

## High Speed LDO Regulators, High PSRR, Low noise

### General Description

The FC6211 series are highly accurate, low noise, CMOS LDO Voltage Regulators. Offering low output noise, high ripple rejection ratio, low dropout and very fast turn-on times, the FC6211 series is ideal for today's cutting edge mobile phone. Internally the FC6211 includes a reference voltage source, error amplifiers, driver transistors, current limiters and phase compensators. The FC6211's current limiters' foldback circuit also operates as a short protect for the output current limiter and the output pin. The FC6211 series is also fully compatible with low ESR ceramic capacitors, reducing cost and improving output stability. This high level of output stability is maintained even during frequent load fluctuations, due to the excellent transient response performance and high PSRR achieved across a broad range of frequencies. The CE function allows the output of regulator to be turned off, resulting in greatly reduced power consumption.

### Typical Application

- Mobile phones
- Cordless phones, radio communication equipment
- Portable games
- Cameras, Video cameras
- Reference voltage sources
- Battery powered equipment

### Features

- Maximum Output Current: 500mA  
( $V_{IN}=4.3V, V_{OUT}=3.3V$ )
- Dropout Voltage: 100mV@  $I_{OUT}=100mA$
- Operating Voltage Range: 1.2V~6.0V
- Highly Accuracy:  $\pm 1\%$
- Low Power Consumption: 30uA (TYP.)
- Standby Current: 0.1uA (TYP.)
- High Ripple Rejection: 70dB@1KHz (FC6211C33)
- Low output noise: 50uVrms
- Line Regulation: 0.05% (TYP.)

### Package

- 3-pin SOT-89-3, SOT-23-3
- 4-pin SOT343R, FBP1\*1-4
- 5-pin SOT-23-5, SOT-353
- 6-pin DFN2\*2-6

## Typical Application Circuit

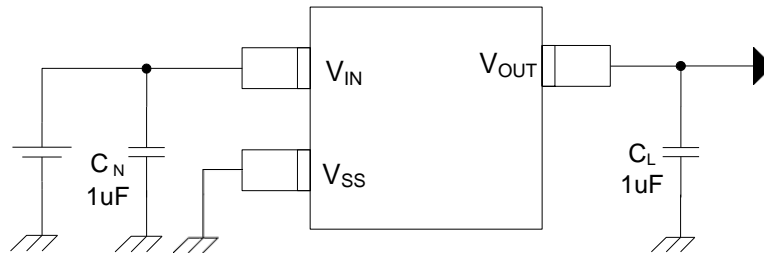


Fig1. FC6211A series

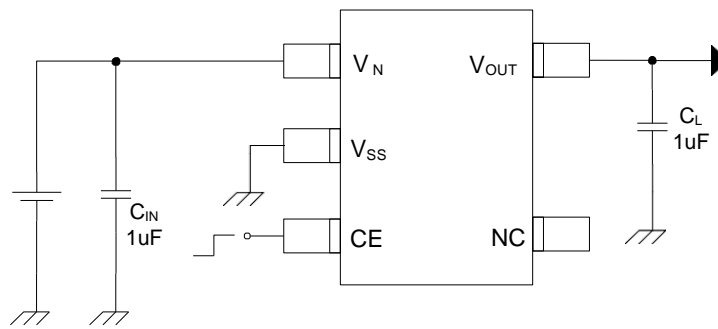


Fig2. FC6211C series

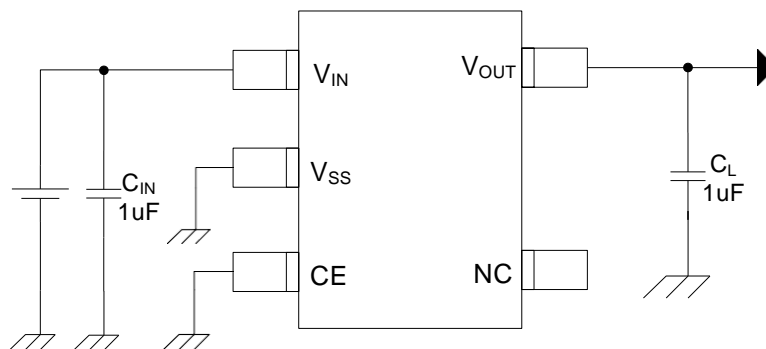
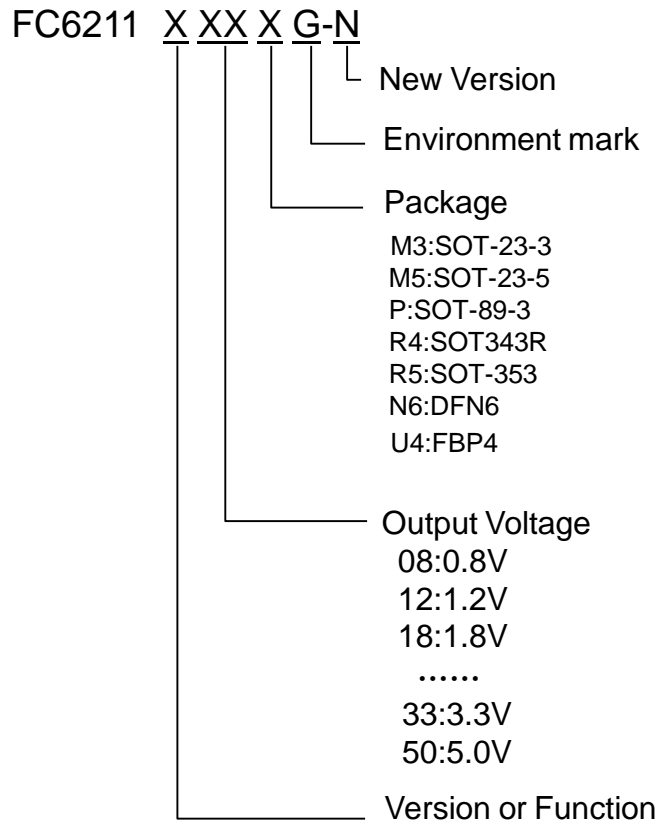


Fig3. FC6211H series



# FC6211

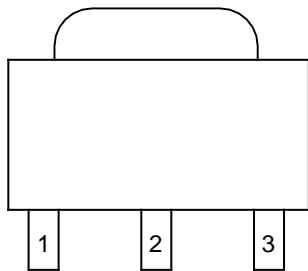
## Selection Guide



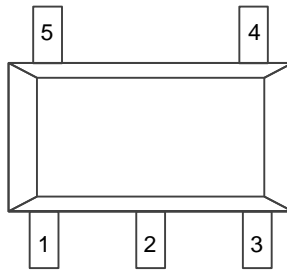
product series	product function	Output voltage	Package
FC6211A12PG-N	Enable the internal connection of high	1.2V	SOT-89-3
FC6211C33M5G-N	Enable can be set	3.3V	SOT-23-5
FC6211C33R4G-N	Enable can be set	3.3V	SOT343R
FC6211C33U4AG-N	Enable can be set	3.3V	FBP1*1-4 (0.37)
FC6211C25N6AG-N	Enable can be set	2.5V	DFN2*2-6(0.75)
FC6211H15M5G-N	Enable connected to a low	1.5V	SOT-23-5

**NOTE:** At present, there are thirteen kinds of voltage value  
 0.8V, 1.0, 1.2V, 1.5V, 1.8V, 2.1V, 2.5V, 2.7V, 2.8V, 2.9V, 3.0V, 3.3V, 5.0V.  
 If you need other voltage and package, please contact our sales staff.

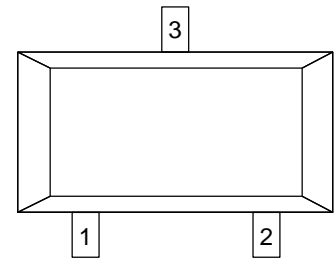
## Pin Configuration



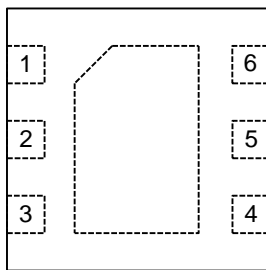
SOT-89-3



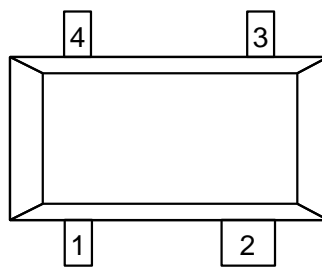
SOT-23-5/SOT-353



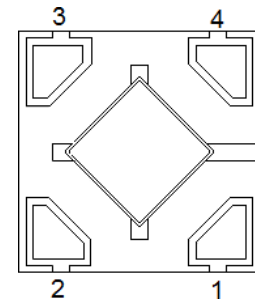
SOT-23-3



DFN2\*2-6



SOT343R



FBP1\*1-4

## Pin Assignment

### FC6211AXXG

Pin Number			Pin Name	Functions
M3	P	P1		
SOT-23-3	SOT-89-3	SOT-89-3		
1	1	2	$V_{SS}$	Ground
2	3	1	$V_{OUT}$	Output
3	2	3	$V_{IN}$	Power Input

The difference of printing on the chip between P and P1 is : P: 6211A , P1: 6211A1

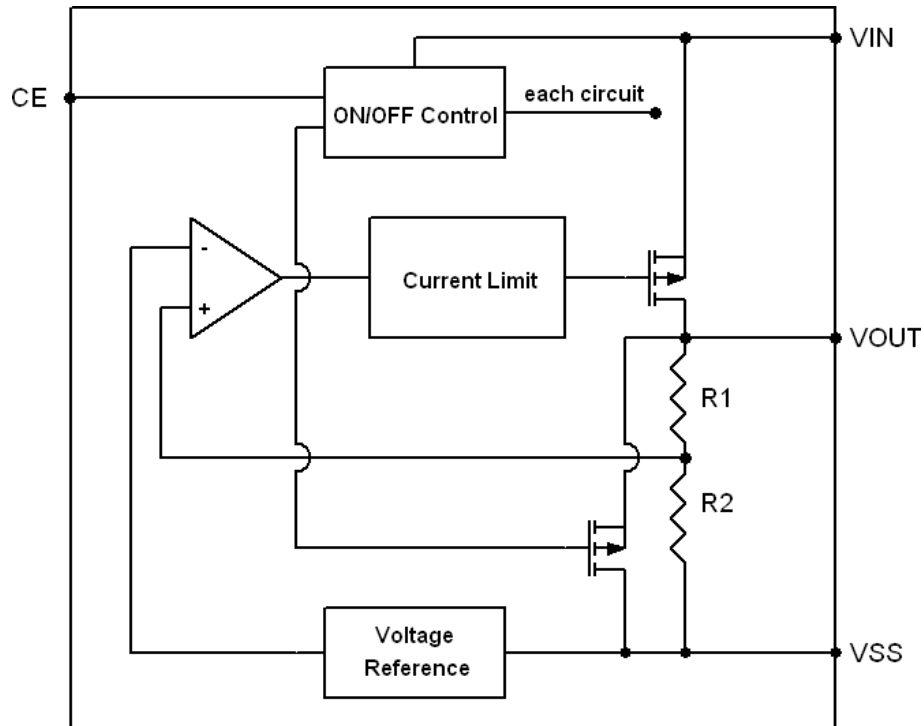
### FC6211AXXG-DS

Pin Number	Pin Name	Functions
SOT-23-3		
1	$V_{IN}$	Power Input
2	$V_{OUT}$	Output
3	$V_{SS}$	Ground

### FC6211CXXG/ FC6211HXXG

Pin Number				Pin Name	Functions
SOT-23-5/SOT-353	DFN2*2-6	SOT343R	FBP1*1-4		
1	3	4	4	$V_{IN}$	Power Input
2	2	2	2	$V_{SS}$	Ground
3	1	1	3	CE	ON / OFF Control
4	5,6	-	-	NC	No Connect
5	4	3	1	$V_{OUT}$	Output

## Block Diagram



## Absolute Maximum Ratings

Parameter	Symbol	Ratings	Units
Input Voltage	$V_{IN}$	6.5	V
Output Current	$I_{OUT}$	600	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	$P_D$	SOT-23-3	300
		SOT-353	250
		DFN2*2-6	300
		SOT-89-3	500
		SOT343R	250
		FBP1*1-4	250
Thermal resistance (Junction to air)	$\theta_{JA}$	SOT-23-3	410
		SOT-353	500
		DFN2*2-6	410
		SOT-89-3	250
		SOT343R	500
		FBP1*1-4	500
Operating Temperature Range	$T_{OPR}$	-40 ~ +85	°C
Storage Temperature Range	$T_{STG}$	-55 ~ +150	°C
Maximum junction temperature	$T_J$	-40 ~ +150	°C



# FC6211

## Electrical Characteristics

**FC6211C08** ( $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $C_{IN}=C_L=1\mu F$ ,  $T_a=25^\circ C$ , 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 0.99	$V_{OUT(T)}$ (Note 1)	X 1.01	V
Maximum Output Current	$I_{OUTMAX}$	$V_{IN}=V_{OUT}+1V$		250		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN}=V_{OUT}+1V$ , $1mA \leq I_{OUT} \leq 100mA$		7		mV
Dropout Voltage (Note 3)	$V_{DIF1}$	$I_{OUT}=100mA$		600		mV
	$V_{DIF2}$	$I_{OUT}=200mA$		850		mV
Supply Current	$I_{SS}$	$V_{IN}=V_{OUT}+1V$		30	60	$\mu A$
Stand-by Current	$I_{CEL}$	$V_{CE}=0V$		0.1	1.0	$\mu A$
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT}=30mA$ $V_{OUT}+1V \leq V_{IN} \leq 6.5V$		0.05		%/V
CE "High" Voltage	VCEH	Start up	1.0			V
CE "Low" Voltage	VCEL	Shut down			0.5	V
Output noise	EN	$I_{OUT}=40mA$ , 300Hz~50kHz		50		$\mu V_{rms}$
Ripple Rejection Rate	PSRR	$V_{IN}=[V_{OUT}+1]V+1V_{p-pAC}$	$I_{OUT}=10mA$ , 1kHz	70		dB
			$I_{OUT}=100mA$ , 10kHz	62		

**FC6211C10** ( $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $C_{IN}=C_L=1\mu F$ ,  $T_a=25^\circ C$ , 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 0.99	$V_{OUT(T)}$ (Note 1)	X 1.01	V
Maximum Output Current	$I_{OUTMAX}$	$V_{IN}=V_{OUT}+1V$		300		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN}=V_{OUT}+1V$ , $1mA \leq I_{OUT} \leq 100mA$		5		mV
Dropout Voltage (Note 3)	$V_{DIF1}$	$I_{OUT}=100mA$		400		mV
	$V_{DIF2}$	$I_{OUT}=200mA$		650		mV
Supply Current	$I_{SS}$	$V_{IN}=V_{OUT}+1V$		30	60	$\mu A$
Stand-by Current	$I_{CEL}$	$V_{CE}=0V$		0.1	1.0	$\mu A$
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT}=30mA$ $V_{OUT}+1V \leq V_{IN} \leq 6.5V$		0.035		%/V
CE "High" Voltage	VCEH	Start up	1.0			V
CE "Low" Voltage	VCEL	Shut down			0.5	V
Output noise	EN	$I_{OUT}=40mA$ , 300Hz~50kHz		50		$\mu V_{rms}$
Ripple Rejection Rate	PSRR	$V_{IN}=[V_{OUT}+1]V+1V_{p-pAC}$	$I_{OUT}=10mA$ , 1kHz	70		dB
			$I_{OUT}=100mA$ , 10kHz	62		



# FC6211

**FC6211C12** ( $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $C_{IN}=C_L=1\mu F$ ,  $T_a=25^\circ C$ , 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 0.99	$V_{OUT(T)}$ (Note 1)	X 1.01	V
Maximum Output Current	$I_{OUTMAX}$	$V_{IN}=V_{OUT}+1V$		300		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN}=V_{OUT}+1V$ , $1mA \leq I_{OUT} \leq 100mA$		8		mV
Dropout Voltage (Note 3)	$V_{DIF1}$	$I_{OUT}=100mA$		280		mV
	$V_{DIF2}$	$I_{OUT}=200mA$		500		mV
Supply Current	$I_{SS}$	$V_{IN}=V_{OUT}+1V$		30	60	$\mu A$
Stand-by Current	$I_{CEL}$	$V_{CE}=0V$		0.1	1.0	$\mu A$
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT}=30mA$ $V_{OUT}+1V \leq V_{IN} \leq 6.5V$		0.03		%/V
CE "High" Voltage	VCEH	Start up	1.0			V
CE "Low" Voltage	VCEL	Shut down			0.5	V
Output noise	EN	$I_{OUT}=40mA$ , 300Hz~50kHz		50		$\mu V_{rms}$
Ripple Rejection Rate	PSRR	$V_{IN} = [V_{OUT} + 1]V$ +1Vp-pAC	$I_{OUT}=10mA$ , 1kHz	70		dB
			$I_{OUT}=100mA$ , 10kHz	62		

**FC6211C15** ( $V_{IN}=V_{OUT}+1V$ ,  $V_{CE}=V_{IN}$ ,  $C_{IN}=C_L=1\mu F$ , 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 0.99	$V_{OUT(T)}$ (Note 1)	X 1.01	V
Maximum Output Current	$I_{OUTMAX}$	$V_{IN}=V_{OUT}+1V$		300		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN}=V_{OUT}+1V$ , $1mA \leq I_{OUT} \leq 100mA$		9		mV
Dropout Voltage (Note 3)	$V_{DIF1}$	$I_{OUT}=100mA$		200		mV
	$V_{DIF2}$	$I_{OUT}=200mA$		400		mV
Supply Current	$I_{SS}$	$V_{IN}=V_{OUT}+1V$		30	60	$\mu A$
Stand-by Current	$I_{CEL}$	$V_{CE}=0V$		0.1	1.0	$\mu A$
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT}=30mA$ $V_{OUT}+1V \leq V_{IN} \leq 6.5V$		0.05		%/V
CE "High" Voltage	VCEH	Shut up	1.0			V
CE "Low" Voltage	VCEL	Start down			0.5	V
Output noise	EN	$I_{OUT}=40mA$ , 300Hz~50kHz		50		$\mu V_{rms}$
Ripple Rejection Rate	PSRR	$V_{IN} = [V_{OUT} + 1]V$ +1Vp-pAC	$I_{OUT}=10mA$ , 1kHz	70		dB
			$I_{OUT}=100mA$ , 10kHz	62		



# FC6211

**FC6211C18** ( $V_{IN} = V_{OUT} + 1V$ ,  $V_{CE} = V_{IN}$ ,  $C_{IN} = C_L = 1\mu F$ ,  $T_a = 25^\circ C$ , 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 0.99	$V_{OUT(T)}$ (Note 1)	X 1.01	V
Maximum Output Current	$I_{OUTMAX}$	$V_{IN} = V_{OUT} + 1V$		300		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN} = V_{OUT} + 1V$ , $1mA \leq I_{OUT} \leq 100mA$		9		mV
Dropout Voltage (Note 3)	$V_{DIF1}$	$I_{OUT} = 100mA$		200		mV
	$V_{DIF2}$	$I_{OUT} = 200mA$		400		mV
Supply Current	$I_{SS}$	$V_{IN} = V_{OUT} + 1V$		30	60	$\mu A$
Stand-by Current	$I_{CEL}$	$V_{CE} = 0V$		0.1	1.0	$\mu A$
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT} = 30mA$ $V_{OUT} + 1V \leq V_{IN} \leq 6.5V$		0.05		%/V
CE "High" Voltage	VCEH	Start up	1.0			V
CE "Low" Voltage	VCEL	Shut down			0.5	V
Output noise	EN	$I_{OUT} = 40mA$ , 300Hz~50kHz		50		$\mu V_{rms}$
Ripple Rejection Rate	PSRR	$V_{IN} = [V_{OUT} + 1]V + 1V_{p-pAC}$	$I_{OUT} = 10mA$ , 1kHz		70	dB
			$I_{OUT} = 100mA$ , 10kHz		62	

**FC6211C25** ( $V_{IN} = V_{OUT} + 1V$ ,  $V_{CE} = V_{IN}$ ,  $C_{IN} = C_L = 1\mu F$ ,  $T_a = 25^\circ C$ , 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 0.99	$V_{OUT(T)}$ (Note 1)	X1.01	V
Maximum Output Current	$I_{OUTMAX}$	$V_{IN} = V_{OUT} + 1V$		400		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN} = V_{OUT} + 1V$ , $1mA \leq I_{OUT} \leq 100mA$		9		mV
Dropout Voltage (Note 3)	$V_{DIF1}$	$I_{OUT} = 100mA$		110		mV
	$V_{DIF2}$	$I_{OUT} = 200mA$		220		mV
Supply Current	$I_{SS}$	$V_{IN} = V_{OUT} + 1V$		30	60	$\mu A$
Stand-by Current	$I_{CEL}$	$V_{CE} = 0V$		0.1	1.0	$\mu A$
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT} = 30mA$ $V_{OUT} + 1V \leq V_{IN} \leq 6.5V$		0.04		%/V
CE "High" Voltage	VCEH	Start up	1.0			V
CE "Low" Voltage	VCEL	Shut down			0.5	V
Output noise	EN	$I_{OUT} = 40mA$ , 300Hz~50kHz		50		$\mu V_{rms}$
Ripple Rejection Rate	PSRR	$V_{IN} = [V_{OUT} + 1]V + 1V_{p-pAC}$	$I_{OUT} = 10mA$ , 1kHz		70	dB
			$I_{OUT} = 100mA$ , 10kHz		62	
			$I_{OUT} = 200mA$ , 10kHz		62	
Short-circuit Current	$I_{SHORT}$	$V_{IN} = V_{OUT} + 1V$ , $V_{CE} = V_{IN}$ , $V_{OUT} = 0V$		60		mA





# FC6211

**FC6211C28** ( $V_{IN} = V_{OUT} + 1V$ ,  $V_{CE} = V_{IN}$ ,  $C_{IN} = C_L = 1\mu F$ ,  $T_a = 25^\circ C$ , 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 0.99	$V_{OUT(T)}$ (Note 1)	X 1.01	V
Maximum Output Current	$I_{OUTMAX}$	$V_{IN} = V_{OUT} + 1V$		450		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN} = V_{OUT} + 1V$ , $1mA \leq I_{OUT} \leq 100mA$		7		mV
Dropout Voltage (Note 3)	$V_{DIF1}$	$I_{OUT} = 100mA$		110		mV
	$V_{DIF2}$	$I_{OUT} = 200mA$		220		mV
Supply Current	$I_{SS}$	$V_{IN} = V_{OUT} + 1V$		30	60	$\mu A$
Stand-by Current	$I_{CEL}$	$V_{CE} = 0V$		0.1	1.0	$\mu A$
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT} = 30mA$ $V_{OUT} + 1V \leq V_{IN} \leq 6.5V$		0.04		%/V
CE "High" Voltage	VCEH	Start up	1.0			V
CE "Low" Voltage	VCEL	Shut down			0.5	V
Output noise	EN	$I_{OUT} = 40mA$ , 300Hz~50kHz		50		$\mu V_{rms}$
Ripple Rejection Rate	PSRR	$V_{IN} = [V_{OUT} + 1]V + 1V_{p-pAC}$	$I_{OUT} = 10mA, 1kHz$	70		dB
			$I_{OUT} = 100mA, 10kHz$	62		
			$I_{OUT} = 200mA, 10kHz$	62		
Short-circuit Current	$I_{SHORT}$	$V_{IN} = V_{OUT} + 1V$ , $V_{CE} = V_{IN}$ , $V_{OUT} = 0V$		65		mA

**FC6211C30** ( $V_{IN} = V_{OUT} + 1V$ ,  $V_{CE} = V_{IN}$ ,  $C_{IN} = C_L = 1\mu F$ ,  $T_a = 25^\circ C$ , 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 0.99	$V_{OUT(T)}$ (Note 1)	X 1.01	V
Maximum Output Current	$I_{OUTMAX}$	$V_{IN} = V_{OUT} + 1V$		500		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN} = V_{OUT} + 1V$ , $1mA \leq I_{OUT} \leq 100mA$		8		mV
Dropout Voltage (Note 3)	$V_{DIF1}$	$I_{OUT} = 100mA$		100		mV
	$V_{DIF2}$	$I_{OUT} = 200mA$		210		mV
Supply Current	$I_{SS}$	$V_{IN} = V_{OUT} + 1V$		30	60	$\mu A$
Stand-by Current	$I_{CEL}$	$V_{CE} = 0V$		0.1	1.0	$\mu A$
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT} = 30mA$ $V_{OUT} + 1V \leq V_{IN} \leq 6.5V$		0.05		%/V
CE "High" Voltage	VCEH	Start up	1.0			V
CE "Low" Voltage	VCEL	Shut down			0.5	V
Output noise	EN	$I_{OUT} = 40mA$ , 300Hz~50kHz		50		$\mu V_{rms}$
Ripple Rejection Rate	PSRR	$V_{IN} = [V_{OUT} + 1]V + 1V_{p-pAC}$	$I_{OUT} = 10mA$ , 1kHz	70		dB
			$I_{OUT} = 100mA$ , 10kHz	62		
			$I_{OUT} = 200mA$ , 10kHz	62		
Short-circuit Current	$I_{SHORT}$	$V_{IN} = V_{OUT} + 1V$ , $V_{CE} = V_{IN}$ , $V_{OU} = 0V$		65		mA



# FC6211

**FC6211C33** ( $V_{IN} = V_{OUT} + 1V$ ,  $V_{CE} = V_{IN}$ ,  $C_{IN} = C_L = 1\mu F$ ,  $T_a = 25^\circ C$ , 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 0.99	$V_{OUT(T)}$ (Note 1)	X 1.01	V
Maximum Output Current	$I_{OUTMAX}$	$V_{IN} = V_{OUT} + 1V$		500		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN} = V_{OUT} + 1V$ , $1mA \leq I_{OUT} \leq 100mA$		9		mV
Dropout Voltage (Note 3)	$V_{DIF1}$	$I_{OUT} = 100mA$		120		mV
	$V_{DIF2}$	$I_{OUT} = 200mA$		260		mV
Supply Current	$I_{SS}$	$V_{IN} = V_{OUT} + 1V$		30	60	$\mu A$
Stand-by Current	$I_{CEL}$	$V_{CE} = 0V$		0.1	1.0	$\mu A$
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT} = 30mA$ $V_{OUT} + 1V \leq V_{IN} \leq 6.5V$		0.05		%/V
CE "High" Voltage	$V_{CEH}$	Start up	1.0			V
CE "Low" Voltage	$V_{CEL}$	Shut down			0.5	V
Output noise	EN	$I_{OUT} = 40mA$ , 300Hz~50kHz		50		$\mu V_{rms}$
Ripple Rejection Rate	PSRR	$V_{IN} = [V_{OUT} + 1]V$ $+1V_{p-pAC}$	$I_{OUT} = 10mA, 1kHz$	70		dB
			$I_{OUT} = 100mA, 10kHz$	62		
			$I_{OUT} = 200mA, 10kHz$	62		
Short-circuit Current	$I_{SHORT}$	$V_{IN} = V_{OUT} + 1V$ , $V_{CE} = V_{IN}$ , $V_{OUT} = 0V$		70		mA

**FC6211C33 SOT343R FBP1\*1-4L SOT-353**

( $V_{IN} = V_{OUT} + 1V$ ,  $V_{CE} = V_{IN}$ ,  $C_{IN} = C_L = 1\mu F$ ,  $T_a = 25^\circ C$ , 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 0.99	$V_{OUT(T)}$ (Note 1)	X 1.01	V
Maximum Output Current	$I_{OUTMAX}$	$V_{IN} = V_{OUT} + 1V$		400		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN} = V_{OUT} + 1V$ , $1mA \leq I_{OUT} \leq 100mA$		9		mV
Dropout Voltage (Note 3)	$V_{DIF1}$	$I_{OUT} = 100mA$		120		mV
	$V_{DIF2}$	$I_{OUT} = 200mA$		260		mV
Supply Current	$I_{SS}$	$V_{IN} = V_{OUT} + 1V$		30	60	$\mu A$
Stand-by Current	$I_{CEL}$	$V_{CE} = 0V$		0.1	1.0	$\mu A$
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT} = 30mA$ $V_{OUT} + 1V \leq V_{IN} \leq 6.5V$		0.05		%/V
CE "High" Voltage	$V_{CEH}$	Start up	1.0			V
CE "Low" Voltage	$V_{CEL}$	Shut down			0.5	V
Output noise	EN	$I_{OUT} = 40mA$ , 300Hz~50kHz		50		$\mu V_{rms}$
Ripple Rejection Rate	PSRR	$V_{IN} = [V_{OUT} + 1]V$ $+1V_{p-pAC}$	$I_{OUT} = 10mA, 1kHz$	70		dB
			$I_{OUT} = 100mA, 10kHz$	62		
			$I_{OUT} = 200mA, 10kHz$	62		
Short-circuit Current	$I_{SHORT}$	$V_{IN} = V_{OUT} + 1V$ , $V_{CE} = V_{IN}$ , $V_{OUT} = 0V$		70		mA



# FC6211

**FC6211C50** ( $V_{IN} = V_{OUT} + 1V$ ,  $V_{CE} = V_{IN}$ ,  $C_{IN} = C_L = 1\mu F$ ,  $T_a = 25^\circ C$ , 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 0.99	$V_{OUT(T)}$ (Note 1)	X 1.01	V
Maximum Output Current	$I_{OUTMAX}$	$V_{IN} = V_{OUT} + 1V$		500		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN} = V_{OUT} + 1V$ , $1mA \leq I_{OUT} \leq 100mA$		8		mV
Dropout Voltage (Note 3)	$V_{DIF1}$	$I_{OUT} = 100mA$		100		mV
	$V_{DIF2}$	$I_{OUT} = 200mA$		200		mV
Supply Current	$I_{SS}$	$V_{IN} = V_{OUT} + 1V$		40	60	$\mu A$
Stand-by Current	$I_{CEL}$	$V_{CE} = 0V$		0.1	1.0	$\mu A$
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT} = 30mA$ $V_{OUT} + 1V \leq V_{IN} \leq 6.5V$		0.05		%/V
CE "High" Voltage	VCEH	Start up	1.0			V
CE "Low" Voltage	VCEL	Shut down			0.7	V
Output noise	EN	$I_{OUT} = 40mA$ , 300Hz~50kHz		50		$\mu V_{rms}$
Ripple Rejection Rate	PSRR	$V_{IN} = [V_{OUT} + 1]V$ $+1V_{p-pAC}$	$I_{OUT} = 10mA, 1kHz$		70	dB
			$I_{OUT} = 100mA, 10kHz$		62	
			$I_{OUT} = 200mA, 10kHz$		62	
Short-circuit Current	$I_{SHORT}$	$V_{IN} = V_{OUT} + 1V$ , $V_{CE} = V_{IN}$ , $V_{OUT} = 0V$		100		mA

**FC6211A30** ( $V_{IN} = V_{OUT} + 1V$ ,  $C_{IN} = C_L = 1\mu F$ ,  $T_a = 25^\circ C$ , 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 0.99	$V_{OUT(T)}$ (Note 1)	X 1.01	V
Maximum Output Current	$I_{OUTMAX}$	$V_{IN} = V_{OUT} + 1V$		500		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN} = V_{OUT} + 1V$ , $1mA \leq I_{OUT} \leq 100mA$		8		mV
Dropout Voltage (Note 3)	$V_{DIF1}$	$I_{OUT} = 100mA$		100		mV
	$V_{DIF2}$	$I_{OUT} = 200mA$		210		mV
Supply Current	$I_{SS}$	$V_{IN} = V_{OUT} + 1V$		30	60	$\mu A$
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT} = 30mA$ $V_{OUT} + 1V \leq V_{IN} \leq 6.5V$		0.05		%/V
Output noise	EN	$I_{OUT} = 40mA$ , 300Hz~50kHz		50		$\mu V_{rms}$
Ripple Rejection Rate	PSRR	$V_{IN} = [V_{OUT} + 1]V$ $+1V_{p-pAC}$	$I_{OUT} = 10mA, 1kHz$		70	dB
			$I_{OUT} = 100mA, 10kHz$		62	
			$I_{OUT} = 200mA, 10kHz$		62	
Short-circuit Current	$I_{SHORT}$	$V_{IN} = V_{OUT} + 1V$ , $V_{CE} = V_{IN}$ , $V_{OUT} = 0V$		65		mA



# FC6211

**FC6211A33** ( $V_{IN}=V_{OUT}+1V$ ,  $C_{IN}=C_L=1\mu F$ ,  $T_a=25^\circ C$ , 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 0.99	$V_{OUT(T)}$ (Note 1)	X 1.01	V
Maximum Output Current	$I_{OUTMAX}$	$V_{IN}=V_{OUT}+1V$		500		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN}=V_{OUT}+1V$ , $1mA \leq I_{OUT} \leq 100mA$		9		mV
Dropout Voltage (Note 3)	$V_{DIF1}$	$I_{OUT}=100mA$		120		mV
	$V_{DIF2}$	$I_{OUT}=200mA$		260		mV
Supply Current	$I_{SS}$	$V_{IN}=V_{OUT}+1V$		30	60	$\mu A$
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT}=30mA$ $V_{OUT}+1V \leq V_{IN} \leq 6.5V$		0.1	1.0	%/V
Output noise	EN	$I_{OUT}=40mA$ , 300Hz~50kHz		50		$\mu V_{rms}$
Ripple Rejection Rate	PSRR	$V_{IN}=[V_{OUT}+1]V$ $+1Vp-pAC$	$I_{OUT}=10mA, 1kHz$	70		dB
			$I_{OUT}=100mA, 10kHz$	62		
			$I_{OUT}=200mA, 10kHz$	62		
Short-circuit Current	$I_{SHORT}$	$V_{IN}=V_{OUT}+1V, V_{OUT}=0V$		70		mA

**FC6211A25** ( $V_{IN}=V_{OUT}+1V$ ,  $C_{IN}=C_L=1\mu F$ ,  $T_a=25^\circ C$ , 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 0.99	$V_{OUT(T)}$ (Note 1)	X 1.01	V
Maximum Output Current	$I_{OUTMAX}$	$V_{IN}=V_{OUT}+1V$		400		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN}=V_{OUT}+1V$ , $1mA \leq I_{OUT} \leq 100mA$		9		mV
Dropout Voltage (Note 3)	$V_{DIF1}$	$I_{OUT}=100mA$		80		mV
	$V_{DIF2}$	$I_{OUT}=200mA$		180		mV
Supply Current	$I_{SS}$	$V_{IN}=V_{OUT}+1V$		30	60	$\mu A$
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT}=30mA$ $V_{OUT}+1V \leq V_{IN} \leq 6.5V$		0.1	1.0	%/V
Output noise	EN	$I_{OUT}=40mA$ , 300Hz~50kHz		50		$\mu V_{rms}$
Ripple Rejection Rate	PSRR	$V_{IN}=[V_{OUT}+1]V$ $+1Vp-pAC$	$I_{OUT}=10mA, 1kHz$	70		dB
			$I_{OUT}=100mA, 10kHz$	62		
			$I_{OUT}=200mA, 10kHz$	62		
Short-circuit Current	$I_{SHORT}$	$V_{IN}=V_{OUT}+1V, V_{OUT}=0V$		60		mA



# FC6211

**FC6211H15** ( $V_{IN} = V_{OUT} + 1V$ ,  $V_{CE} = GND$ ,  $C_{IN} = C_L = 1\mu F$ ,  $T_a = 25^\circ C$ , 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
Maximum Output Current	$I_{OUTMAX}$	$V_{IN} = V_{OUT} + 1V$		300		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN} = V_{OUT} + 1V$ , $1mA \leq I_{OUT} \leq 100mA$		9		mV
Dropout Voltage (Note 3)	$V_{DIF1}$	$I_{OUT} = 100mA$		200		mV
	$V_{DIF2}$	$I_{OUT} = 200mA$		400		mV
Supply Current	$I_{SS}$	$V_{IN} = V_{OUT} + 1V$		30	60	$\mu A$
Stand-by Current	$I_{CEL}$	$V_{CE} = V_{IN}$		0.1	1.0	$\mu A$
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT} = 30mA$ $V_{OUT} + 1V \leq V_{IN} \leq 6.5V$		0.05		%/V
CE "High" Voltage	VCEH	Shut down	1.0			V
CE "Low" Voltage	VCEL	Start up			0.4	V
Output noise	EN	$I_{OUT} = 40mA$ , 300Hz~50kHz		50		$\mu V_{rms}$
Ripple Rejection Rate	PSRR	$V_{IN} = [V_{OUT} + 1]V + 1V_{p-pAC}$   $I_{OUT} = 10mA$ , 1kHz		70		dB

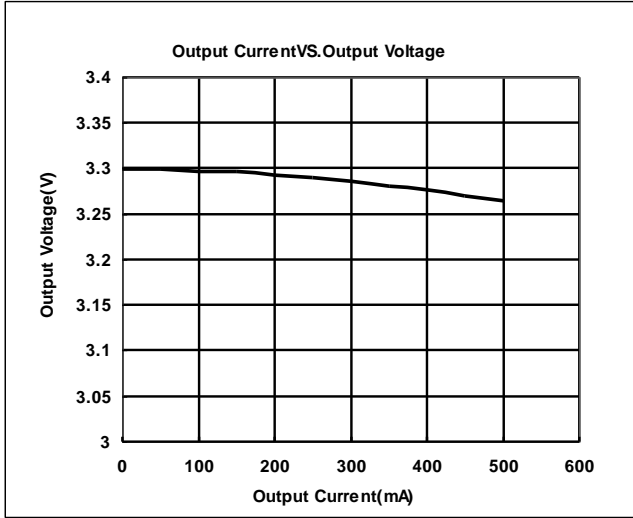
Note :

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

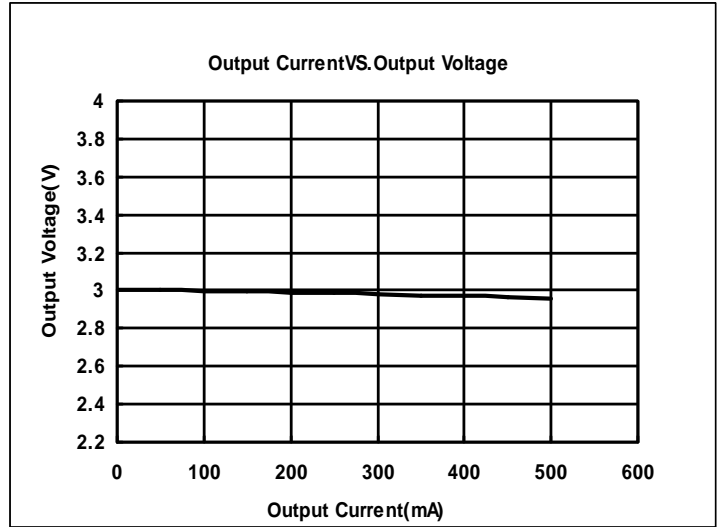
## Type Characteristics

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

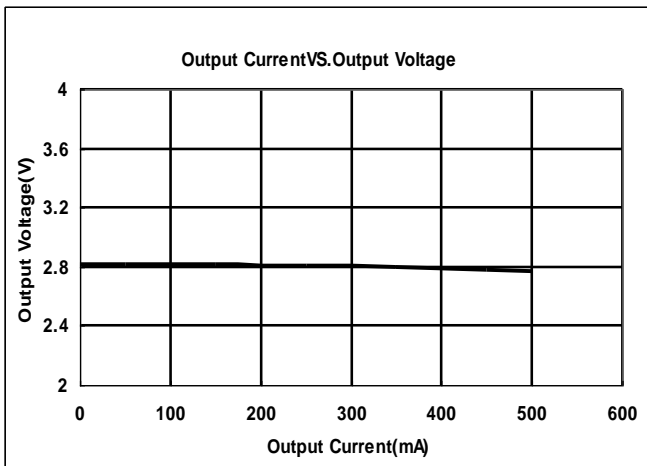
FC6211C33M5G



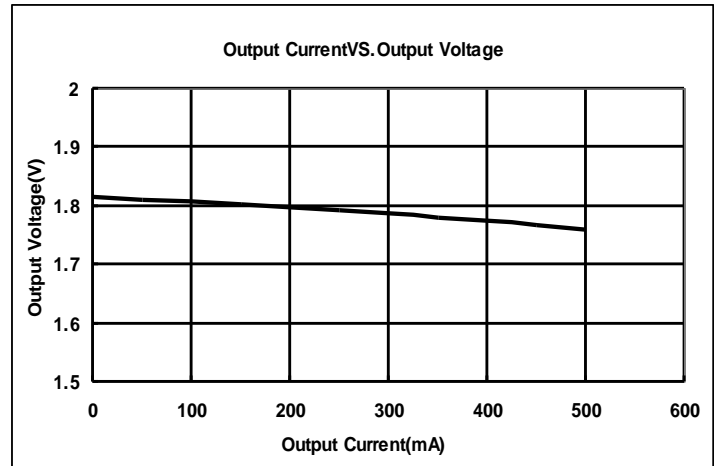
FC6211C30M5G



FC6211C28M5G

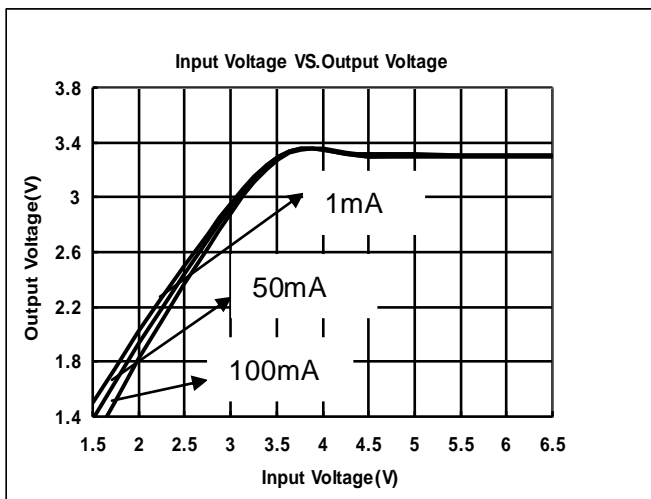


FC6211C18M5G

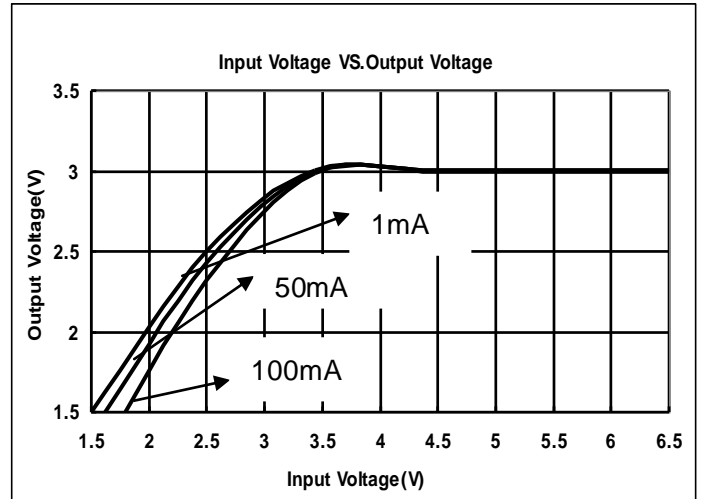


(2) Input Voltage VS. Output Voltage ( $T_a = 25^\circ\text{C}$ )

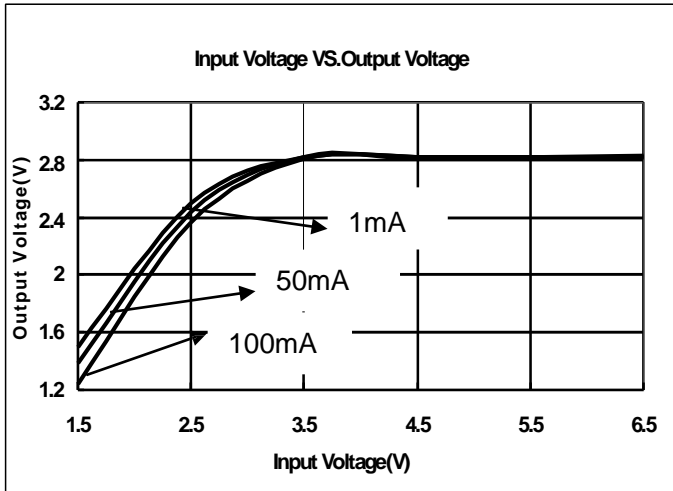
FC6211C33M5G



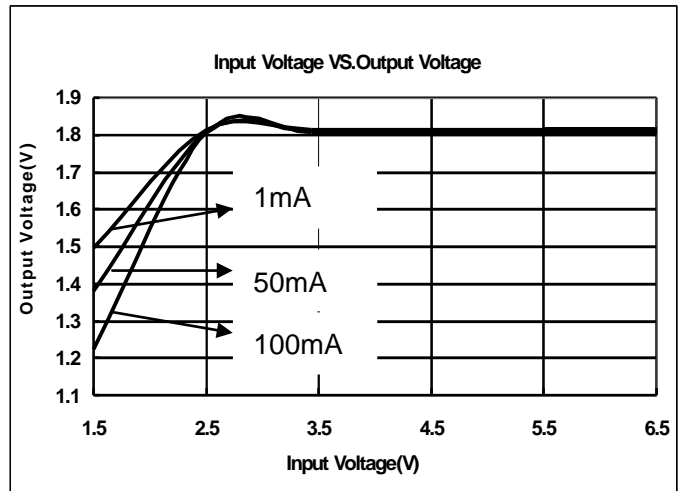
FC6211C30M5G



FC6211C28M5G

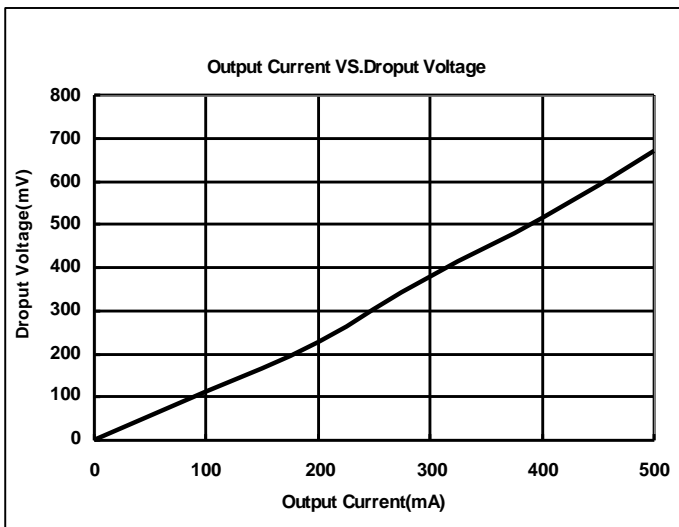


FC6211C18M5G

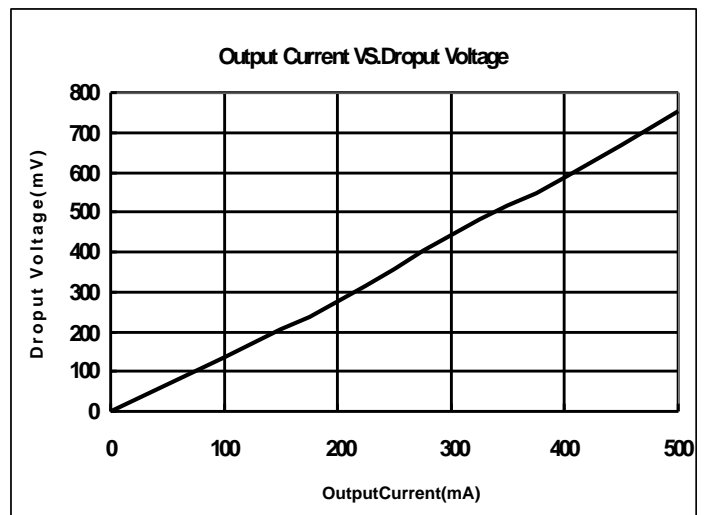


(3) Output Current VS. Dropout Voltage ( $V_{IN}=V_{out}+1V, T_a = 25^\circ C$ )

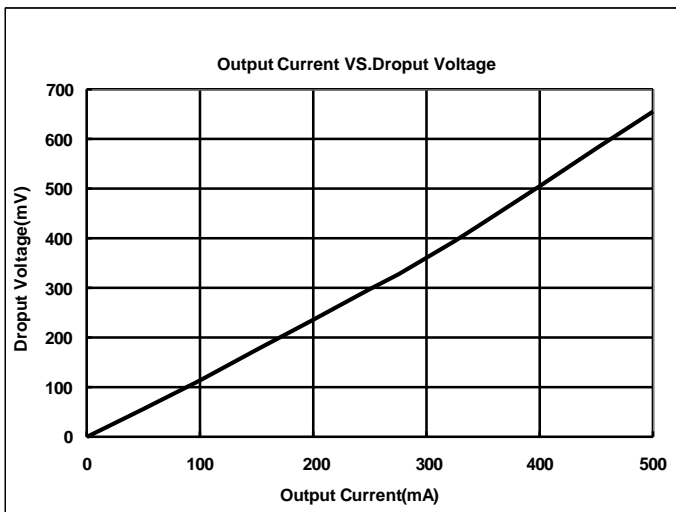
FC6211C33M5G



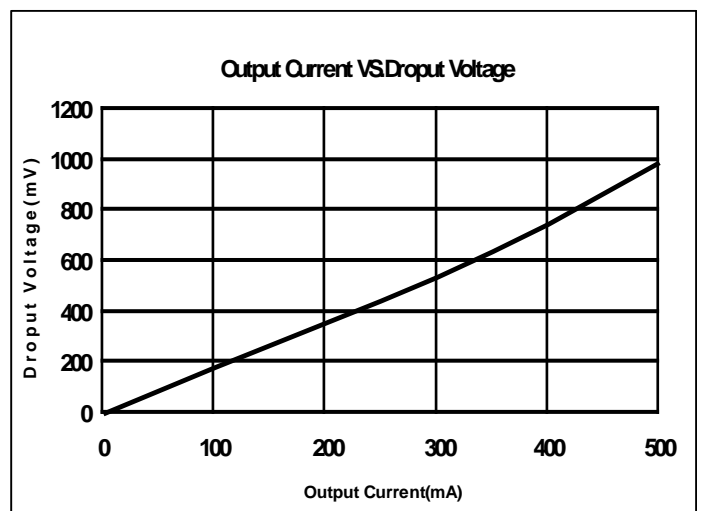
FC6211C30M5G



FC6211C28M5G

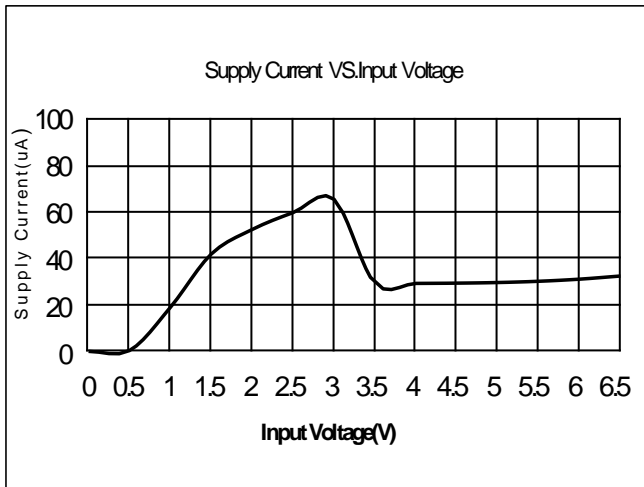


FC6211C18M5G

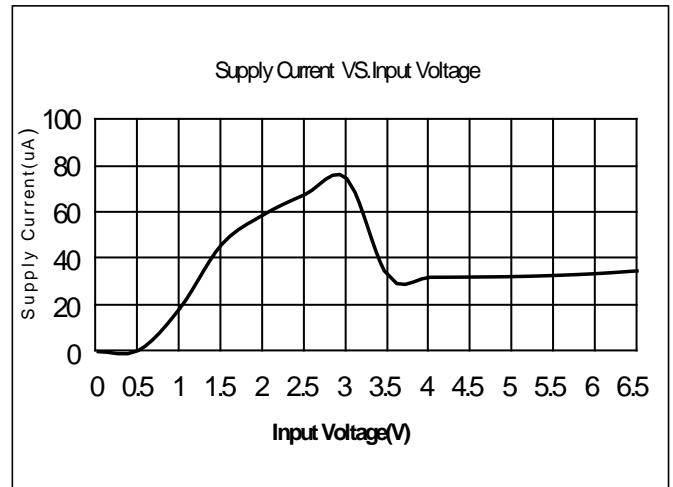


## (4) Input Voltage VS. Supply Current (Ta = 25 °C)

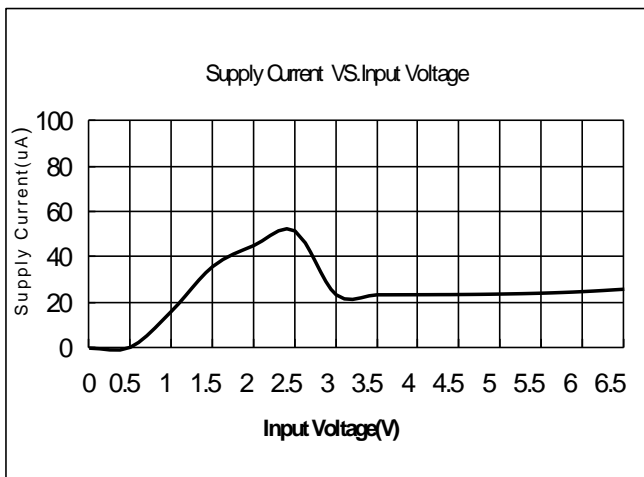
FC6211C33M5G



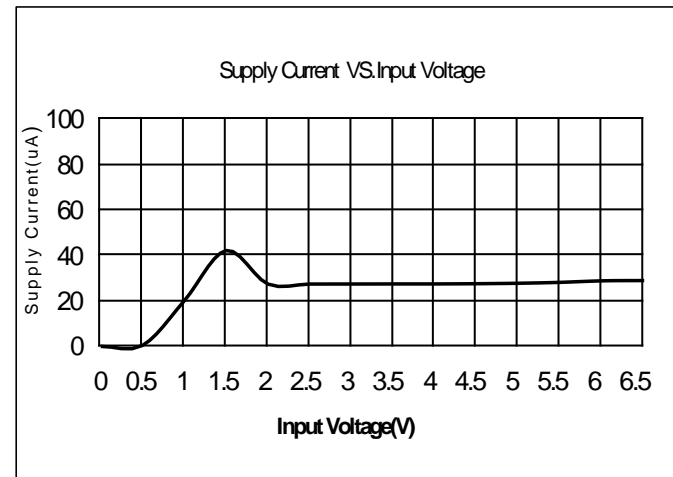
FC6211C30M5G



FC6211C28M5G

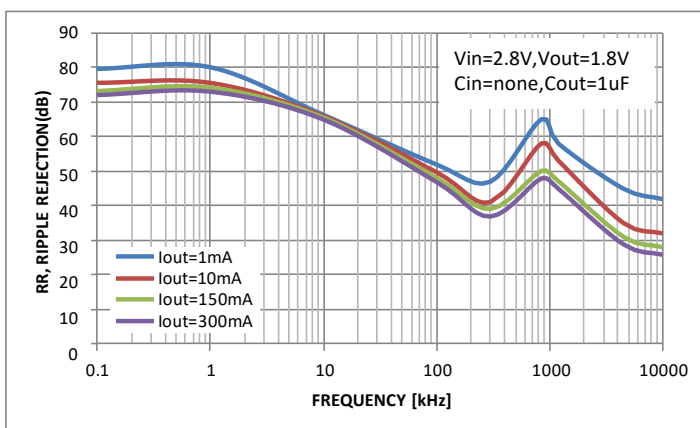


FC6211C18M5G

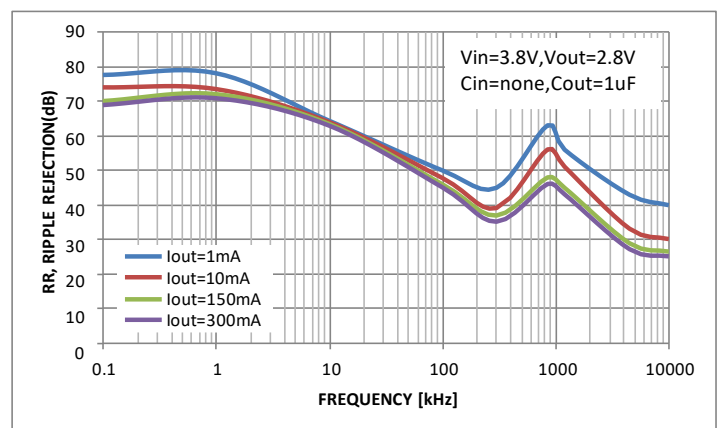


## (5) PSRR

FC6211C18M5G



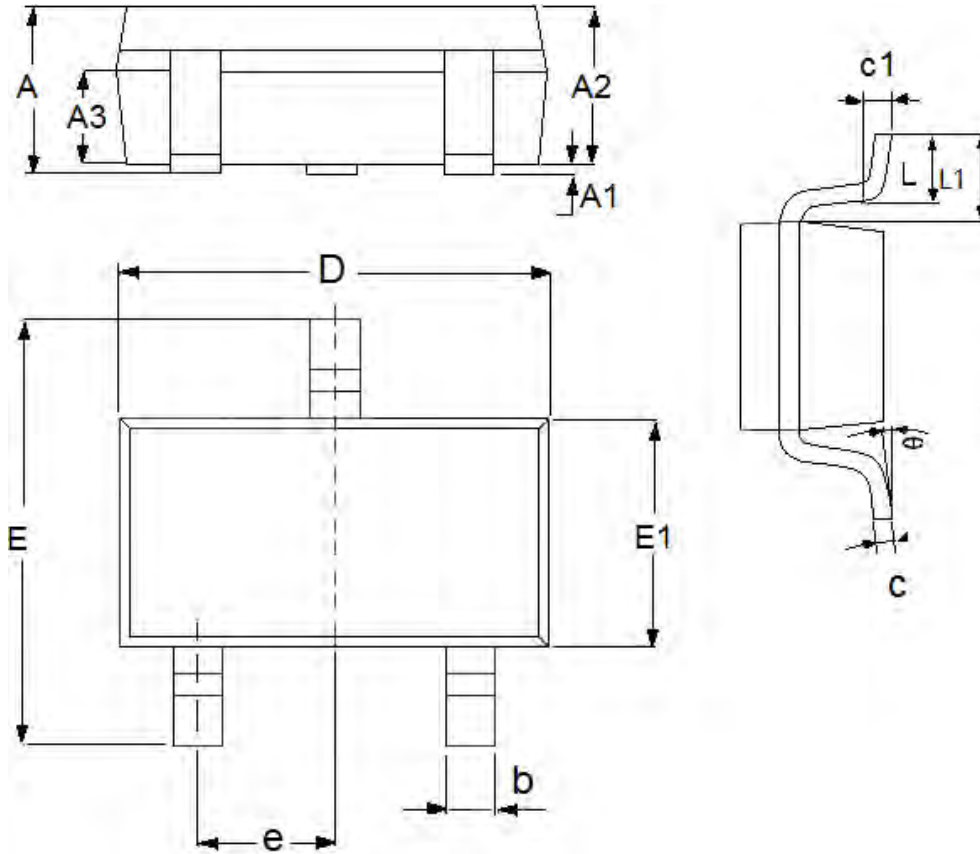
FC6211C28M5G





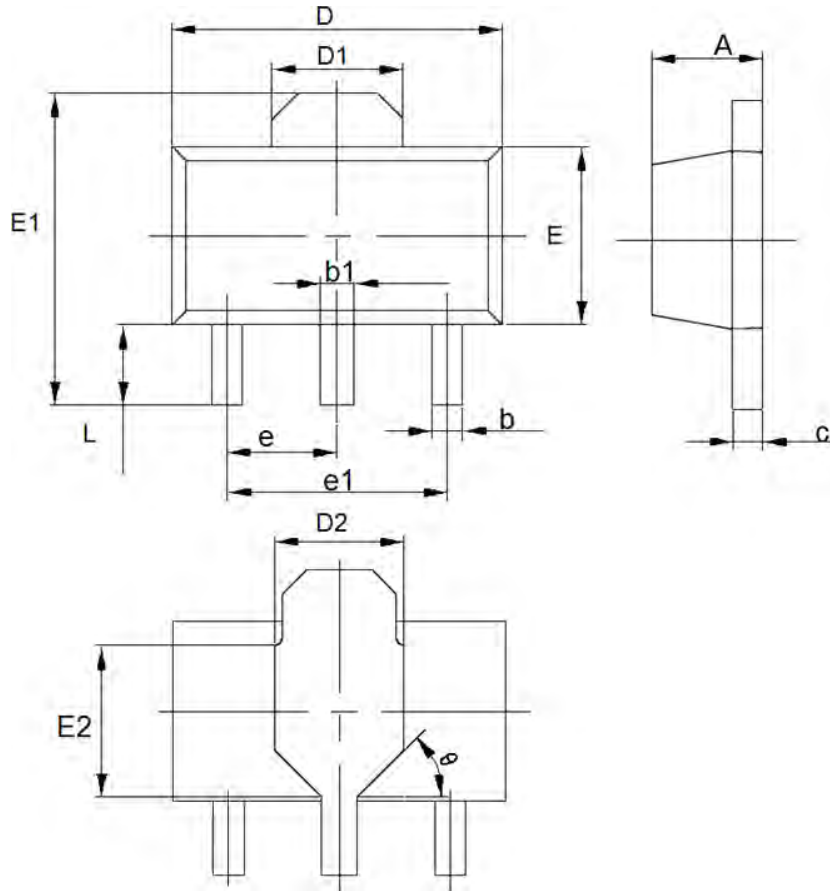
## Packaging Information

- SOT-23-3



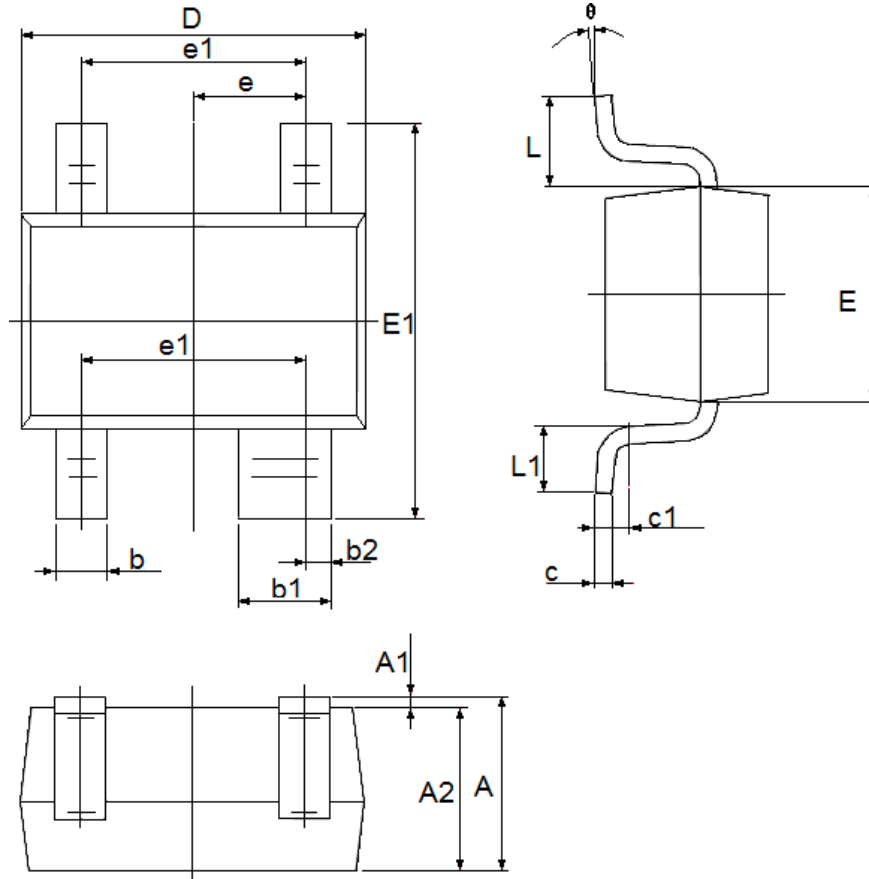
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.05	1.45	0.0413	0.0571
A1	0	0.15	0.0000	0.0059
A2	0.9	1.3	0.0354	0.0512
A3	0.6	0.7	0.0236	0.0276
b	0.25	0.5	0.0098	0.0197
c	0.1	0.25	0.0039	0.0098
D	2.8	3.1	0.1102	0.1220
E	2.6	3.1	0.1023	0.1220
E1	1.5	1.8	0.0591	0.0709
e	0.95(TYP)		0.0374(TYP)	
L	0.25	0.6	0.0098	0.0236
L1	0.59(TYP)		0.0232(TYP)	
theta	0	8°	0.0000	8°
c1	0.2(TYP)		0.0079(TYP)	

- SOT-89-3



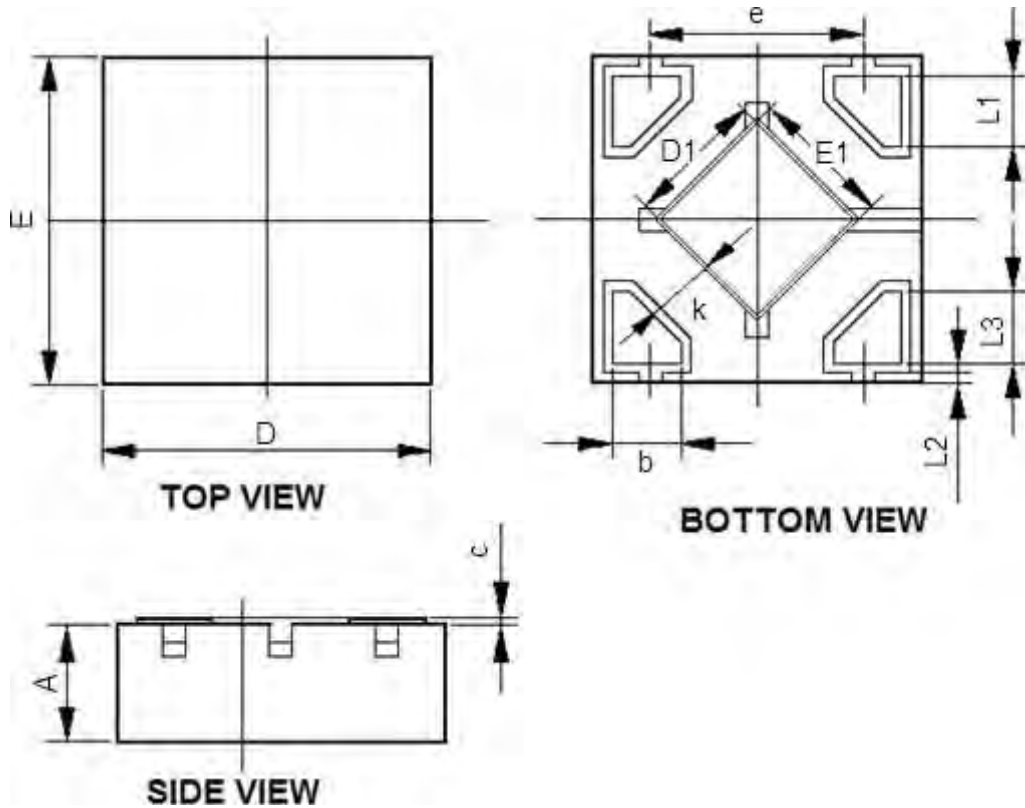
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.4	1.6	0.0551	0.063
b	0.32	0.52	0.0126	0.0205
b1	0.4	0.58	0.0157	0.0228
c	0.35	0.45	0.0138	0.01772
D	4.4	4.6	0.1732	0.1811
D1	1.55(TYP)		0.061(TYP)	
D2	1.75(TYP)		0.0689(TYP)	
e1	3(TYP)		0.1181(TYP)	
E	2.3	2.6	0.0906	0.1023
E1	3.94	4.4	0.1551	0.1732
E2	1.9(TYP)		0.0748(TYP)	
e	1.5(TYP)		0.0591(TYP)	
L	0.8	1.2	0.0315	0.0472
θ	45°		45°	

- SOT343R



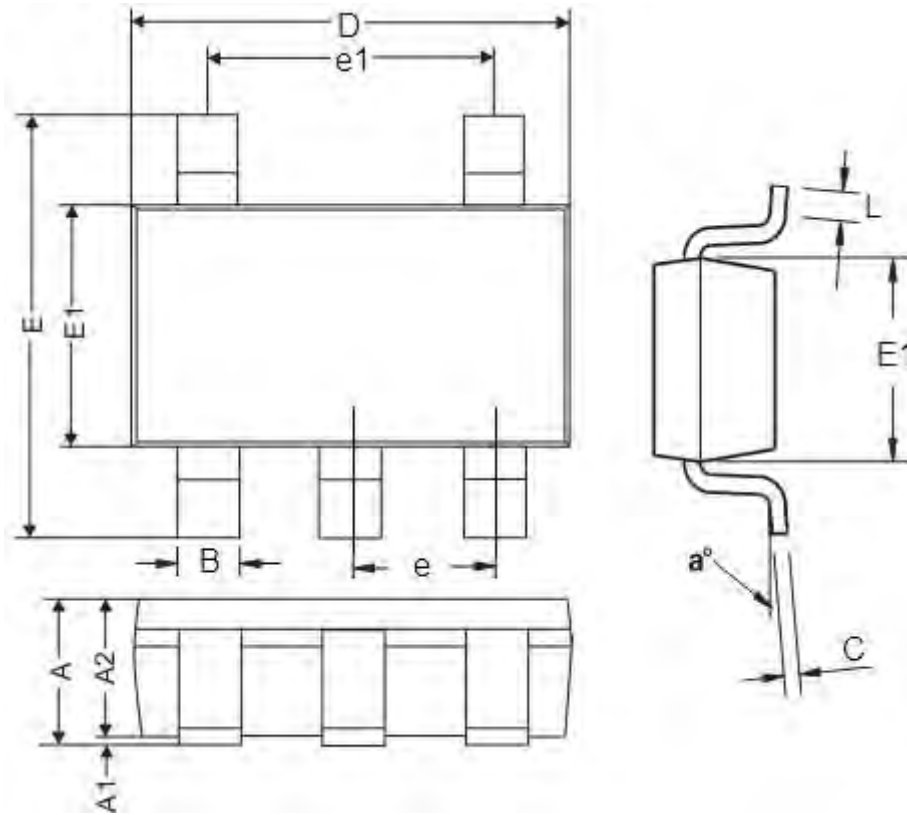
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
b1	0.350	0.500	0.014	0.020
b2	0.075	0.175	0.003	0.007
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.1	1.4	0.0433	0.0551
E1	2.1	2.5	0.0827	0.0984
e	0.65TYP		0.026TYP	
e1	1.200	1.400	0.047	0.055
L	0.525TYP		0.021TYP	
L1	0.260	0.460	0.010	0.018
θ	0.000	8°	0	8°
c1	0.2TYP		0.0079TYP	

- FBP1\*1-4



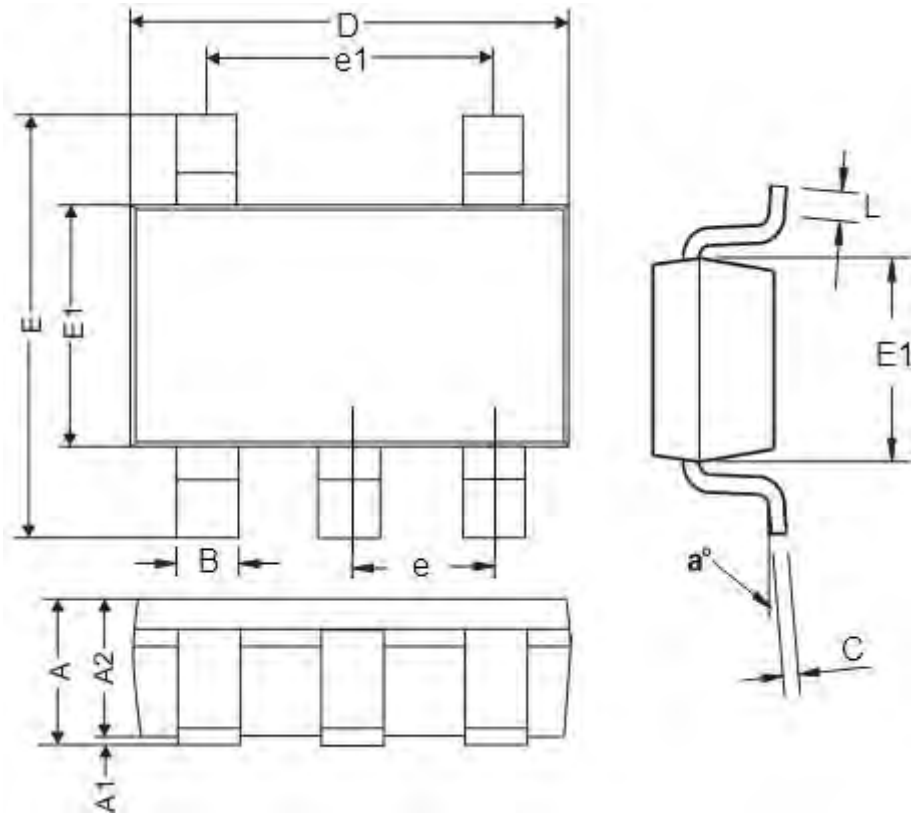
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	0.335	0.410	0.013	0.016
D	0.950	1.100	0.037	0.043
E	0.950	1.100	0.037	0.043
D1	0.370	0.470	0.015	0.019
E1	0.370	0.470	0.015	0.019
k	0.170MIN		0.007MIN	
b	0.160	0.260	0.060	0.010
C	0.010	0.090	0.000	0.004
e	0.600	0.700	0.024	0.028
L1	0.185	0.255	0.007	0.010
L2	0.03REF		0.001REF	
L3	0.185	0.255	0.007	0.010

- SOT-23-5



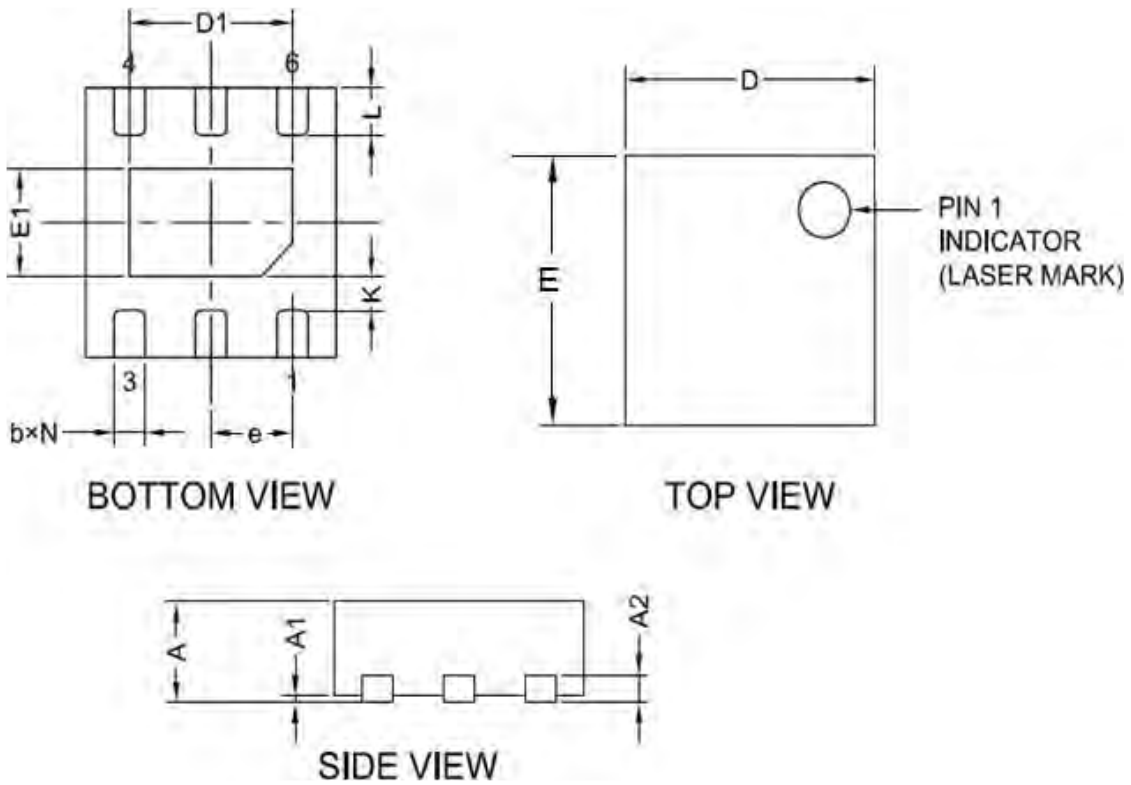
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.05	1.45	0.0413	0.0570
A1	0	0.15	0	0.0059
A2	0.9	1.3	0.0354	0.0511
B	0.25	0.5	0.0098	0.0196
C	0.10	0.23	0.0039	0.0090
D	2.82	3.05	0.1110	0.1200
E	2.60	3.05	0.1023	0.1200
E1	1.50	1.75	0.0590	0.0688
e	0.95REF		0.0374REF	
e1	1.90REF		0.0748REF	
L	0.10	0.60	0.0039	0.0236
a°	0°	30°	0°	30°

- SOT-353



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	0.9	1.1	0.035	0.043
A1	0.0	0.10	0.00	0.004
A2	0.9	1.0	0.035	0.039
B	0.15	0.35	0.006	0.014
C	0.08	0.15	0.003	0.006
D	2.0	2.2	0.079	0.087
E	2.15	2.45	0.085	0.096
E1	1.15	1.35	0.045	0.096
e	0.65 REF		0.026 REF	
e1	1.20	1.4	0.047	0.055
L	0.26	0.46	0.01	0.018
$a^\circ$	$0^\circ$	$8^\circ$	$0^\circ$	$8^\circ$

- DFN2\*2-6



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