ACE535C

300mA High PSRR, Fast Response Linear Regulator

Description

ACE535C series is a group of positive voltage output, low power consumption, low dropout voltage regulator.

ACE535C can provide output value in the range of 1.0V~4.5V every 0.1V step. It also can be customized on command.

ACE535C includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module with discharge capability.

ACE535C has excellent load and line transient response and good temperature characteristics, which can assure the stability of chip and power system. And it uses trimming technique to guarantee output voltage accuracy within ±2%.

ACE535C is available in SOT23-5 and DFN1x1-4 packages which are lead free.

Features

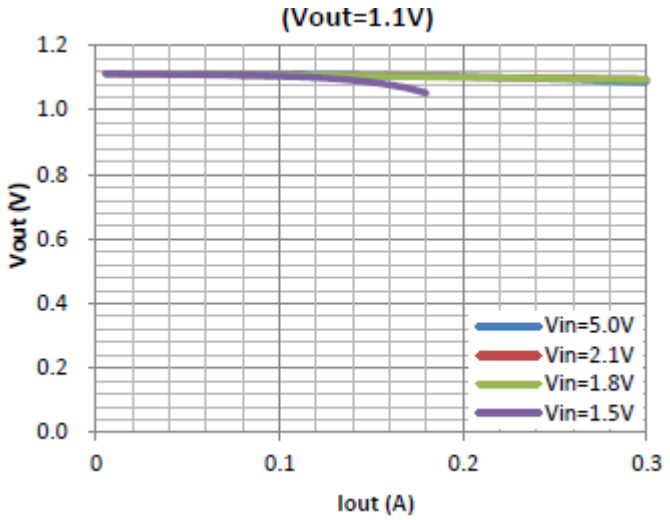
- Low Power Consumption: 50uA (Typ.)
- Low output noise (47uVRMS)
- Standby Mode: 0.1uA
- Low dropout Voltage: 470mV@200mA (Typ.)
- High Ripple Rejection: 70dB@1KHz (Typ.)
- Low Temperature Coefficient: ±100ppm/$^{\circ}$C
- Excellent Line regulation: 0.05%/V
- Build-in chip enable and discharge circuit
- Output Voltage Range: 1.0V~4.5V (customized on command every 0.1V step)
- Highly Accurate: ±2%
- Output Current Limit

Application

- Power source for cellular phones and various kind of PCSs
- Battery Powered equipment
- Power Management of MP3, PDA, DSC, Mouse, PS2 Games
- Reference Voltage Source
- Regulation after Switching Power

Typical Performance Characteristic:

Line Regulation



Absolute Maximum Ratings

Parameter		Max	Unit
Max Input voltage		8	V
Operating Junction Temperature(Tj)		125	°C
Output Current		300	mA
Ambient Temperature(Ta)		-40~85	°C
Package Thermal Resistance (θj_A) SOT-23-5		220	°C/W
Power Dissipation	SOT-23-5	250	mW
	DFN1*1-4	600	
Storage temperature (Ts)		- 45 to 150	°C
Lead Temperature & Time		260°C,10S	°C

Note:

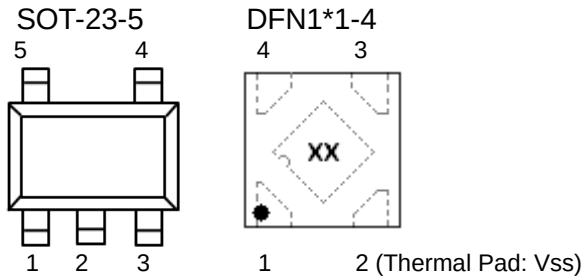
1)Heat Sink Area of PCB for DFN1x1-4 is recommended at least 2.5mmx4mm.

2) Package Thermal Resistance value can be affected by PCB design, outside radiator, ambient airflow, operating power, it just shows for reference.

3) Exceed these limits to damage to the device.

4) Exposure to absolute maximum rating conditions may affect device reliability

Packaging Type



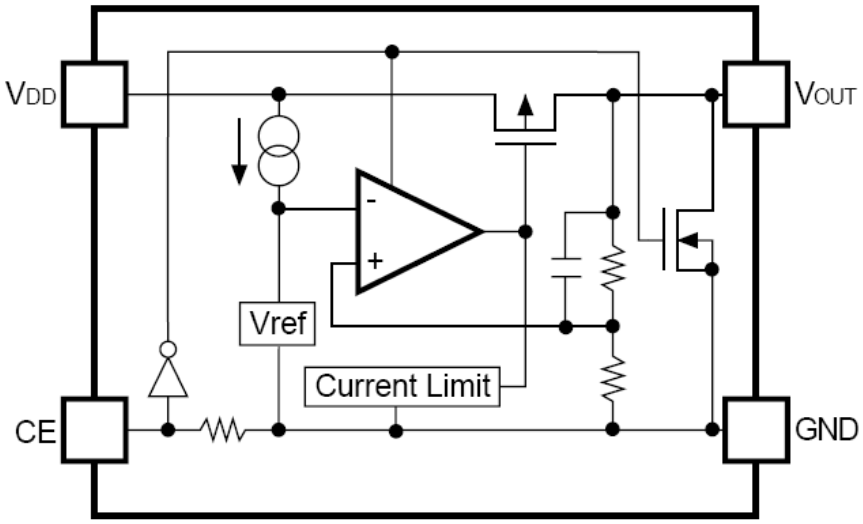
SOT-23-5	DFN1*1-4	Description	Function
5	1	Vout	Output pin
1	4	Vin	Input pin
2	2	V_{SS}	Ground pin
3	3	CE	Chip Enable pin
4		NC	No Connection

Ordering information

ACE535C XX XX + H

- Halogen - free
- Pb - free
- BN: SOT-23-5
  IN: DFN1*1-4
- Output Voltage: 1.0V/1.5V/1.8V…..4.5V

Block Diagram



Recommended Work Conditions

Item	Min	Max	Unit
Input Voltage Range	1.5	6	V
Ambient Temperature	-40	85	℃

Electrical Characteristics

ACE535C, For Arbitrary Output Voltage.(Test Conditions: Cin=1uF,Cout=1uF,T_A=25°C, unless otherwise specified.)

Symbol	Parameter		Conditions	Min	Typ	Max	Units
Vin	Input Voltage			1.5		6	V
Vout	Output Voltage	Vout>1.5V	Vin=Set Vout+1V 1mA≤Iout≤30mA	Vout x0.98	Vout	Vout x 1.02	V
		Vout<=1.5V		Vout -0.03		Vout +0.03	
Iout (Max.)	Maximun Output Current		Vin-Vout=1V	300			mA
Vdrop**	Dropout Voltage,Vout=1.1V		Iout=200mA		470	600	mV
			Iout=300mA		600	800	mV
$\frac{\Delta Vout}{\Delta Vin \times Vout}$	Line Regulation		Iout=10mA 1.8V≤Vin≤6V		0.05	0.2	%/V
$\frac{\Delta Vout}{\Delta Iout}$	Load Regulation		Vin=Set Vout+1V 1mA≤Iout≤300mA		50	80	mV
Iss	Supply Current		Vin=Set Vout+1V		50	120	uA
Istandby	Supply Current (Srandby)		Vin=Set Vout+1V Vce=GND		0.1	1.0	uA
$\frac{\Delta Vout}{\Delta T \times Vout}$	Output Voltage Temperature Coefficient		Iout=30mA		±100		ppm/°C
PSRR	Ripple Rejection		F=1KHz, Ripple=0.5Vp-p Vin=Set Vout+1V		70		dB
Ilim	Current Limit			500			mA
Rdischarge	Discharge Resistor		CE=0, Vout=3.0V		150		ohm
Vceh	CE Input Voltage “H”			0.95		Vin	V
Vcel	CE Input Voltage “L”			0		0.25	V
en	Output Noise		BW=10Hz~100kHz		47		uVrms

Note:

Iout=100mA @Vout=1.0V - 1.2V

Vdrop=Vin1-(Vout2*0.98) Vout2 is the output voltage when Vin=Vout1+1.0V and Iout=300mA. Vin1 is the input voltage at which the output voltage becomes 98% of Vout1 after gradually decreasing the input voltage.

EXPLANATION

ACE535C series is a group of positive voltage output, low noise, low power consumption, low dropout voltage regulator.

ACE535C can provide output value in the range of 1.0V~4.5V every 0.1V step. It also can be customized on command.

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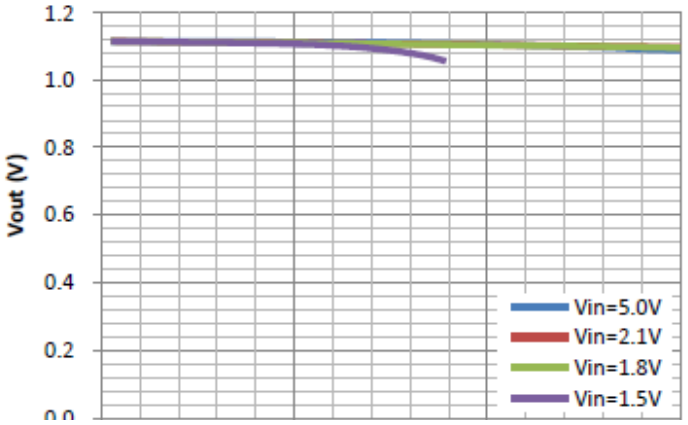
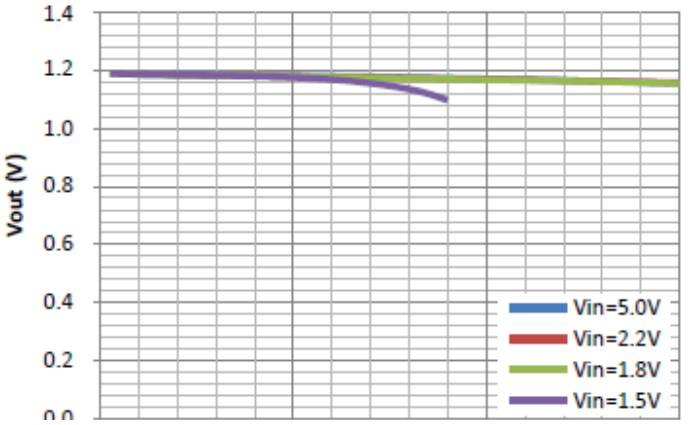
Typical Performance Characteristics (T_A=25℃)

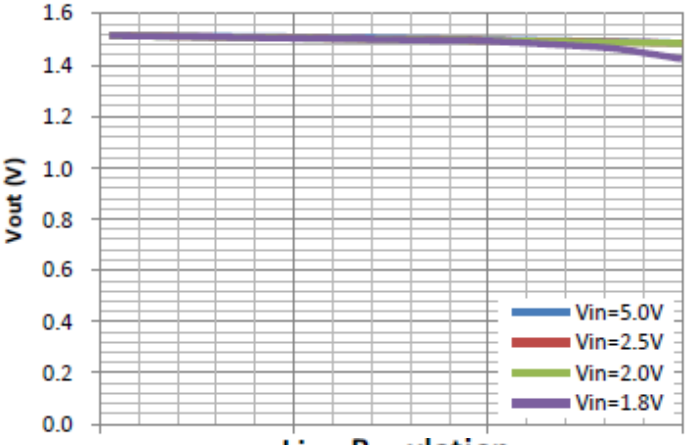
Load Regulation
(Vout=1.1V)



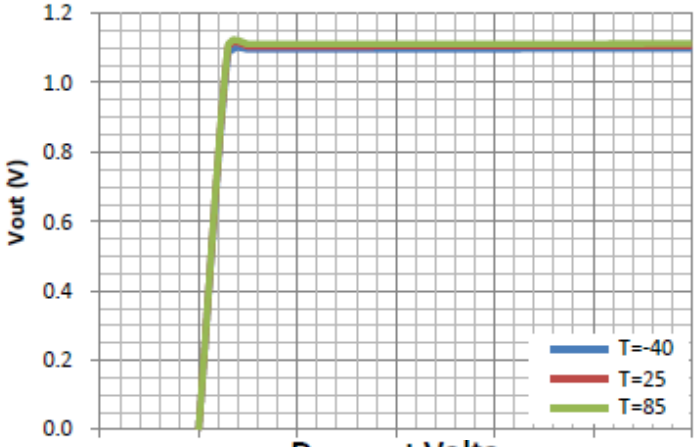
Load Regulation
(Vout=1.2V)



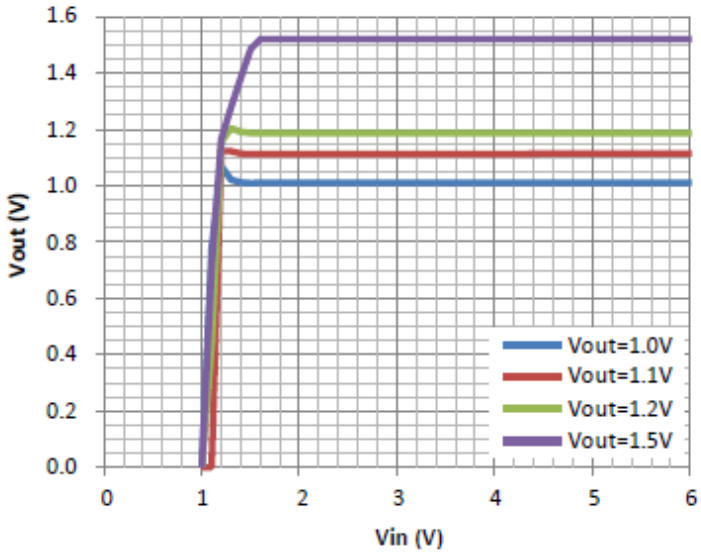
Load Regulation
(Vout=1.5V)



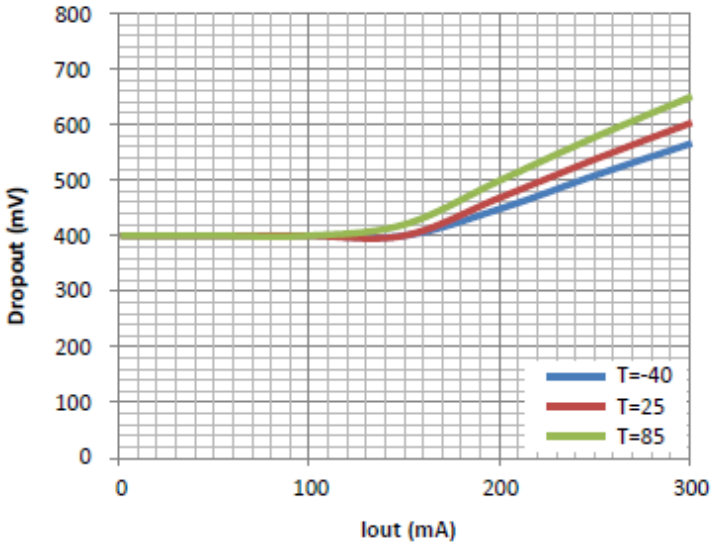
Load Regulation
(Vout=1.1V)



Line Regulation

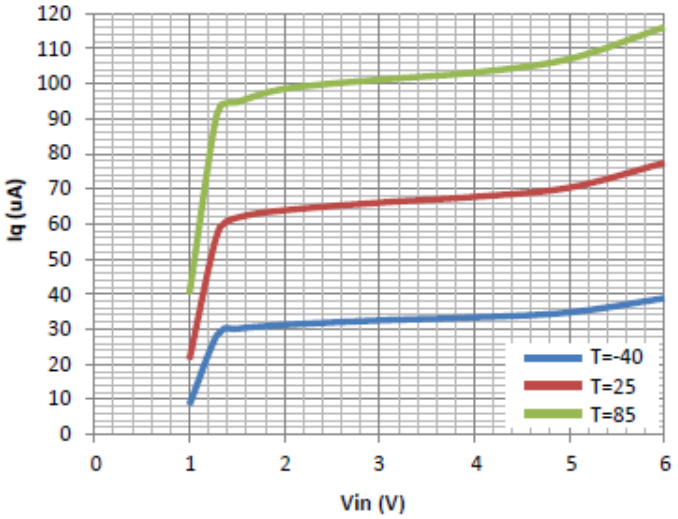


Dropout Voltage

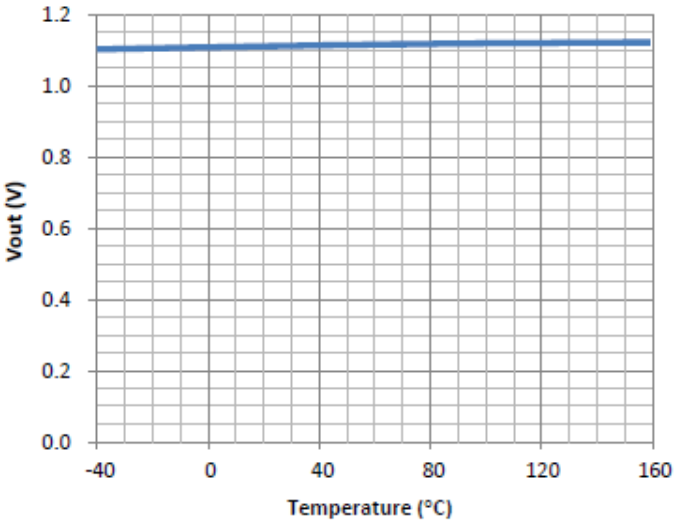


Typical Performance Characteristics

Iq

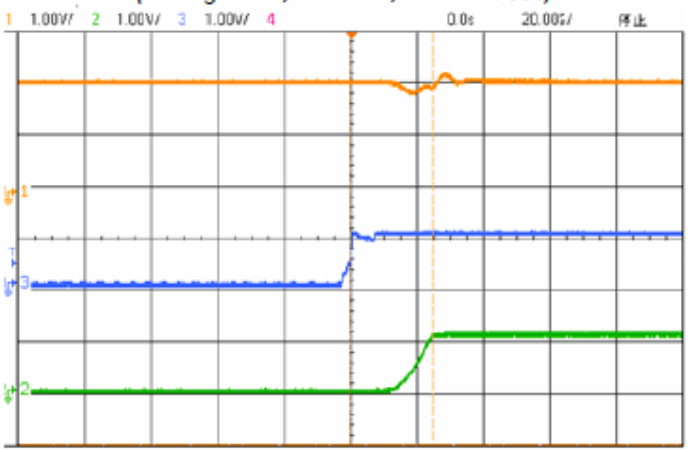


Vout vs. Temperature



CE Chip Enable Response

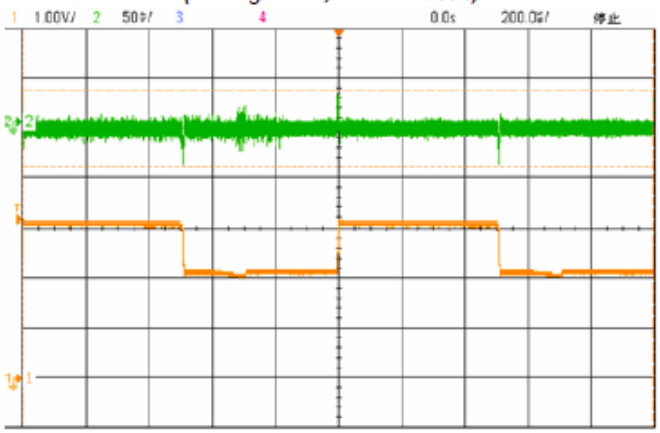
(Orange: Vin; Blue: CE; Green: Vout)



Line Transient Response

Vout=1.1V, Iout=10mA

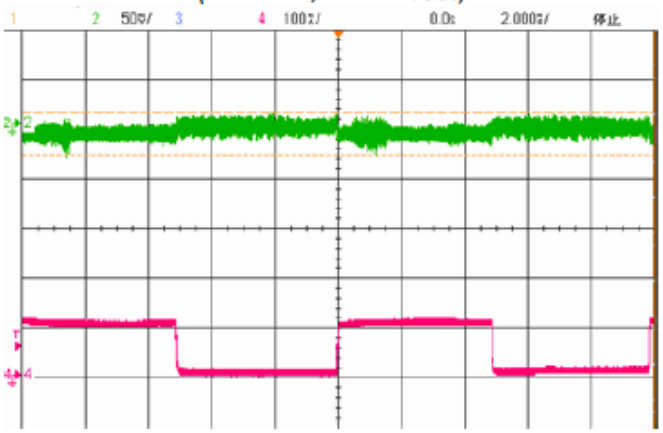
(Orange: Vin; Green: Vout)



Load Transient Response

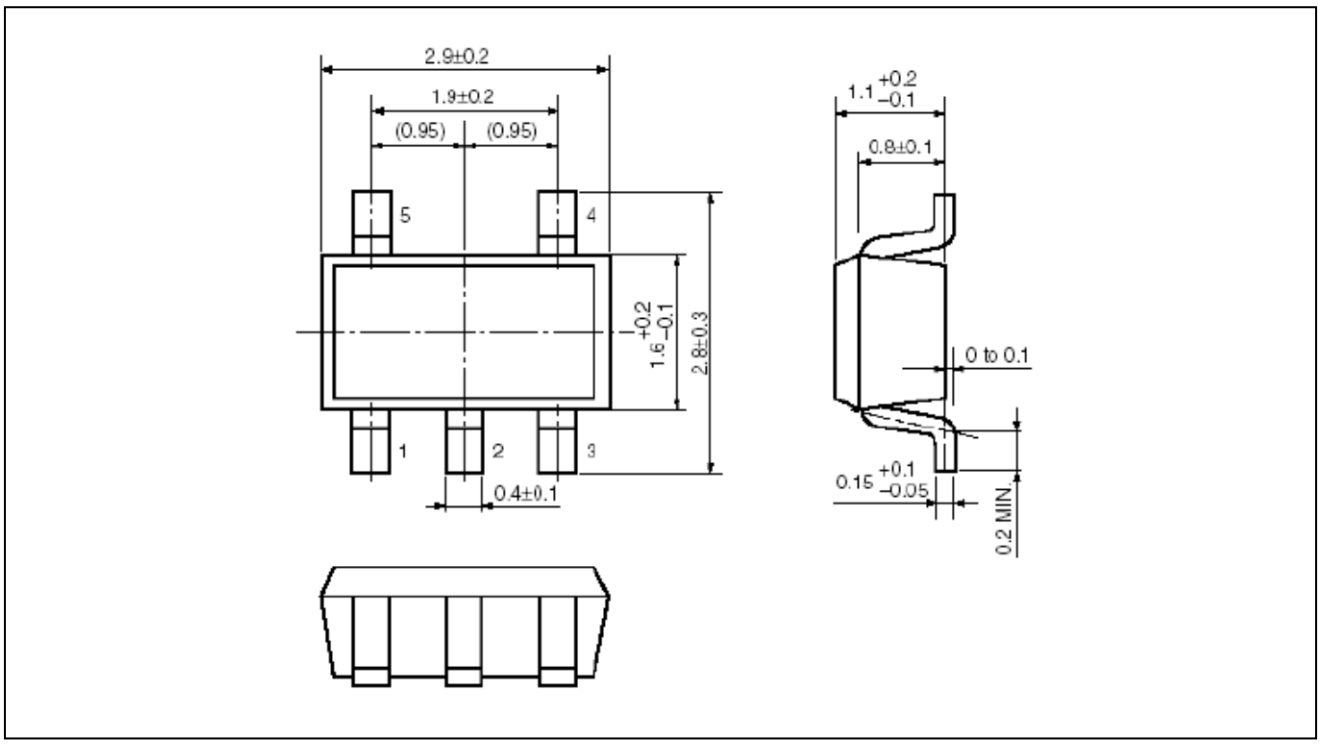
Vin=2.1V, Vout=1.1V, Iout=1-100mA

(Pink: Iout; Green: Vout)

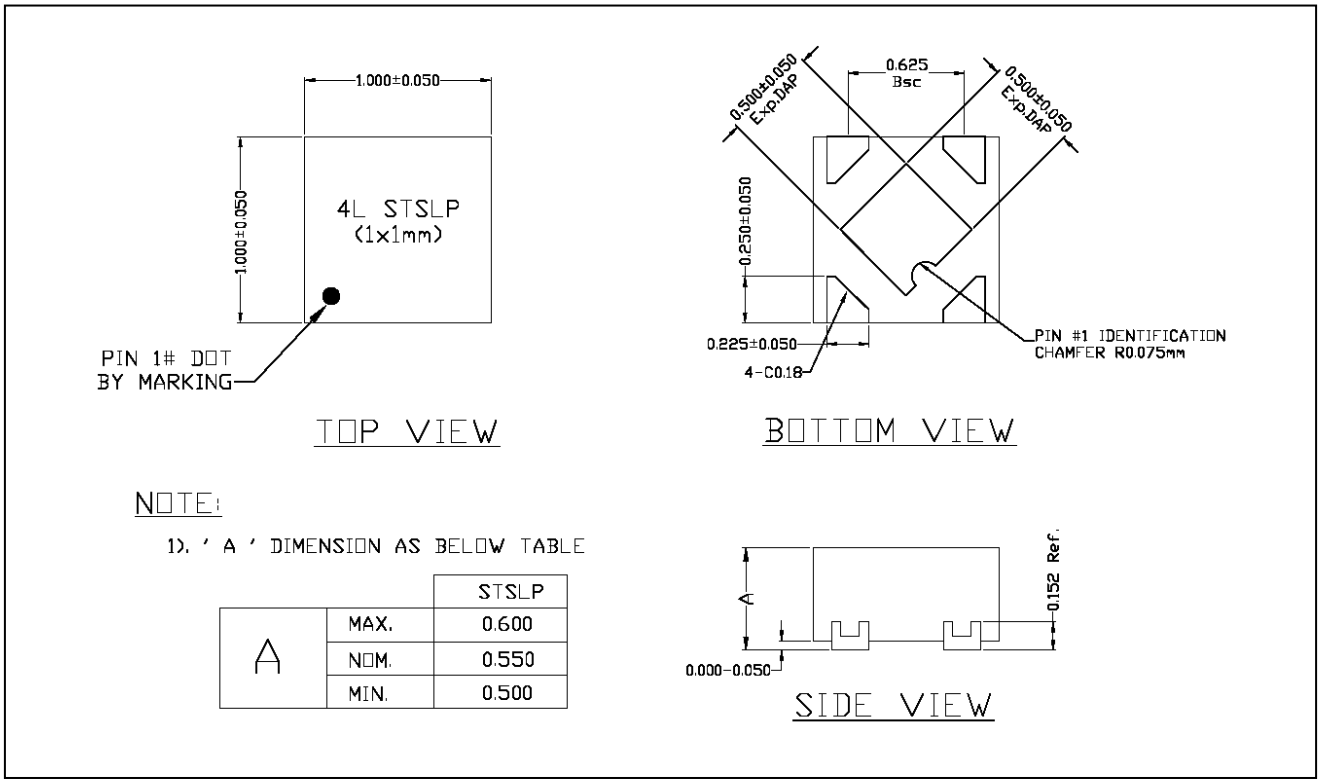


Packing Information

SOT-23-5



DFN1*1-4



Notes

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1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and shoes failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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