

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.

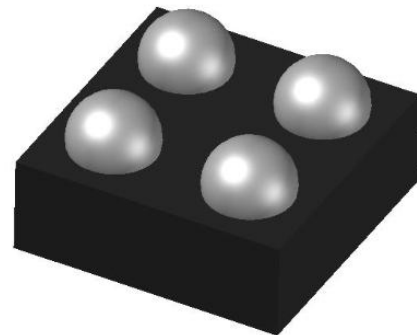
Features

- 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 V_{RMS}
- Output Voltage Tolerance : $\pm$ 2%
- Shutdown Current :Typ. 0.01 μ A
- UVLO Threshold(V) :Typ. 2.05V
- Recommend capacitor :1 μ F
- Stable with 1 μ F Ceramic Input and Output capacitor
- No Noise Bypass Capacitor Required
- Thermal-Overload Protection

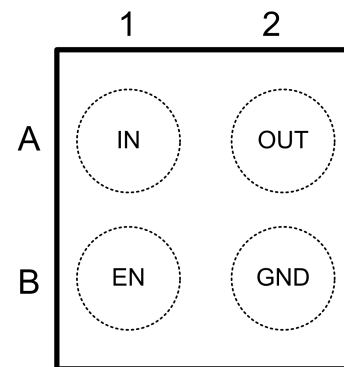
Applications

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

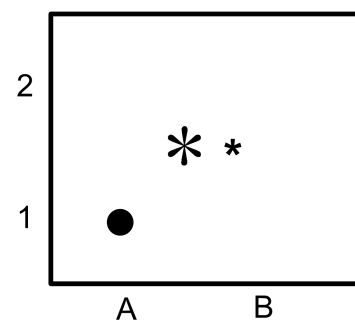
[Http://www.ovt.com](http://www.ovt.com)



CSP-4L



Pin Configuration (Top View)



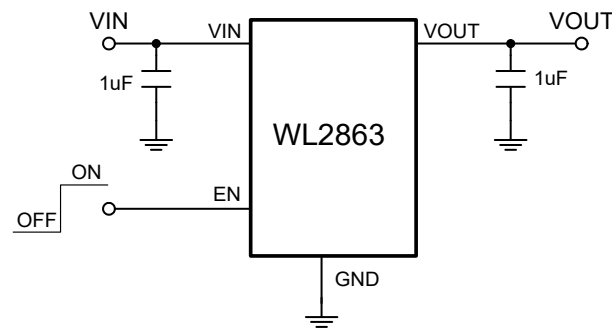
Marking

- * : Voltage Code
- * : Month Code

Order Information

For detail order information, please see page 8

Typical Application

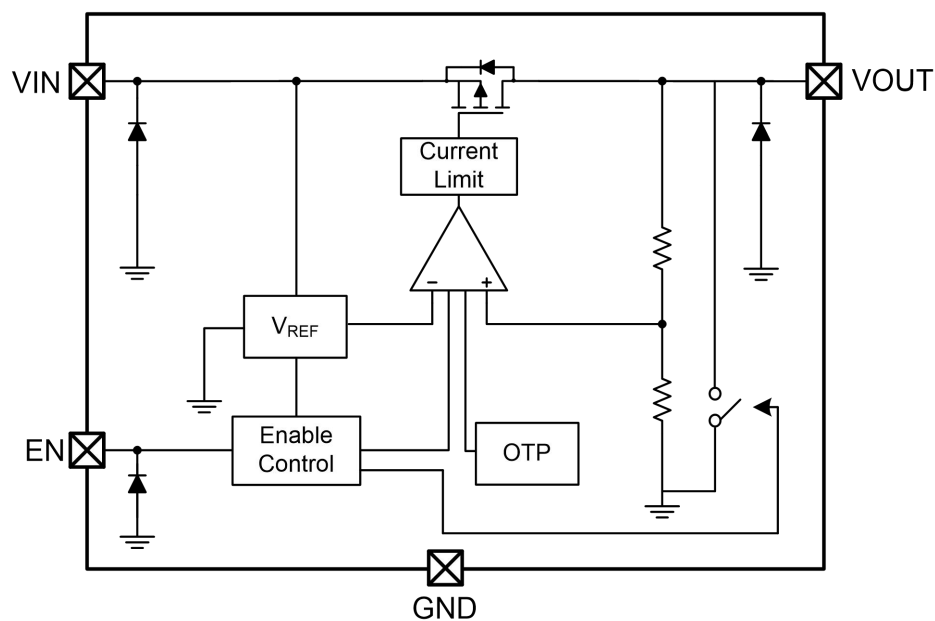


Note : The input and output capacitor must be located a distance of not more than 1 cm

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	$^{\circ}\text{C}$
Storage Temperature Range	-55 ~ 150	$^{\circ}\text{C}$
Operating Junction Temperature Range	150	$^{\circ}\text{C}$
ESD Ratings	HBM	2000
	MM	200

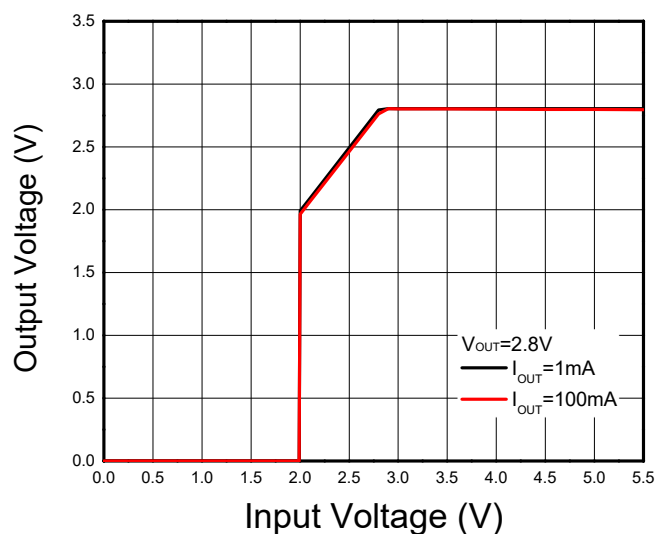
Recommend Operating Ratings

Parameter	Value	Unit
Operating Supply voltage	2.2 ~ 5.5	V
Operating Temperature Range	-40 ~ 85	$^{\circ}\text{C}$
Thermal Resistance, $R_{\theta JA}$	206	$^{\circ}\text{C/W}$

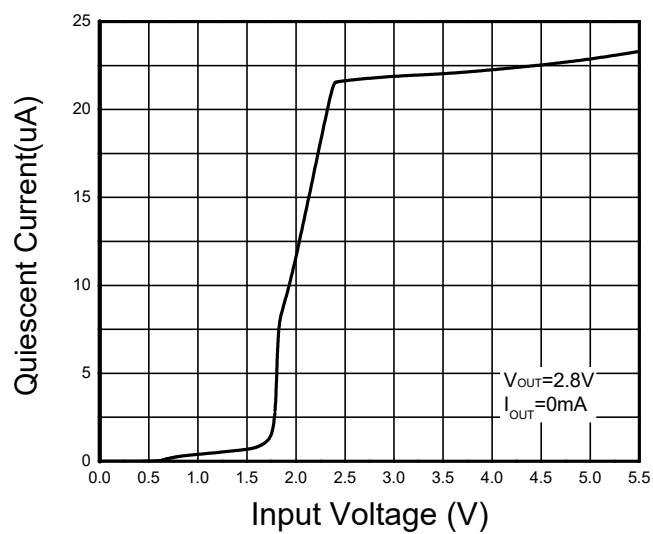
Electronics Characteristics ($V_{IN}=V_{OUT(NOM)}+1V$, $C_{IN}=C_{OUT}=1\mu F$, $V_{EN} = 1.2 V$. Typical values are at $T_a = +25^{\circ}C$, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating Input Voltage	V_{IN}		2.2		5.5	V
Output Voltage Accuracy	V_{OUT}	$V_{IN} = V_{OUT(NOM)} + 1 V$ $I_{OUT}=1mA$	-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 f=1KHz f=100KHz f=1MHz		95 100 62 45		dB
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, $I_{OUT} = 1mA$ $I_{OUT} = 200mA$		6 5		$\mu VRMS$
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 μs , $I_{OUT} = 1 mA$	-1			mV
		$V_{IN} = (V_{OUT(NOM)} + 1 V)$ to $(V_{OUT(NOM)} + 2 V)$ in 30 μs , $I_{OUT} = 1 mA$			+1	
Load Transient	$Tran_{LOAD}$	$I_{OUT} = 1 mA$ to 200 mA in 10 μs	-10			mV
		$I_{OUT} = 200 mA$ to 1 mA in 10 μs			+10	

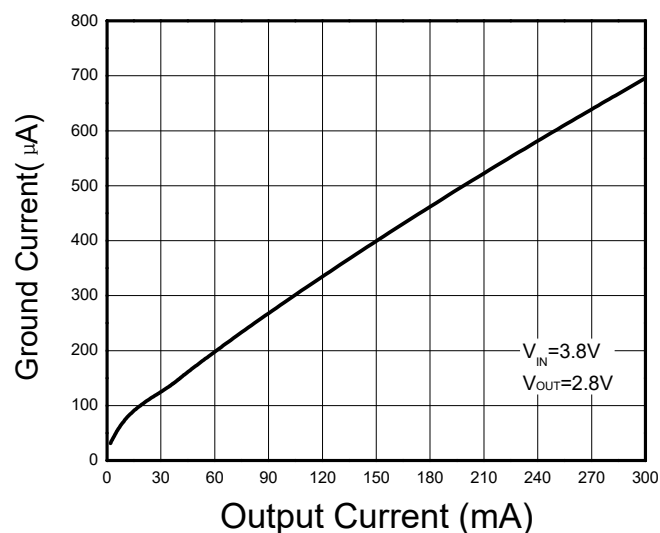
Typical characteristics ($T_a=25^\circ\text{C}$, $V_{IN}=V_{OUT}+1\text{ V}$, $C_{IN}=C_{OUT}=1\mu\text{F}$, unless otherwise noted)



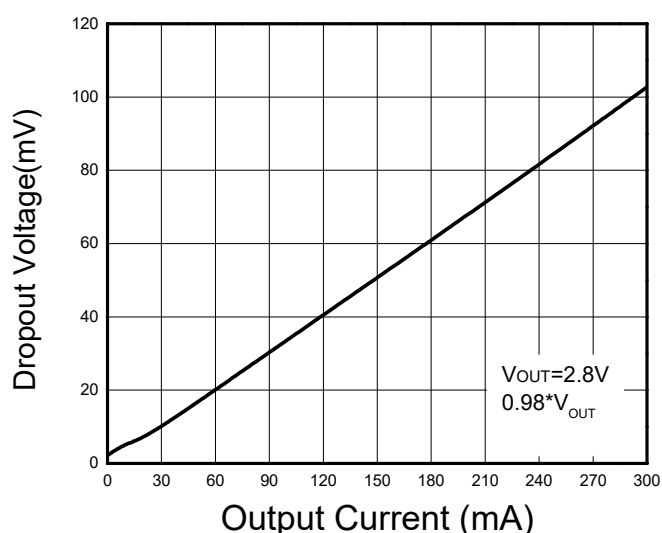
Input Voltage VS Output Voltage



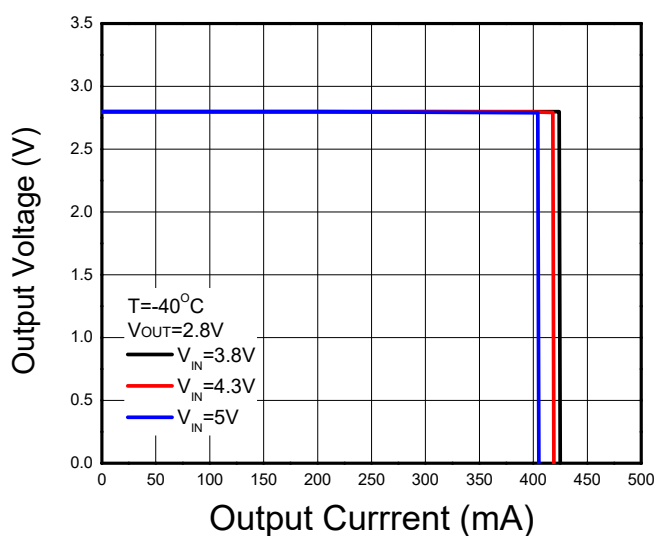
Input Voltage VS Quiescent Current



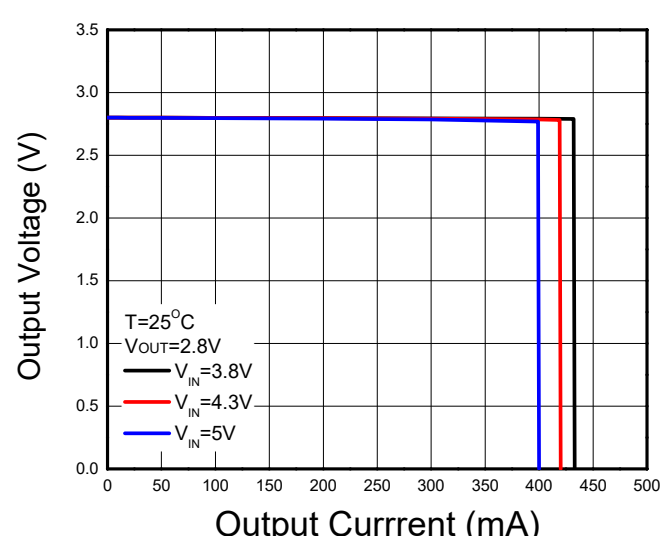
Output Current VS Ground Current



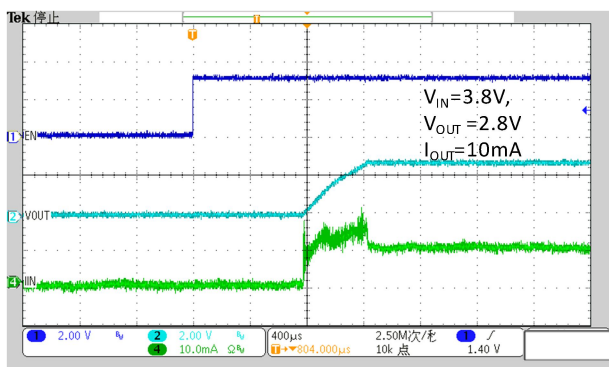
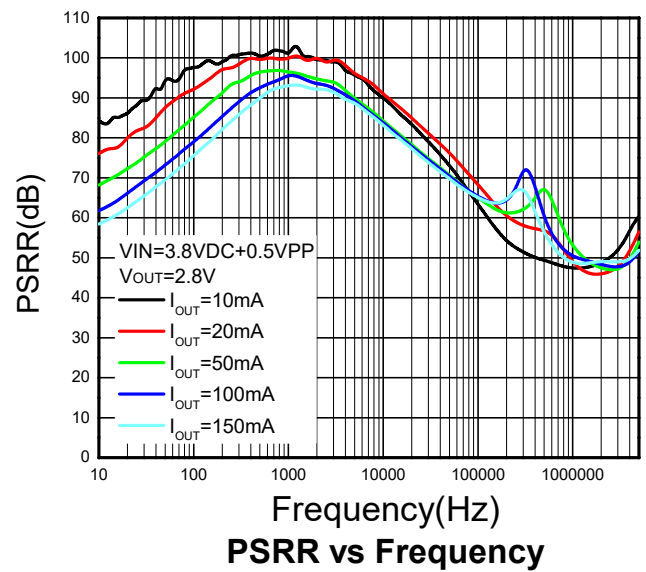
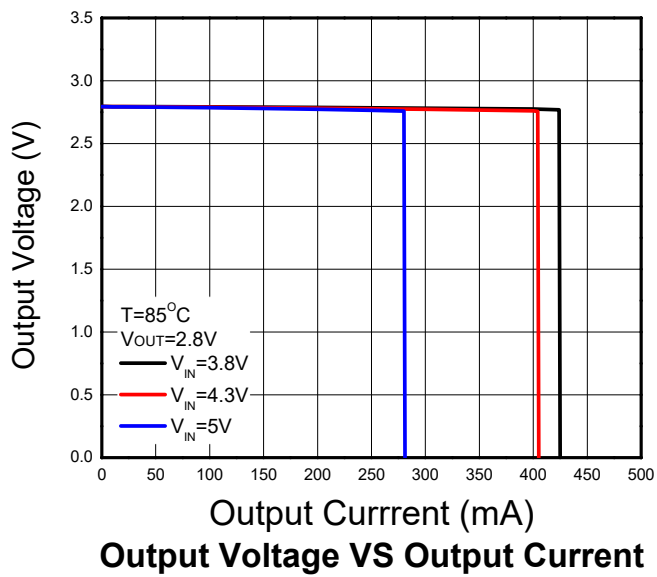
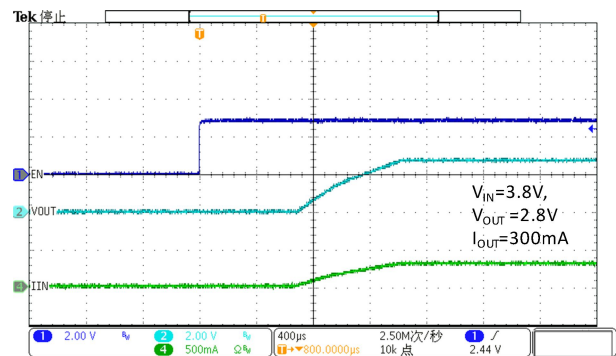
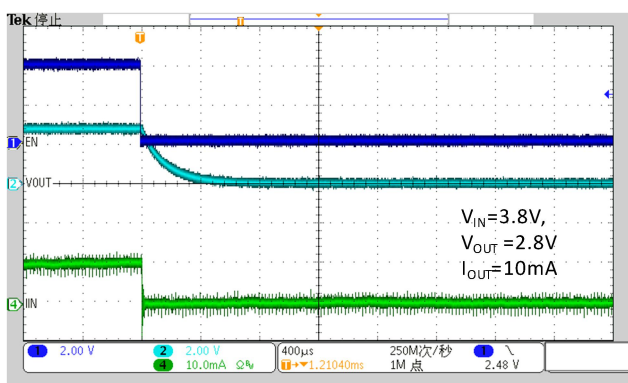
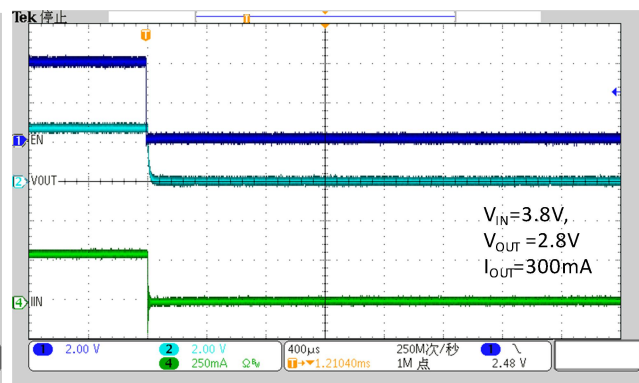
Output Voltage VS Dropout Voltage

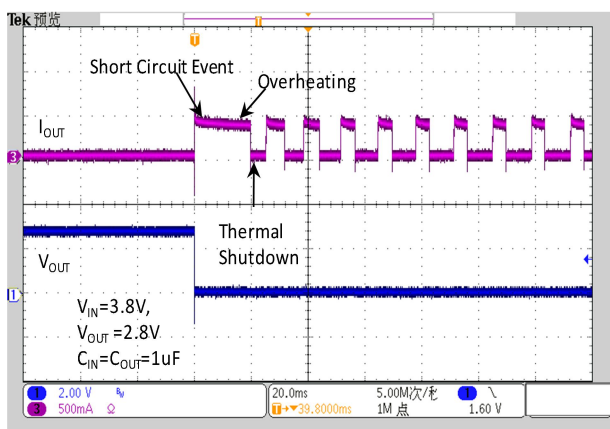


Output Voltage VS Output Current

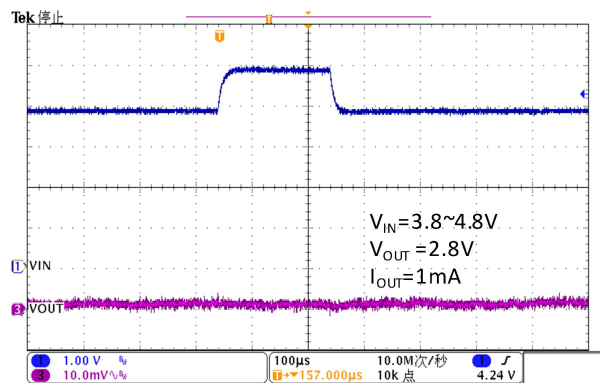


Output Voltage VS Output Current

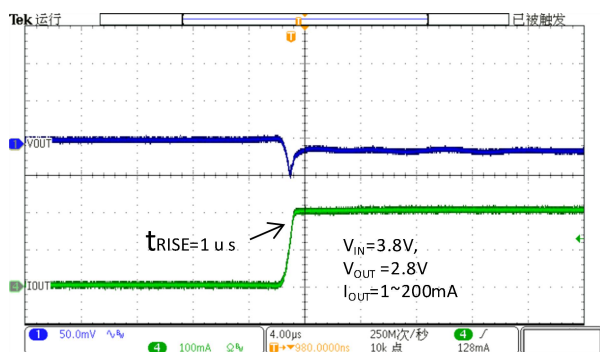

Soft-Start From EN

Soft-Start From EN

EN Shutdown

EN Shutdown



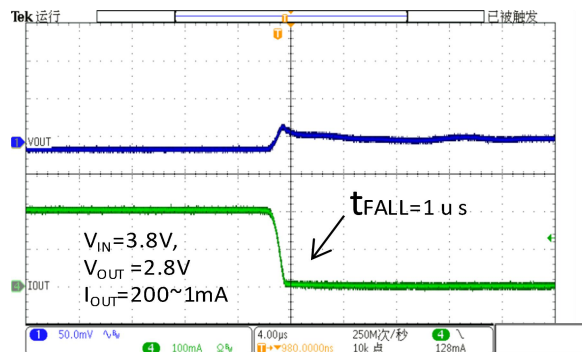
Short Circuit and Thermal Shutdown



Line Transient Response



Load Transient Response



Load Transient Response

ORDER INFORMATION

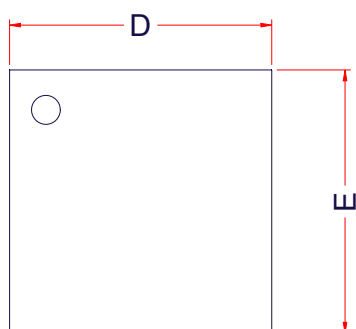
Ordering No.	Vout (V)	Package	Operating Temperature	Marking	Shipping
WL2863C12-4/TR	1.2	CSP-4L	-40~+85°C	H*	Tape and Reel, 3000
WL2863C18-4/TR	1.8	CSP-4L	-40~+85°C	C*	Tape and Reel, 3000
WL2863C28-4/TR	2.8	CSP-4L	-40~+85°C	D*	Tape and Reel, 3000
WL2863C29-4/TR	2.9	CSP-4L	-40~+85°C	J*	Tape and Reel, 3000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

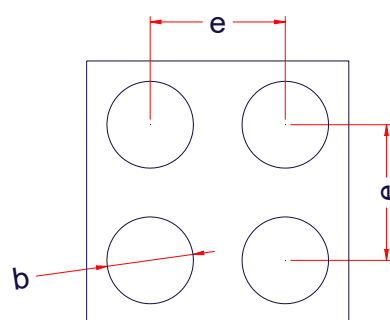
- * : Voltage Code
- * : Month Code

PACKAGE OUTLINE DIMENSIONS

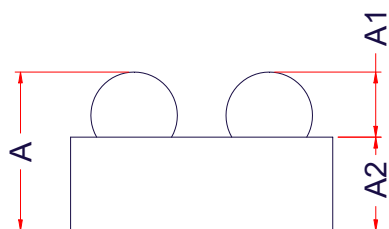
CSP-4L



TOP VIEW

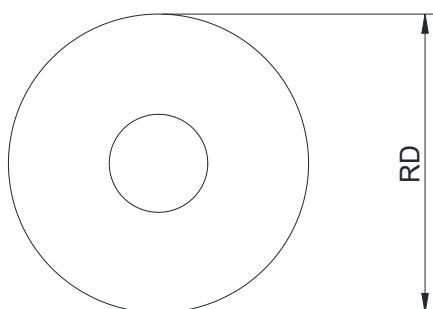
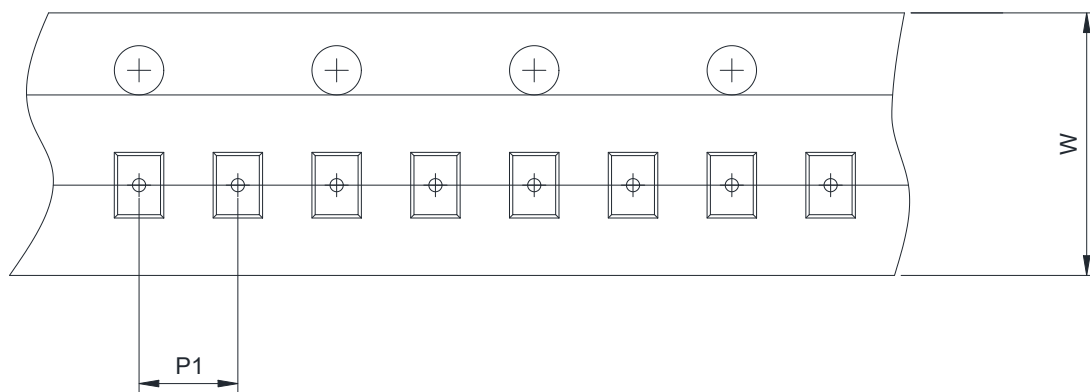
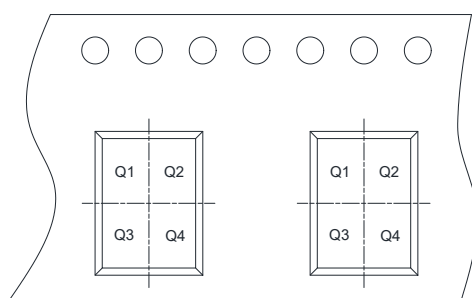


BOTTOM VIEW



SIDE VIEW

Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.37	0.41	0.45
A1	0.12	0.14	0.17
A2	0.25	0.27	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



 User Direction of Feed

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