



DESCRIPTION

Three-terminal positive voltage regulator.

The A78LXX is available in SOT89-3 and TO-92 packages.

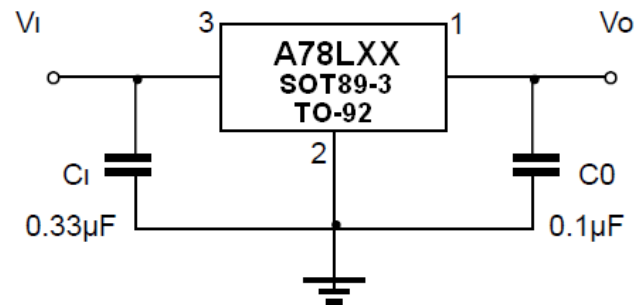
FEATURES

- Maximum Output current I_{OM} : 100mA
- Output voltage V_O : 5V/6V/8V/9V/12V/15V/18V
- Continuous total dissipation
SOT89-3 P_D : 0.5W
TO-92 P_D : 0.625W
- Available in SOT89-3 and TO-92 Packages

ORDERING INFORMATION

Package Type	Part Number	
SOT89-3 SPQ: 1,000pcs/Reel	K3	A78LXXK3R
		A78LXXK3VR
TO-92 SPQ: ZA: 2,000/BOX ZB: 1,000/BAG	Z	A78LXXZA
		A78LXXZVA
		A78LXXZB
		A78LXXZVB
Note	XX: Output Voltage 05=5.0V, 12=12V V: Halogen free Package R: Tape & Reel A: Ammo Pack B: Bulk	
AiT provides all RoHS products		

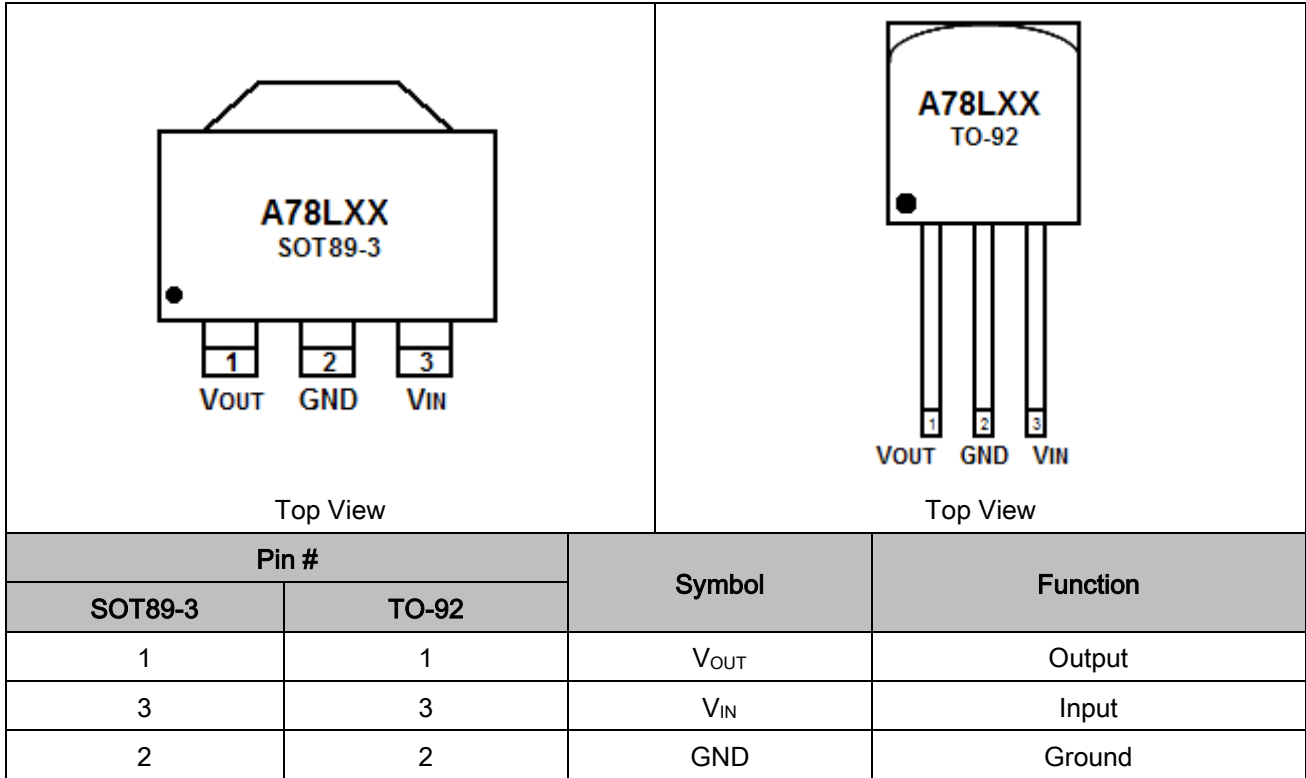
TYPICAL APPLICATION



NOTE: Bypass capacitors are recommended for optimum stability and transient response and should be located as close as Possible to the regulators.



PIN DESCRIPTION





ABSOLUTE MAXIMUM RATINGS

V _I , Input Voltage	
A78L05/06/08/09	30V
A78L12/15/18	35V
T _{OPR} , Operating Junction Temperature Range	0°C ~ +125°C
T _{STG} , Storage Temperature Range	-55°C ~ +150°C

Stresses above 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 in the Electrical Characteristics is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.



ELECTRICAL CHARACTERISTICS

$V_I=10V(A78L05)$, $V_I=11V(A78L06)$, $V_I=14V(A78L08)$, $V_I=16V(A78L09)$, $V_I=19V(A78L12)$, $V_I=23V(A78L15)$, $V_I=26V(A78L18)$, $I_o=40mA$, $C_I=0.33\mu F$, $C_O=0.1\mu F$, unless otherwise specified.

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit		
Output Voltage	V_o		5V	25°C	4.8	5.0	5.2	V	
			6V		5.75	6.0	6.25		
			8V		7.7	8.0	8.3		
			9V		8.64	9.0	9.36		
			12V		11.5	12	12.5		
			15V		14.4	15	15.6		
			18V		17.3	18	18.7		
		$7V \leq V_I \leq 20V, I_o=1mA \sim 40mA$		5V		4.75	5.0		5.25
		$I_o=1mA \sim 70mA$							
		$8V \leq V_I \leq 20V, I_o=1mA \sim 40mA$		6V		5.7	6.0		6.3
		$I_o=1mA \sim 70mA$							
		$10.5V \leq V_I \leq 23V, I_o=1mA \sim 40mA$		8V		7.6	8.0		8.4
		$I_o=1mA \sim 70mA$							
		$12V \leq V_I \leq 24V, I_o=1mA \sim 40mA$		9V		8.55	9.0		9.45
		$I_o=1mA \sim 70mA$							
		$14V \leq V_I \leq 27V, I_o=1mA \sim 40mA$		12V		11.4	12		12.6
$I_o=1mA \sim 70mA$									
$17.5V \leq V_I \leq 30V, I_o=1mA \sim 40mA$		15V		14.25	15	15.75			
$I_o=1mA \sim 70mA$									
$20.5V \leq V_I \leq 33V, I_o=1mA \sim 40mA$		18V		17.1	18	18.9			
$I_o=1mA \sim 70mA$									
Load Regulation	ΔV_o		5V	25°C	-	15	60	mV	
			6V			16	80		
			8V			18	80		
			9V			19	90		
			12V			22	100		
			15V			25	150		
			18V			27	180		
		$I_o=1mA \sim 40mA$	5V	8	30				
			6V	9	40				
			8V	10	40				
			9V	11	40				
			12V	13	50				
			15V	15	75				
			18V	19	90				



Parameter	Symbol	Conditions			Min.	Typ.	Max.	Unit	
Line Regulation	ΔV_o	$7V \leq V_i \leq 20V$	5V	25°C	-	32	150	mV	
		$8V \leq V_i \leq 20V$				26	100		
		$8V \leq V_i \leq 20V$	6V			35	175		
		$9V \leq V_i \leq 20V$				29	125		
		$10.5V \leq V_i \leq 23V$	8V			42	175		
		$11V \leq V_i \leq 23V$				36	125		
		$12V \leq V_i \leq 24V$	9V			45	175		
		$13V \leq V_i \leq 24V$				40	125		
		$14.5V \leq V_i \leq 27V$	12V			55	250		
		$16V \leq V_i \leq 27V$				49	200		
		$17.5V \leq V_i \leq 30V$	15V			65	300		
		$19V \leq V_i \leq 30V$				58	250		
		$20.5V \leq V_i \leq 33V$	18V			70	360		
		$22V \leq V_i \leq 33V$				64	300		
Quiescent Current	I_q		5V	25°C	-	3.8	6.0	mA	
			6V			3.9			
			8V			4.0			
			9V			4.1	6.5		
			12V			4.3			
			15V			4.6			
			18V			4.7			
Quiescent Current Change	ΔI_q	$8V \leq V_i \leq 20V$	5V	0~125°C	-	-	1.5	mA	
		$9V \leq V_i \leq 20V$	6V						
		$11V \leq V_i \leq 23V$	8V						
		$13V \leq V_i \leq 24V$	9V						
		$16V \leq V_i \leq 27V$	12V						
		$19V \leq V_i \leq 30V$	15V						
		$22V \leq V_i \leq 33V$	18V						
			5V				1mA ≤ I _o ≤ 40mA		0.1
			6V						
			8V						
			9V						
			12V						
			15V						
			18V						

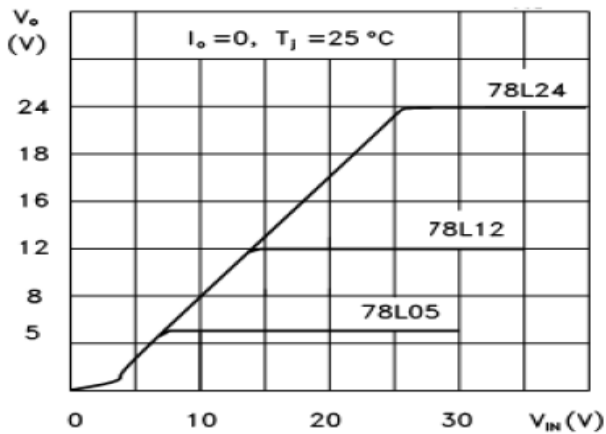


Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
Output Noise Voltage	V _N	10Hz ≤ f ≤ 100kHz	5V	25°C	-	42	uV
			6V			46	
			8V			54	
			9V			58	
			12V			70	
			15V			82	
			18V			89	
Ripple Rejection	RR	8V ≤ V _I ≤ 20V, f = 120Hz	5V	0~ 125°C	41	49	dB
		9V ≤ V _I ≤ 19V, f = 120Hz	6V		40	48	
		13V ≤ V _I ≤ 23V, f = 120Hz	8V		37	46	
		15V ≤ V _I ≤ 25V, f = 120Hz	9V		-	45	
		15V ≤ V _I ≤ 25V, f = 120Hz	12V		37	42	
		18.5V ≤ V _I ≤ 28.5V, f = 120Hz	15V		34	39	
		21.5V ≤ V _I ≤ 31.5V, f = 120Hz	18V		32	36	
Dropout Voltage	V _D		25°C	-	1.7	-	V

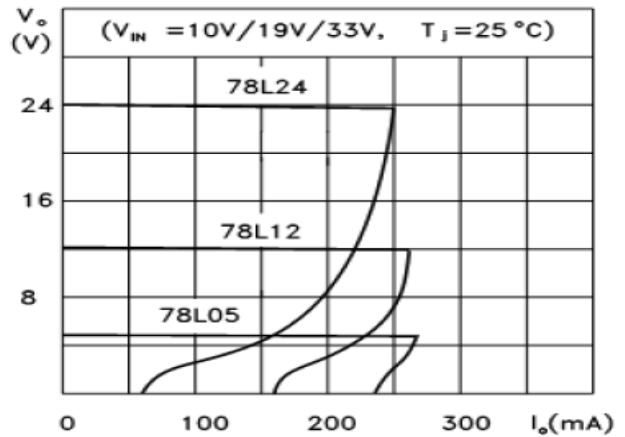


TYPICAL PERFORMANCE CHARACTERISTICS

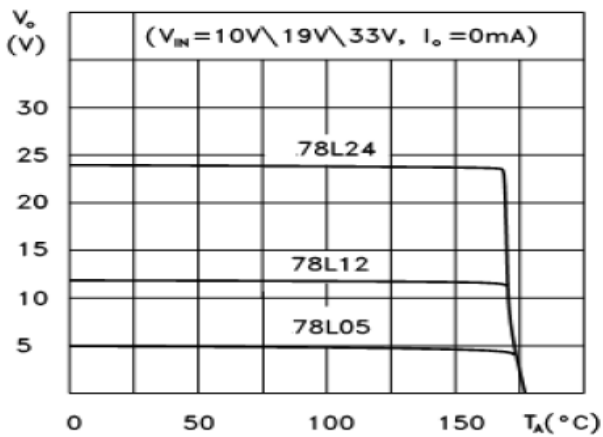
1. A78L05/12/24 Output Characteristics



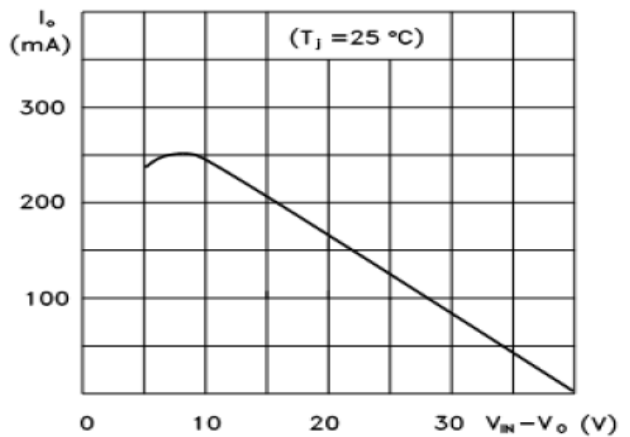
2. A78L05/12/24 Load Characteristics



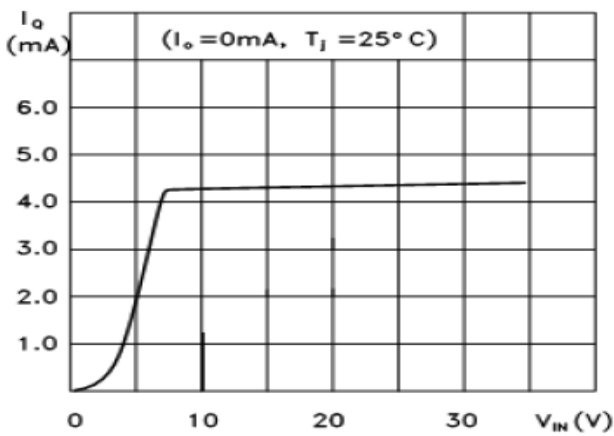
3. A78L05/12/24 Thermal Shutdown



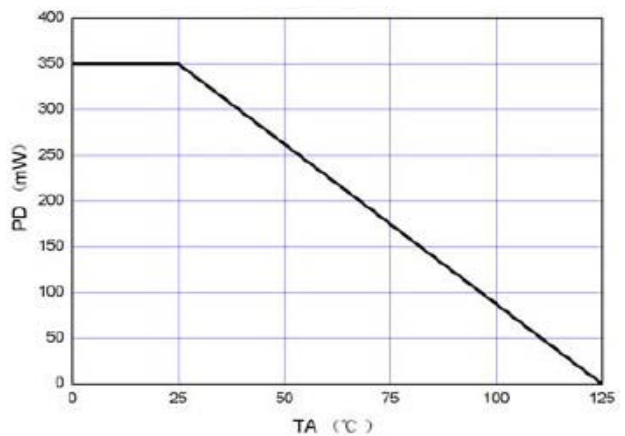
4. A78LXX Series Short Circuit Output Current



5. A78L05 Quiescent Current vs. Input Voltage



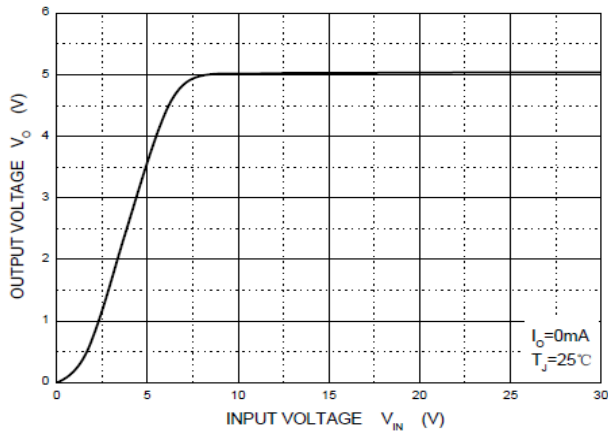
6. PD-T_A



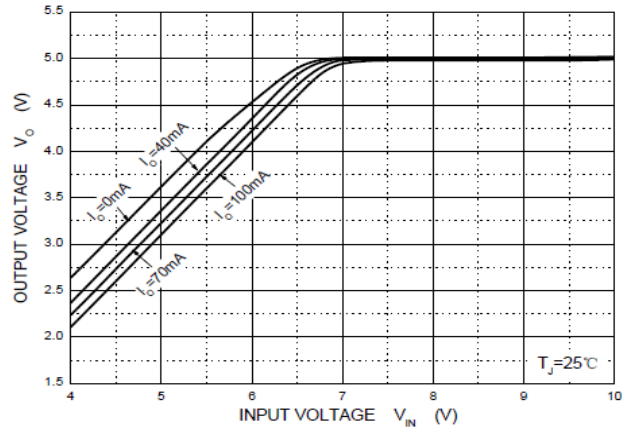


A78L05 TO-92

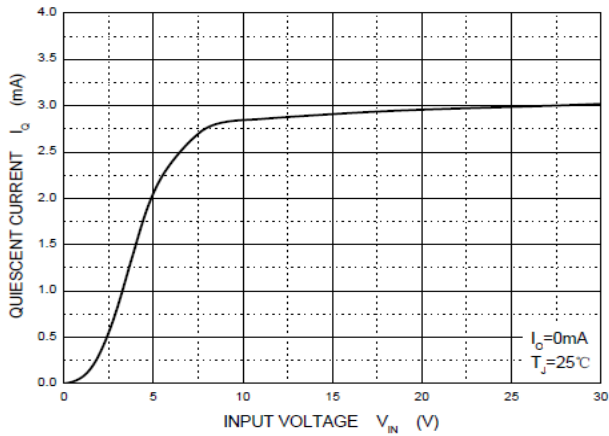
7. Output Characteristics



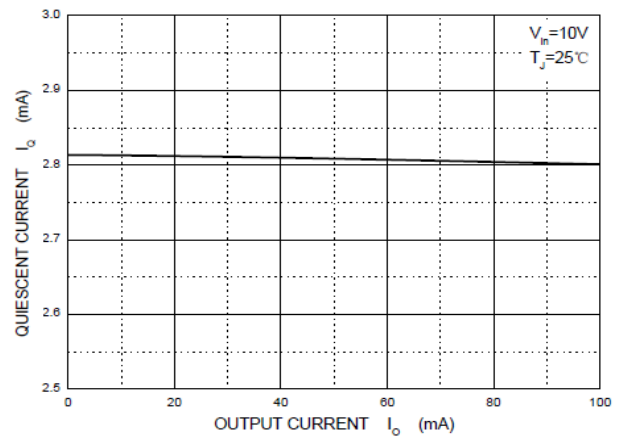
8. Dropout Characteristics



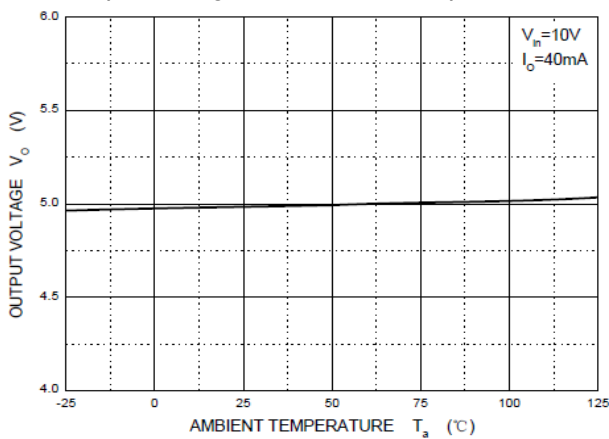
9. Quiescent Current vs. Input Voltage



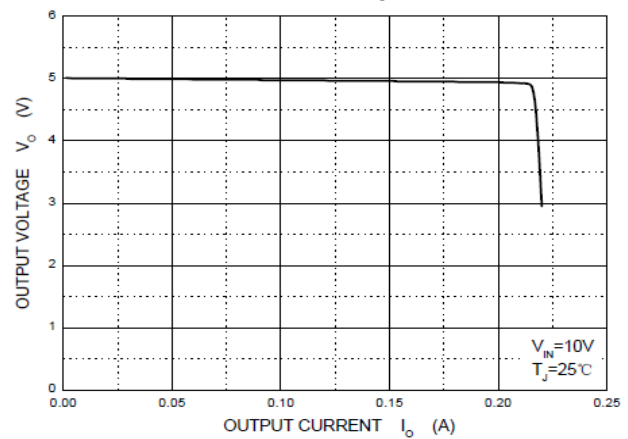
10. Quiescent Current vs. Output Current



11. Output Voltage vs. Ambient Temperature

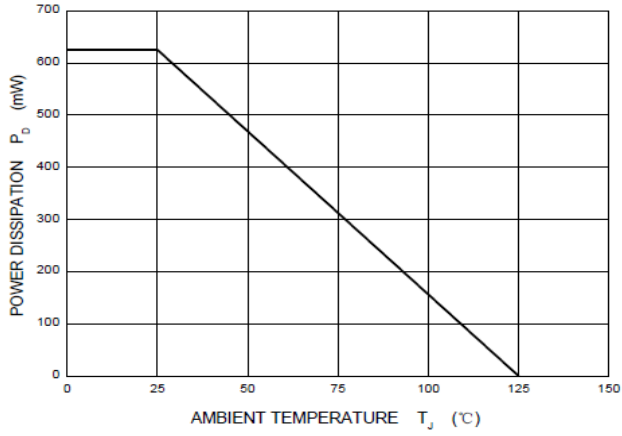


12. Current Cut-off Grid Voltage





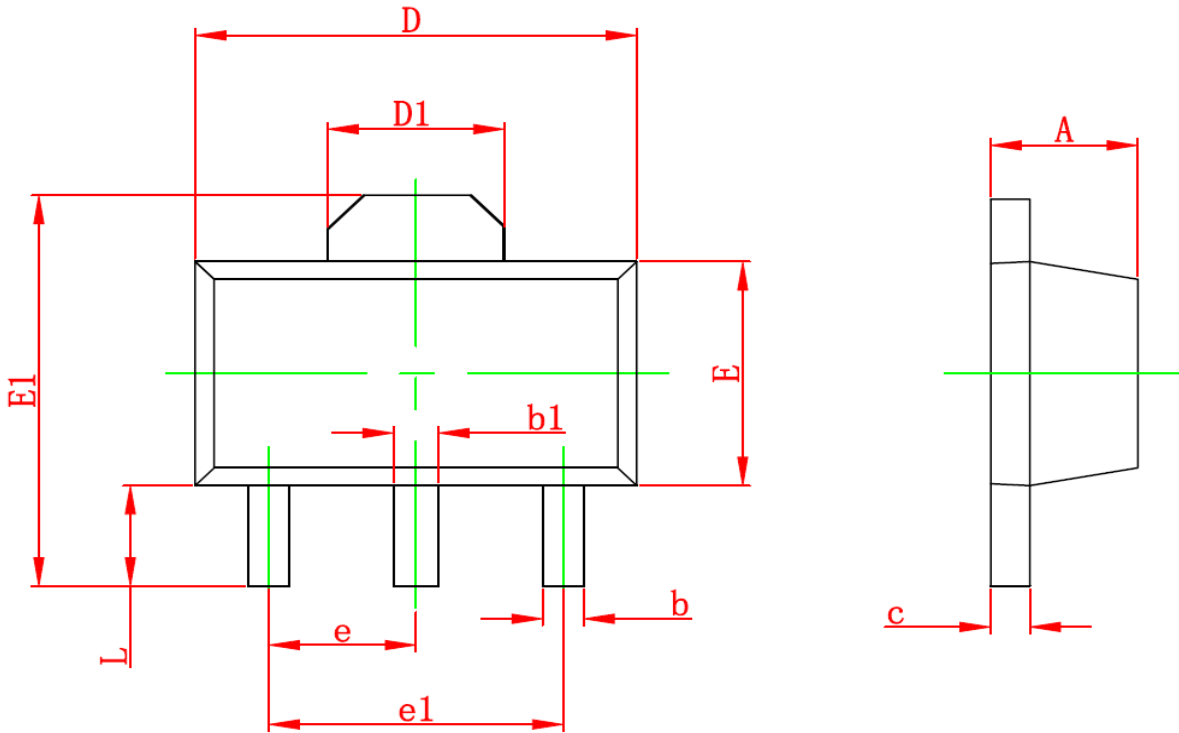
13. Power Derating Curve





PACKAGE INFORMATION

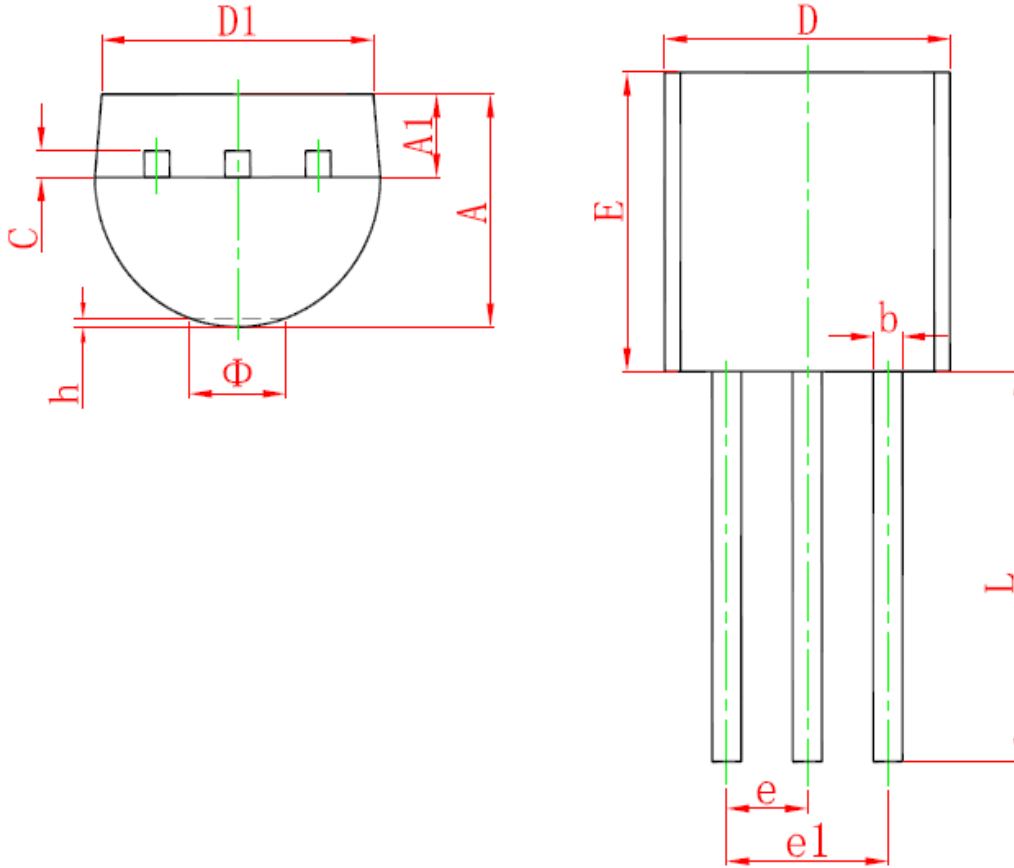
Dimension in SOT89-3 (Unit: mm)



Symbol	Min	Max
A	1.400	1.600
b	0.320	0.520
b1	0.400	0.580
c	0.350	0.440
D	4.400	4.600
D1	1.550 REF	
E	2.300	2.600
E1	3.940	4.250
e	1.500 TYP	
e1	3.000 TYP	
L	0.900	1.200



Dimension in TO-92 (Unit: mm)



Symbol	Min	Max
A	3.300	3.700
A1	1.100	1.400
b	0.380	0.550
c	0.360	0.510
D	4.400	4.700
D1	3.430	-
E	4.300	4.700
e	1.270 TYP	
e1	2.440	2.640
L	14.100	14.500
Φ	-	1.600
h	0.000	0.380



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