



DESCRIPTION

Three-terminal positive voltage regulator.

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

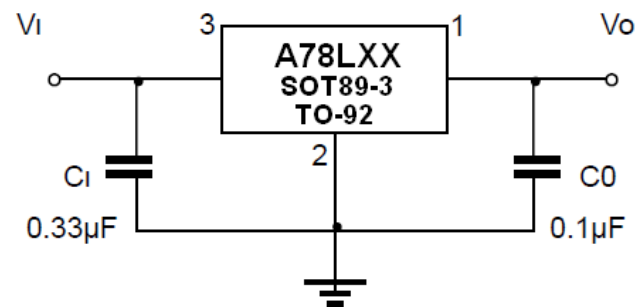
ORDERING INFORMATION

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		

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

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

Top View		Top View	
Pin #		Symbol	Function
SOT89-3	TO-92		
1	1	V_{OUT}	Output
3	3	V_{IN}	Input
2	2	GND	Ground



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≤V _I ≤20V, I _O =1mA ~ 40mA	5V	0~125°C	4.75	5.0	5.25	
		I _O =1mA ~ 70mA						
		8V≤V _I ≤20V, I _O =1mA ~ 40mA	6V		5.7	6.0	6.3	
		I _O =1mA ~ 70mA						
		10.5V≤V _I ≤23V, I _O =1mA ~ 40mA	8V		7.6	8.0	8.4	
		I _O =1mA ~ 70mA						
		12V≤V _I ≤24V, I _O =1mA ~ 40mA	9V		8.55	9.0	9.45	
		I _O =1mA ~ 70mA						
		14V≤V _I ≤27V, I _O =1mA ~ 40mA	12V		11.4	12	12.6	
		I _O =1mA ~ 70mA						
		17.5V≤V _I ≤30V, I _O =1mA ~ 40mA	15V		14.25	15	15.75	
		I _O =1mA ~ 70mA						
		20.5V≤ V _I ≤33V, I _O =1mA ~ 40mA	18V		17.1	18	18.9	
I _O =1mA ~ 70mA								
Load Regulation	ΔV _O	I _O =1mA ~ 100mA	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 ~ 40mA			5V	8	
		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	$25^{\circ}C$	-	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	$25^{\circ}C$	-	3.8	6.0	mA
			6V			3.9		
			8V			4.0		
			9V			4.1		
			12V			4.3	6.5	
			15V			4.6		
			18V			4.7		
Quiescent Current Change	ΔI_q	$8V \leq V_i \leq 20V$	5V	$0 \sim 125^{\circ}C$	-	-	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					
		$1mA \leq I_o \leq 40mA$	5V				0.1	
			6V					
			8V					
			9V					
			12V					
			15V					
			18V					

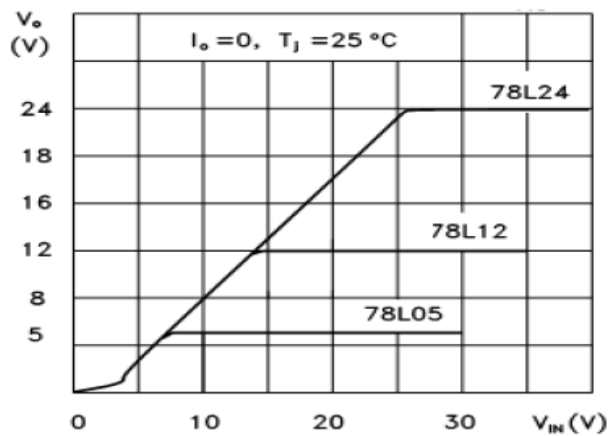


Parameter	Symbol	Conditions			Min.	Typ.	Max.	Unit
Output Noise Voltage	V _N	10Hz≤ f ≤100kHz	5V	25°C	-	42	-	uV
			6V			46		
			8V			54		
			9V			58		
			12V			70		
			15V			82		
			18V			89		
Ripple Rejection	RR	8V≤V _I ≤20V, f=120Hz	5V	0~ 125°C	41	49	-	dB
		9V≤V _I ≤19V, f=120Hz	6V		40	48		
		13V≤V _I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

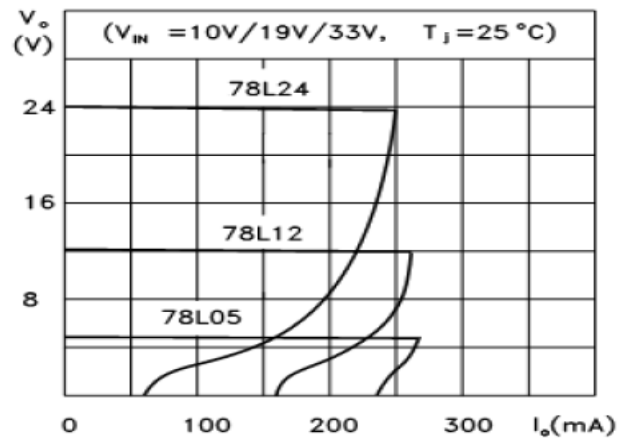


TYPICAL PERFORMANCE CHARACTERISTICS

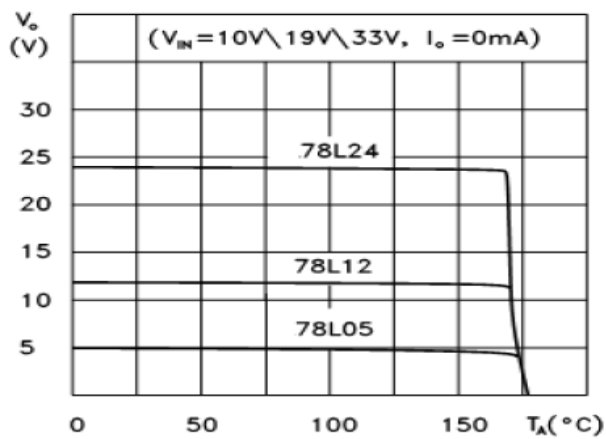
1. A78L05/12/24 Output Characteristics



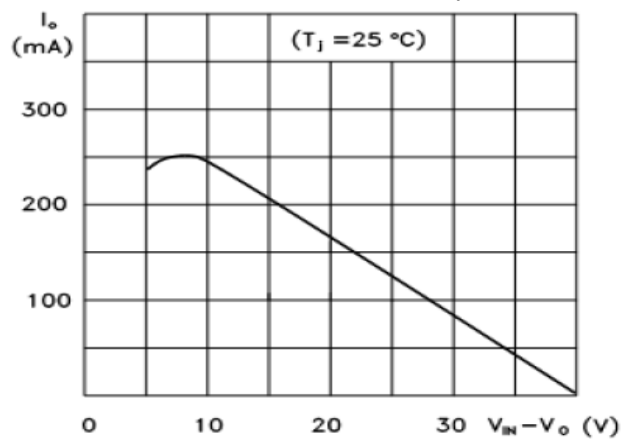
2. A78L05/12/24 Load Characteristics



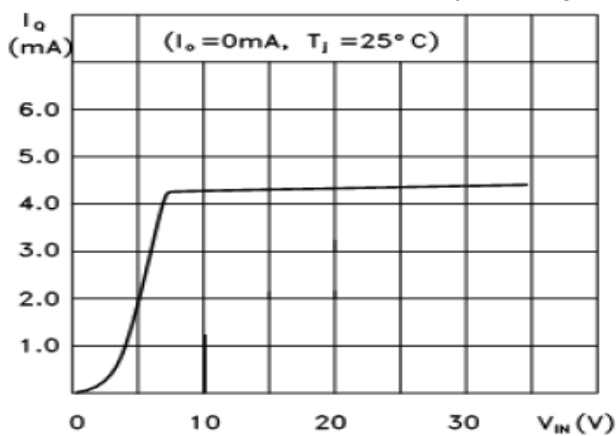
3. A78L05/12/24 Thermal Shutdown



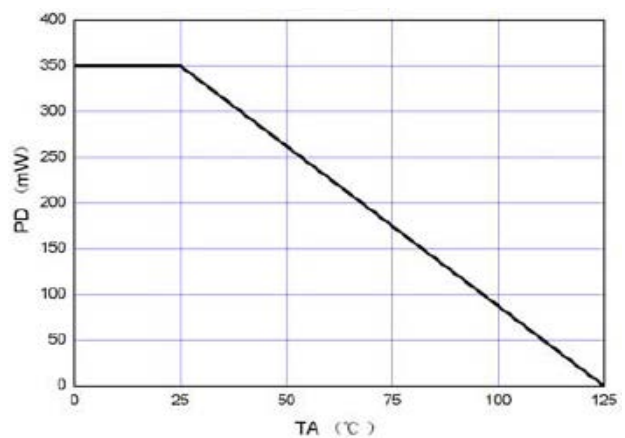
4. A78LXX Series Short Circuit Output Current



5. A78L05 Quiescent Current vs. Input Voltage



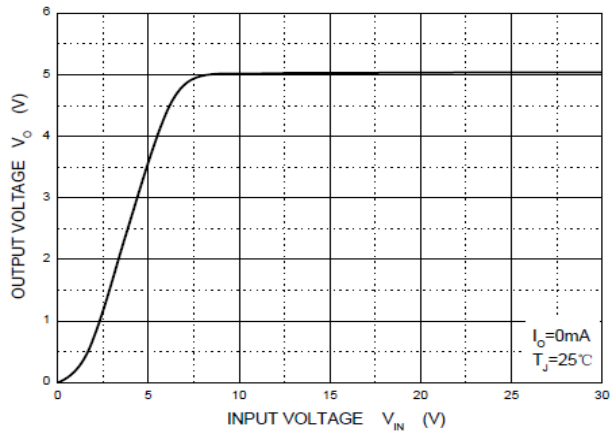
6. PD- T_A



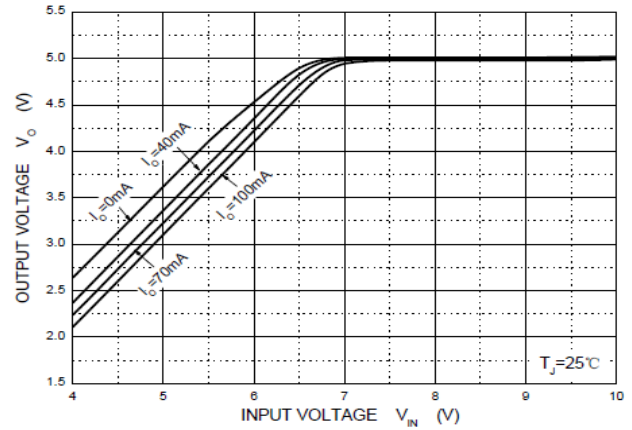


A78L05 TO-92

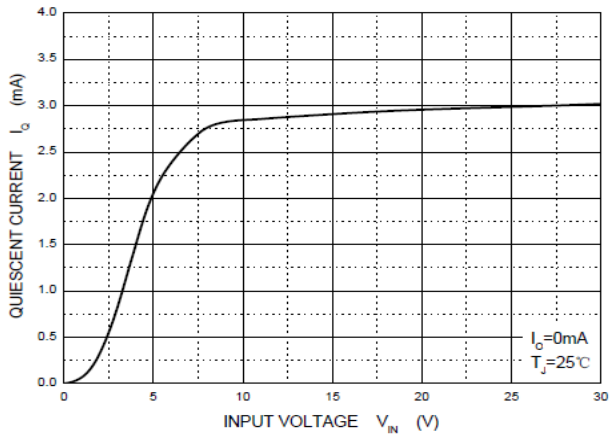
7. Output Characteristics



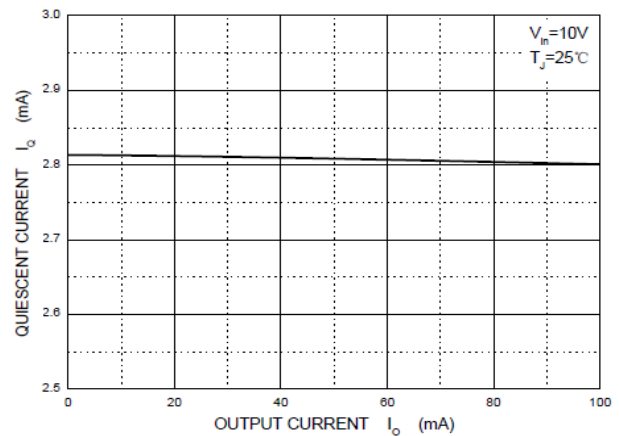
8. Dropout Characteristics



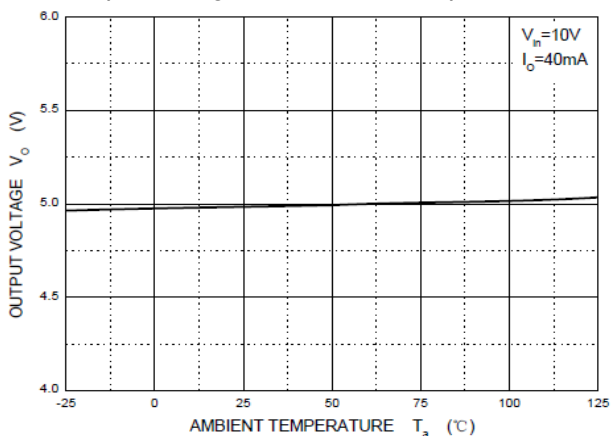
9. Quiescent Current vs. Input Voltage



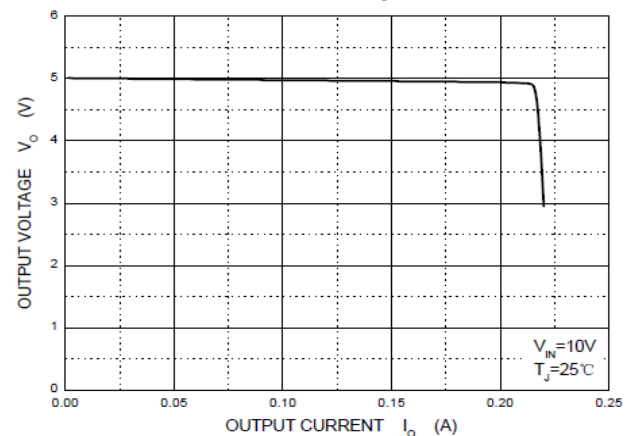
10. Quiescent Current vs. Output Current



11. Output Voltage vs. Ambient Temperature

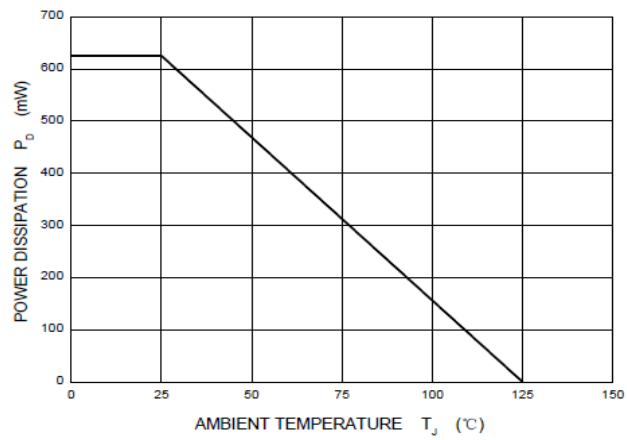


12. Current Cut-off Grid Voltage





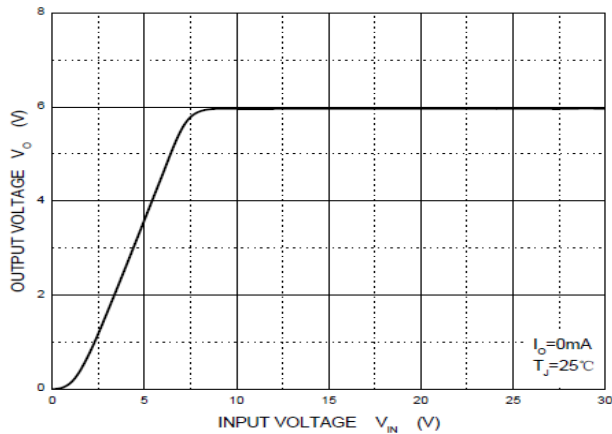
13. Power Derating Curve



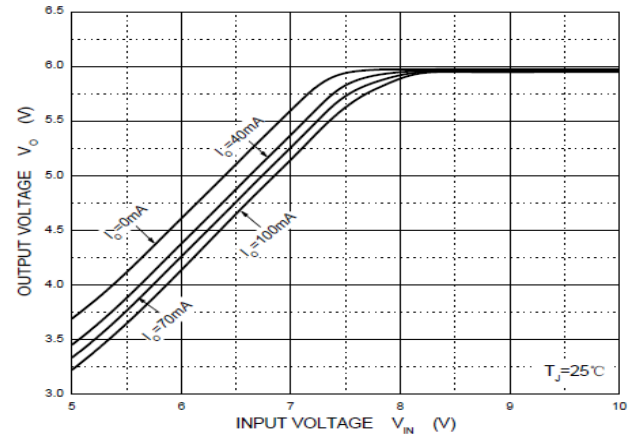


A78L06 TO-92

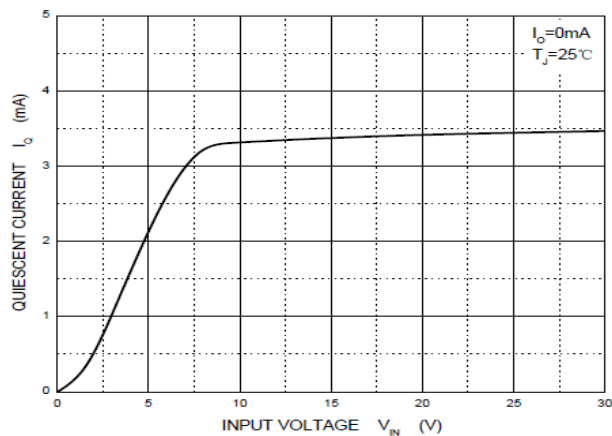
14. Output Characteristics



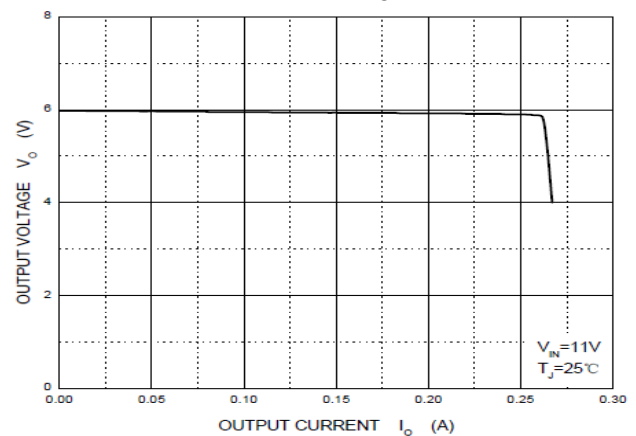
15. Dropout Characteristics



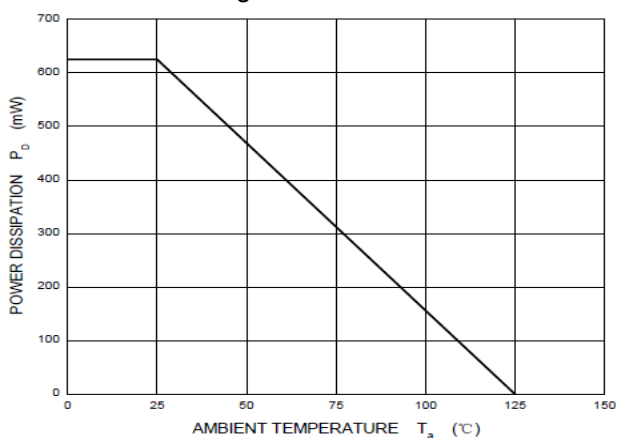
16. Quiescent Current



17. Current Cut-off Grid Voltage



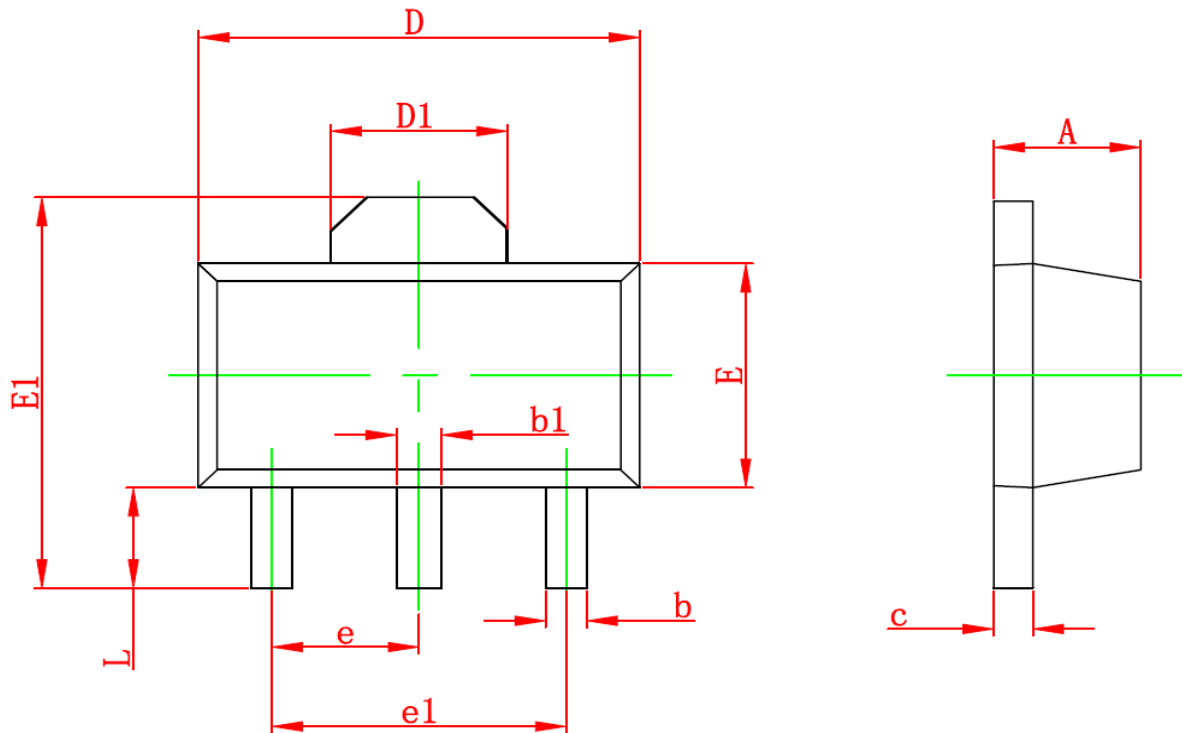
18. Power Derating Curve





PACKAGE INFORMATION

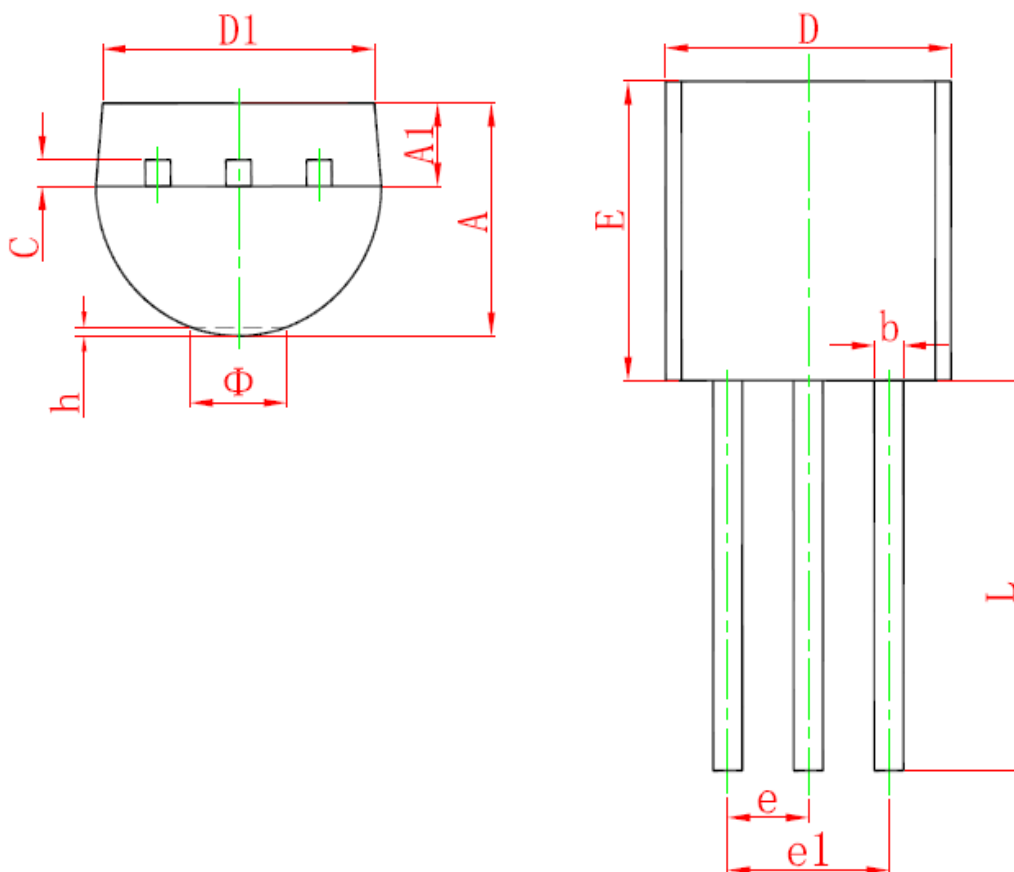
Dimension in SOT89-3 (Unit: mm)



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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