

## WL2863B

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

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

### Descriptions

The WL2863B is a linear regulator capable of supplying 250-mA output current. Designed to meet the requirements of RF and analog circuits, the WL2863B device provides low noise, high PSRR, low quiescent current and very good load /line transients.

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

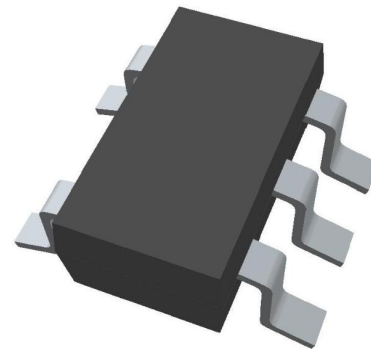
The WL2863B regulators are available in standard SOT-23-5L Package. Standard products are Pb-free and Halogen-free.

### Features

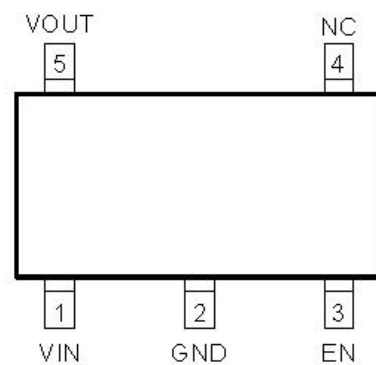
- Input Voltage Range :2.2V~5.5V
- Output Voltage Range :1.2V~4.3V
- Output current :250mA
- PSRR :Typ.101dB at 10mA , f =1KHz  
:Typ. 45dB at 10mA , f =1MHz
- Low Dropout :Typ. 115mV at 250mA
- Quiescent current :Typ. 21 $\mu$ A
- Low Output Voltage Noise:Typ. 7 $\mu$ VRMS
- Output Voltage Tolerance : $\pm$ 2%
- Shutdown Current :Typ. 0.01 $\mu$ A
- UVLO Threshold(V) :Typ. 1.90V
- Recommend capacitor :1uF
- Stable with 1 $\mu$ F Ceramic Input and Output capacitor
- No Noise Bypass Capacitor Required
- Thermal-Overload Protection

### Applications

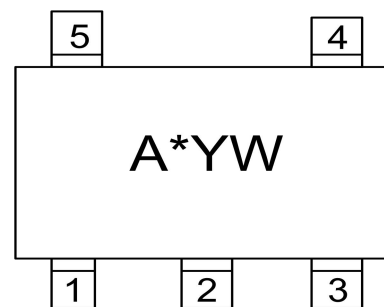
- Cell phones , radiophone, digital cameras
- Bluetooth, wireless handsets
- HiFi products
- Others portable electronics device



**SOT-353**



**Pin Configuration (Top View)**



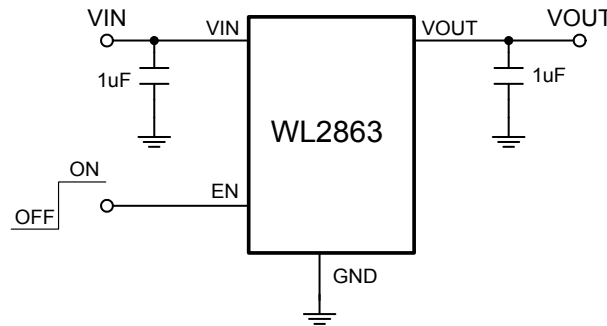
### Marking

- A** : Device Code
- \*** : Voltage Code
- Y** : Year Code
- W** : Week Code

### Order Information

For detail order information, please see page 8

Typical Application

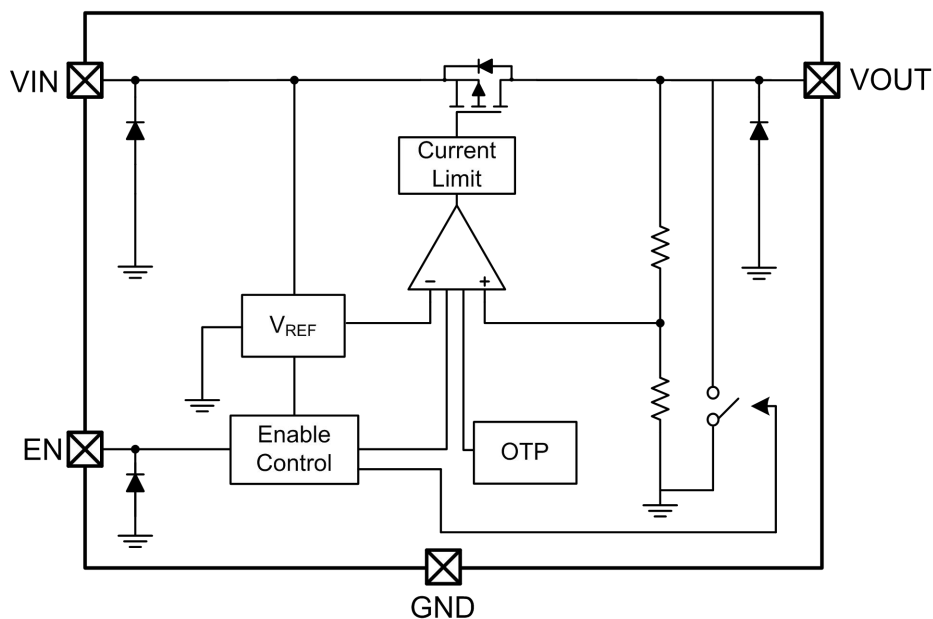


Note : The input and output capacitor must be located a distance of not more than 1 cm

PIN Functions

PIN	Symbol	Description
1	VIN	Input voltage supply pin , 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	NC	No internal electrical connection
5	VOUT	Regulated output voltage. 1µF capacitor should be connected at this input

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	V
	MM	200	V

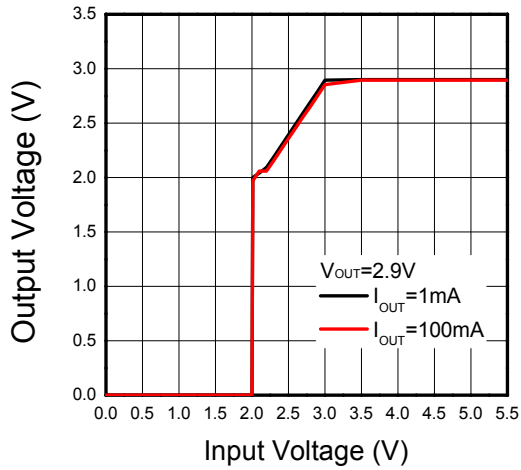
**Recommend Operating Ratings**

Parameter	Value	Unit
Operating Supply voltage	2.2~5.5	V
Operating Temperature Range	-40~85	$^\circ\text{C}$
Thermal Resistance, $R_{\theta JA}$	157	$^\circ\text{C/W}$

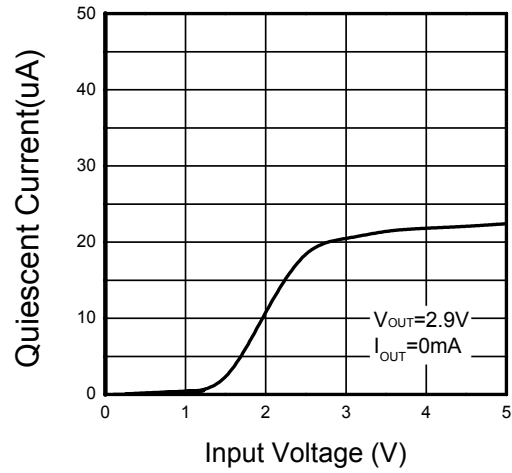
**Electronics Characteristics** ( $V_{IN}=V_{OUT(NOM)}+1V$ ,  $C_{IN}=C_{OUT}=1\mu F$ ,  $V_{EN} = 1.2 V$ . Typical values are at  $T_a = +25^{\circ}C$ , unless otherwise noted)

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		$V_{OUT}=2.9V_{(NOM)}$ , $I_{OUT}=250mA$		115	150	mV
Line Regulation	$\Delta V_{LINE}$	$V_{IN}=2.2V\sim 5V$ , $I_{OUT}=1mA$		0.1		mV
Load Regulation	$\Delta V_{Load}$	$I_{OUT}=1\sim 200mA$		15		mV
Quiescent Current	$I_Q$	$I_{OUT}=0mA$		21	25	$\mu A$
Short Current	$I_{SHORT}$	$V_{OUT}=0V$		390		mA
Shut-down Current	$I_{SHDN}$	$V_{EN} = 0.4 V$ , $V_{IN} = 4.8 V$		0.01	1.0	$\mu A$
Power Supply Rejection Rate	PSRR	$I_{OUT} = 10mA$	$f=100Hz$	96		dB
			$f=1KHz$	101		
			$f=100KHz$	60		
			$f=1MHz$	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	$\mu A$
Turn-On Time		$C_{OUT} = 1\mu F$ , From assertion of $V_{EN}$ to $V_{OUT} = 95\% V_{OUT(NOM)}$		1.5		mS
Output Voltage Noise	$e_{NO}$	10Hz to 100KHz, $I_{OUT} = 1mA$ $I_{OUT} = 200mA$		7 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	$V_{UVLO}$			1.9		V
Active Output Discharge Resistance	$R_{LOW}$	$V_{EN}<0.4V$		300		$\Omega$
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	

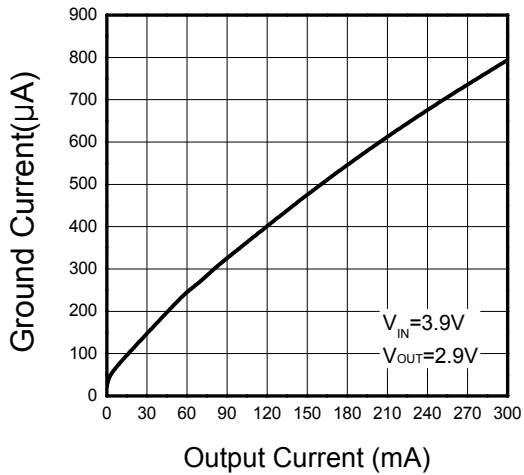
Typical characteristics ( $T_a=25^\circ\text{C}$ ,  $V_{IN}=V_{OUT}+1\text{ V}$ ,  $C_{IN}=C_{OUT}=1\mu\text{F}$ , unless otherwise noted)



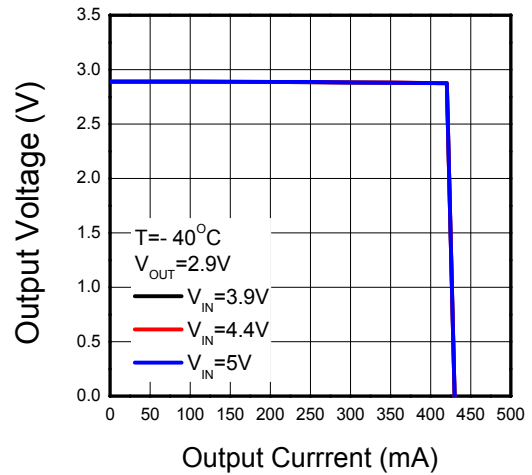
Output voltage vs. Supply voltage



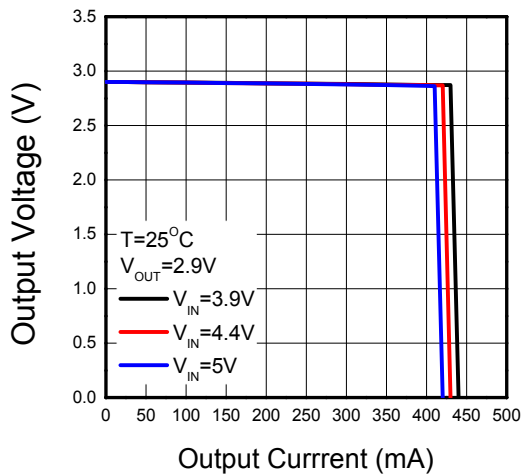
Input Voltage vs. Quiescent Current



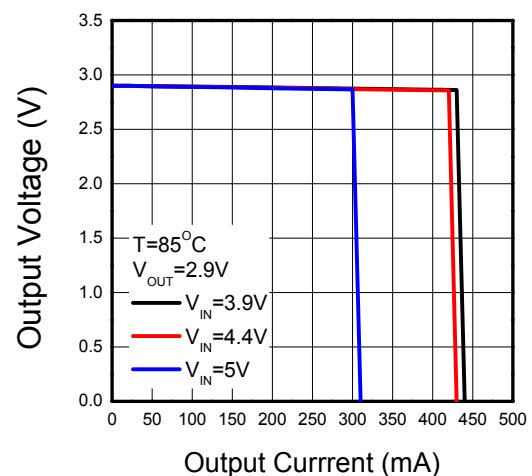
Ground Current vs. Output Current



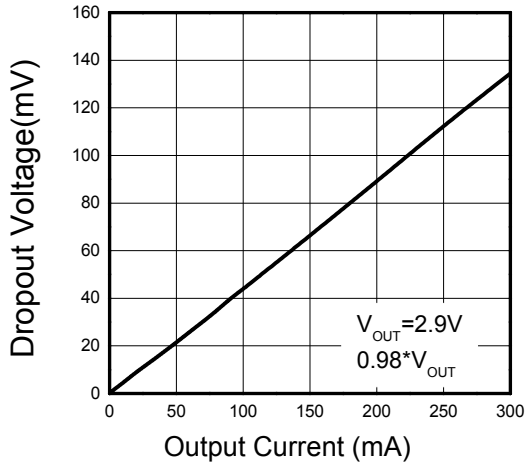
Output Voltage vs. Output Current



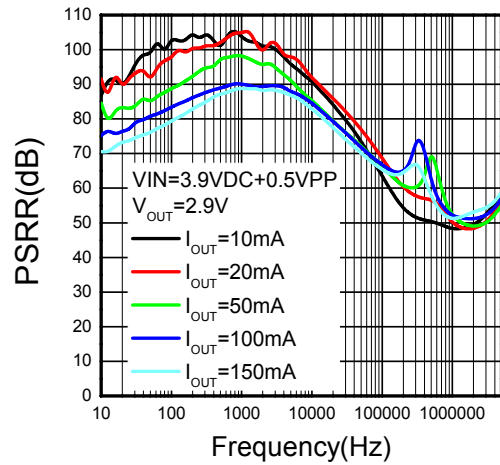
Output Voltage vs. Output Current



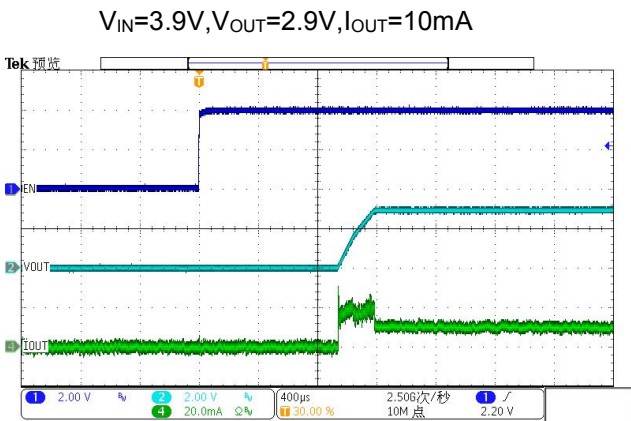
Output Voltage vs. Output Current



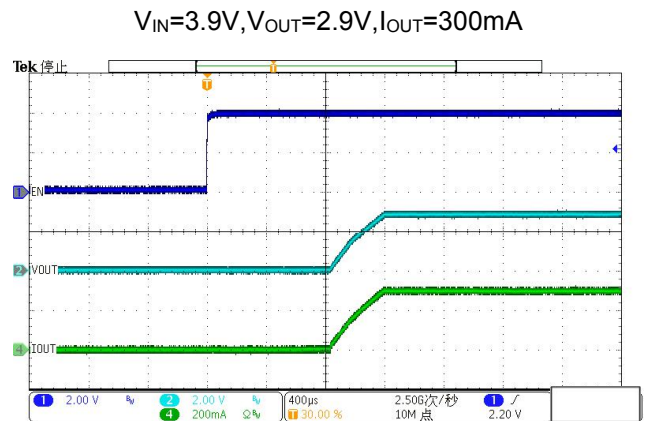
Output Voltage vs. Dropout Current



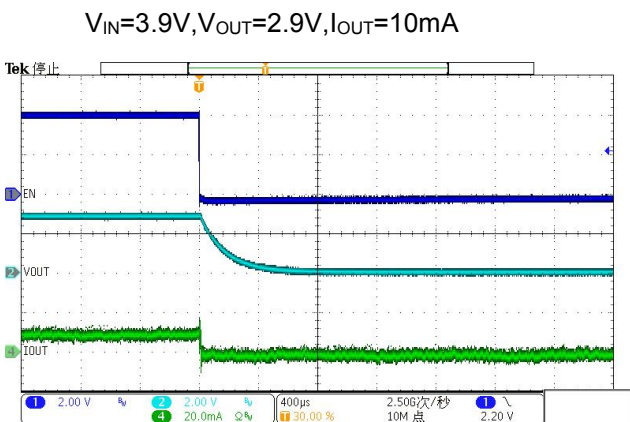
PSRR vs. Frequency



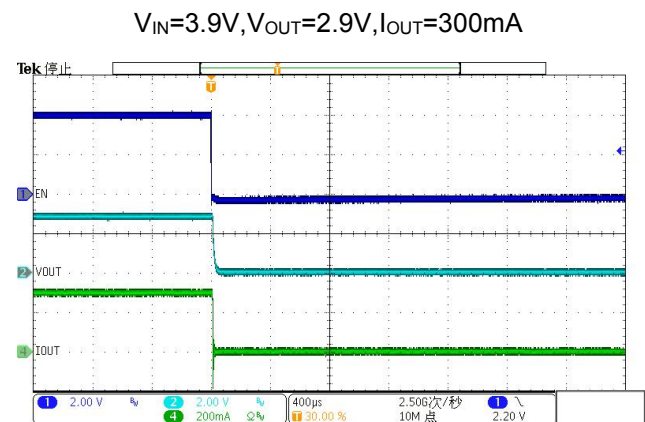
Soft-Start From EN



Soft-Start From EN

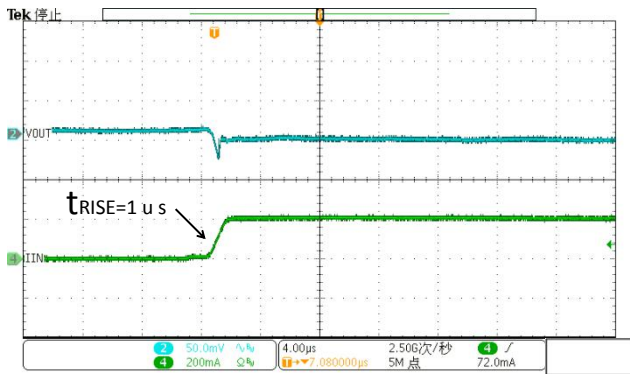


EN Shutdown



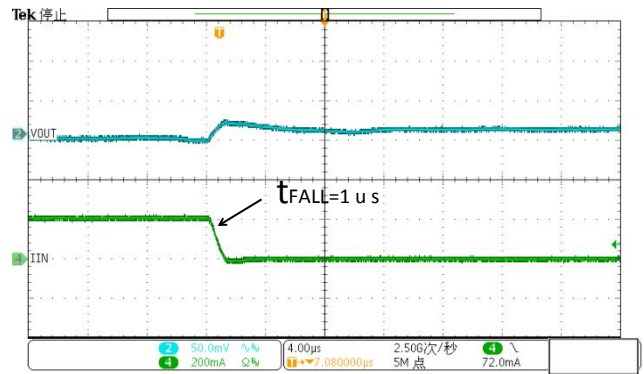
EN Shutdown

$V_{IN}=V_{EN}=3.9V, V_{OUT}=2.9V, I_{OUT}=1mA\sim 200mA$



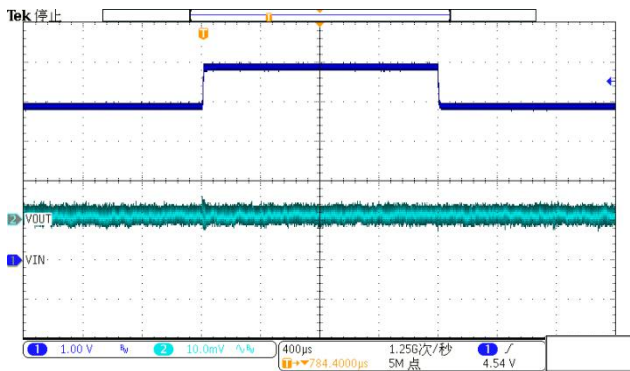
Load Transient Response

$V_{IN}=V_{EN}=3.9V, V_{OUT}=2.9V, I_{OUT}=200mA\sim 1mA$

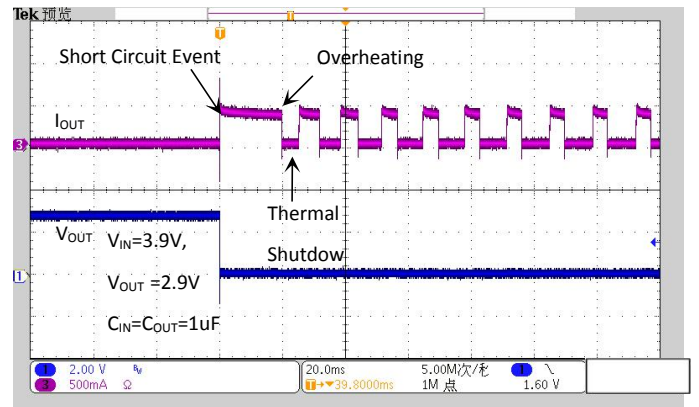


Load Transient Response

$V_{IN}=V_{EN}=3.9V\sim 4.9V, V_{OUT}=2.9V, I_{OUT}=1mA$



Line Transient Response



Short Circuit and Thermal Shutdown

### ORDER INFORMATION

Ordering No.	V <sub>OUT</sub> (V)	Package	Operating Temperature	Marking	Shipping
WL2863B29-5/TR	2.9	SOT-353	-40~+85°C	AgYW	Tape and Reel, 3000

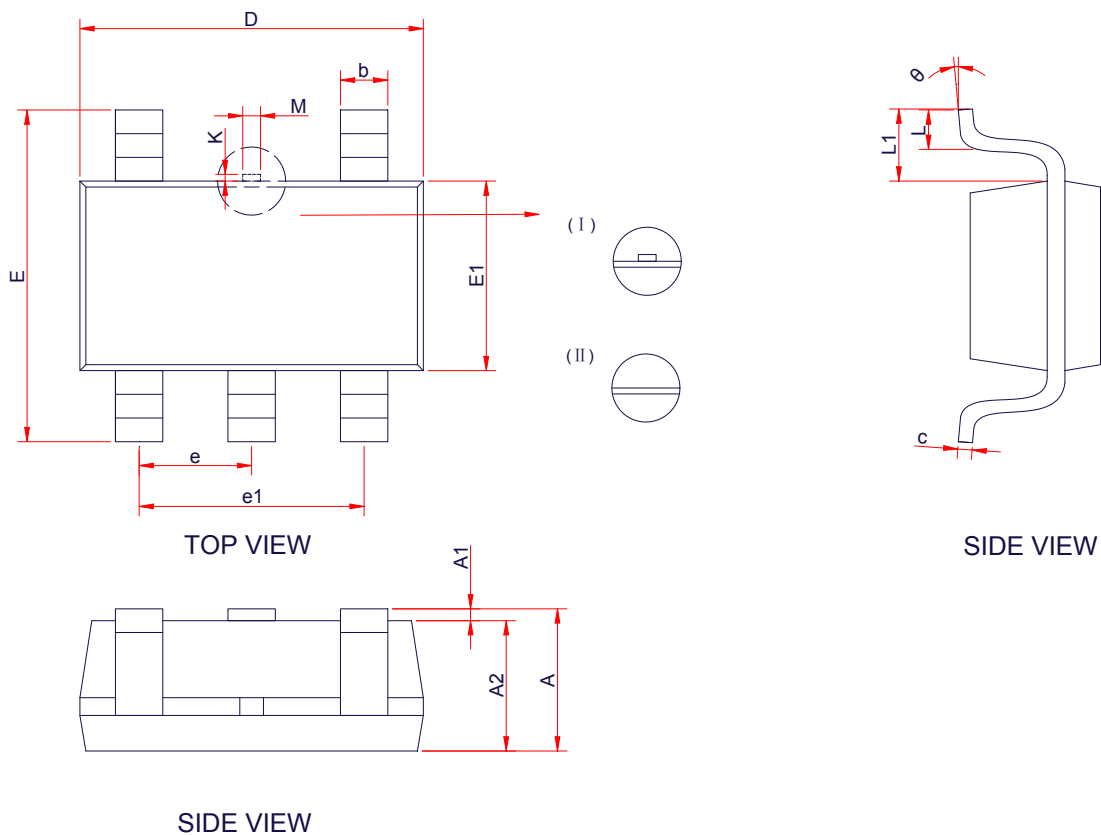
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PACKAGE OUTLINE DIMENSIONS

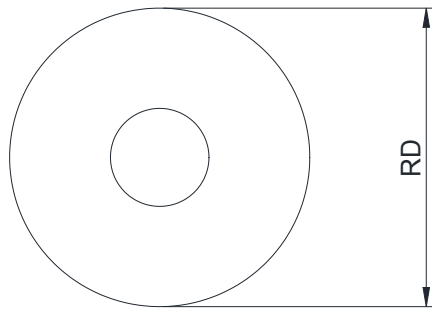
SOT-353



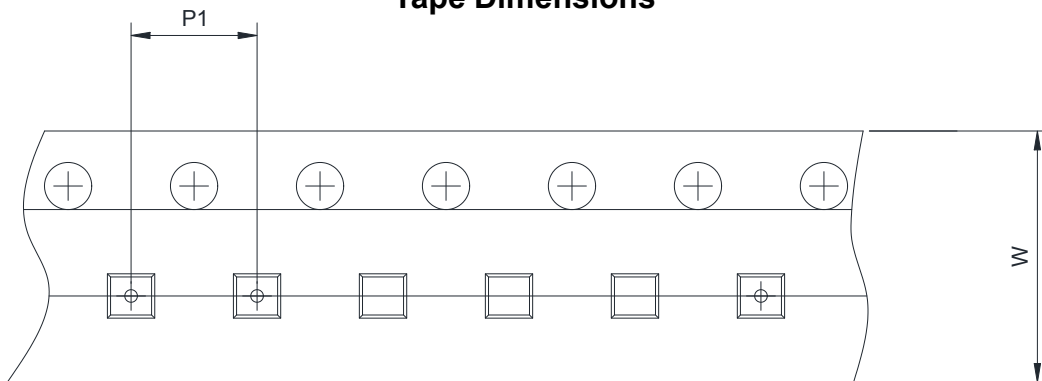
Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.80	0.95	1.10
A1	0.00	-	0.10
A2	0.80	0.90	1.00
b	0.15	0.25	0.35
c	0.08	-	0.20
D	2.00	2.10	2.20
E1	1.15	1.25	1.35
E	2.15	2.30	2.45
e	0.65 Typ.		
e1	1.20	1.30	1.40
L1	0.50 Ref.		
L	0.26	0.36	0.46
M	0.10	0.15	0.25
K	0.00	-	0.25
θ	0 °	-	14 °

TAPE AND REEL INFORMATION

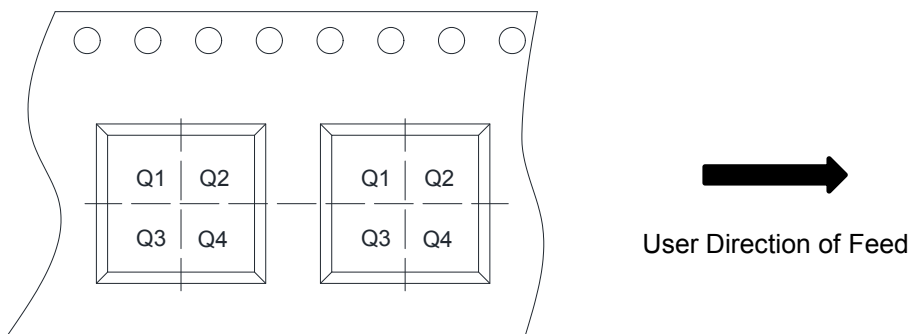
Reel Dimensions



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		
P1	Pitch between successive cavity centers	<input type="checkbox"/> 2mm	<input checked="" type="checkbox"/> 4mm	<input type="checkbox"/> 8mm	
Pin1	Pin1 Quadrant	<input type="checkbox"/> Q1	<input type="checkbox"/> Q2	<input checked="" type="checkbox"/> Q3	<input type="checkbox"/> Q4