

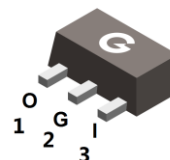
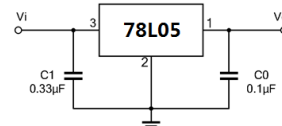
Features

- If adequate heat sinking is provided, they can deliver over 100mA output current
- Thermal overload protection
- Short circuit current limiting
- Output voltage of 5V

HF

Mechanical Data

- Case: SOT-89
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



SOT-89

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL78L05	SOT-89	1000 pcs / Tape & Reel	78L05

Maximum Ratings (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Input Voltage	V_i	30	V
Maximum Output Current	I_{CM}	100	mA

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation ($T_A = 25^\circ\text{C}$)	P_D	0.5	W
Thermal Resistance Junction-to-Air	$R_{\theta JA}$	250	$^\circ\text{C/W}$
Operating Temperature Range	T_{OPR}	$-40 \sim +125$	$^\circ\text{C}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	$-65 \sim +150$	$^\circ\text{C}$

Electrical Characteristics ($I_O = 40\text{mA}$, $V_I = 10\text{V}$, $C_I = 0.33\mu\text{F}$, $C_O = 0.1\mu\text{F}$, $T_J = 0^\circ\text{C}$ to 125°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Voltage	V_O	$T_J = 25^\circ\text{C}$	4.8	5.0	5.2	V
		$1\text{mA} < I_O < 40\text{mA}$ $7\text{V} \leq V_I \leq 20\text{V}$	4.75	-	5.25	V
		$1\text{mA} < I_O < 70\text{mA}$, $V_I = 10\text{V}$	4.75	-	5.25	V
Line Regulation	ΔV_O	$7\text{V} \leq V_I \leq 20\text{V}$, $T_J = 25^\circ\text{C}$	-	55	150	mV
		$8\text{V} \leq V_I \leq 20\text{V}$, $T_J = 25^\circ\text{C}$	-	2	100	mV
Load Regulation	ΔV_O	$1\text{mA} \leq I_O \leq 100\text{mA}$, $T_J = 25^\circ\text{C}$	-	11	60	mV
		$1\text{mA} \leq I_O \leq 40\text{mA}$, $T_J = 25^\circ\text{C}$	-	5	30	mV
Quiescent Current	I_Q	$T_J = 25^\circ\text{C}$	-	3	6	mA
		$T_J = 125^\circ\text{C}$	-	-	5.5	mA
Quiescent Current Change	ΔI_Q	$8\text{V} \leq V_I \leq 20\text{V}$	-	-	1.5	mA
		$1\text{mA} \leq I_O \leq 40\text{mA}$	-	-	0.1	mA
Output Voltage Drift	$\Delta V_O / \Delta T$	$I_O = 5\text{mA}$, $0 \leq T_J \leq 125^\circ\text{C}$	-	0.65	-	mV/ $^\circ\text{C}$
Output Noise Voltage	V_N	$10\text{Hz} \leq f \leq 100\text{kHz}$, $T_J = 25^\circ\text{C}$	-	40	-	μV
Ripple Rejection	RR	$8\text{V} \leq V_I \leq 18\text{V}$, $f = 120\text{Hz}$ $T_J = 25^\circ\text{C}$	41	90	-	dB
Dropout Voltage	V_D	$T_J = 25^\circ\text{C}$	-	1.7	-	V

TYPICAL CHARACTERISTICS (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

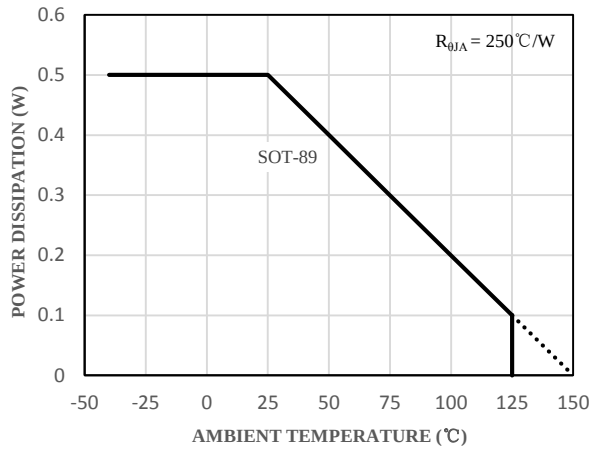


Fig 1 Power Dissipation vs. Temperature

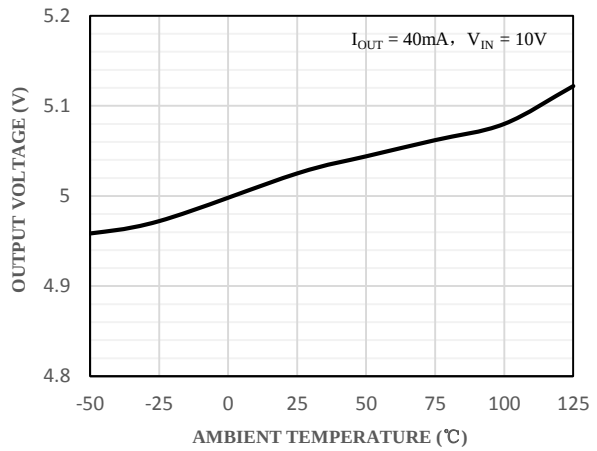


Fig 2 Output Voltage vs. Temperature

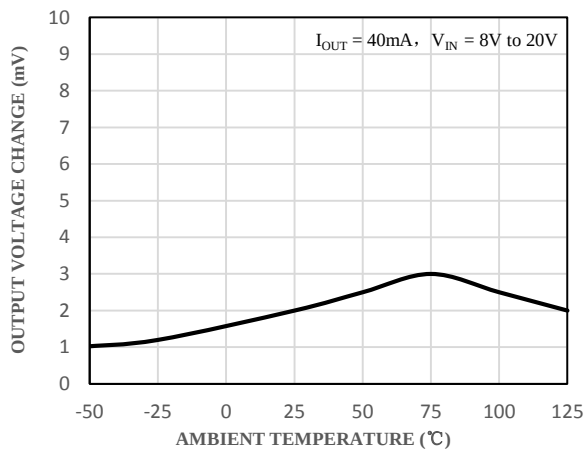


Fig 3 Line Regulation vs. Temperature

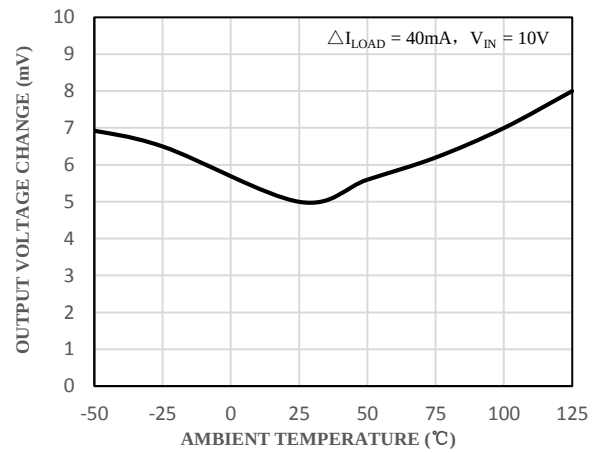


Fig 4 Load Regulation vs. Temperature

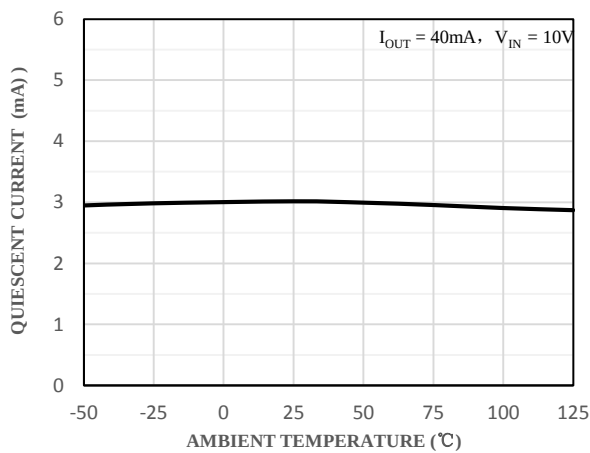


Fig 5 Quiescent Current vs. Temperature

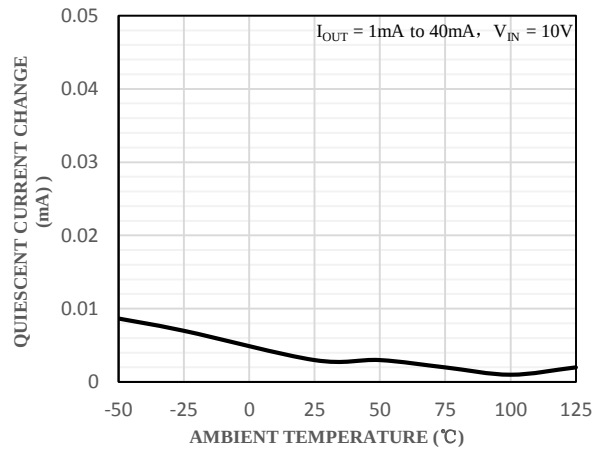


Fig 6 Quiescent Current Change vs. Temperature

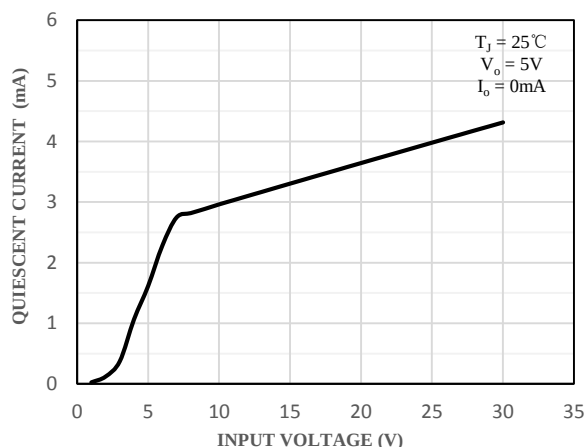


Fig 7 Quiescent Current vs. Input Voltage

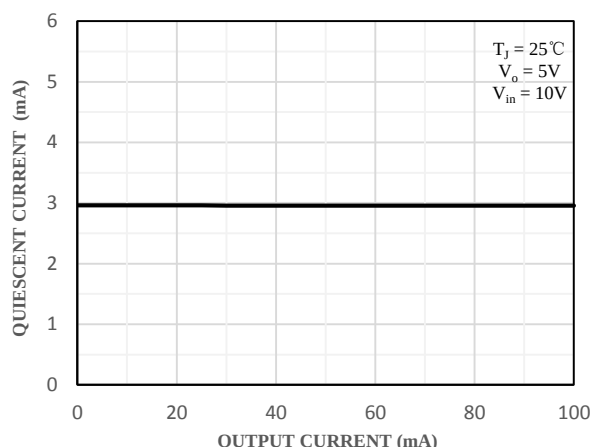


Fig 8 Quiescent Current vs. Output Current

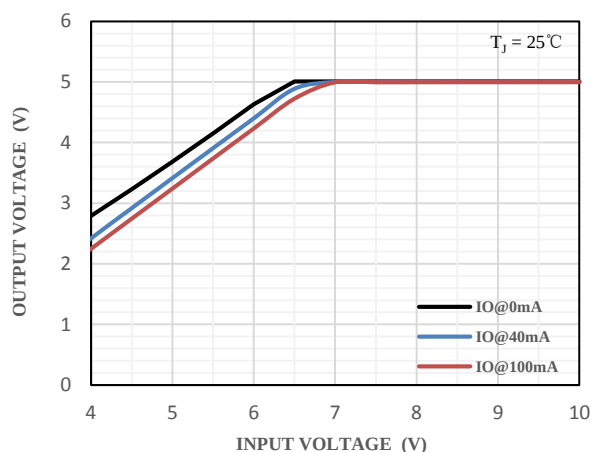


Fig 9 Output Voltage vs. Input Voltage

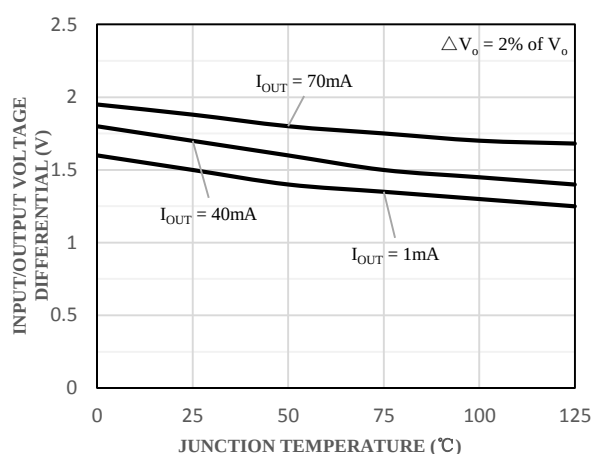


Fig 10 Dropout Voltage vs. Junction Temperature

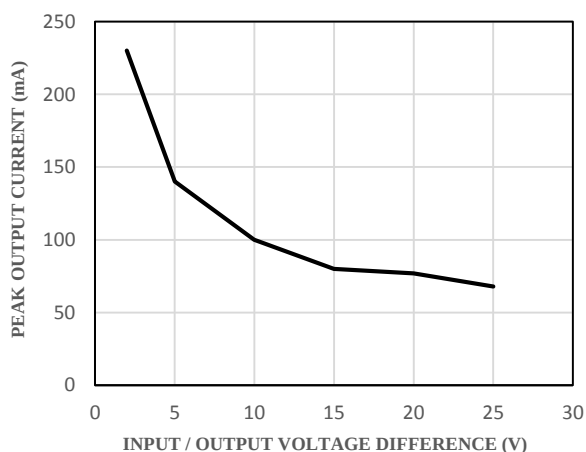


Fig 11 Peak Output Current vs. Dropout Voltage Difference

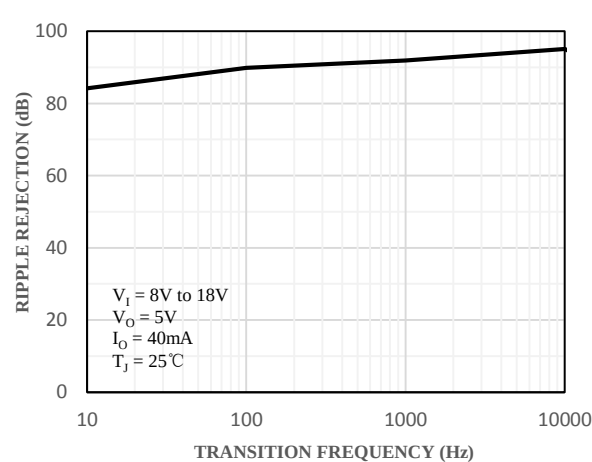
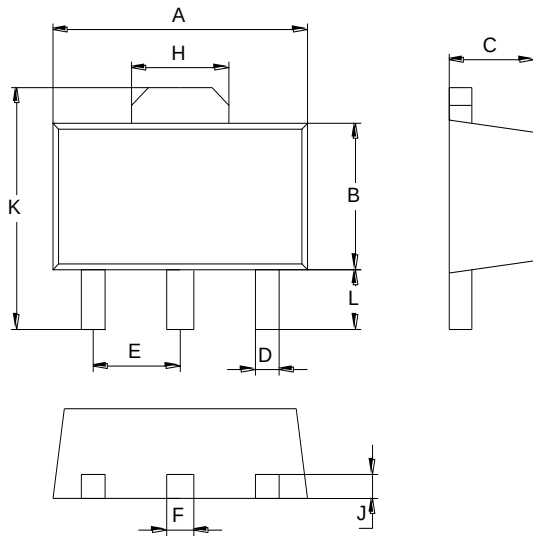


Fig 12 Ripple Rejection vs. Transition Frequency

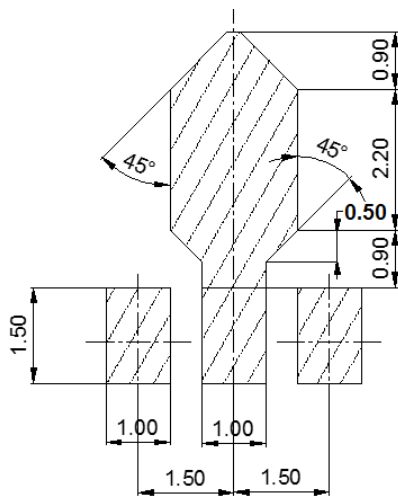
Package Outline Dimensions (Unit: mm)



SOT-89		
Dimension	Min.	Max.
A	4.30	4.70
B	2.25	2.65
C	1.30	1.70
D	0.30	0.50
E	1.40	1.60
F	0.38	0.58
H	1.60	1.80
J	0.30	0.50
L	0.90	1.10
K	3.95	4.35

Mounting Pad Layout (Unit: mm)

SOT-89



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