



## Low power consumption, Low dropout voltage, With CE function

### General Description

ME6213 series are highly precise, low power consumption, high voltage, positive voltage regulators manufactured using CMOS and laser trimming technologies. The series provides large currents with a significantly small dropout voltage.

The current limiter's foldback circuit also operates as a short protect for the output current limiter and the output pin. The CE function allows the output of regulator to be turned off, resulting in greatly reduced power consumption.

### Typical Application

- Battery powered equipment
- Communication tools
- Mobile phones
- Portable games
- Portable AV systems
- Cameras, Video systems
- Reference voltage sources

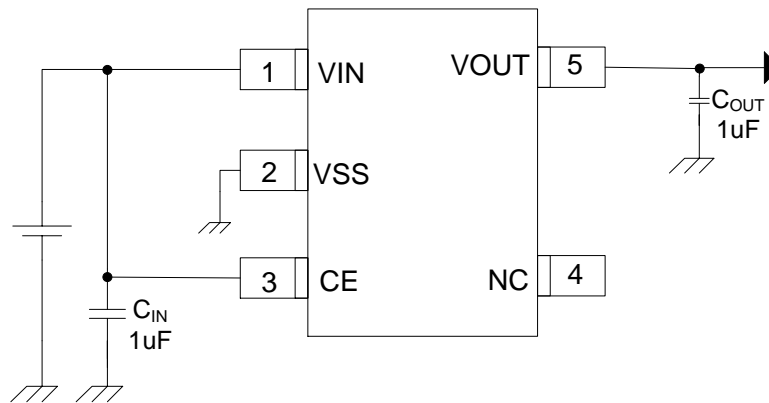
### Features

- Highly Accurate:  $V_{out}=3.3V: \pm 1\%$   
Others:  $\pm 2\%$
- Output voltage range: 1.2V~5.0V
- Low power consumption: 7.5uA(TYP.)
- Large output current:  
300mA ( $V_{IN}=3.8V, V_{OUT}=2.8V$ )
- Input voltage: up to 6 V
- Dropout voltage:  
0.11V at 100mA and 0.23V at 200mA
- CE Pin Function : Active High
- Short-circuit Current: 45mA(TYP.)
- Excellent Input Stability
- Be available to regulator and reference voltage

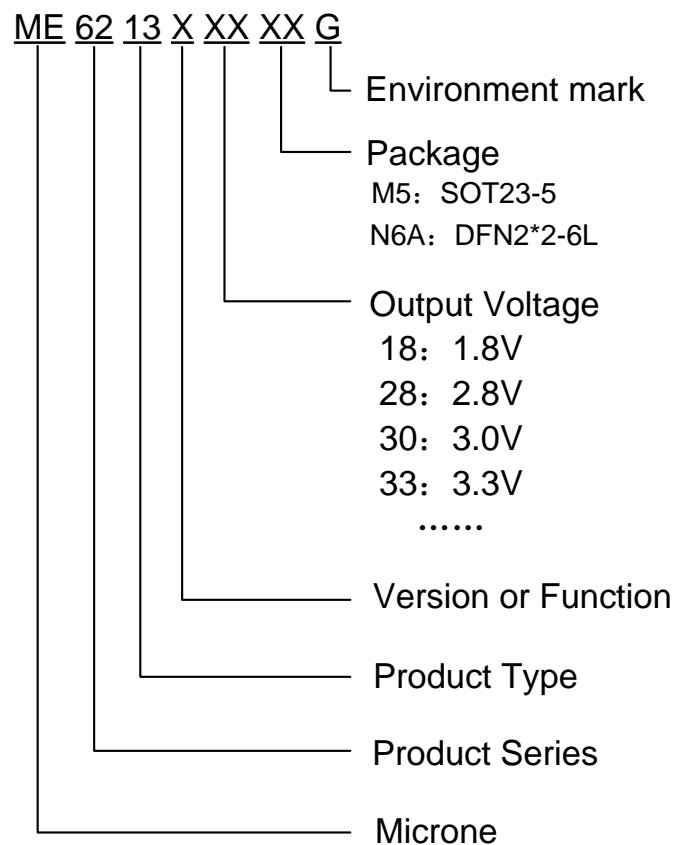
### Package

- 5-pin SOT23-5
- 6-pin DFN2×2-6L

## Typical Application Circuit



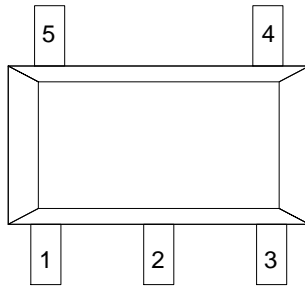
## Selection Guide



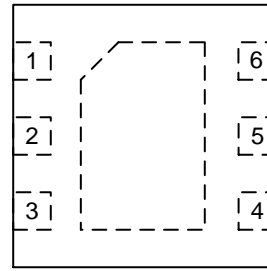
product series	Output voltage	Package
ME6213C18M5G	1.8V	SOT23-5
ME6213C28M5G	2.8V	SOT23-5
ME6213C30M5G	3.0V	SOT23-5
ME6213C33M5G	3.3V	SOT23-5
ME6213C33N6AG	3.3V	DFN2*2-6L

**NOTE:** If you need other voltage and package, please contact our sales staff.

## Pin Configuration



SOT23-5



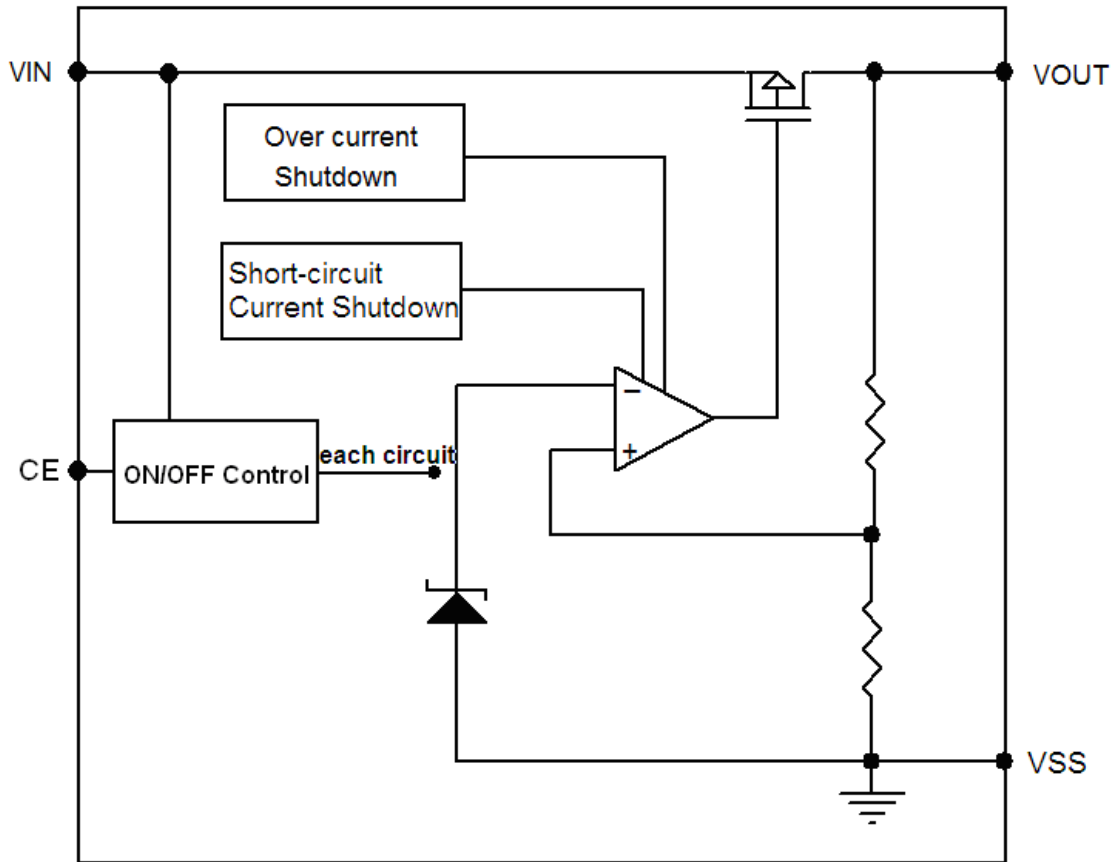
DFN2\*2-6L

## Pin Assignment

Pin Number	Pin Name	Functions
<b>SOT23-5</b>		
1	$V_{IN}$	Power Input
2	$V_{SS}$	Ground
3	CE	ON / OFF Control
4	NC	No Connect
5	$V_{OUT}$	Output

Pin Number	Pin Name	Functions
<b>DFN2×2-6L</b>		
1	CE	ON / OFF Control
2	$V_{SS}$	Ground
3	$V_{IN}$	Power Input
4	$V_{OUT}$	Output
5	NC	No Connect
6	NC	No Connect

## Block Diagram



## Absolute Maximum Ratings

Parameter	Symbol	Ratings	Units
Input Voltage	$V_{IN}$	6.5	V
Output Current	$I_{OUT}$	420	mA
Output Voltage	$V_{OUT}$	$V_{SS}-0.3 \sim V_{IN} + 0.3$	V
CE Pin Voltage	$V_{CE}$	$V_{SS}-0.3 \sim V_{IN} + 0.3$	V
Power Dissipation	SOT23-5 $P_D$	250	mW
Operating Temperature Range	$T_{OPR}$	$-40 \sim +85$	$^{\circ}C$
Storage Temperature Range	$T_{STG}$	$-55 \sim +150$	$^{\circ}C$
Lead Temperature		$260^{\circ}C, 4sec$	

## Electrical Characteristics

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Output Voltage	$V_{OUT(E)}$ (Note 2)	$I_{OUT} = 30mA$ , $V_{IN} = V_{OUT} + 1V$	X 0.98	$V_{OUT(T)}$ (Note 1)	X 1.02	V
Input Voltage	$V_{IN}$		2.8		6	V
Maximum Output Current	$I_{OUTMAX}$	$V_{IN} = V_{OUT} + 1V$		300		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN} = V_{OUT} + 1V$ ,		4		mV

		$1\text{mA} \leq I_{\text{OUT}} \leq 100\text{mA}$				
Dropout Voltage(Note 1)	$V_{\text{DIF1}}$	$I_{\text{OUT}} = 100\text{mA}$		110		mV
	$V_{\text{DIF2}}$	$I_{\text{OUT}} = 200\text{mA}$		230		mV
Supply Current	$I_{\text{SS}}$	$V_{\text{IN}} = V_{\text{OUT}} + 1\text{V}$		7.5		$\mu\text{A}$
Stand-by Current	$I_{\text{CEL}}$	$V_{\text{CE}} = 0\text{V}$		0.02		$\mu\text{A}$
Line Regulation	$\Delta V_{\text{OUT}}$	$I_{\text{OUT}} = 30\text{mA}$ $V_{\text{OUT}} + 1\text{V} \leq V_{\text{IN}} \leq 6\text{V}$		5		mV
CE "High" Voltage	$V_{\text{CEH}}$	Start up	1.0			V
CE "Low" Voltage	$V_{\text{CEL}}$	Shut down			0.5	V
Short-circuit Current	$I_{\text{SHORT}}$	$V_{\text{IN}} = V_{\text{OUT}} + 1\text{V}$ , $V_{\text{CE}} = V_{\text{IN}}$ , $V_{\text{OUT}} = 0\text{V}$		45		mA
Over Current Protection	$I_{\text{limit}}$	$V_{\text{IN}} = 3.8\text{V}$		430		mA

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Output Voltage	$V_{\text{OUT}}(\text{E})$ (Note 2)	$I_{\text{OUT}} = 30\text{mA}$ , $V_{\text{IN}} = V_{\text{OUT}} + 1\text{V}$	X 0.99	$V_{\text{OUT}}(\text{T})$ (Note 1)	X 1.01	V
Input Voltage	$V_{\text{IN}}$		3.3		6	V
Maximum Output Current	$I_{\text{OUTMAX}}$	$V_{\text{IN}} = V_{\text{OUT}} + 1\text{V}$		350		mA
Load Regulation	$\Delta V_{\text{OUT}}$	$V_{\text{IN}} = V_{\text{OUT}} + 1\text{V}$ , $1\text{mA} \leq I_{\text{OUT}} \leq 100\text{mA}$		4		mV
Dropout Voltage (Note 1)	$V_{\text{DIF1}}$	$I_{\text{OUT}} = 100\text{mA}$		100		mV
	$V_{\text{DIF2}}$	$I_{\text{OUT}} = 200\text{mA}$		200		mV
Supply Current	$I_{\text{SS}}$	$V_{\text{IN}} = V_{\text{OUT}} + 1\text{V}$		7.5		$\mu\text{A}$
Stand-by Current	$I_{\text{CEL}}$	$V_{\text{CE}} = 0\text{V}$		0.02		$\mu\text{A}$
Line Regulation	$\Delta V_{\text{OUT}}$	$I_{\text{OUT}} = 30\text{mA}$ $V_{\text{OUT}} + 1\text{V} \leq V_{\text{IN}} \leq 6\text{V}$		4		mV
CE "High" Voltage	$V_{\text{CEH}}$	Start up	1.0			V
CE "Low" Voltage	$V_{\text{CEL}}$	Shut down			0.5	V
Short-circuit Current	$I_{\text{SHORT}}$	$V_{\text{IN}} = V_{\text{OUT}} + 1\text{V}$ , $V_{\text{CE}} = V_{\text{IN}}$ , $V_{\text{OUT}} = 0\text{V}$		45		mA
Over Current Protection	$I_{\text{limit}}$	$V_{\text{IN}} = 4.3\text{V}$		440		mA

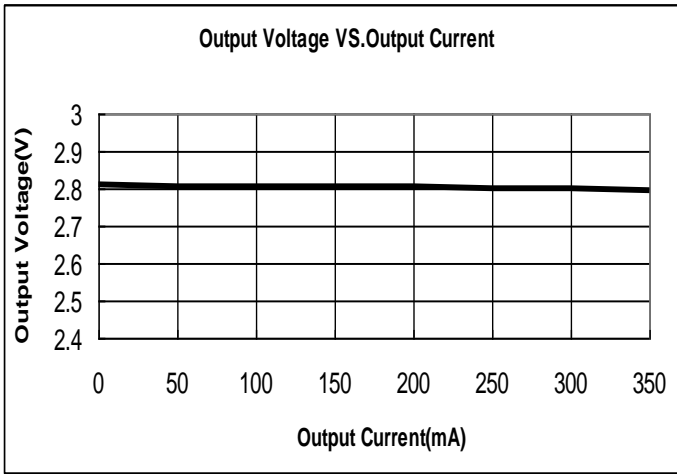
Note :

- $V_{\text{OUT}}(\text{T})$  : Specified Output Voltage
- $V_{\text{OUT}}(\text{E})$  : Effective Output Voltage ( i.e. The output voltage when " $V_{\text{OUT}}(\text{T}) + 1.0\text{V}$ " is provided at the  $V_{\text{in}}$  pin while maintaining a certain  $I_{\text{out}}$  value.)
- $V_{\text{DIF}}$ :  $V_{\text{IN1}} - V_{\text{OUT}}(\text{E})'$   
 $V_{\text{IN1}}$  : The input voltage when  $V_{\text{OUT}}(\text{E})'$  appears as input voltage is gradually decreased.  
 $V_{\text{OUT}}(\text{E})'$  = A voltage equal to 98% of the output voltage whenever an amply stabilized  $I_{\text{out}} \{V_{\text{OUT}}(\text{T}) + 1.0\text{V}\}$  is input.

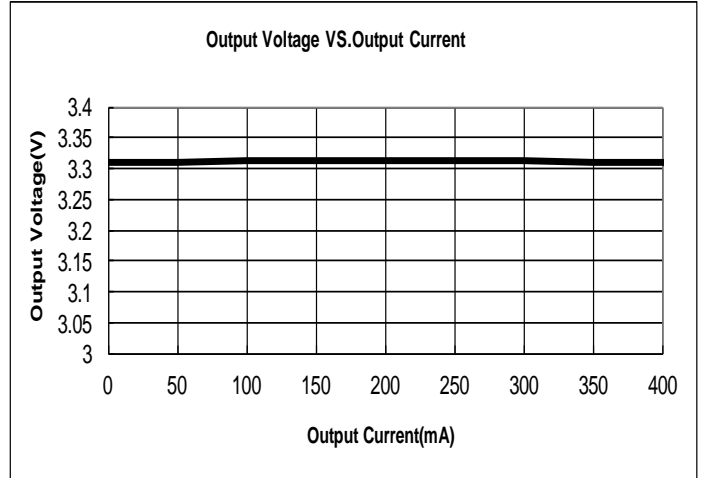
## Type Characteristics

(1) Output Voltage VS. Output Current ( $V_{IN}=V_{OUT}+1$ ,  $T_a = 25\text{ }^\circ\text{C}$ )

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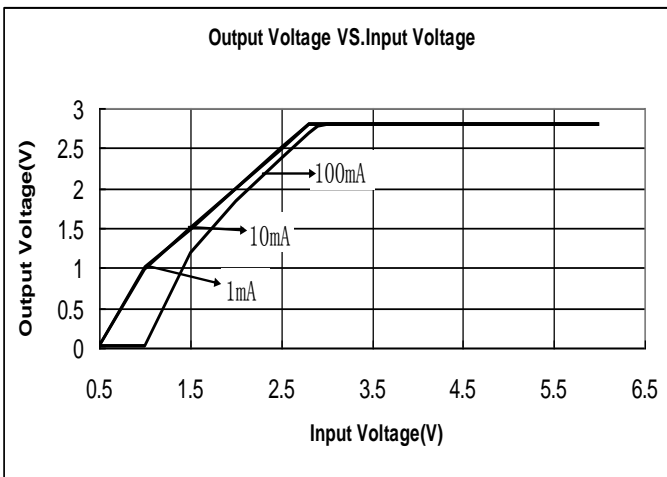


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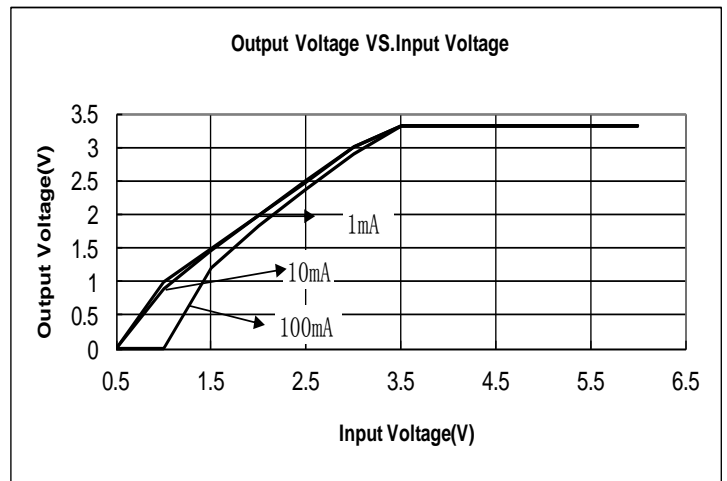


(2) Output Voltage VS. Input Voltage ( $T_a = 25\text{ }^\circ\text{C}$ )

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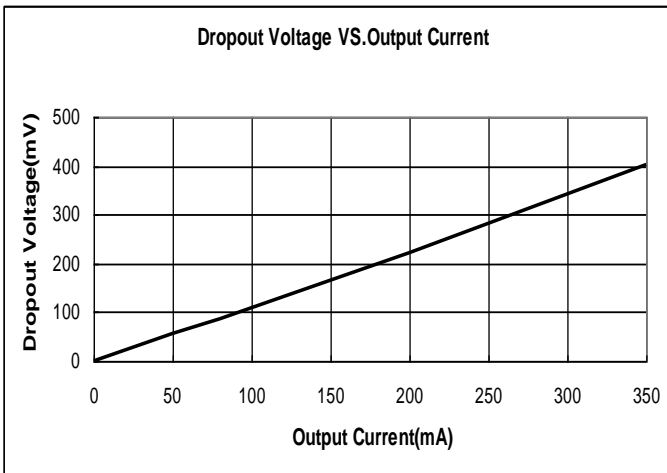


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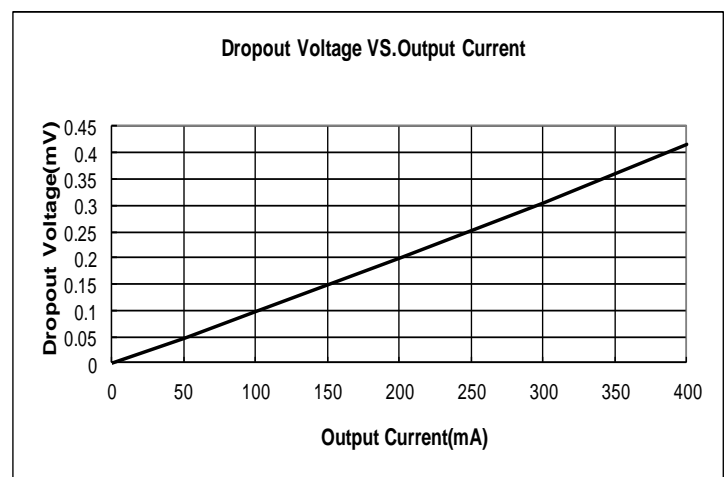


(3) Dropout Voltage VS. Output Current ( $V_{IN}=V_{OUT}+1V$ ,  $T_a = 25\text{ }^\circ\text{C}$ )

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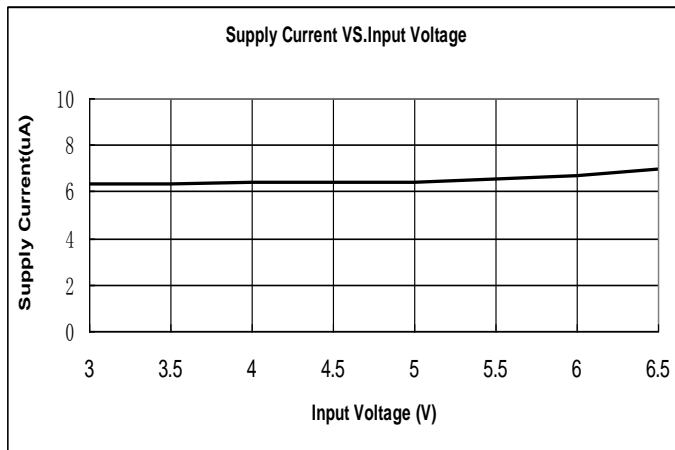


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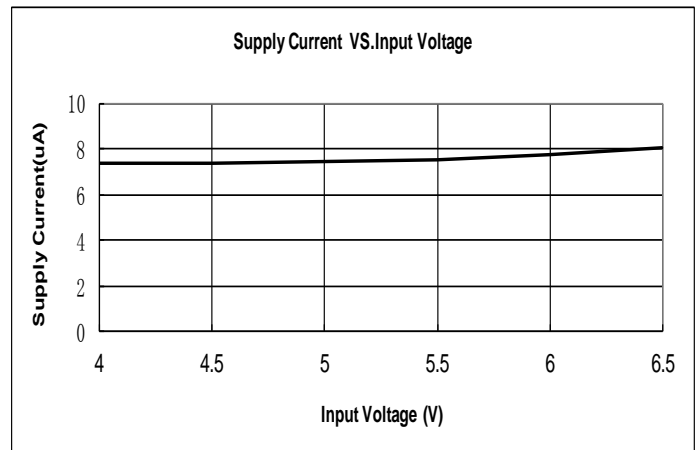


(4) Supply Current VS. Input Voltage ( $T_a = 25\text{ }^\circ\text{C}$ )

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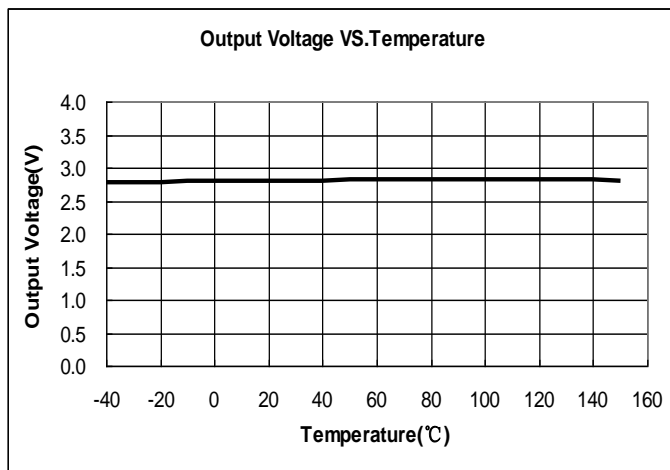


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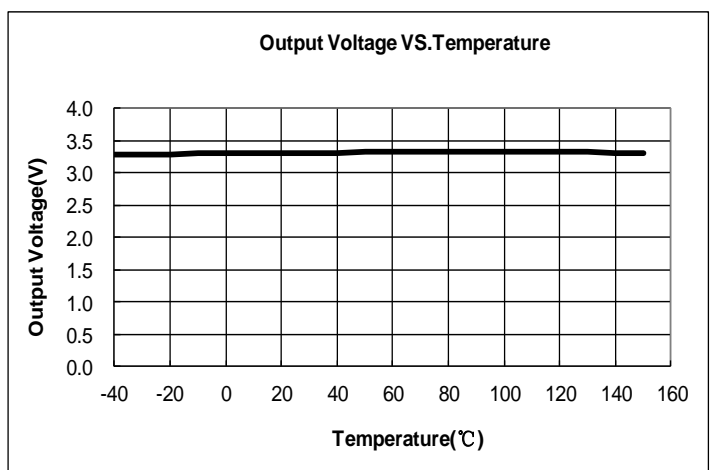


(5) Output Voltage VS. Temperature ( $V_{IN}=V_{OUT}+1V$ ,  $I_{OUT}=10mA$ )

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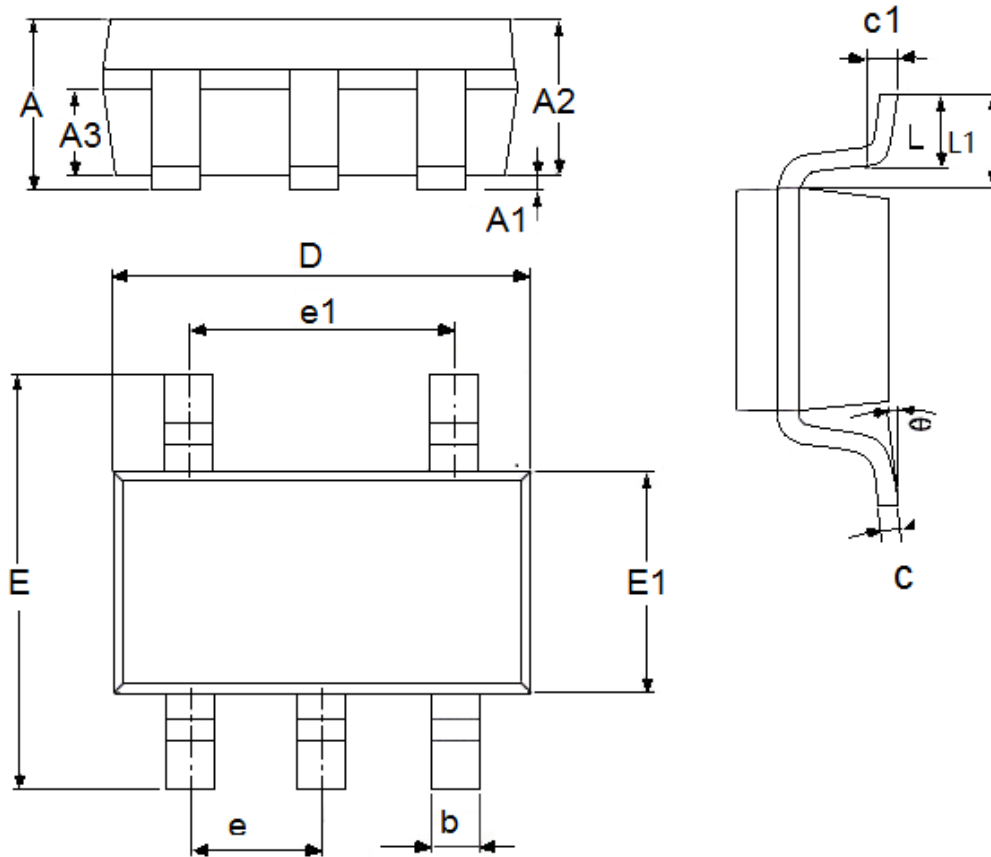


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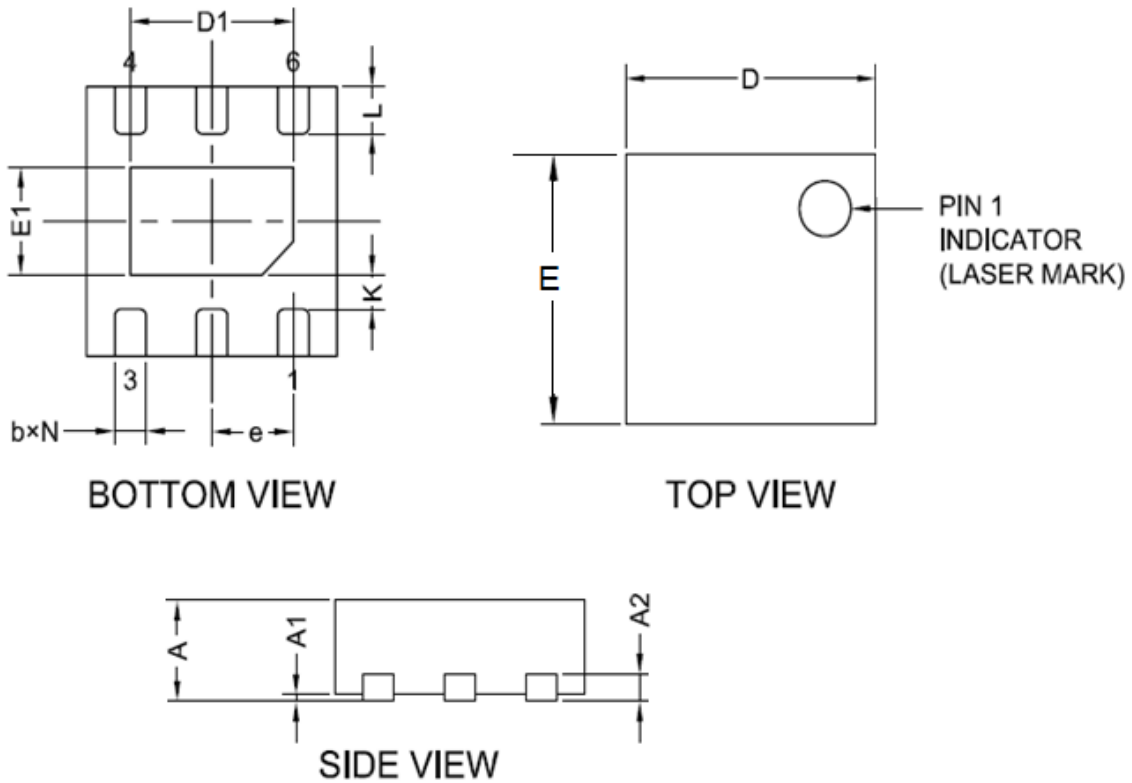
## Packaging Information

- SOT23-5L



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.05	1.45	0.0413	0.0571
A1	0	0.15	0.0000	0.0059
A2	0.9	1.3	0.0354	0.0512
A3	0.6	0.7	0.0236	0.0276
b	0.25	0.5	0.0098	0.0197
c	0.1	0.23	0.0039	0.0091
D	2.82	3.05	0.1110	0.1201
e1	1.9(TYP)		0.0748(TYP)	
E	2.6	3.05	0.1024	0.1201
E1	1.5	1.75	0.0512	0.0689
e	0.95(TYP)		0.0374(TYP)	
L	0.25	0.6	0.0098	0.0236
L1	0.59(TYP)		0.0232(TYP)	
θ	0	8°	0.0000	8°
c1	0.2(TYP)		0.0079(TYP)	

● DFN2x2-6L



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	0.7	0.8	0.0276	0.0315
A1	0	0.05	0	0.002
A2	0.203(TYP)		0.008(TYP)	
b	0.2	0.35	0.0078	0.0138
D	1.9	2.1	0.0748	0.0827
E	1.9	2.1	0.0748	0.0827
E1	0.5	0.9	0.0197	0.0354
e	0.65(TYP)		0.0256(TYP)	
L	0.25	0.426	0.0098	0.0168
K	0.2	—	0.0079	—
D1	1	1.45	0.0393	0.0571

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