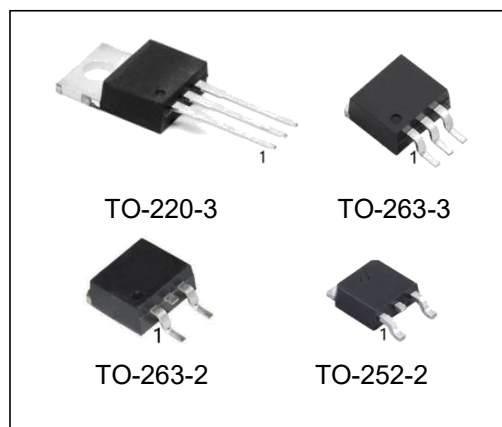


## 40V, 3A, Adjustable Voltage Regulator

### Features

- Typical 1% Output Voltage Tolerance
- Output voltage adjustable from 1.20V ~37V
- Output current in excess of 3.0A
- Internal short circuit protection
- Internal over temperature protection
- Output transistor safe area compensation



### Ordering Information

DEVICE	Package Type	MARKING	Packing	Packing Qty
LM350HT/HG	TO-220-3	LM350H	TUBE	1000pcs/box
LM350HS/TR-HG	TO-263-3	LM350H	REEL	500pcs/reel
LM350HS2/TR-HG	TO-263-2	LM350H	REEL	500pcs/reel
LM350HDT/TR-HG	TO-252-2	LM350H	REEL	2500pcs/reel

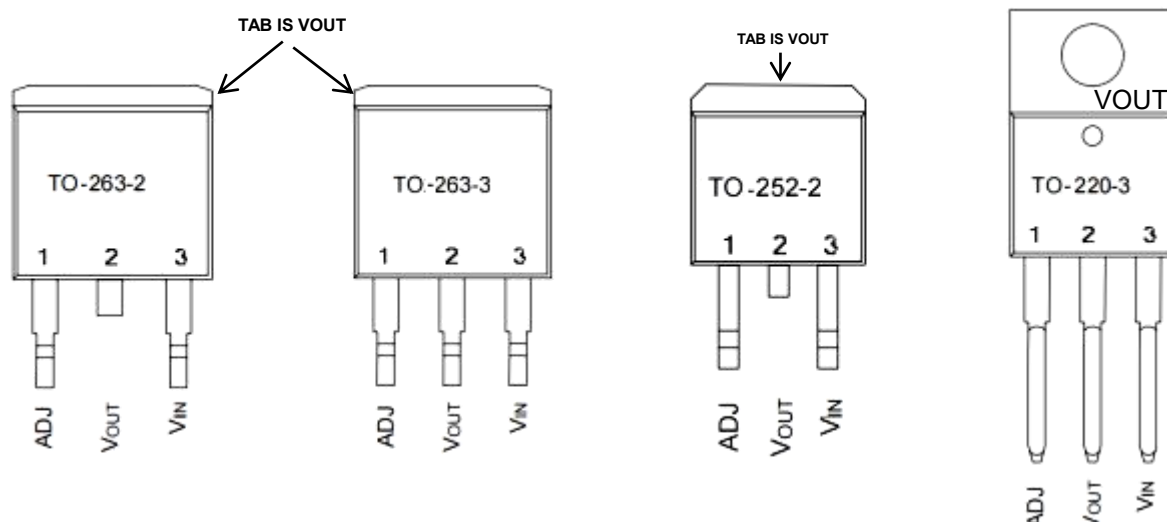
## General Description

The LM350H is an adjustable 3-terminal positive voltage regulator capable of supplying in excess of 1.5A over an output voltage range of 1.20 V to 37 V. This voltage regulator is exceptionally easy to use and requires only two external resistors to set the output voltage. Further, it employs internal current limiting, thermal shutdown and safe area compensation, making it essentially blow-out proof.

The LM350H serves a wide variety of applications including local, on card regulation. This device can also be used to make a programmable output regulator, or by connecting a fixed resistor between the adjustment and output, the LM350H can be used as a precision current regulator.

The LM350H series are packaged in TO220-3, TO252-2, TO263-3 and TO263-2.

## Pin Description



PIN	NAME	I/O	DESCRIPTION
1	ADJ	-	Adjust pin
2, TAB	V <sub>OUT</sub>	O	Output voltage pin for the regulator
3	V <sub>IN</sub>	I	Input voltage pin for the regulator

## Function Block

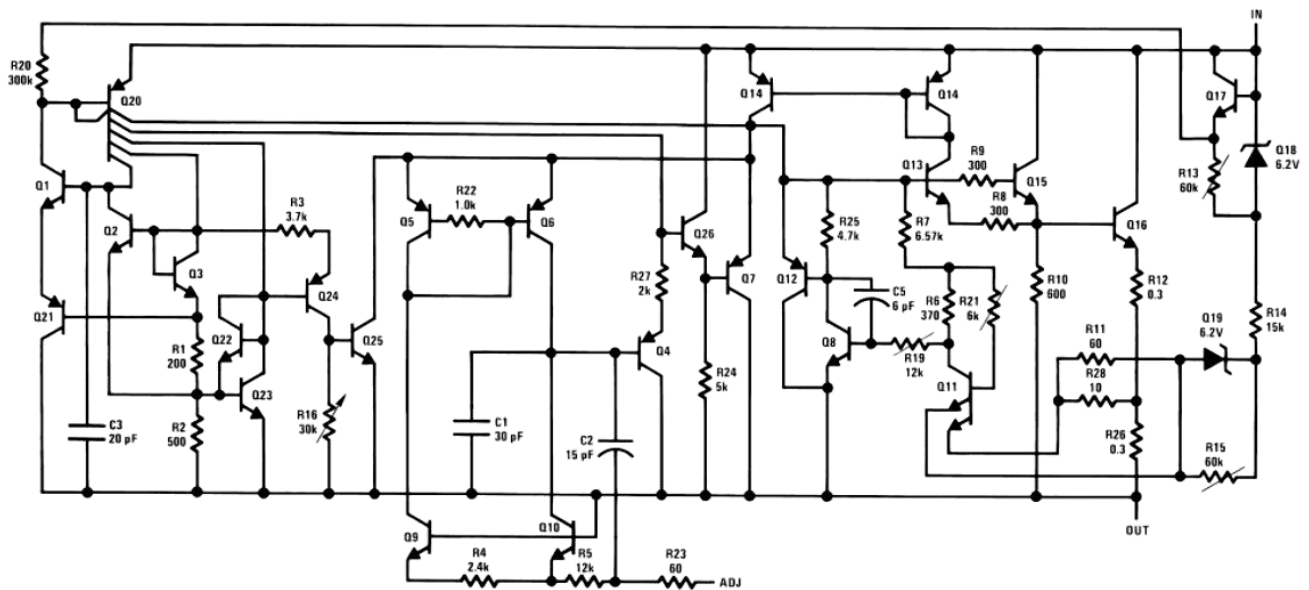
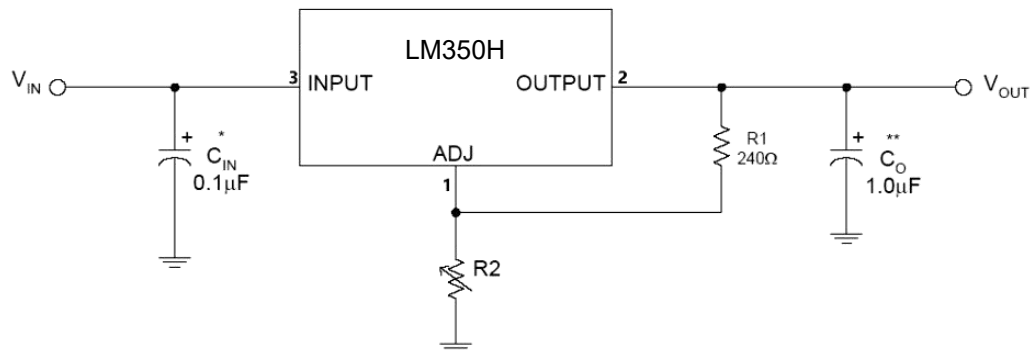


Figure1 Function Block Diagram of LM350H

## Typical Application Circuit



\* =  $C_{IN}$  is required if the regulator is located near power supply filter.

\*\* =  $C_O$  is needed for stability and it improves transient response.

$$V_{OUT} = V_{REF} \times (1 + R2/R1) + I_{ADJ} \times R2$$

Since  $I_{ADJ}$  is controlled to less than 100 μA, the error associated with this term is negligible in most applications.

## Absolute Maximum Ratings(Ta=25°C)

Characteristic		Symbol	Min.	Max.	Unit
Supply Voltage		V <sub>CC</sub>		40	V
Input - Output Voltage Difference		V <sub>in</sub> - V <sub>out</sub>		37	V
Power Dissipation		P <sub>d</sub>	Internal I limited		
Maximum junction temperature		T <sub>J</sub>		150	°C
Storage temperature		T <sub>S</sub>	- 40	150	°C
Lead temperature ( soldering, 10 sec)	TO-263/TO-220	T <sub>LEAD</sub>		245	°C
	TO-252	T <sub>LEAD</sub>		260	°C
ESD ( human body model)		ESD		4000	V
Operating temperature range <sup>(1)</sup>		T <sub>A</sub>	-40	125	°C

**Note:** Stress greater than those listed under Absolute Maximum Ratings may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions outside those indicated in the operational sections of this specification are not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

(1) Operating temperature range: -40°C to +125°C. This product is designed for industrial grade applications. For automotive grade versions compliant with AEC-Q100, please conduct internal screening per the standard or contact our sales team for availability.

## Electrical Characteristics

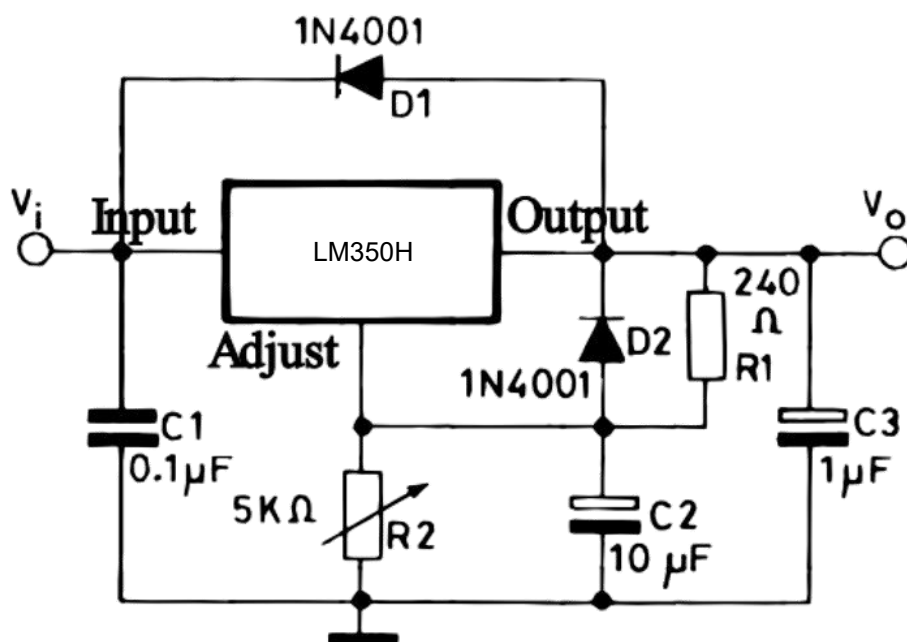
(V<sub>IN</sub>-V<sub>OUT</sub>=5V, I<sub>OUT</sub>=10mA, Ta=25°C, unless otherwise specified. ) \*

Characteristics	Test conditions	Symbol	Min.	Typ.	Max.	Unit
Reference voltage	10 mA ≤ I <sub>OUT</sub> ≤ 3.0A 3 V ≤ (V <sub>IN</sub> - V <sub>OUT</sub> ) ≤ 37V P <sub>D</sub> ≤ 20 W	V <sub>REF</sub>	1.20	1.25	1.30	V
Line regulation	3 V ≤ V <sub>IN</sub> - V <sub>OUT</sub> ≤ 37V	SV		0.01	0.04	%/V
Load regulation	0 mA ≤ I <sub>OUT</sub> ≤ 3.0A	Si		0.2	0.4	%
Adjust pin current		I <sub>adj</sub>		50	100	μA
Adjust pin current change	3 V ≤ V <sub>IN</sub> - V <sub>OUT</sub> ≤ 37V, 10 mA ≤ I <sub>OUT</sub> ≤ 3.0A, P <sub>D</sub> ≤ 20W	ΔI <sub>adj</sub>		0.2	5.0	μA
Minimum load current	V <sub>IN</sub> - V <sub>OUT</sub> = 37 V	I <sub>Lmin</sub>		3.5	10.0	mA
Ripple rejection	f= 120 Hz, C <sub>OUT</sub> = 1 μF tantalum,( V <sub>IN</sub> -V <sub>OUT</sub> )= 3V, I <sub>OUT</sub> = 3.0A	RR	60	75		dB
Temperature stability	T <sub>MIN</sub> ≤ T <sub>J</sub> ≤ T <sub>MAX</sub>			0.7		%
RMS output noise (%ofV <sub>OUT</sub> )	Ta= 25°C, 10 Hz ≤ f ≤ 10 k Hz	en		0.003		%
Thermal resistance, Junction to case	TO-263 TO-252 TO-220	θ <sub>JC</sub>		42 12 5		°C/W
Thermal resistance, Junction to Ambient	TO-263 TO-252 TO-220	θ <sub>JA</sub>		60 112 54		°C/W
Thermal shutdown hysteresis		Thys		25		°C

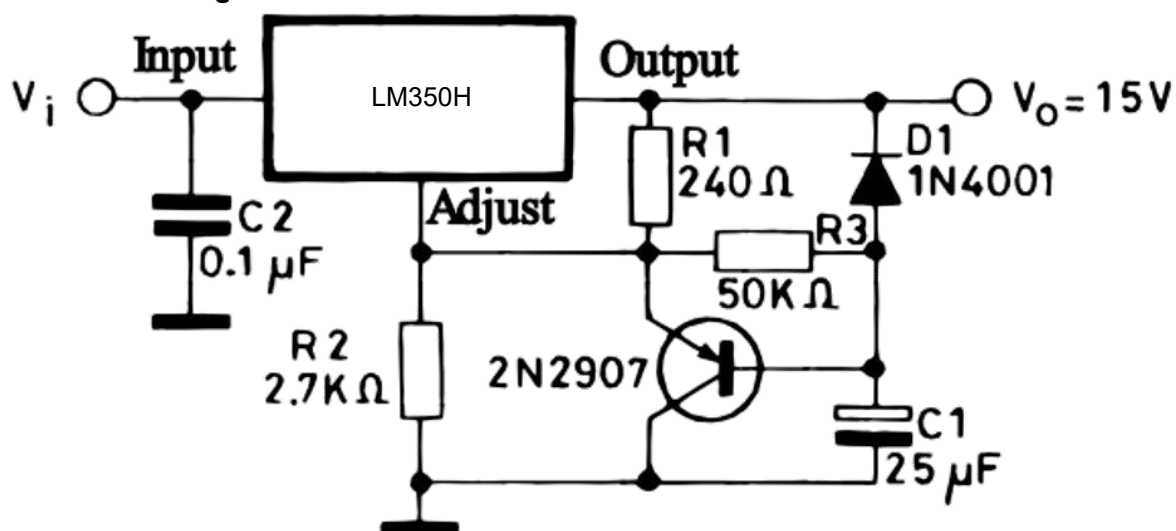
\*: Maximum Power Dissipation is Package Type and Case Temperature dependent.

## Application Information

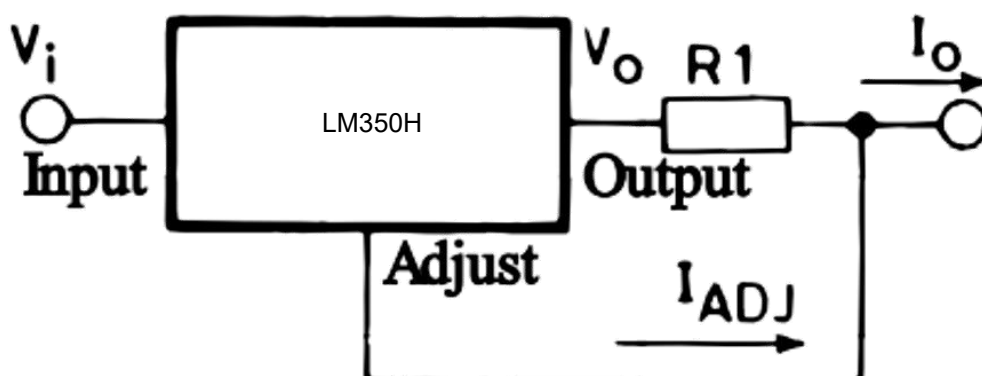
### Voltage regulator with protection diodes



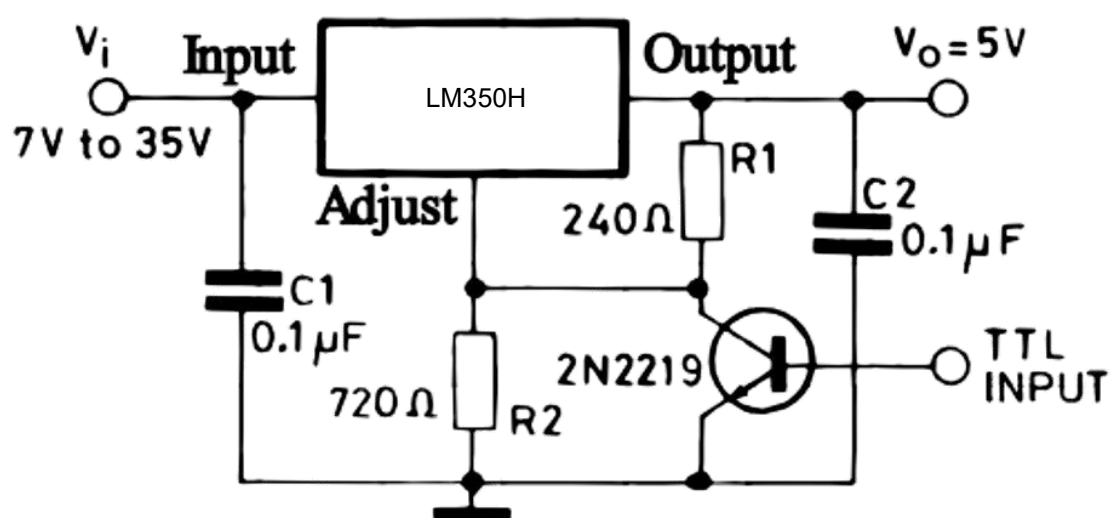
### Slow turn-on 15 V regulator



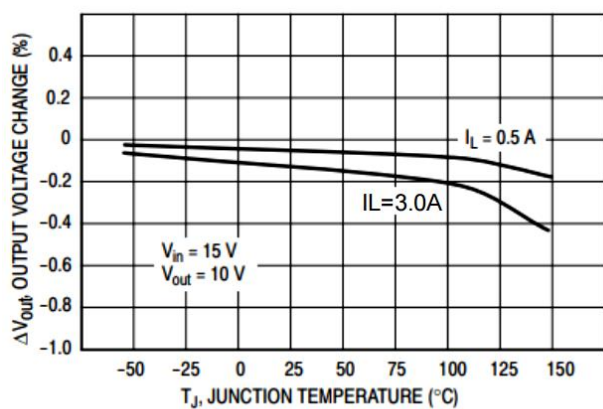
Current regulator



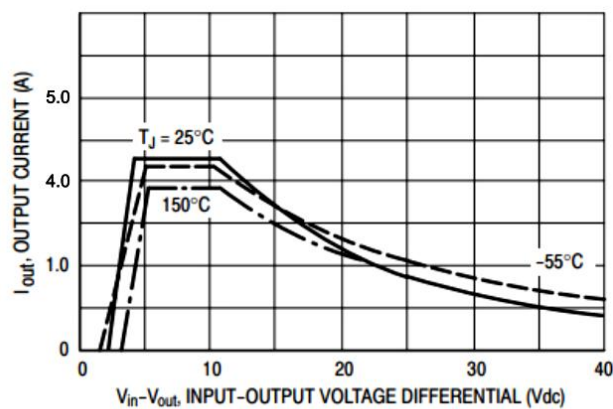
5V electronic shut-down regulator



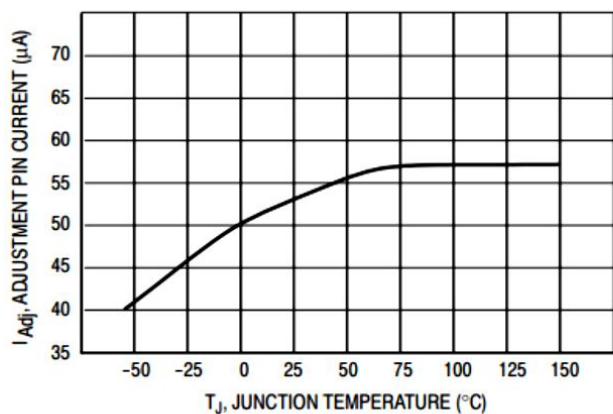
## Characteristics Curves



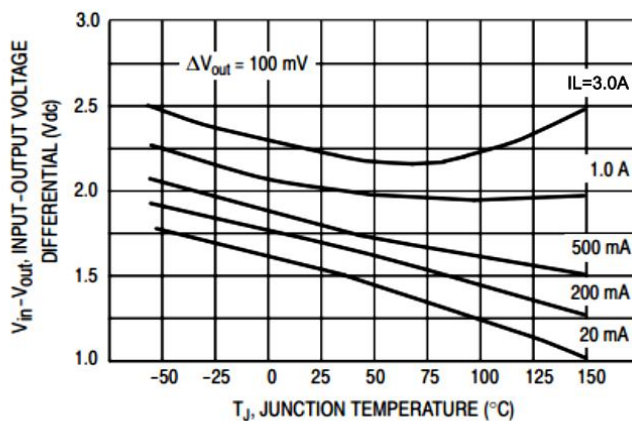
Load Regulation



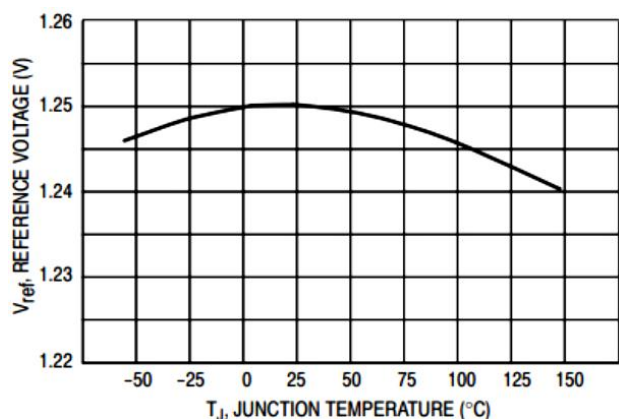
Current Limit



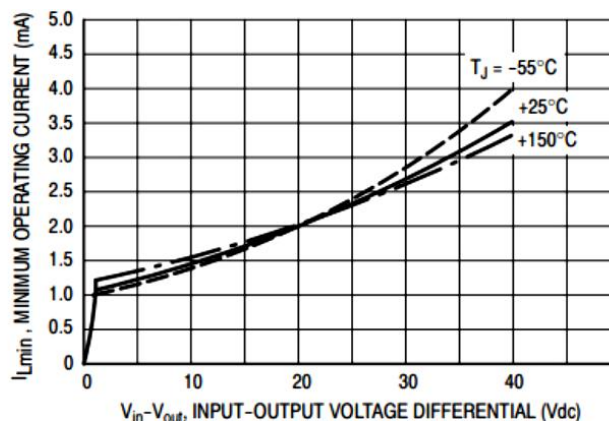
Adjustment Pin Current



Dropout Voltage

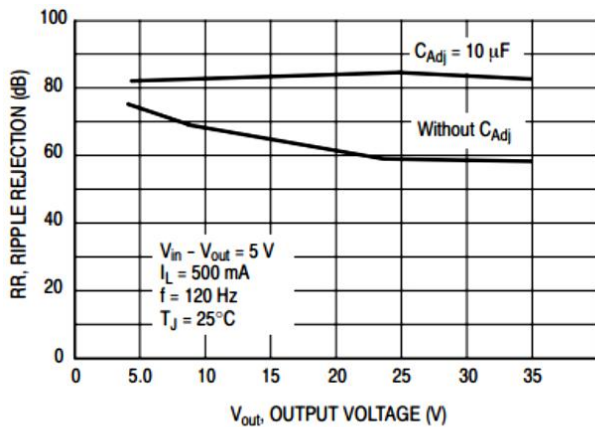


Temperature Stability

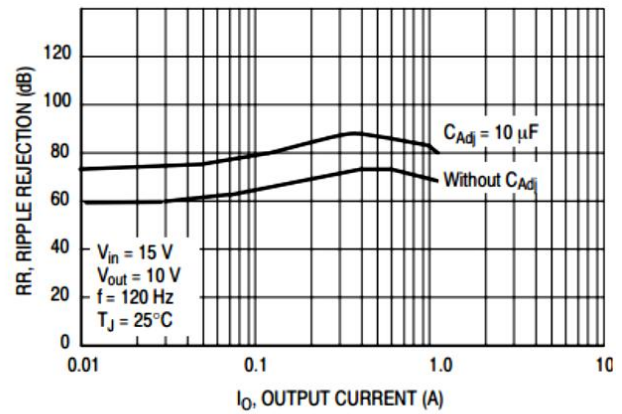


Minimum Operating Current

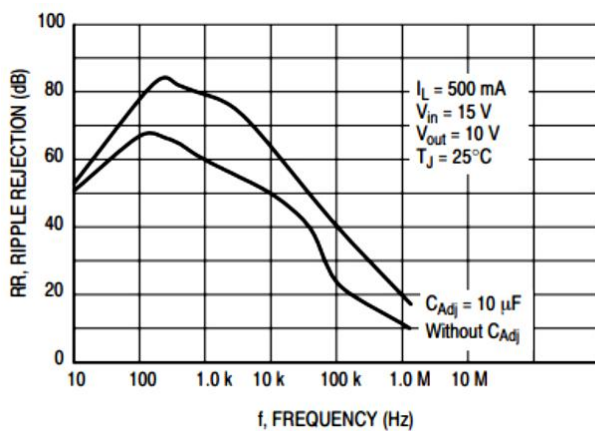




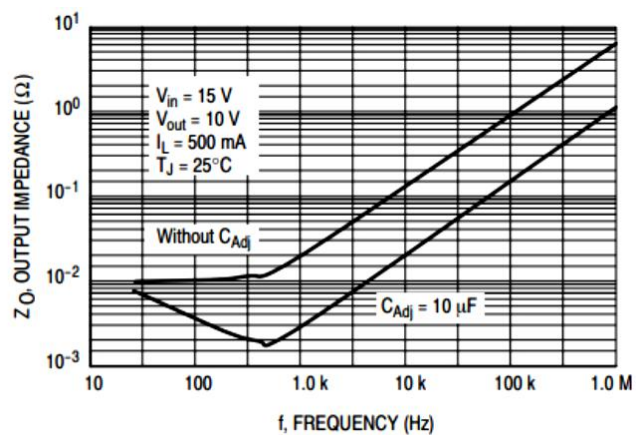
**Ripple Rejection versus Output Voltage**



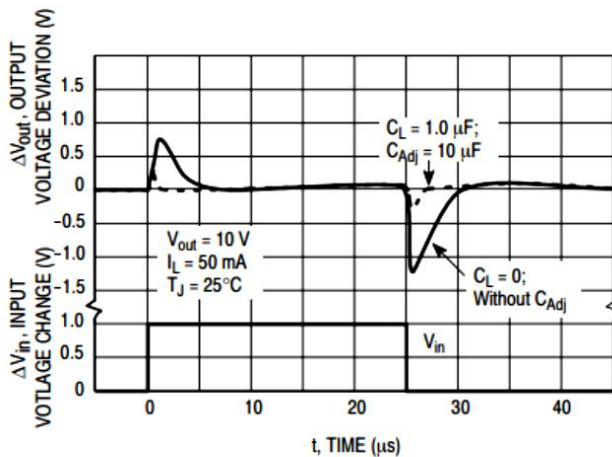
**Ripple Rejection versus output Current**



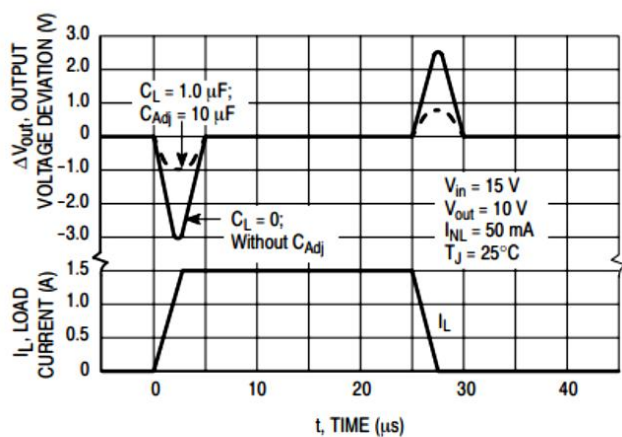
**Ripple Rejection versus Frequency**



**Output Impedance**



**Line Transient Response**

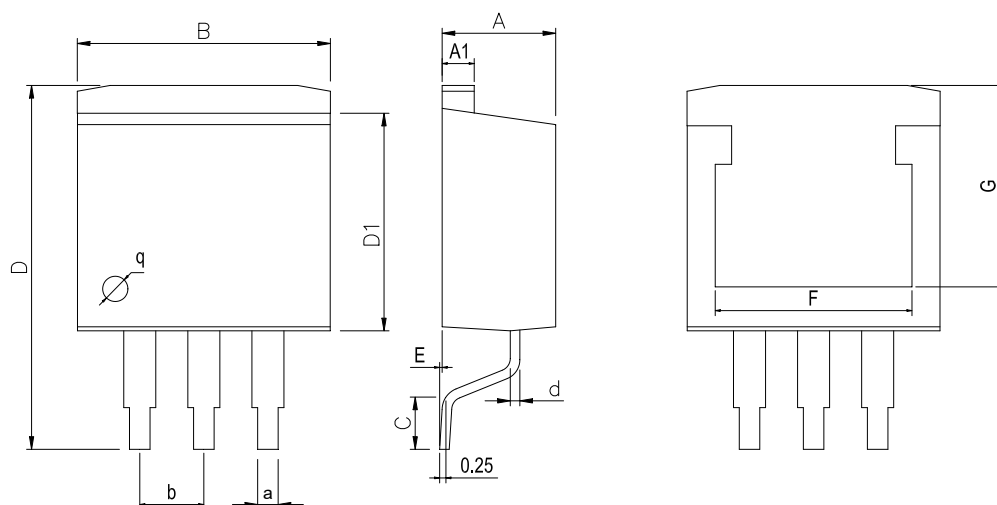


**Load Transient Response**



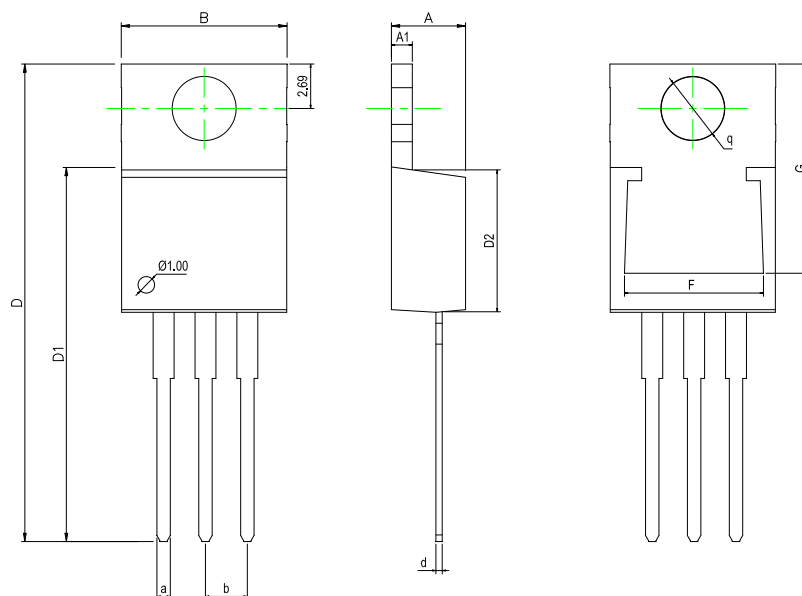
## Physical Dimensions

### TO-263-3



Dimensions In Millimeters(TO-263-3)											
Symbol:	A	A1	B	C	D	D1	E	F	G	a	b
Min:	4.45	1.22	10	1.89	14.1	8.38	0	7.20	7.20	0.71	2.54BSC
Max:	4.62	1.32	10.4	2.19	15.3	8.89	0.305	8.10	8.10	0.97	

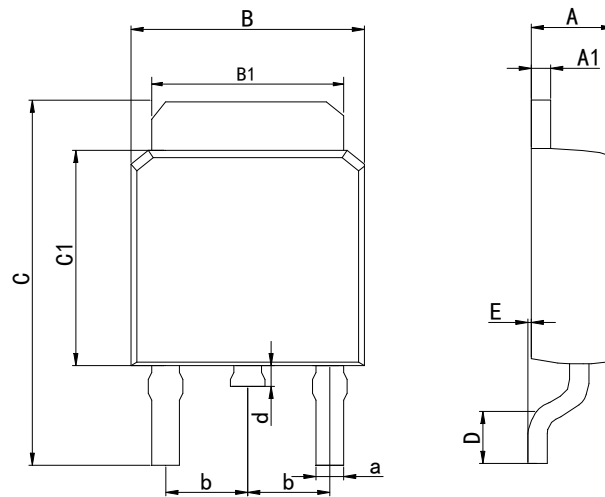
### TO-220-3



Dimensions In Millimeters(TO-220-3)												
Symbol:	A	A1	B	D	D1	D2	F	G	a	d	b	q
Min:	4.45	1.22	10	28.2	22.22	8.50	8.30	12.55	0.71	0.33	2.54	3.80
Max:	4.62	1.32	10.4	28.9	22.62	9.10	8.55	12.75	0.97	0.42	BSC	TYP

## Physical Dimensions

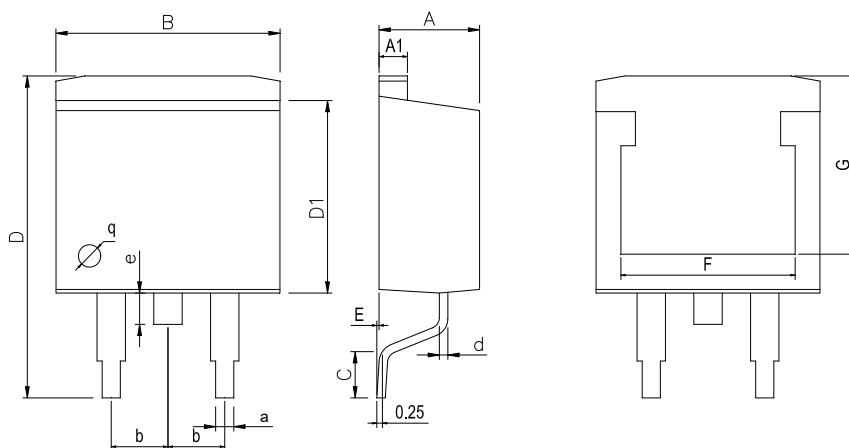
### TO-252-2



Dimensions In Millimeters(TO-252-2)

Symbol:	A	A1	B	B1	C	C1	D	E	a	d	b
Min:	2.10	0.45	6.40	5.10	9.20	5.30	0.90	0	0.50	0.60	2.28
Max:	2.50	0.70	6.80	5.50	10.6	6.30	1.75	0.23	0.80	1.20	BSC

### TO-263-2



Dimensions In Millimeters(TO-263-2)

Symbol:	A	A1	B	C	D	D1	E	F	G	a	e	b
Min:	4.45	1.22	10	2.25	14.5	8.45	0	7.20	7.20	0.71	1.10	2.54BSC
Max:	4.62	1.32	10.4	2.85	15.4	9.10	0.305	8.10	8.10	0.97	1.70	

## Revision History

REVISION NUMBER	DATE	REVISION	PAGE
V1.0	2018-6	New	1-10
V1.1	2025-11	Document Reformatting	1-12

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