

Introduction

The GPL6335 series are a group of positive voltage regulators manufactured by CMOS technologies with low power consumption and low dropout voltage, which provide large output currents even when the difference of the input-output voltage is small. The GPL6335 series can deliver 300mA output current and allow an input voltage as high as 18V. The series are very suitable for the battery-powered equipment, such as RF applications and other systems requiring a quiet voltage source.

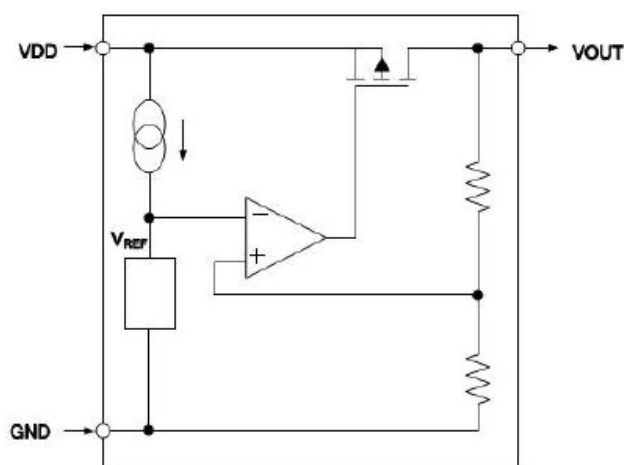
Features

- Low Quiescent Current: 2.5 μ A
- Operating Voltage Range: 2.5V~18V
- Output Current: 100mA
- Low Dropout Voltage: 100mV@1mA
- Output Voltage: 1.2~ 5.0V
- High Accuracy: $\pm 2\%$
- Low Output Noise: $27 \times V_{OUT} \mu V_{RMS}$ (10Hz~100kHz)
- Excellent Line and Load Transient Response
- Built-in Current Limiter, Short-Circuit Protection
- Over-Temperature Protection

Applications

- Cordless Phones
- Radio control systems
- Laptop, Palmtops and PDAs
- Single-lens reflex DSC
- PC peripherals with memory
- Wireless Communication Equipment
- Portable Audio Video Equipment
- Car Navigation Systems
- LAN Cards
- Ultra-Low Power Microcontrollers

Block Diagram



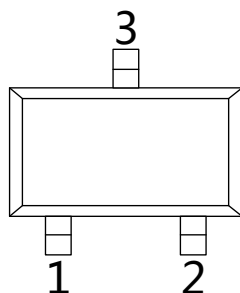
Order Information

GPL6335①②③④

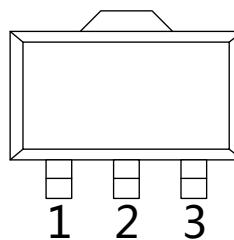
Designator	Symbol	Description
①②③	Integer	Output Voltage e.g. 1.8V=①:V, ②:1,③:8
④	K3	Package:SOT-23-3L
	KE	Package:SOT-89-3L

Pin Configuration

SOT-23-3L



SOT-89-3L



SOT-23-3L & SOT-89-3L

Pin Number		Pin Name	Function
SOT-23-3L	SOT-89-3L		
1	1	V_{SS}	Ground
2	3	V_{OUT}	Output
3	2	V_{IN}	Power input

Absolute Maximum Ratings¹⁾ (T_a=25°C unless otherwise noted)

Parameter	Symbol	Ratings	Units
Input Voltage ²⁾	V _{IN}	-0.3~20	V
Output Voltage ²⁾	V _{OUT}	-0.3~7	V
CE Pin Voltage	V _{CE}	-0.3~V _{in} +0.3	V
Output Current	I _{OUT}	100	mA
Operating Junction Temperature Range ³⁾	T _j	-40~125	°C
Storage Temperature	T _{stg}	-40~125	°C
Lead Temperature(Soldering, 10 sec)	T _{solder}	260	°C
ESD rating ⁴⁾	Human Body Model -(HBM)	4	kV
	Machine Model- (MM)	400	V

- 1) Stresses beyond those listed under *absolute maximum ratings* may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under *recommended operating conditions* is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.
- 2) All voltages are with respect to network ground terminal.
- 3) This GPL6335 includes over temperature protection that is intended to protect the device during momentary overload. Junction temperature will exceed 125°C when over temperature protection is active. Continuous operation above the specified maximum operating junction temperature may impair device reliability.
- 4) ESD testing is performed according to the respective JESD22 JEDEC standard. The human body model is a 100 pF capacitor discharged through a 1.5kΩ resistor into each pin. The machine model is a 200pF capacitor discharged directly into each pin.

Electrical Characteristics

GPL6335 Series ($V_{IN}=V_{OUT}+1V$, $C_{IN}=C_{OUT}=1\mu F$, $T_A=25^\circ C$, unless otherwise specified)

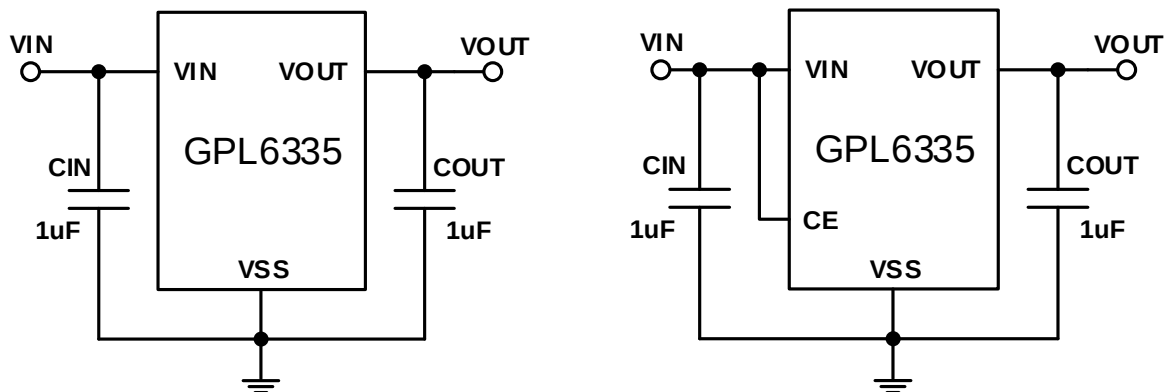
Parameter	Symbol	Conditions	Min.	Typ. ⁵⁾	Max.	Units
Input Voltage	V_{IN}				18	V
Output Voltage Range	V_{OUT}		1.2		5	V
DC Output Accuracy		$I_{OUT}=1mA$	-2		2	%
Dropout Voltage	$V_{dif}^{6)}$	$I_{OUT}=1mA$		100		mV
Supply Current	I_{SS}	$I_{OUT}=0A$		2.5	3.5	μA
Line Regulation	$\frac{\Delta V_{OUT}}{V_{OUT} \times \Delta V_{IN}}$	$I_{OUT}=10mA$ $V_{OUT}+1V \leq V_{IN} \leq 18V$		0.2		%/V
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+1V$, $1mA \leq I_{OUT} \leq 70mA$		60	150	mV
Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta T_A}$	$V_{IN}=V_{OUT}+2V$ $I_{OUT}=10mA$, $0^\circ C < T_A < 70^\circ C$		0.75		mV/ $^\circ C$
Output Current Limit	I_{LIM}	$V_{IN}=V_{OUT}+1V$	100			mA
Short Current	I_{SHORT}	$V_{OUT}=V_{SS}$		25		mA
CE "High" Voltage	V_{CE}^{H}		1.5		V_{IN}	V
CE "Low" Voltage	V_{CE}^{L}				0.3	V
CE "High" Current	I_{CE}^{H}	V_{CE}^{H}			0.2	μA

5) Typical numbers are at $25^\circ C$ and represent the most likely norm.

6) V_{dif} : The Difference Of Output Voltage And Input Voltage When Input Voltage Is Decreased Gradually Till Output Voltage Equals To 98% Of V_{OUT} (E).

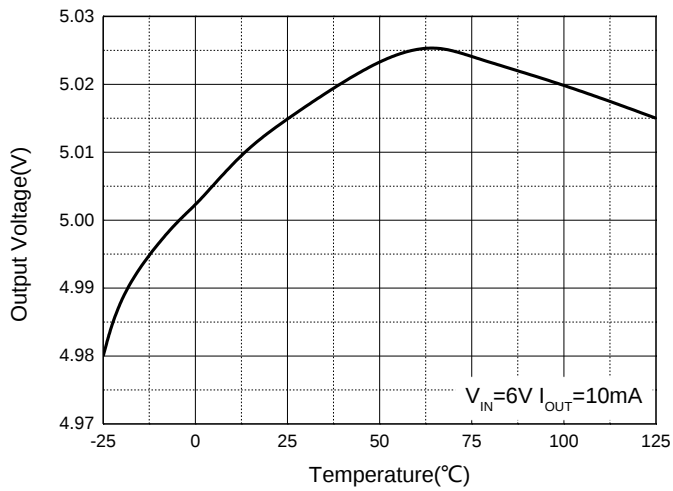
7)

Typical Application Circuit

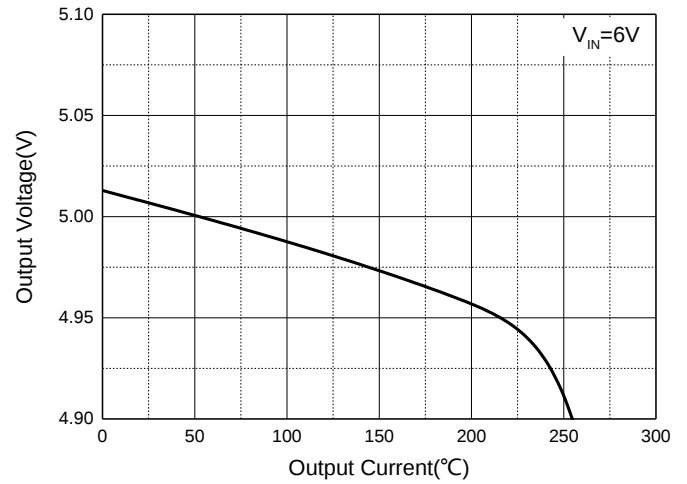


Typical Performance Characteristics

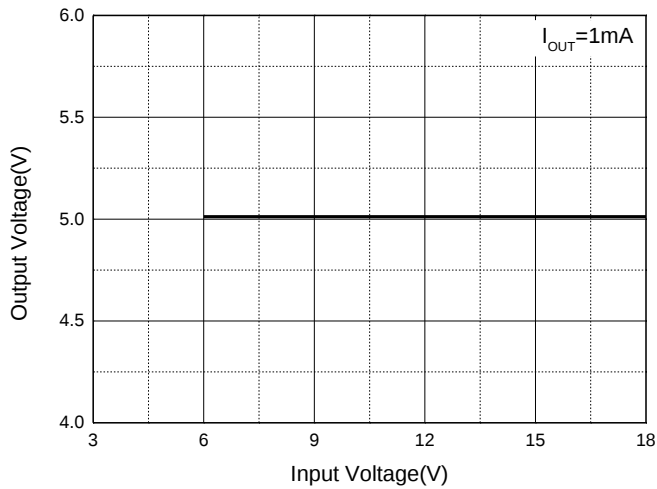
Output Voltage vs. Temperature



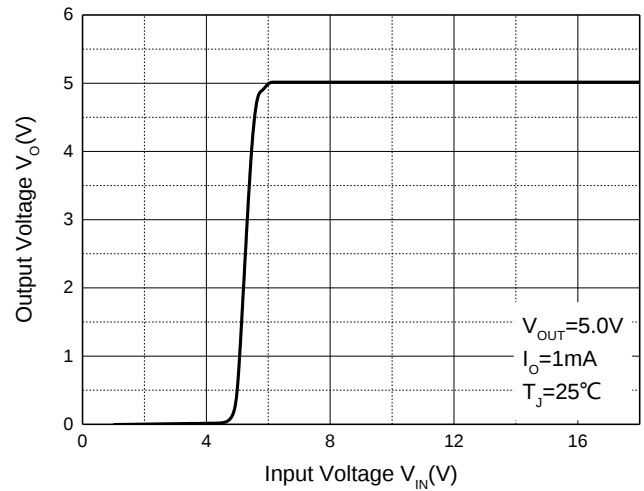
Output Voltage vs. Output Current



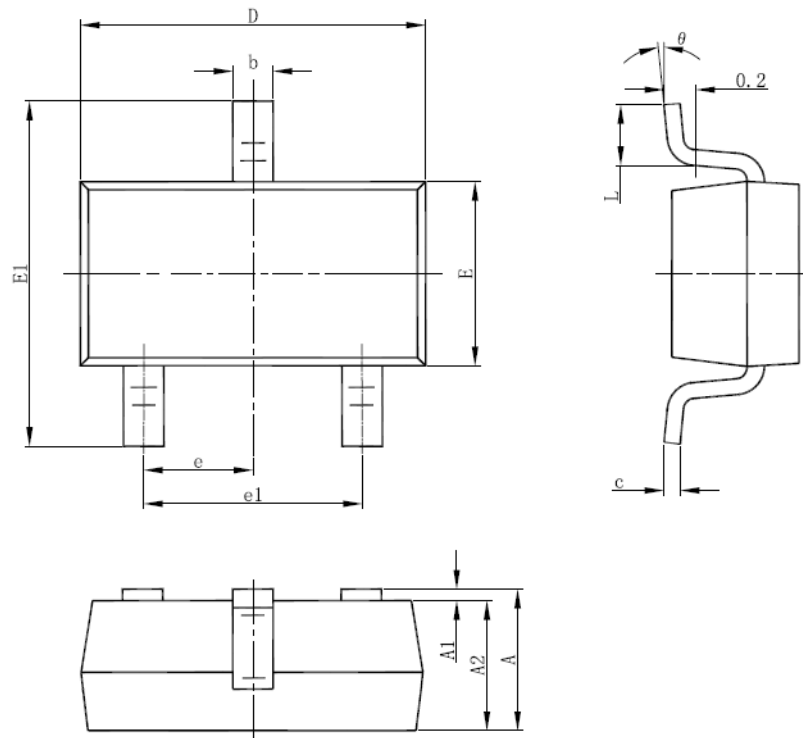
Output Voltage vs. Input Voltage



Ground Current VS. Load Current

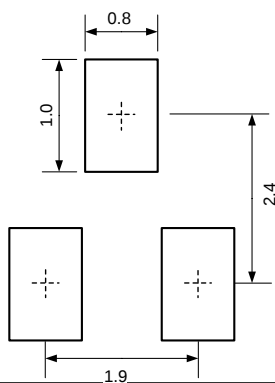


SOT-23-3L Package Outline Dimensions



Symbol	Dimensions in millimeters		
	Min.	Typ.	Max.
A	1.050	-	1.250
A1	0.000	-	0.100
A2	1.050	-	1.150
b	0.300	-	0.500
c	0.100	-	0.200
D	2.820	-	3.020
E	1.500	-	1.700
E1	2.650	-	2.950
e	0.950TYP		
e1	1.800	-	2.000
L	0.300	-	0.600
θ	0°	-	8°

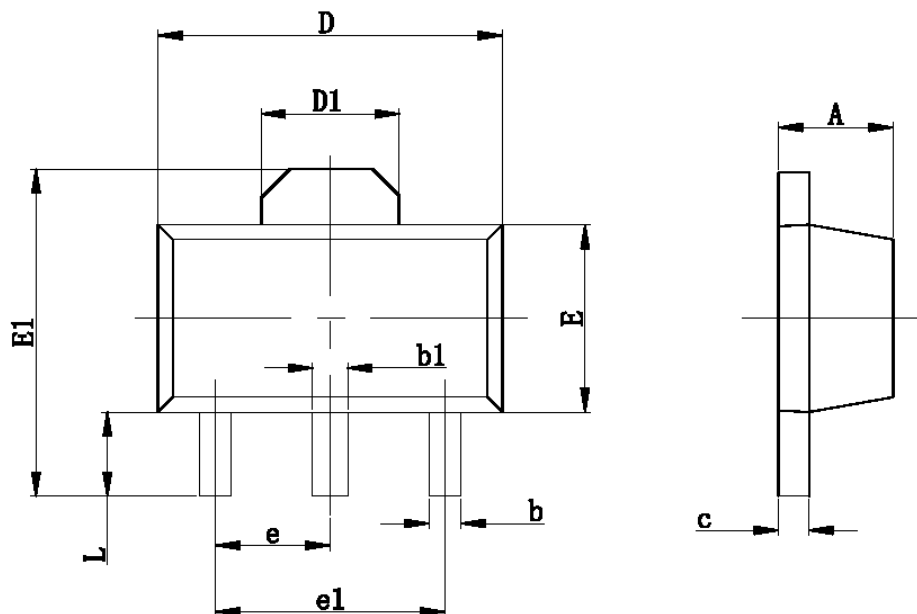
SOT-23-3L Suggested Pad Layout (Unit: mm)



Notes:

- General tolerance: $\pm 0.05\text{mm}$.
- The pad layout is for reference purposes only.

SOT-89-3L Package Outline Dimensions



Symbol	Dimensions in millimeters		Dimensions in inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.197
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550REF		0.061REF	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500TYP		0.060TYP	
e1	3.000TYP		0.118TYP	
L	0.900	1.200	0.035	0.047