieve high performance of PSRR, it is recommended that the V_{IN} needs to be no smaller than ($V_{OUT}+0.5V$).

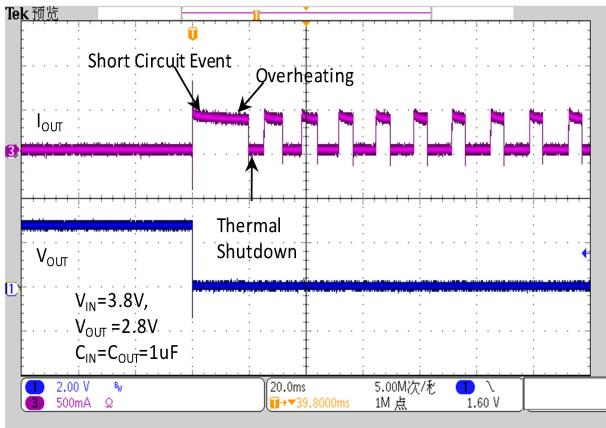
Electronics Characteristics ($V_{IN}=V_{OUT(NOM)}+1V$, $C_{IN}=C_{OUT}=1\mu F$, $V_{EN} = 1.2 V$. Typical values are at $T_a = +25^\circ C$, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating Input Voltage	V_{IN}		2.2		5.5	V
Output Voltage Accuracy	V_{OUT}	$V_{IN} = V_{OUT(NOM)} + 1 V$ $I_{OUT}=1mA$	-2		+2	%
Output Current Limit	I_{LIM}	$V_{OUT} = 90\% V_{OUT(NOM)}$	250			mA
Dropout Voltage		$V_{OUT}=2.8V_{(NOM)}$, $I_{OUT}=250mA$		85		mV
		$V_{OUT}=3.0V_{(NOM)}$, $I_{OUT}=250mA$		80		
Line Regulation	ΔV_{LINE}	$V_{IN}=(V_{OUT}+1)V\sim 5V$, $I_{OUT}=1mA$		0.1	6.5	mV
Load Regulation	ΔV_{Load}	$I_{OUT}=1\sim 200mA$		10		mV
Quiescent Current	I_Q	$I_{OUT}=0mA$		22	28	μA
Short Current	I_{SHORT}	$V_{OUT}=0V$		420	550	mA
Shut-down Current	I_{SHDN}	$V_{EN}=0V$, $V_{IN} = 4.8 V$		0.01	1.0	μA
Power Supply Rejection Rate	PSRR	$I_{OUT} = 10mA$	$f=100Hz$		95	dB
			$f=1KHz$		100	
			$f=100KHz$		62	
			$f=1MHz$		45	
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	μA
Turn-On Time		$C_{OUT} = 1\mu F$, From assertion of V_{EN} to $V_{OUT} = 95\% V_{OUT} (NOM)$		1		mS
Output Voltage Noise	e_{NO}	10Hz to 100KHz,	$I_{OUT} = 1mA$		6	$\mu VRMS$
			$I_{OUT} = 200mA$		5	
Thermal shutdown threshold	T_{SDH}	Temperature rising		150		$^\circ C$
	T_{SDL}	Temperature falling		120		$^\circ C$
Under voltage lock out threshold	V_{UVLO}			2.05		V
Active Output Discharge Resistance	R_{LOW}	$V_{EN}<0.4V$		300		Ω
Line Transient	$Tran_{LINE}$	$V_{IN} = (V_{OUT(NOM)} + 2 V)$ to $(V_{OUT(NOM)} + 1 V)$ in 30 us, $I_{OUT} = 1 mA$	-1			mV
		$V_{IN} = (V_{OUT(NOM)} + 1 V)$ to $(V_{OUT(NOM)} + 2 V)$ in 30 us, $I_{OUT} = 1 mA$			+1	
Load Transient	$Tran_{LOAD}$	$I_{OUT} = 1 mA$ to $200 mA$ in 10 us	-10			mV
		$I_{OUT} = 200 mA$ to $1 mA$ in 10 us			+10	

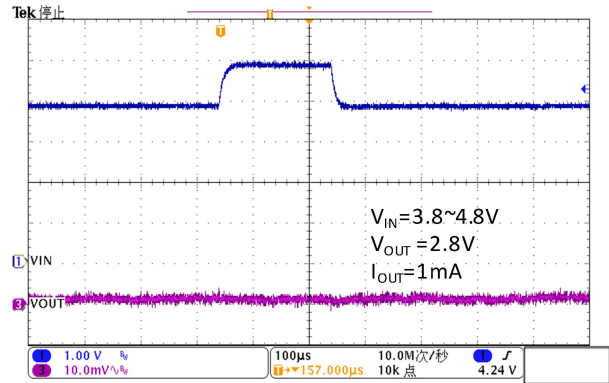
Typical characteristics (Ta=25 °C, VIN=VOUT +1 V, CIN=COUT=1uF, unless otherwise noted)



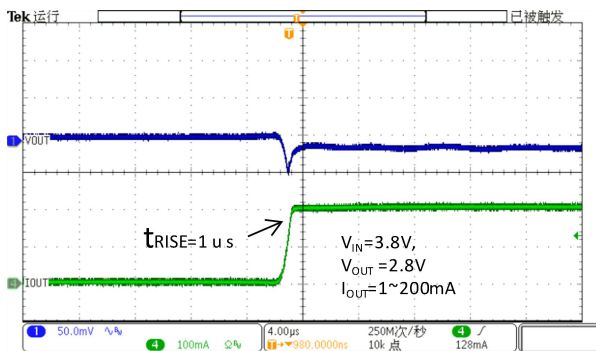




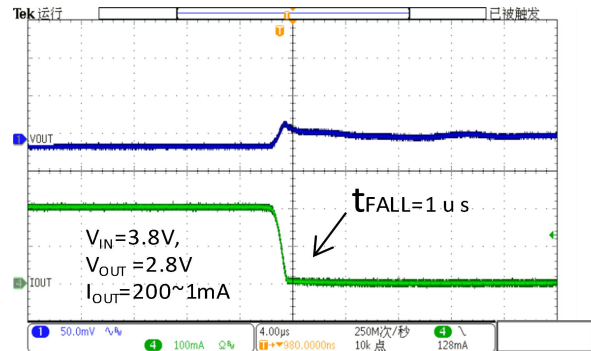
Short Circuit and Thermal Shutdown



Line Transient Response



Load Transient Response



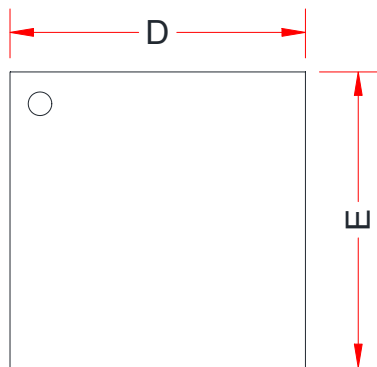
Load Transient Response

ORDER INFORMATION

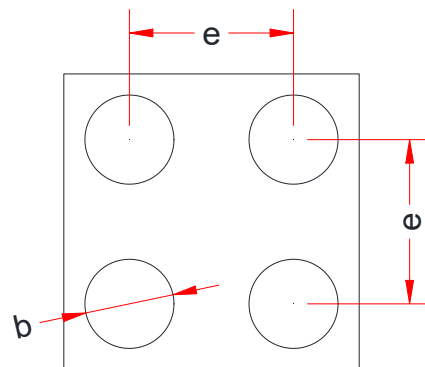
Ordering No.	Vout (V)	Package	Operating Temperature	Marking	Shipping
WL2863C12-4/TR	1.2	CSP-4L	-40~+85°C	H*	Tape and Reel, 3000
WL2863C18-4/TR	1.8	CSP-4L	-40~+85°C	C*	Tape and Reel, 3000
WL2863C28-4/TR	2.8	CSP-4L	-40~+85°C	D*	Tape and Reel, 3000
WL2863C29-4/TR	2.9	CSP-4L	-40~+85°C	J*	Tape and Reel, 3000
WL2863C30-4/TR	3.0	CSP-4L	-40~+85°C	F*	Tape and Reel, 3000
WL2863C33-4/TR	3.3	CSP-4L	-40~+85°C	G*	Tape and Reel, 3000

Marking

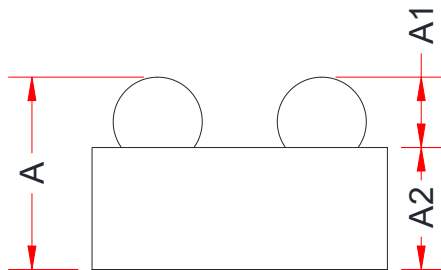
- * : Voltage Code
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PACKAGE OUTLINE DIMENSIONS
CSP-4L


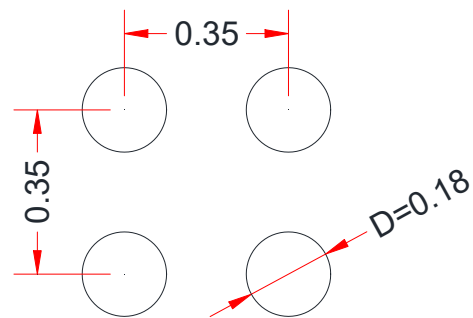
TOP VIEW



BOTTOM VIEW



SIDE VIEW

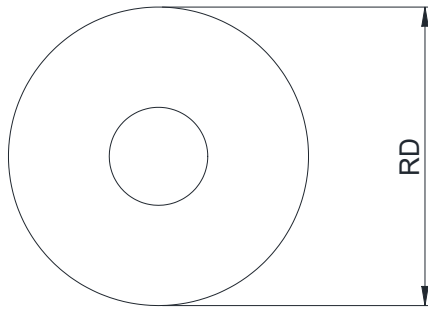


RECOMMENDED LAND PATTERN (Unit:mm)

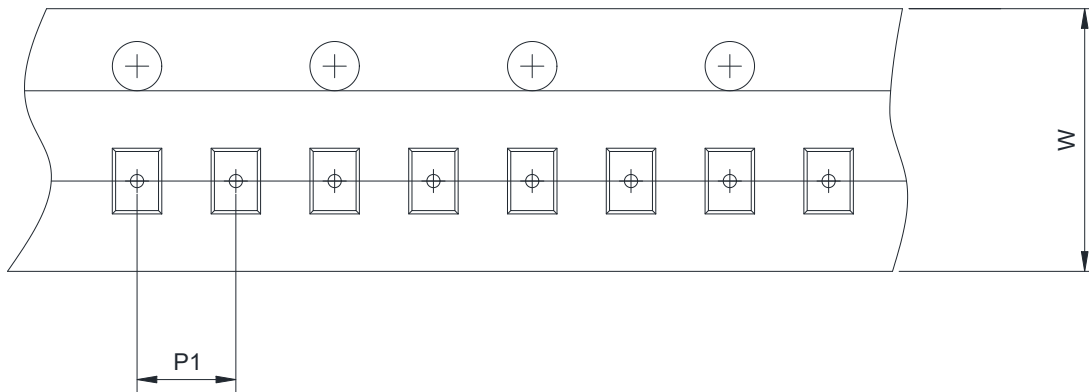
Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.37	0.41	0.45
A1	0.12	0.14	0.17
A2	0.25	0.26	0.28
D	0.61	0.63	0.66
E	0.61	0.63	0.66
e	0.35BSC		
b	0.17	0.19	0.21

TAPE AND REEL INFORMATION

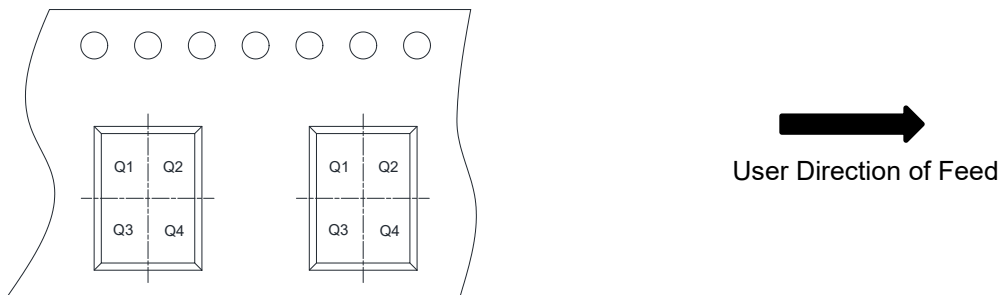
Reel Dimensions



Tape Dimensions



Quadrant Assignments For PIN1 Orientation In Tape



RD	Reel Dimension	<input checked="" type="checkbox"/> 7inch	<input type="checkbox"/> 13inch
W	Overall width of the carrier tape	<input checked="" type="checkbox"/> 8mm	<input type="checkbox"/> 12mm <input type="checkbox"/> 16mm
P1	Pitch between successive cavity centers	<input type="checkbox"/> 2mm	<input checked="" type="checkbox"/> 4mm <input type="checkbox"/> 8mm
Pin1	Pin1 Quadrant	<input checked="" type="checkbox"/> Q1	<input type="checkbox"/> Q2 <input type="checkbox"/> Q3 <input type="checkbox"/> Q4