78L05S THRU 78L12S

3-Terminal positive voltage regulator

- Suitable for TTL, DTL, HTL, C-MOS, Power Supply
- Internal Short-Circuit Current Limiting
- Internal Thermal Overload Protection
- Maximum Output Current of 150mA (Tj=25^{o}C)
- Available in the Plastic SOT-23 Package
- ESD protected up to 2KV

1.OUT
2.IN
3.GND

SOT-23

Absolute Maximum Ratings (T_a = 25 °C)

Parameter	Symbol	Rating	Unit
Input Voltage 5V/12V	V_{IN}	30/35	V
Power Dissipation	P_{tot}	350	mW
Operating Temperature	T_{opr}	-30~75	°C
Storage Temperature Range	T_s	-55~150	°C

ELECTRICAL CHARACTERISTICS AT SPECIFIED VIRTUAL JUNCTION TEMPERATURE (Vi=10V,Io=40mA,Ci=0.33μF,Co=0.1μF, unless otherwise specified)

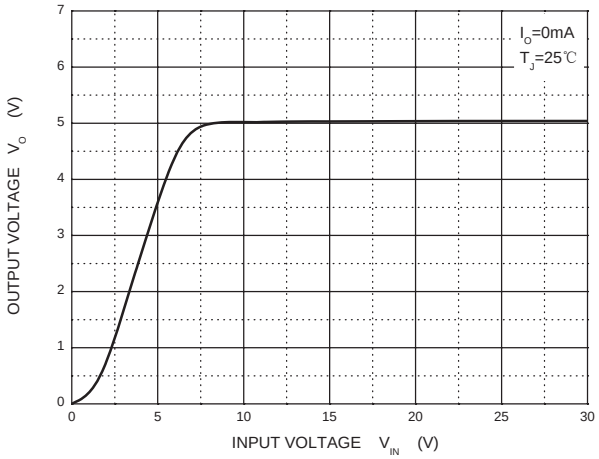
Parameter	Symbol	Test conditions		Min	Typ	Max	Unit
Output voltage	Vo		25℃	4.8	5.0	5.2	V
		7V≤Vi≤20V, Io=1mA~40mA	0-125℃	4.75	5.0	5.25	V
		Io=1mA~70mA		4.75	5.0	5.25	V
Load Regulation	ΔVo	Io=1mA~100mA	25℃		15	60	mV
		Io=1mA~40mA	25℃		8	30	mV
Line regulation	ΔVo	7V≤Vi≤20V			32	150	mV
		8V≤Vi≤20V	25℃		26	100	mV
Quiescent Current	Iq		25℃		3.8	6	mA
Quiescent Current Change	ΔIq	8V≤Vi≤20V	0-125℃			1.5	mA
	ΔIq	1mA≤V i≤40mA	0-125℃			0.1	mA
Output Noise Voltage	V_N	10Hz≤f≤100KHz	25℃		42		uV
Ripple Rejection	RR	8V≤Vi≤20V,f=120Hz	0-125℃	41	49		dB
Dropout Voltage	Vd		25℃		1.7		V

Electrical Characteristics

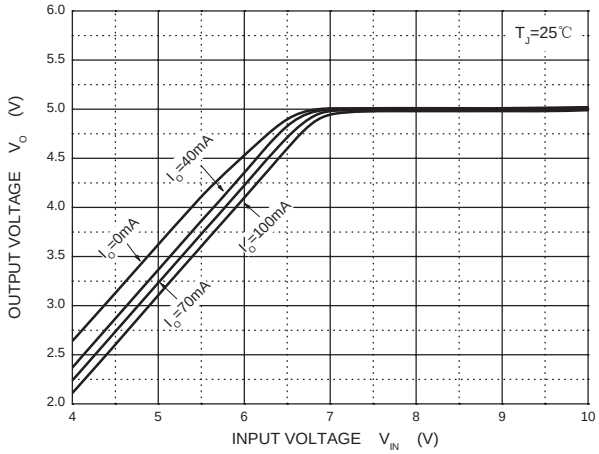
(Unless otherwise specified, V_{IN}=19V, I_{OUT}=40mA, C_{IN}=0.33μF, C_{OUT}=0.1μF, T_j=25°C)

Parameter		Symbol	Test Condition	Min.	Typ.	Max.	Uunit
Output Voltage		V_{OUT}		11.5	12	12.5	V
Input Regulation		Reg. line	14.5V≤V_{IN}≤27V	-	120	250	mV
			16V≤V_{IN}≤27V	-	100	200	
Load Regulation		Reg. load	1.0mA≤I_{OUT}≤100mA	-	20	100	mV
			1.0mA≤I_{OUT}≤40mA	-	10	50	
Output Voltage		V_{OUT}	14.5V≤V_{IN}≤27V 1.0mA≤I_{OUT}≤40mA	11.4	-	12.6	V
		V_{OUT}	V_{IN}=19V 1.0mA≤I_{OUT}≤70mA	11.4	-	12.6	V
Quiescent Current		I_B		-	3.2	6.5	mA
Quiescent Current Change	With line	ΔI_B	16V≤V_{IN}≤27V	-	-	1.5	mA
	With load		1.0mA≤I_{OUT}≤40mA	-	-	0.1	
Output Noise Voltage		V_{NO}	Ta=25°C, 10Hz≤f≤100KHz	-	80	-	μV
Ripple Rejection		RR	f=120Hz, 15V≤V_{IN}≤25V,T_j=25°C	36	41	-	dB
Dropout Voltage		□V_{IN}-V_{OUT}	T_j=25°C	-	1.7	-	V
Average Temperature Coefficient of Output Voltage		TC_{VO}	I_{OUT}=5mA	-	1	-	mV/°C

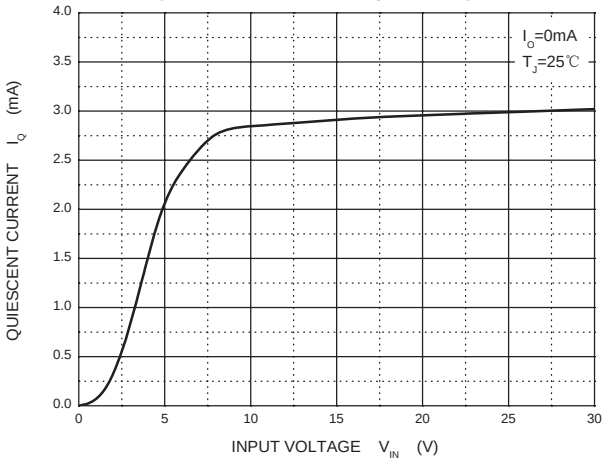
Output Characteristics



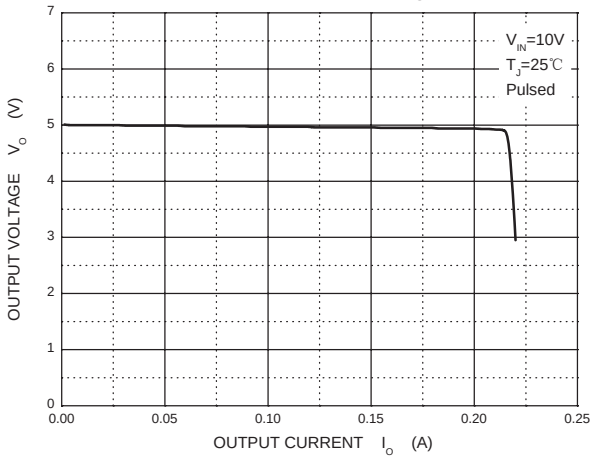
Dropout Characteristics



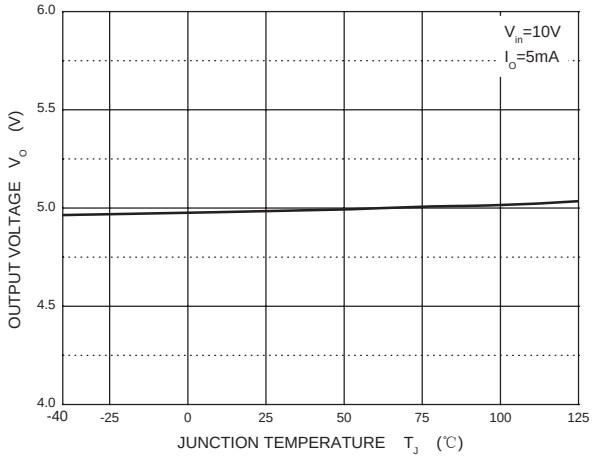
Quiescent Current vs Input Voltage



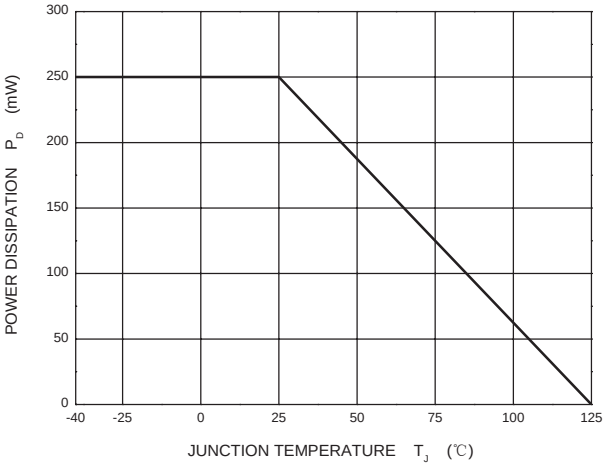
Current Cut-off Grid Voltage



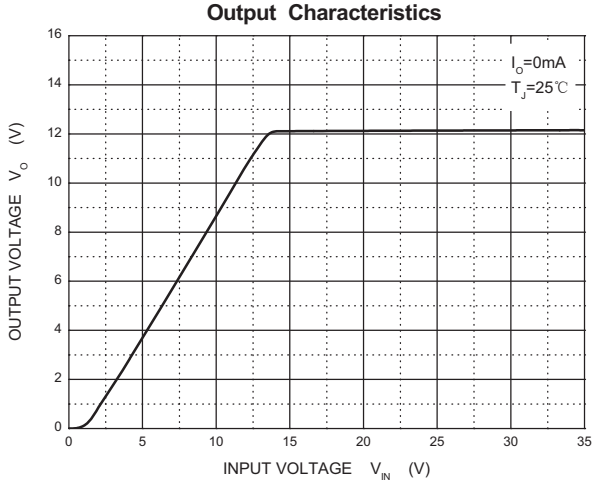
Output Voltage vs Junction Temperature



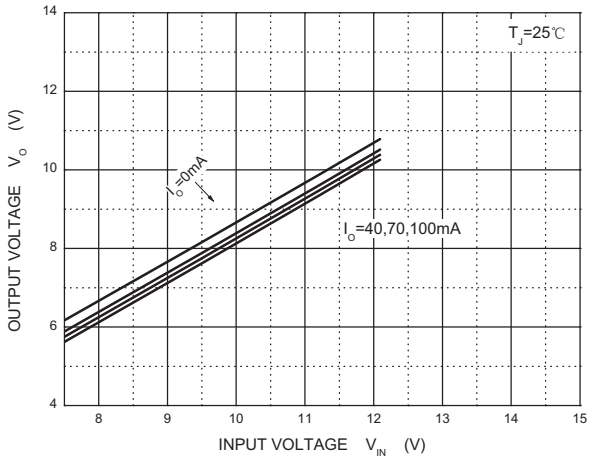
Power Derating Curve



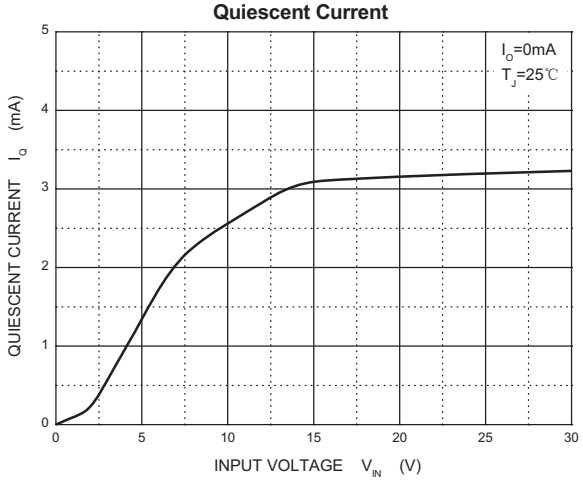
Output Characteristics



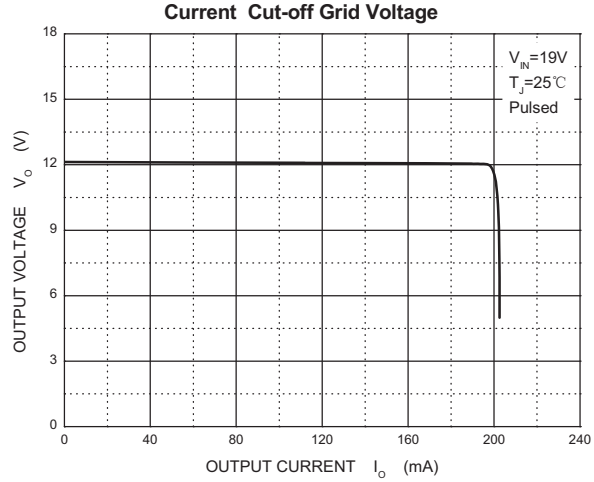
Dropout Characteristics



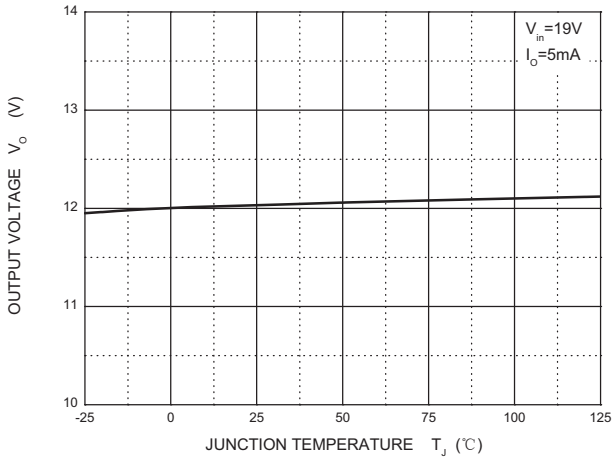
Quiescent Current



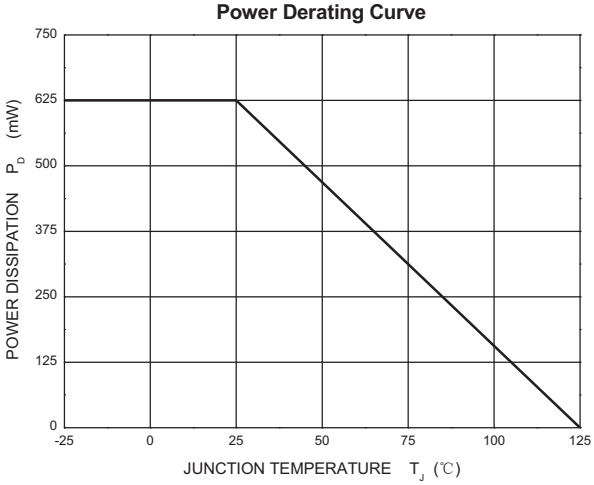
Current Cut-off Grid Voltage



Output Voltage vs Junction Temperature

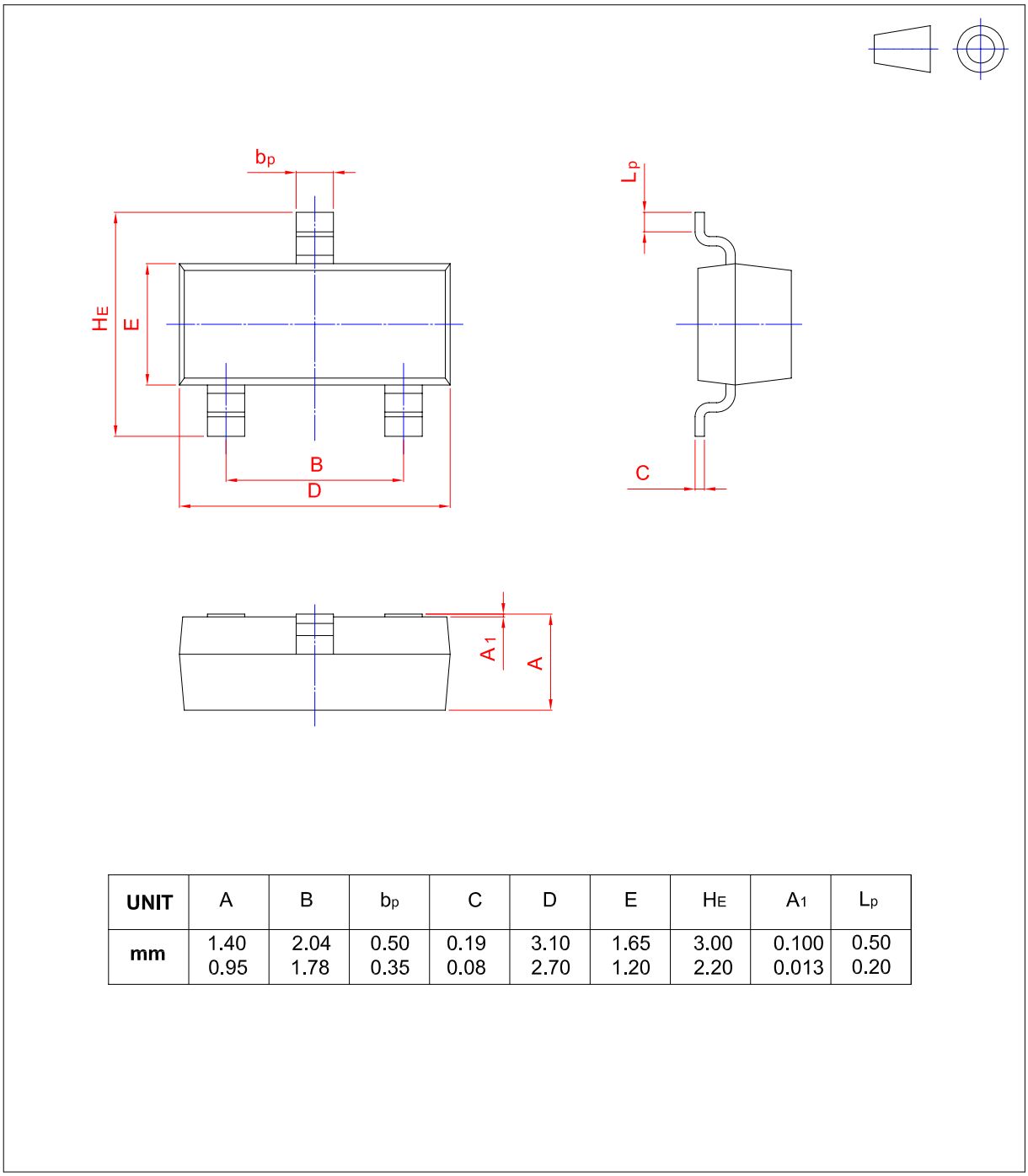


Power Derating Curve



PACKAGE OUTLINE

Plastic surface mounted package; 3 leads **SOT-23**



UNIT	A	B	bp	C	D	E	HE	A1	Lp
mm	1.40 0.95	2.04 1.78	0.50 0.35	0.19 0.08	3.10 2.70	1.65 1.20	3.00 2.20	0.100 0.013	0.50 0.20