

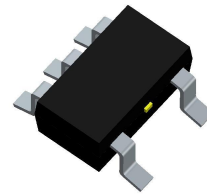
## WL2856E

**High Input Voltage, Low Quiescent Current LDO**

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

### Descriptions

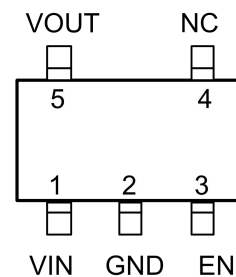
The WL2856E series is a high accuracy, high input voltage low quiescent current, high speed, and low dropout Linear regulator with high ripple rejection.



**SOT-23-5L**

The WL2856E offers over-current limit and over temperature protection to ensure the device working in well conditions.

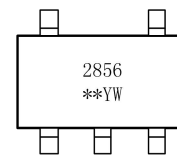
The WL2856E regulators are available in standard SOT-23-5L packages. Standard products are Pb-free and Halogen-free.



### Features

- Supply Voltage : 4.5V~36V
- Output Range : 0.8V~5.5V
- Output Accuracy : <+/-2%
- Output Current : 150mA@(V<sub>IN</sub>-V<sub>OUT</sub>=2V)(Typ.)
- PSRR : 60dB @ 1KHz
- Dropout Voltage : 900mV @ I<sub>OUT</sub>=150mA
- Quiescent Current : 14μA@V<sub>IN</sub>=12V(Typ.)

### Pin Configuration (Top View)



#### Marking

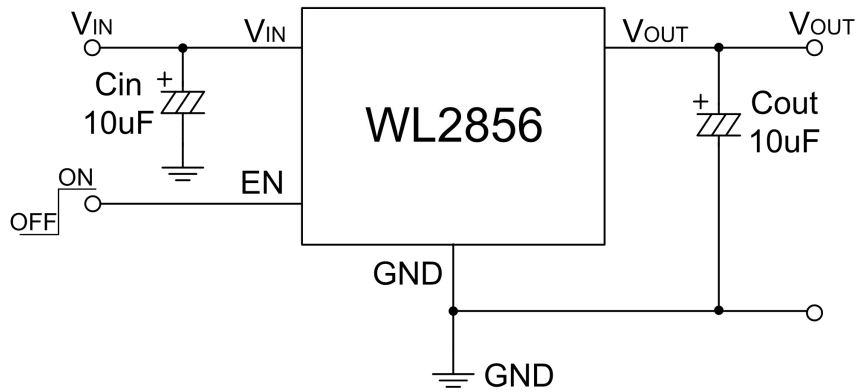
**2856\*\*** = Device Code  
**Y** = Year  
**W** = Week

### Applications

- Battery-Powered Equipment
- Communication Equipment
- Audio/Video Equipment
- Smoke Detector

### Order Information

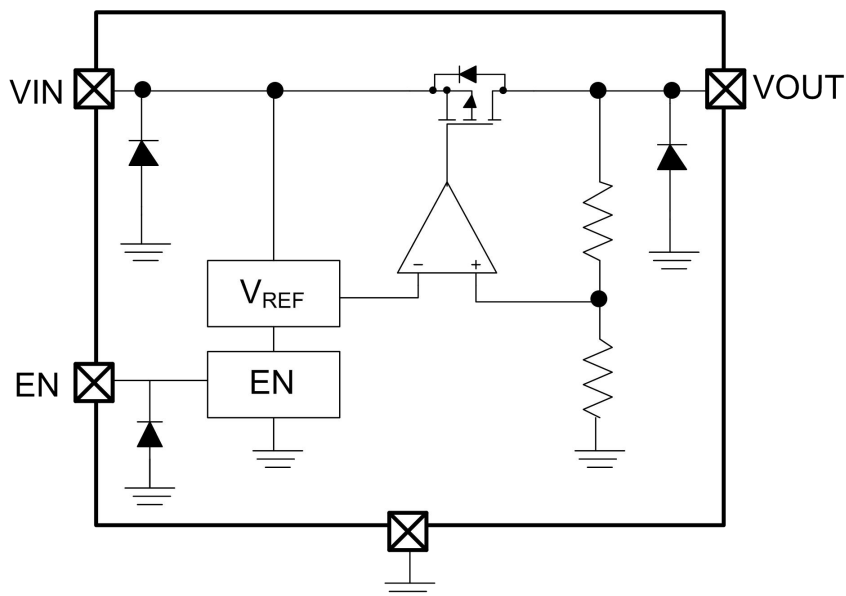
For detail order information, please see page 10.

**Typical Application**


(Locate  $C_{in}$  and  $C_{out}$  as close to the  $V_{in}$  pin and  $V_{out}$  pin as possible.)

**Pin Description**

PIN	Symbol	Description
1	VIN	Voltage Input
2	GND	Ground
3	EN	Enable(Active high)
4	NC	Not Connect
5	VOUT	Voltage Output

**Block Diagram**


**Absolute Maximum Ratings**

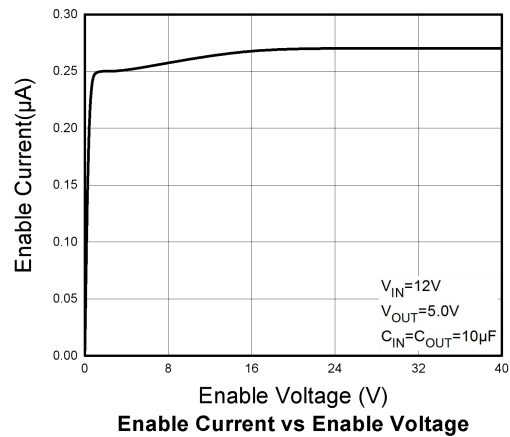
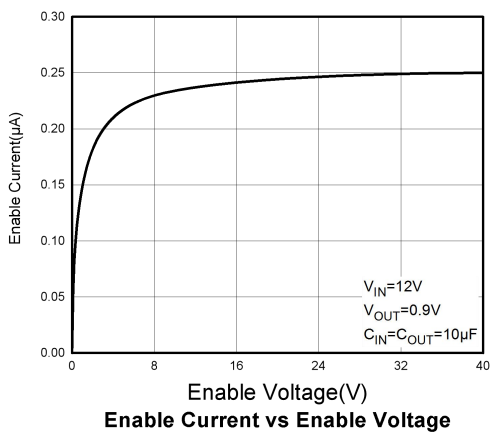
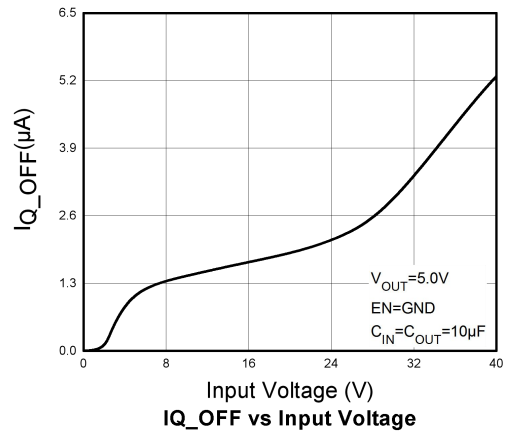
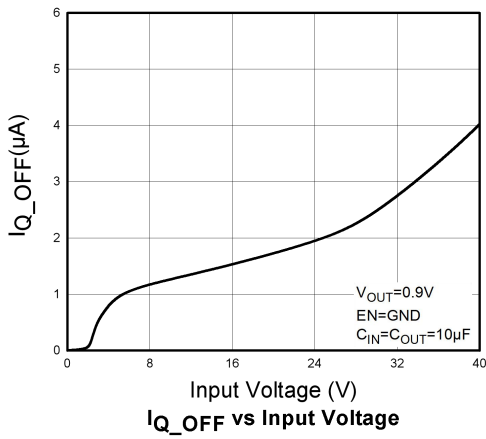
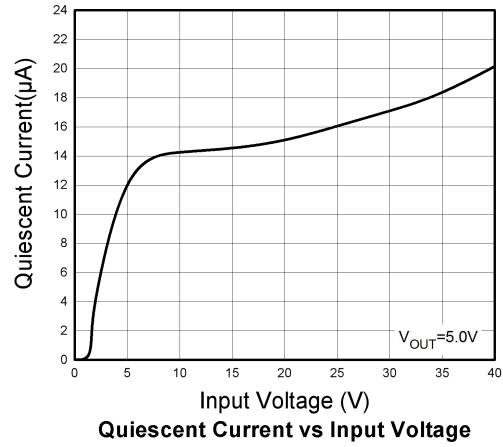
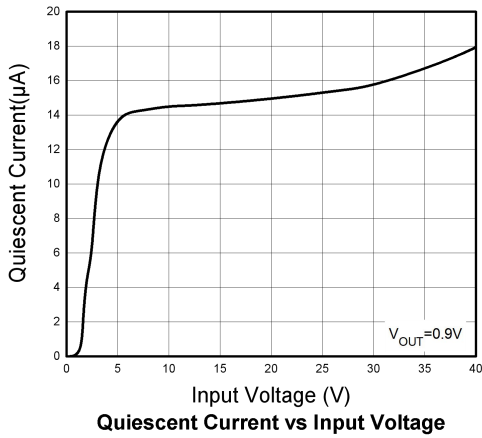
Parameter	Value	Unit
Power Dissipation	500	mW
V <sub>IN</sub> Range	-0.3~40	V
V <sub>EN</sub> Range	-0.3~V <sub>IN</sub>	V
V <sub>OUT</sub> Range	-0.3~15	V
Lead Temperature Range	260	°C
Storage Temperature Range	-55 ~ 150	°C
Operating Junction Temperature Range	150	°C
ESD MM	800	V
ESD HBM	8K	V

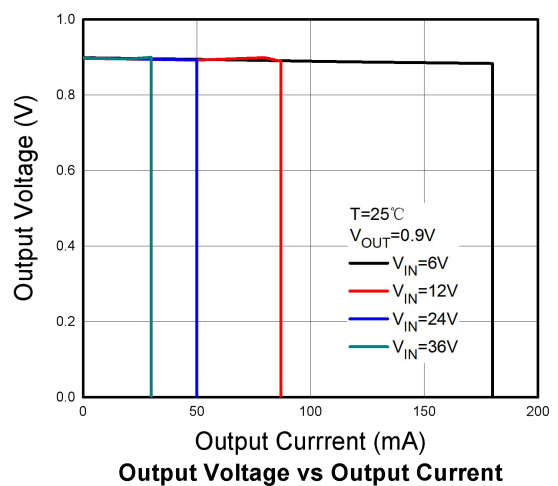
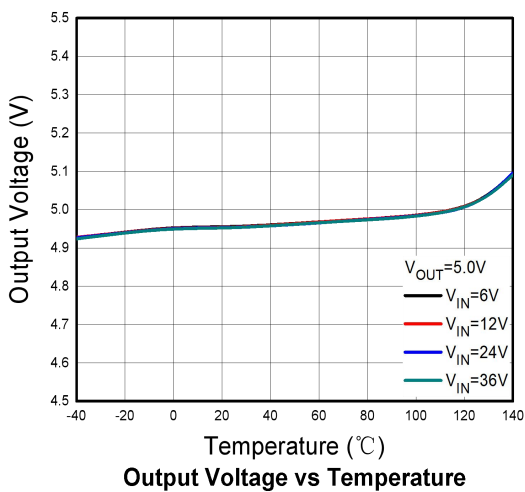
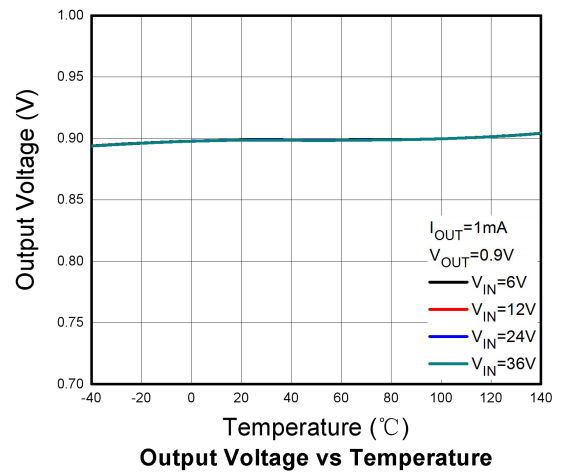
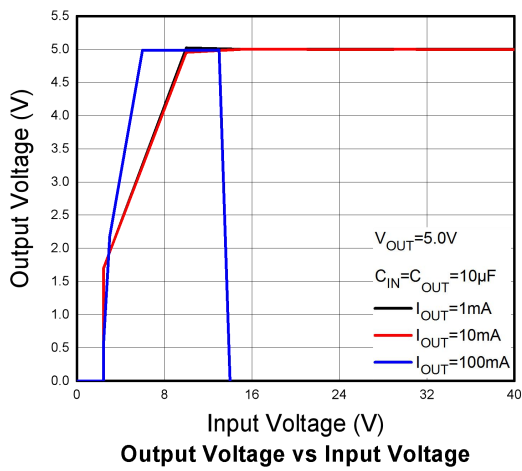
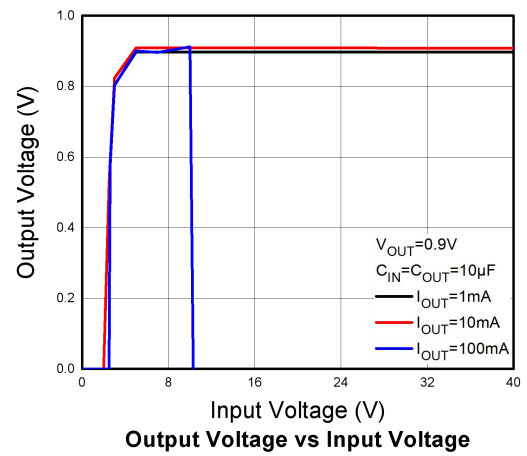
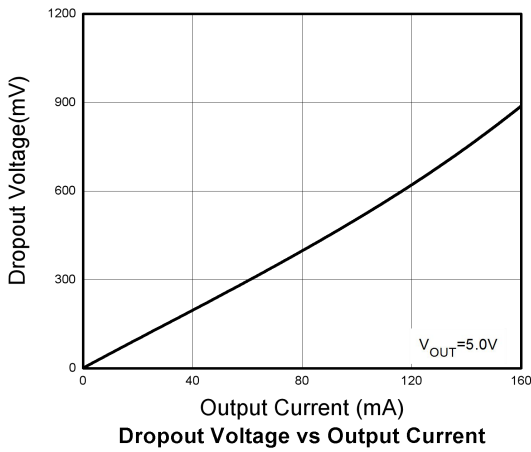
**Recommend Operating Ratings**

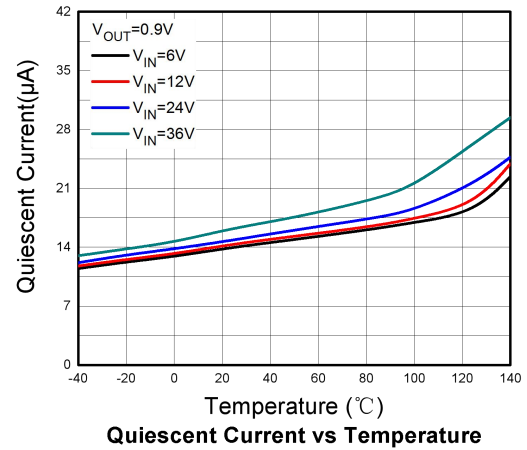
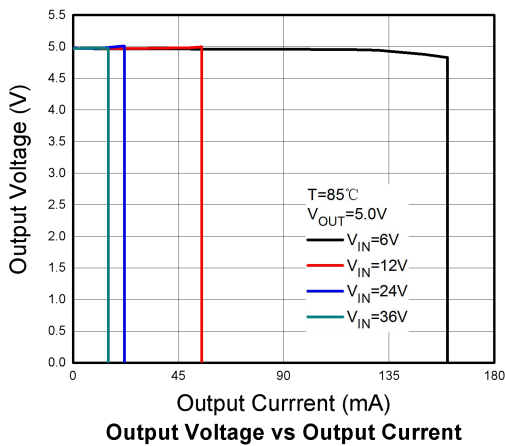
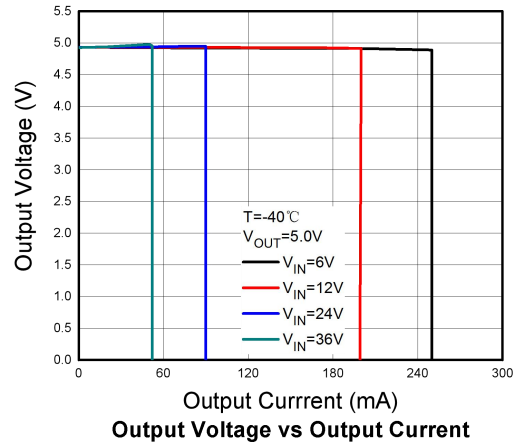
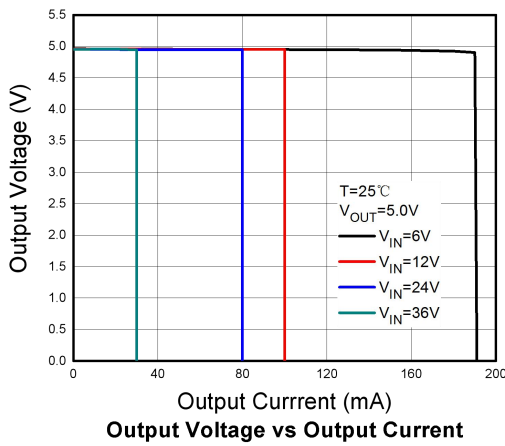
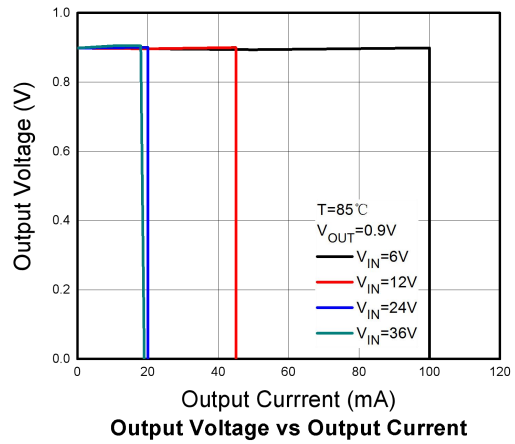
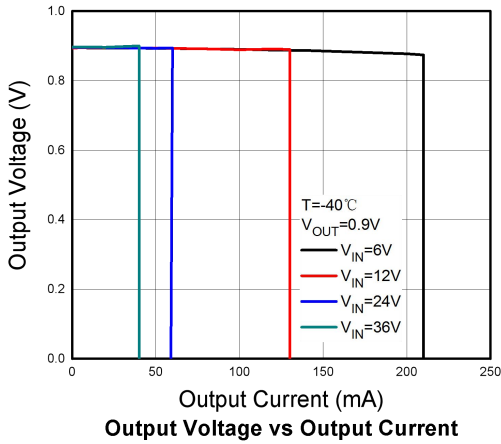
Parameter	Value	Unit
Operating Supply voltage	4.5~36	V
Operating Temperature Range	-40~85	°C
Thermal Resistance (On PCB) , R <sub>θJA</sub>	250	°C/W

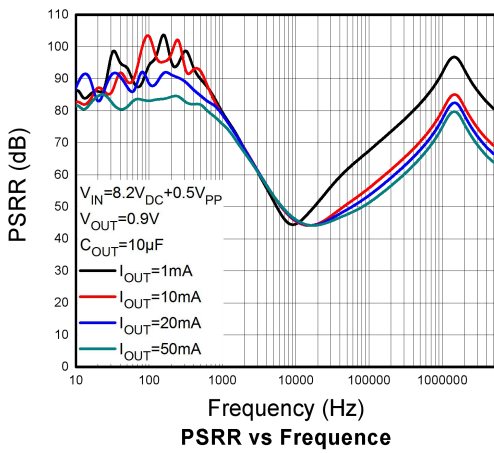
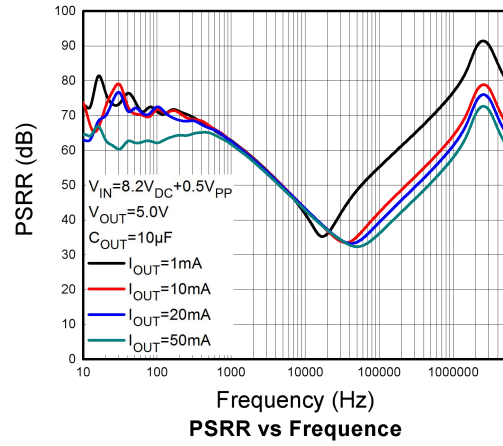
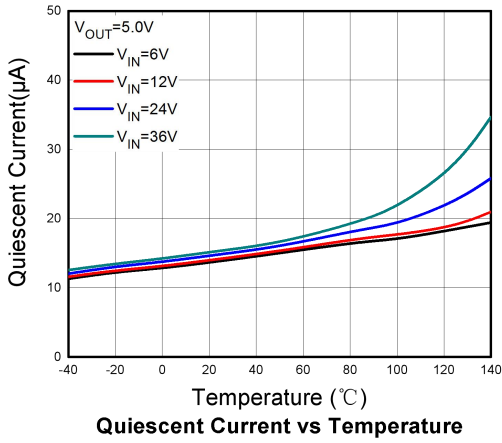
**Electronics Characteristics** ( $T_a=25^{\circ}\text{C}$ ,  $V_{IN}=12\text{V}$ ,  $C_{IN}=C_{OUT}=10\mu\text{F}$ ,  $V_{OUT}=5\text{V}$ , unless otherwise noted)

Symbol	Parameter	Test Condition	WL2856E SPEC			Unit
			Min.	Typ.	Max.	
$V_{IN}$	Input Range	$I_{OUT}=10\text{mA}$	4.5		36	V
$V_{OUT}$	Output Range	$I_{OUT}=10\text{mA}, V_{EN}=V_{IN}$ $V_{OUT}\leq 1.25\text{V}$	$V_{OUT}-0.025$		$V_{OUT}+0.025$	V
			0.775	0.8	0.825	V
			0.875	0.9	0.925	V
		$I_{OUT}=10\text{mA}, V_{EN}=V_{IN}$ $V_{OUT}>1.25\text{V}$	$V_{OUT}\times 0.98$		$V_{OUT}\times 1.02$	V
			1.764	1.8	1.836	V
			2.744	2.8	2.856	V
			2.94	3.0	3.06	V
			3.234	3.3	3.366	V
4.9	5.0	5.1	V			
$I_{OUT\_PK}$	Maximum Output Current	$V_{EN}=V_{IN}, V_{IN}=V_{OUT}+2\text{V}, R_L=1\Omega$	150			mA
$I_Q$	Quiescent Current	$V_{EN}=V_{IN}$ , No load		14		$\mu\text{A}$
$V_{DROD}$	Dropout Voltage	$V_{EN}=V_{IN}, I_{OUT}=1\text{mA}$		6		mV
		$V_{EN}=V_{IN}, I_{OUT}=150\text{mA}$		900		
$V_{EN\_H}$	EN On Threshold	$V_{IN}=4\text{V to }36\text{V}$	1.5			V
$V_{EN\_L}$	EN Off Threshold				0.4	V
$I_{Q\_EN\_H}$	EN Input Current	$V_{EN}=V_{IN}$		0.2		$\mu\text{A}$
$I_{Q\_EN\_L}$	EN Input Current	$V_{EN}=0\text{V}$		0.01		$\mu\text{A}$
$I_{Q\_OFF}$	EN OFF Supply Current	$V_{EN}=0\text{V}$		1.5		$\mu\text{A}$
$\Delta V_{Line}$	Line Regulation	$V_{IN}=7\text{--}36\text{V}, V_{OUT}=5\text{V}, I_{OUT}=1\text{mA}$		0.1		%/V
$\Delta V_{Load}$	Load Regulation	$V_{IN}=12\text{V}, I_{OUT}=1\text{--}100\text{mA}$ ,		0.6		%
$e_{NO}$	Output Noise	$I_{OUT}=10\text{mA}, V_{OUT}=5\text{V}$		150		$\mu\text{V}$
PSRR	Ripple Rejection	$V_{IN}=10\text{V}$ $V_{PP}=0.5\text{V}$ $I_{OUT}=1\text{mA}$	$f=100\text{Hz}$		70	dB
			$f=1\text{KHz}$		60	
			$f=10\text{KHz}$		40	
$T_{SD}$	Thermal Protection	$V_{EN}=V_{IN}=12\text{V}, I_{OUT}=1\text{mA}$		155		$^{\circ}\text{C}$
$\Delta V_o/\Delta T$	Temperature Coefficient	$V_{IN}=12\text{V}, I_{OUT}=1\text{mA}$		100		ppm

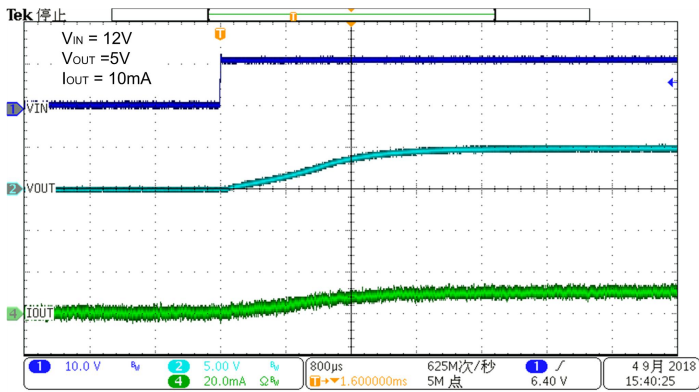
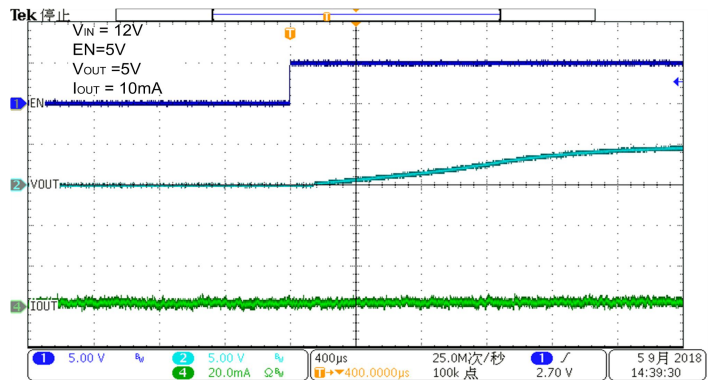
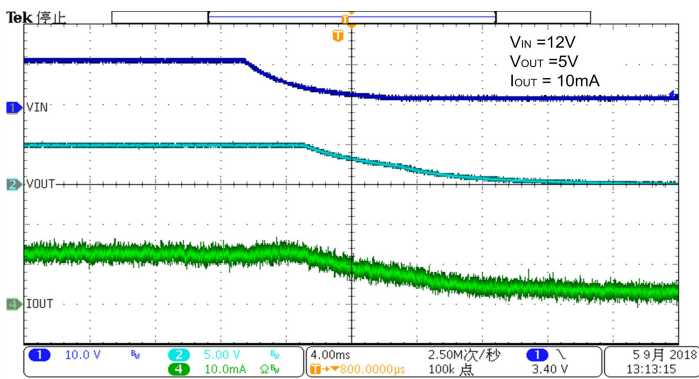
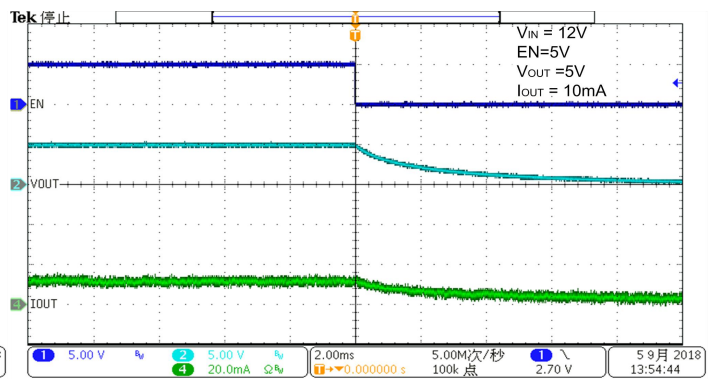
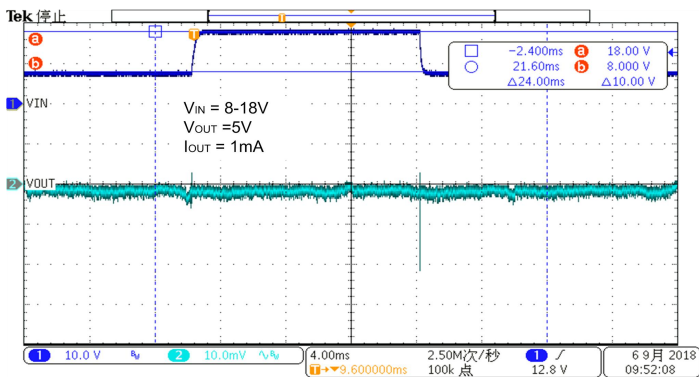
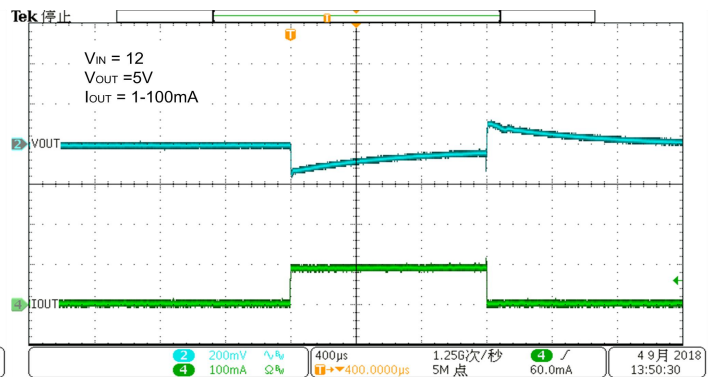
**Typical characteristics(Ta=25°C,C<sub>IN</sub>=C<sub>OUT</sub>=10uF, unless otherwise noted)**






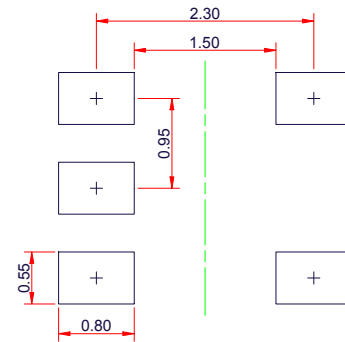
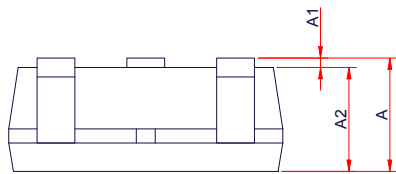
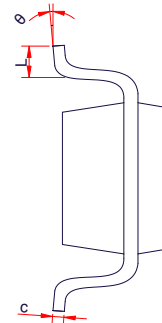
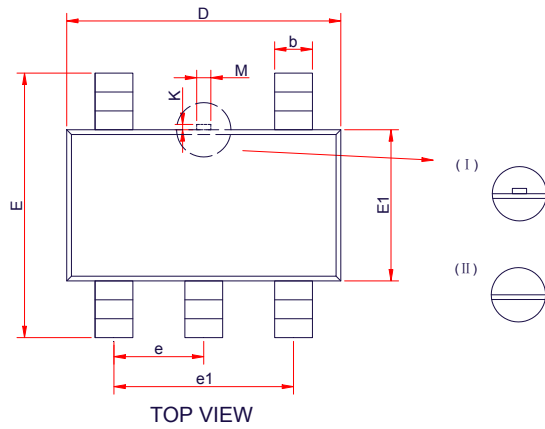




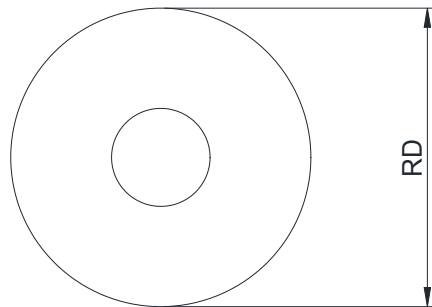
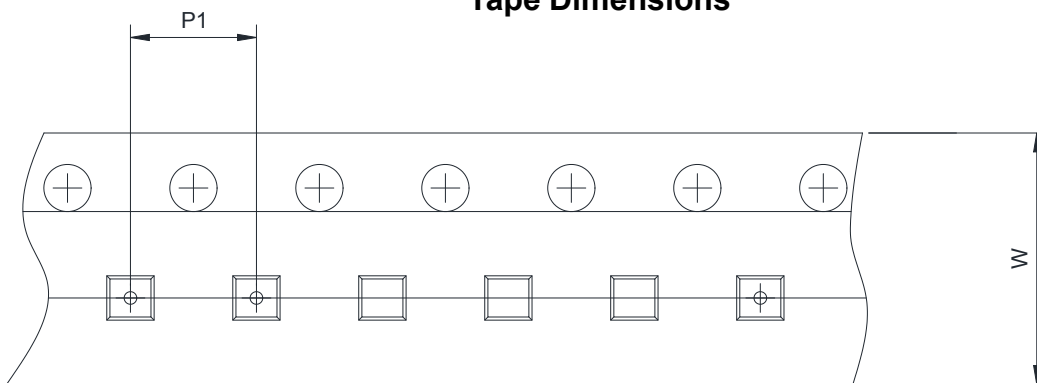
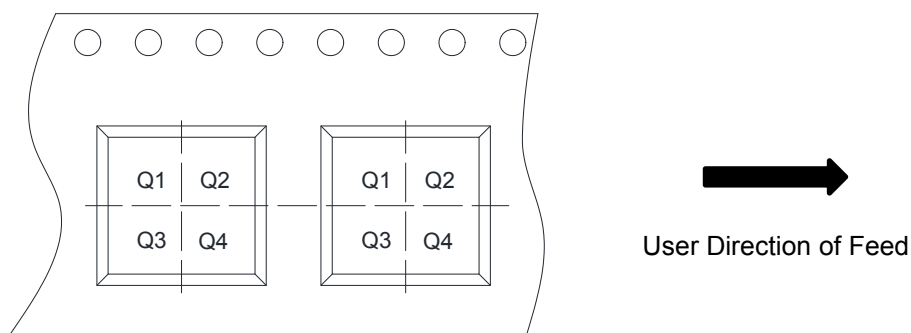

**Start up from VIN**

**Start up from EN**

**Shutdown from VIN**

**Shutdown from EN**

**Line Transient Response**

**Load Transient Response**

**ORDER INFORMATION**

Ordering No.	Vout (V)	Package	Operating Temperature	Marking	Shipping
WL2856E08-5/TR	0.8	SOT-23-5L	-40~+85°C	2856 EhYW	Tape and Reel, 3000
WL2856E09-5/TR	0.9	SOT-23-5L	-40~+85°C	2856 EAYW	Tape and Reel, 3000
WL2856E18-5/TR	1.8	SOT-23-5L	-40~+85°C	2856 EHYW	Tape and Reel, 3000
WL2856E28-5/TR	2.8	SOT-23-5L	-40~+85°C	2856 ELYW	Tape and Reel, 3000
WL2856E30-5/TR	3.0	SOT-23-5L	-40~+85°C	2856 EMYW	Tape and Reel, 3000
WL2856E33-5/TR	3.3	SOT-23-5L	-40~+85°C	2856 ENYW	Tape and Reel, 3000
WL2856E50-5/TR	5.0	SOT-23-5L	-40~+85°C	2856 ETYW	Tape and Reel, 3000

**PACKAGE OUTLINE DIMENSIONS**
**SOT-23-5L**


Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	-	-	1.45
A1	0.00	-	0.15
A2	0.90	1.10	1.30
b	0.30	0.40	0.50
c	0.10	-	0.21
D	2.72	2.92	3.12
E	2.60	2.80	3.00
E1	1.40	1.60	1.80
e	0.95 BSC		
e1	1.90 BSC		
L	0.30	0.45	0.60
M	0.10	0.15	0.25
K	0.00	-	0.25
$\theta$	0°	-	8°

**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 type="checkbox"/> Q1	<input type="checkbox"/> Q2 <input checked="" type="checkbox"/> Q3 <input type="checkbox"/> Q4