High precision, high ripple rejection ratio, low noise, fast response linear regulator

Outline

ME6212 Series is CMOS Precision manufacturing process, the high profile Wave rejection ratio, low noise, fast response low-dropout linear regulator. ME6212 Series regulator built fixed reference voltage source, error correction circuit, the current limiting Circuit, a phase compensation circuit and a low internal resistance MOSFET To achieve high grain Wave suppression, output low noise, low dropout fast response performance.

ME6212 Series compatible smaller than tantalum capacitors ceramic capacitors, and And without the use of 0.1μF of By-pass Capacitors, it could save space.

ME6212 Series of high-speed response characteristic to cope with the load current wave Move, it is particularly suitable for use in handheld and RF products. By controlling the core On-chip CE The output pin can be switched off, power consumption in shutdown only 1μA the following.

Feature

- Low power consumption: Operating: 50uA (typical)
  Sleep time: 0.1uA (typical)
- Input voltage range: 2.0 ~ 6.0V
- Output voltage range: 1.2 ~ 5.0V (interval 0.1V)
- Output accuracy: ± 2 %
- Input and output voltage difference: @ 120mV the I_{OUT} = 100mA (3.3V)
- Output current: 350mA
- High ripple rejection ratio: 65dB @ 1KHz (ME6212C33)
- Low output noise: 50uVrms
- Enter the good stability: 0.05 % (TYP.)

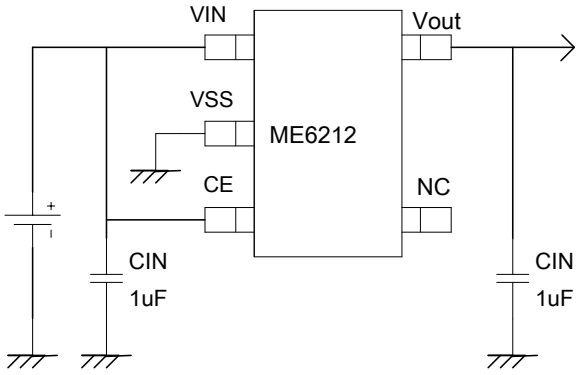
Applications

- tablet , Set-top boxes
- Bluetooth speakers, tachograph, automotive products
- toy

Package

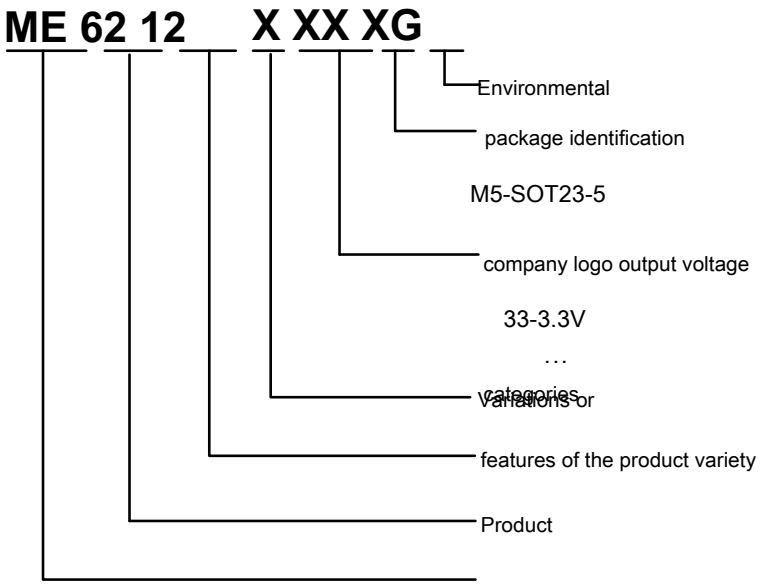
- 5-pin SOT23-5

Typical Application Diagram



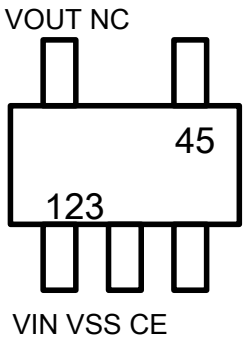
Selection Guide

1. Model Description



Product number	product manual
ME6212C12M5G	Vo= 1.2V With enable function, package: SOT23-5
ME6212C15M5G	Vo= 1.5V With enable function, package: SOT23-5
ME6212C18M5G	Vo= 1.8V With enable function, package: SOT23-5
ME6212C21M5G	Vo= 2.1V With enable function, package: SOT23-5
ME6212C25M5G	Vo= 2.5V With enable function, package: SOT23-5
ME6212C28M5G	Vo= 2.8V With enable function, package: SOT23-5
ME6212C30M5G	Vo= 3.0V With enable function, package: SOT23-5
ME6212C33M5G	Vo= 3.3V With enable function, package: SOT23-5
ME6212C50M5G	Vo= 5.0V With enable function, package: SOT23-5

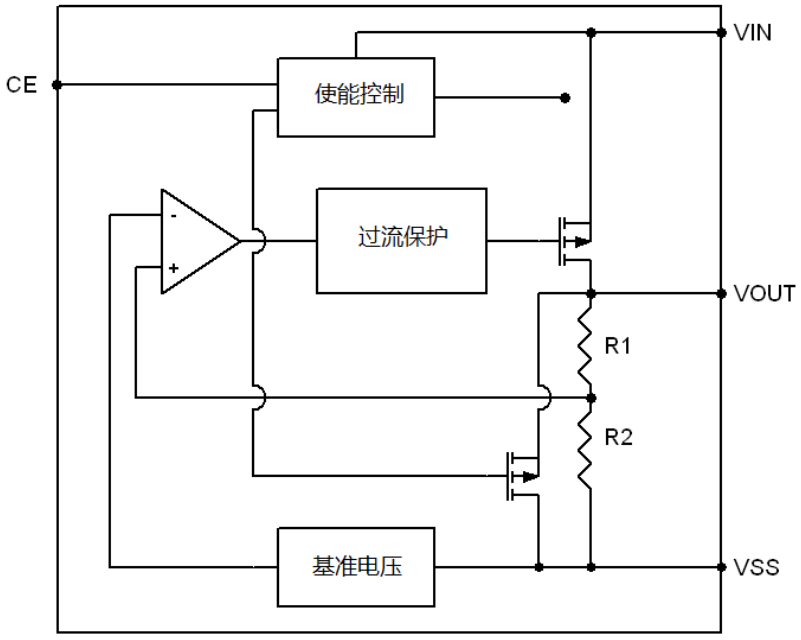
Product feet bitmap (SOT23-5)



Pin Function Description

Pin Number SOT-23-5	symbol	Pin Description
1	VIN	Voltage input terminal
2	VSS	Ground pin
3	CE	An enable terminal, prohibit floating high voltage level ON Low level OFF
4	NC	air
5	VOUT	Voltage output terminal

Functional Block Diagram



Absolute Maximum Ratings

parameter		symbol	Limit	unit
Voltage input pin		VIN	6.5	V
Output Pin Current		IOUT	500	mA
Output pin voltage		VOUT	Vss-0.3 ~ VIN +0.3	V
CE Pin voltage		VCE	Vss-0.3 ~ VIN +0.3	V
The maximum allowed power	SOT23-5	PD	250	mW
Operating temperature		TOPR	- 40 ~ + 150	℃
storage temperature		TSTG	- 40 ~ + 150	℃

Note: Absolute maximum ratings are the product can withstand a maximum limit physical damage, please do not exceed the rated value in any case.

Electrical parameters (Normal conditions TA = 25 ºC, VCC = 5V, Unless otherwise marked)

ME6212C18

(V_{IN} = V_{OUT} + 1V , V_{CE} = V_{IN} , C_{IN} = C_L = 1uF , Ta = 25 o C, Except where otherwise specified)

characteristic	symbol	condition		Min	Typ	Max	Units
The 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
Maximum output current	I_{OUTMAX}	V_{IN} = V_{OUT} + 1V			250		mA
Load characteristics	Δ V_{OUT}	V_{IN} = V_{OUT} + 1V, 1mA≤I_{OUT} ≤100mA			9		mV
Differential pressure (Note 3)	V_{DIF1}	I_{OUT} = 100mA			200		mV
	V_{DIF2}	I_{OUT} = 200mA			400		mV
Quiescent Current	I_{SS}	V_{IN} = V_{OUT} + 1V			50		μA
Off current	I_{CEL}	V_{CE} = 0V			0.1		μA
Supply voltage regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \bullet V_{OUT}}$	I_{OUT} = 40mA V_{OUT} + 1V ≤V_{IN} ≤6.0V			0.05		% / V
CE end " high " Level	VCEH	Turn, the output voltage		1.0			V
CE end " low " Level	VCEL	Turned off, the output voltage is 0				0.5	V
Output noise	Noise	I_{OUT} = 40mA , 300Hz ~ 50kHz			50		uVrms
Ripple Rejection	PSRR	V_{IN} = [V_{OUT} + 1] V + 1Vp-pAC	I_{OUT} = 10mA, 1kHZ		65		dB
			I_{OUT} = 100mA, 10kHZ		57		

ME6212C28 (V_{IN} - V_{OUT} + 1V , V_{CE} - V_{IN} , C_{IN} - C_L - 1uF , Ta = 25o C, Unless otherwise it refers to set)

characteristic	symbol	condition		Min	Typ	Max	Units
The 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
Maximum output current	I_{OUTMAX}	V_{IN} = V_{OUT} + 1V			350		mA
Load characteristics	Δ V_{OUT}	V_{IN} = V_{OUT} + 1V, 1mA≤I_{OUT} ≤100mA			7		mV
Differential pressure (Note 3)	V_{DIF1}	I_{OUT} = 100mA			110		mV
	V_{DIF2}	I_{OUT} = 200mA			220		mV
Quiescent Current	I_{SS}	V_{IN} = V_{OUT} + 1V			60		μA
Off current	I_{CEL}	V_{CE} = 0V			0.1		μA
Supply voltage regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \bullet V_{OUT}}$	I_{OUT} = 40mA V_{OUT} + 1V ≤V_{IN} ≤6.0V			0.05		% / V
CE end " high " Level	VCEH	Turn, the output voltage		1.0			V
CE end " low " Level	VCEL	Turned off, the output voltage is 0				0.5	V
Output noise	Noise	I_{OUT} = 40mA , 300Hz ~ 50kHz			50		uVrms
Ripple Rejection	PSRR	V_{IN} = [V_{OUT} + 1] V + 1Vp-pAC	I_{OUT} = 10mA, 1kHZ		65		dB
			I_{OUT} = 100mA, 10kHZ		57		

ME6212C30 **(V_{IN} - V_{OUT} + 1V , V_{CE} - V_{IN} , C_{IN} - C_L - 1uF , Ta = 25o C , Unless otherwise Specified)**

characteristic	symbol	condition		Min	Typ	Max	Units
The 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
Maximum output current	I_{OUTMAX}	V_{IN} = V_{OUT} + 1V			350		mA
Load characteristics	Δ V_{OUT}	V_{IN} = V_{OUT} + 1V, 1mA≤I_{OUT} ≤100mA			8		mV
Differential pressure (Note 3)	V_{DIF1}	I_{OUT} = 100mA			100		mV
	V_{DIF2}	I_{OUT} = 200mA			210		mV
Quiescent Current	I_{SS}	V_{IN} = V_{OUT} + 1V			60		μA
Off current	I_{CEL}	V_{CE} = 0V			0.1		μA
Supply voltage regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \bullet V_{OUT}}$	I_{OUT} = 40mA V_{OUT} + 1V ≤V_{IN} ≤6.0V			0.05		% / V
CE end " high " Level	VCEH	Turn, the output voltage		1.0			V
CE end " low " Level	VCEL	Turned off, the output voltage is 0				0.5	V
Output noise	Noise	I_{OUT} = 40mA , 300Hz ~ 50kHz			50		uVrms
Ripple Rejection	PSRR	V_{IN} = [V_{OUT} + 1] V + 1Vp-pAC	I_{OUT} = 10mA, 1kHZ		65		dB
			I_{OUT} = 100mA, 10kHZ		57		

ME6212C33 (V_{IN} = V_{OUT} + 1V , V_{CE} = V_{IN} , C_{IN} = C_L = 1uF , Ta = 25 o C, Unless otherwise it refers to set)

characteristic	symbol	condition		Min	Typ	Max	Units
The 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
Maximum output current	I_{OUTMAX}	V_{IN} = V_{OUT} + 1V			350		mA
Load characteristics	ΔV_{OUT}	V_{IN} = V_{OUT} + 1V, 1mA≤I_{OUT} ≤100mA			9		mV
Differential pressure (Note 3)	V_{DIF1}	I_{OUT} = 100mA			120		mV
	V_{DIF2}	I_{OUT} = 200mA			260		mV
Quiescent Current	I_{SS}	V_{IN} = V_{OUT} + 1V			50		μA
Off current	I_{CEL}	V_{CE} = 0V			0.1		μA
Supply voltage regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \bullet V_{OUT}}$	I_{OUT} = 40mA V_{OUT} + 1V ≤V_{IN} ≤6.0V			0.05		% / V
CE end " high " Level	VCEH	Turn, the output voltage		1.0			V
CE end " low " Level	VCEL	Turned off, the output voltage is 0				0.5	V
Output noise	Noise	I_{OUT} = 40mA , 300Hz ~ 50kHz			50		uVrms
Ripple Rejection	PSRR	V_{IN} = [V_{OUT} + 1] V + 1Vp-pAC	I_{OUT} = 10mA, 1kHZ		65		dB
			I_{OUT} = 100mA, 10kHZ		57		

Note :

1. VOUT (T) : Predetermined output voltage

2. VOUT (E) : Effective output voltage (i.e., when IOUT To maintain a certain value, VIN = (VOUT (T) + 1.0V) When the output voltage.

3. Vdif : VIN1 -VOUT (E) '

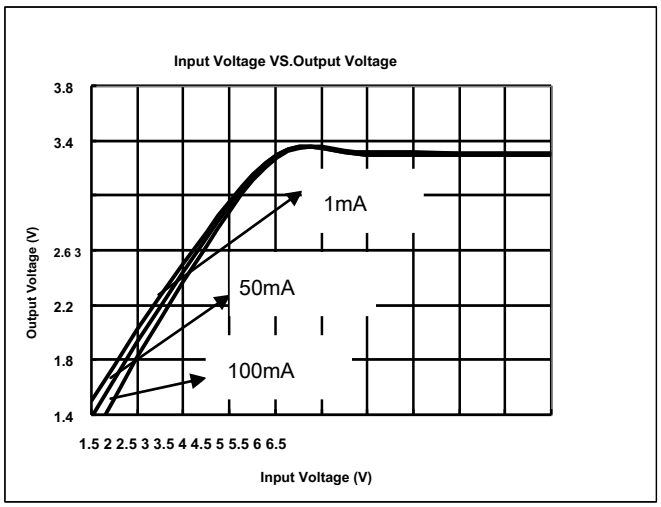
VIN1 : Gradually decreasing the input voltage, the output voltage is reduced to VOUT (E) of 98% Input voltages.

VOUT (E) '= VOUT (E) * 98%

Typical characteristics of FIG.

(1)) Input VoltageVS.Output Voltage (Ta = 25 ° C)

ME6212C33M5G



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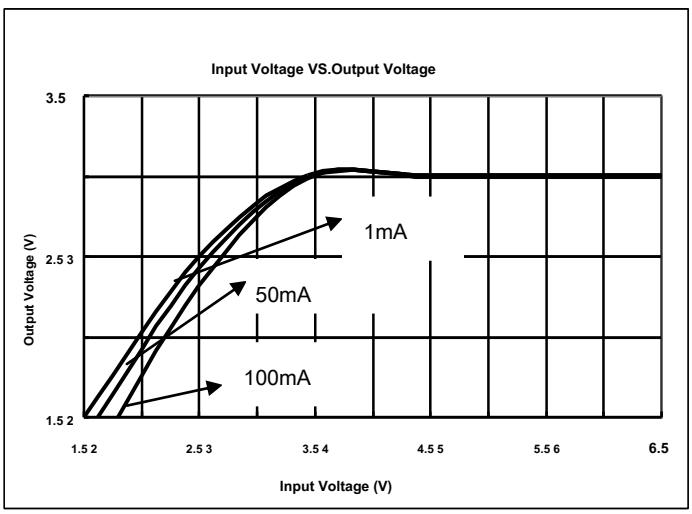

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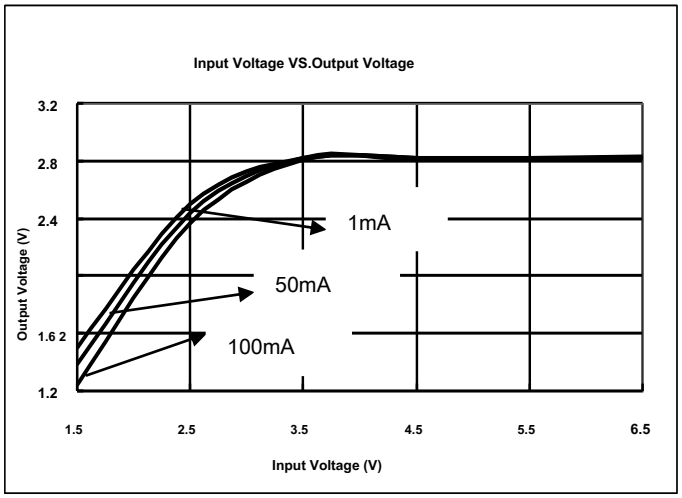

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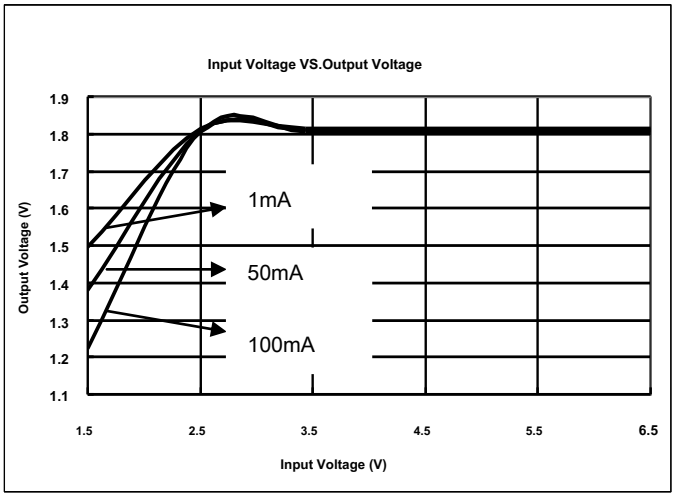
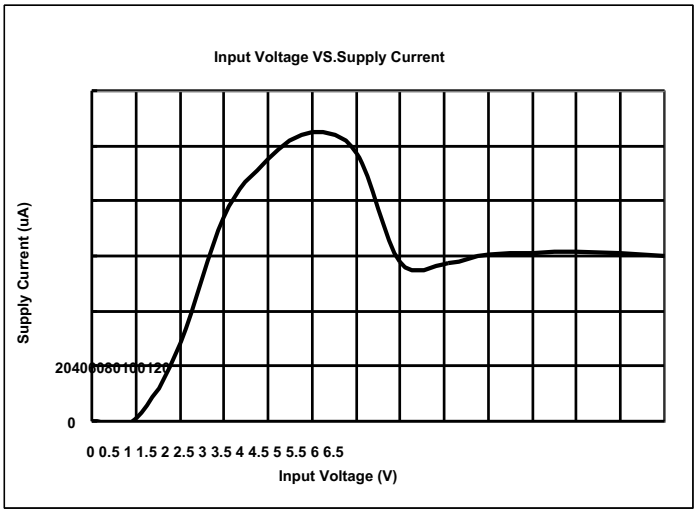


(2) Input Voltage VS. Supply Current (Ta = 25 ° C)

ME6212C33M5G



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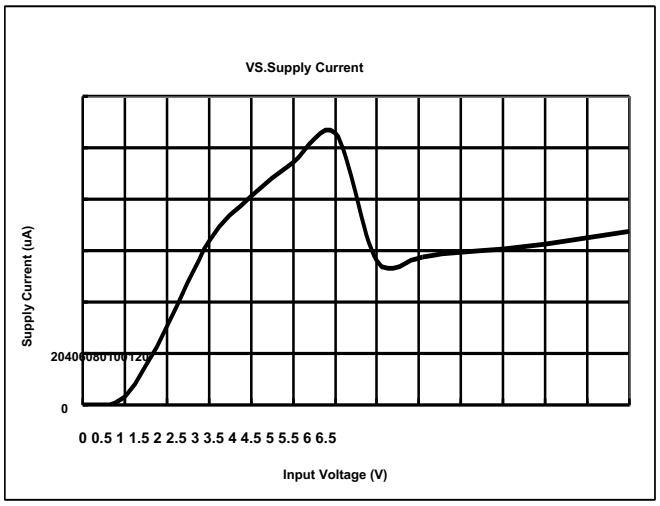

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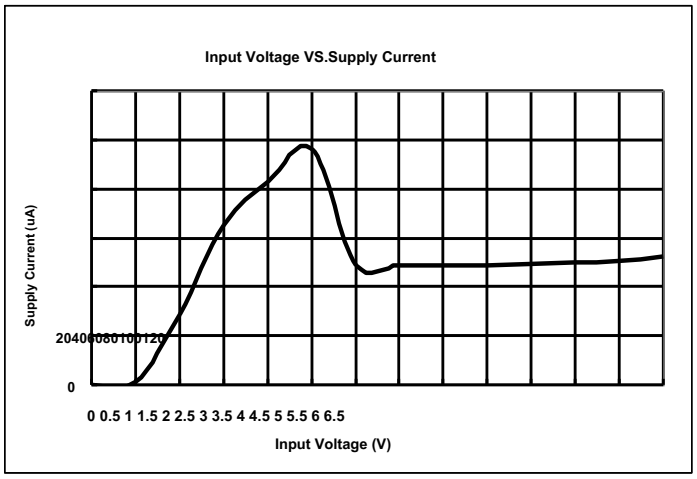

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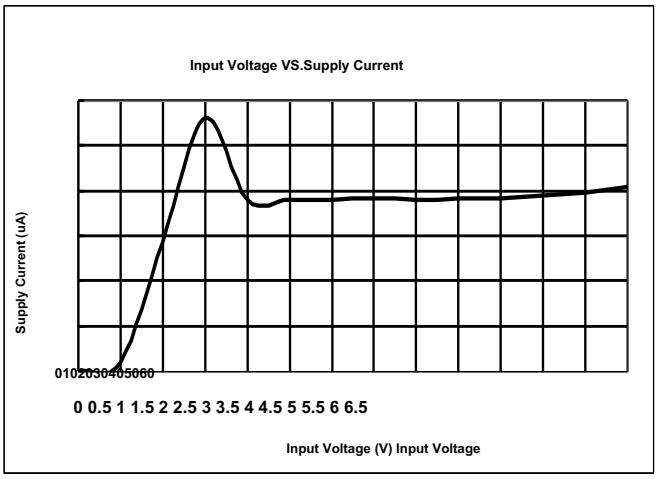
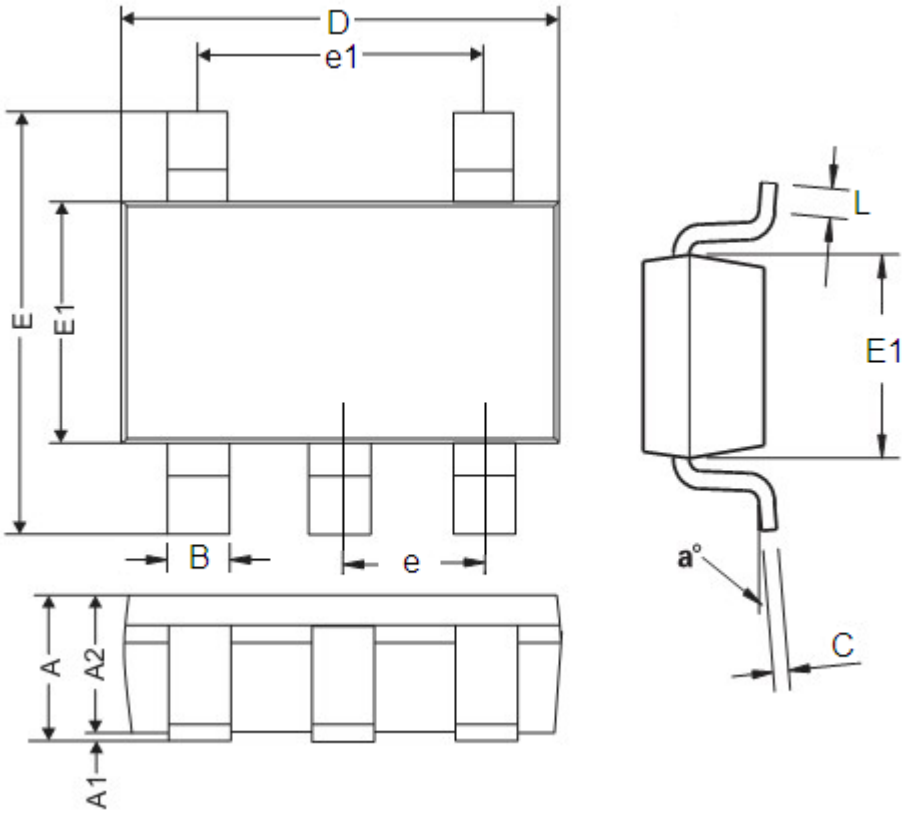


Package Information

- **Package Type: SOT23-5**



parameter	Dimensions (mm)		Dimensions (Inch)	
	Minimum	Maximum	Minimum	Maximum
A	0.9	1.45	0.0354	0.0570
A1	0	0.15	0	0.0059
A2	0.9	1.3	0.0354	0.0511
B	0.2	0.5	0.0078	0.0196
C	0.09	0.26	0.0035	0.0102
D	2.7	3.10	.1062	.1220
E	2.2	3.2	0.0866	.1181
E1	1.30	1.80	0.0511	0.0708
e	0.95REF		0.0374REF	
e1	1.90REF		0.0748REF	
L	0.10	0.60	0.0039	0.0236
a°	0°	30°	0°	30°

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