D317H

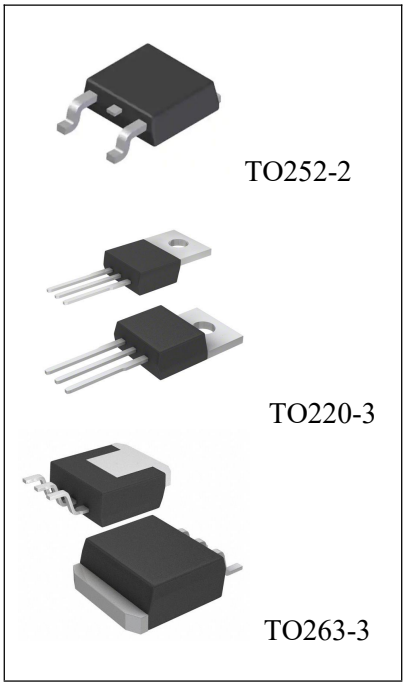
High Voltage Three-Terminal Adjustable Regulator

General Description

The D317H is an adjustable 3-terminal positive voltage regulator. Using 2 external resistors, the D317H can provide an adjustable output voltage down to 1.25V.

The D317H includes a circuit of trimmed bandgap reference to assure output voltage accuracy to be within 1%. It also provides current limiting and thermal shutdown. The current limit is trimmed to ensure specified output current and controlled short-circuit current. The On-chip thermal limiting provides protection against any combination of overload and ambient temperature that would create excessive junction temperature

The D317H is available in the standard TO252-2、TO220-3 and TO263-3 power package.



Features

- Trimmed Current Limit
- On-chip Thermal Protection
- Operation Junction Temperature: 0 to 125 ℃

Package Information

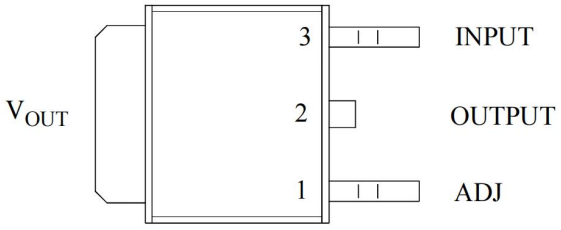
Part NO.	Package Description	Package Marking	Package Option
D317HD	TO252-2	CHMC D317HD SXXXX	2500/Reel
D317HT	TO220-3	CHMC D317HT SXXXX	50/Tube
D317HS	TO263-3	CHMC D317HS SXXXX	50/Tube 800/Reel

CHMC:Trademark D317HD/D317HT/D317HS:Part NO. SXXXX：Lot NO.

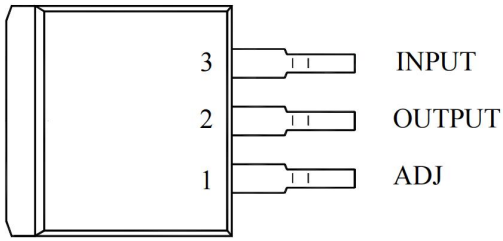
Application

- LCD Monitor
- PC Motherboard
- Graphic Card
- DVD Player
- Network Interface Card/Switch
- Telecom Equipment
- Printer and other
- Peripheral Equipment

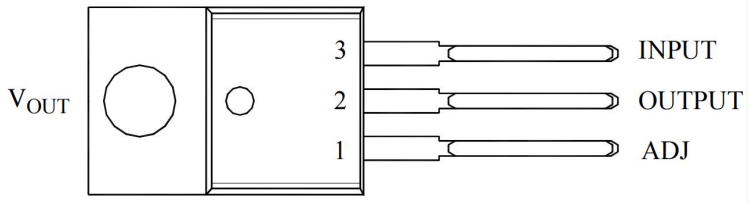
Pin Configuration



D317HD(TO252-2)

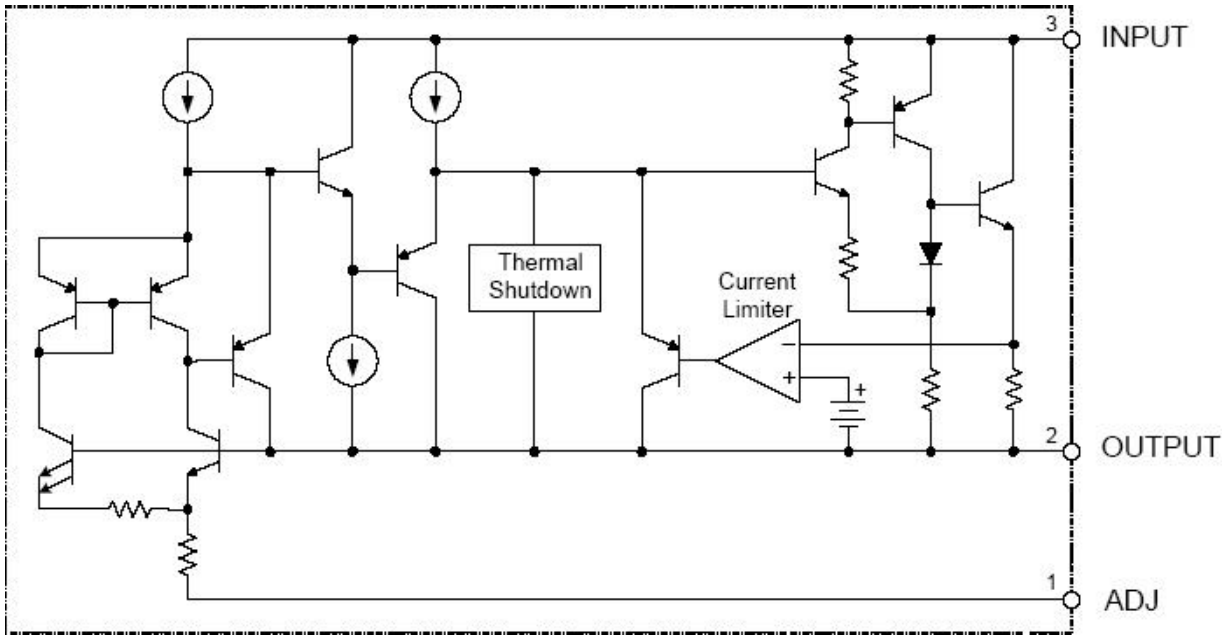


D317HS(TO263-3)



D317HT(TO220-3)

Block Diagram



Absolute Maximum Ratings (Ta=25 °C) *

Characteristic	Symbol	Min.	Max.	Unit
Input voltage	V_{IN}		60	V
Maximum junction temperature	T_J		150	°C
Storage temperature	T_S	-65	150	°C
Lead temperature (soldering, 10sec)	T_{LEAD}		300	°C
ESD (human body model)	ESD		4000	V

*: Stresses greater than those listed under " Absolute Maximum Ratings" 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 under " Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

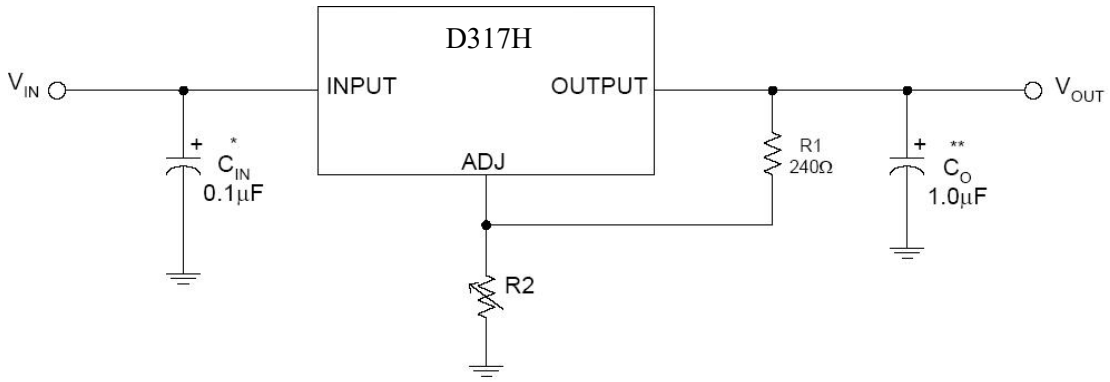
Recommended Operating Conditions

Characteristic	Symbol	Min.	Max.	Unit
Input voltage	V_{IN}	V_{OUT} +2	60	V
Operating Temperature Range	Topr	-40	125	℃

Electrical Characteristics (Typicals and l imits apply for T_J =25 ℃)

Characteristics	Test conditions	Symbol	Min.	Typ.	Max.	Unit
Reference voltage	10m A≤ I_{OUT} ≤ 1A 3V≤ (V_{IN} -V_{OUT}) ≤ 40V	V_{REF}	1.20	1.25	1.30	V
Line regulation	I_{OUT} ≤ 20 m A, 3V≤ V_{IN} -V_{OUT} ≤ 40V	S_V		3	16	m V
Load regulation	V_{IN} -V_{OUT} =2 V, 10m A≤ I_{OUT} ≤ 1A	Si		5	25	m V
Thermal regulation	20ms pulse			0.04	0.07	%/W
Dropout voltage	I_{OUT} =1A	ΔV		1.3	1.5	V
Current limit	(V_{IN} -V_{OUT})=2V	I_{LIMIT}	1.5	2.0		A
Adjust pin current				50	100	μA
Adjust pin current change	1.4 V≤ (V_{IN} -V_{OUT}) ≤ 40V 10m A≤ I_{OUT} ≤ 1A			0.2	5.0	μA
Minimum load current	3V≤ (V_{IN} -V_{OUT}) ≤ 40V			3.5	10.0	m A
Ripple rejection	f=120Hz,COUT=1μF tantalum, (V_{IN} -V_{OUT})=3 V, I_{OUT} =1A		60	75		dB
Temperature stability				1		%
Long-term stability	Ta= 125 ℃, 1000hrs			0.3		%
RMS output noise (% of V_{OUT})	Ta= 25 ℃, 10Hz≤ f≤ 10kHz			0.003		%
Thermal resistance, Junction to case	TO-220			4.5		℃ /W
Thermal shutdown	Junction temperature			150		℃
Thermal shutdown hysteresis				25		℃

Application Circuit



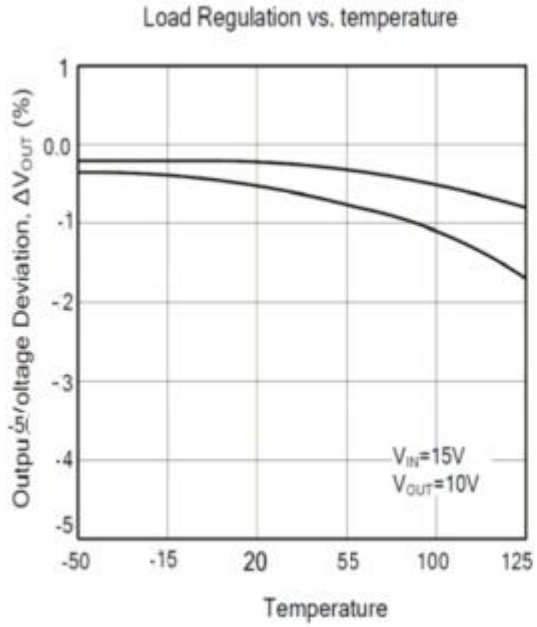
* = C_{IN} is required if the regulator is located near power supply filter.

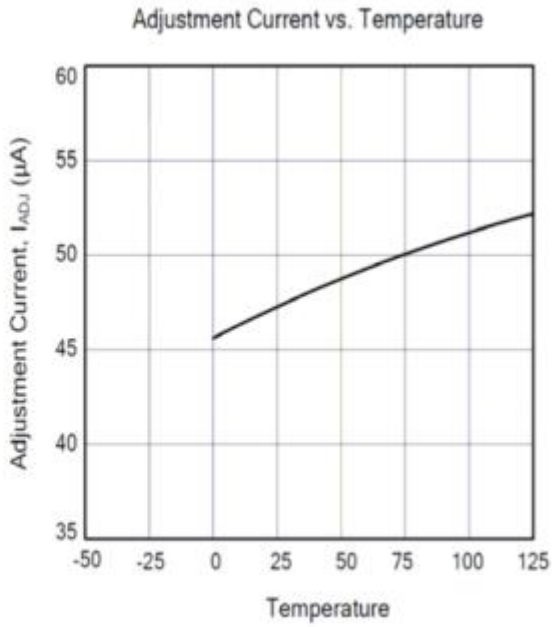
**= C_O is needed for stability and it improves transient response.

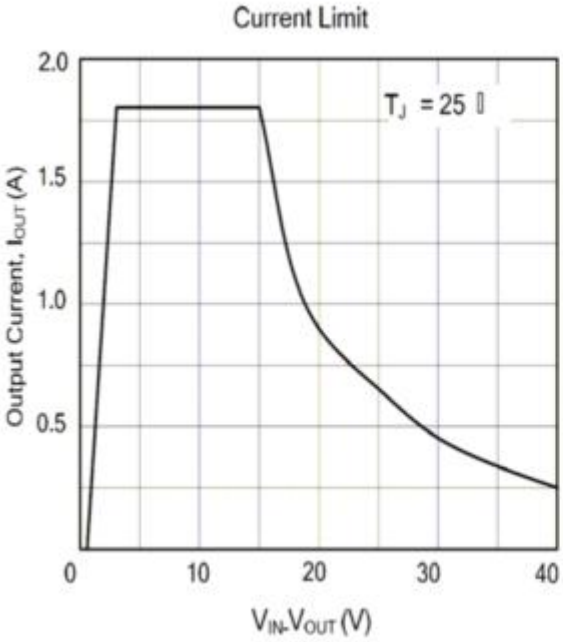
$$V_{OUT} = V_{REF} \times (1+R2/R1) + I_{ADJ} \times R2$$

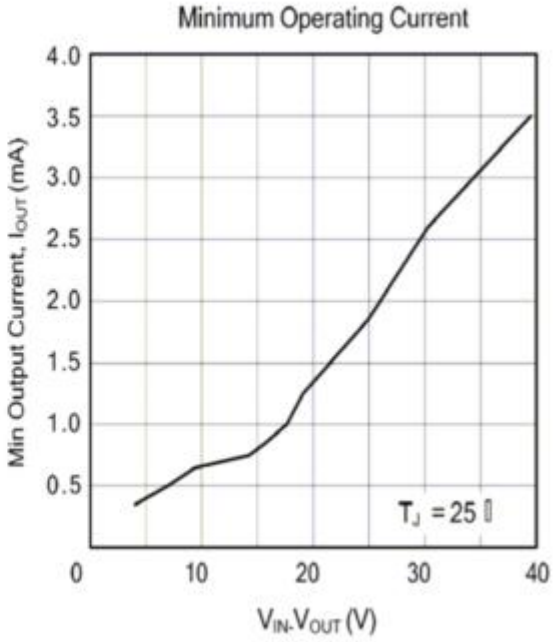
Since I_{ADJ} is controlled to less than 100μA, the error associated with this term is negligible in most applications.

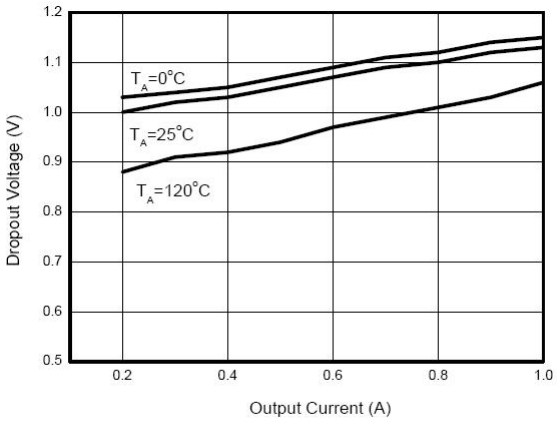
Characteristics Curves



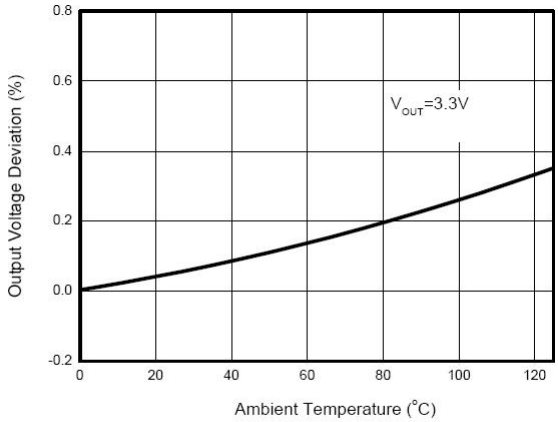




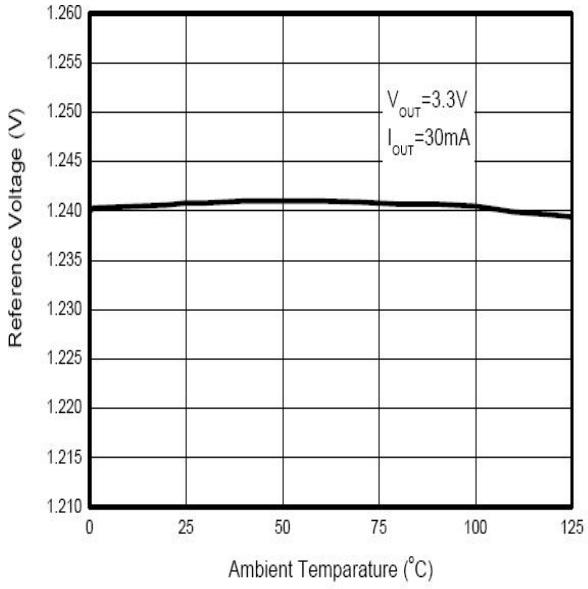




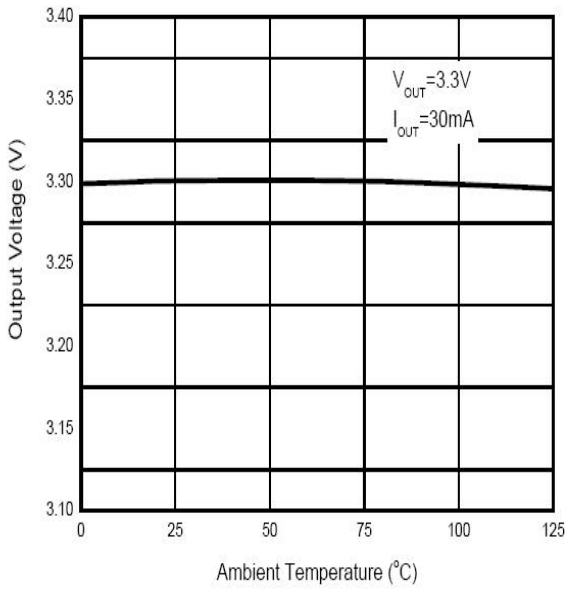
Dropout Voltage vs. Output Current



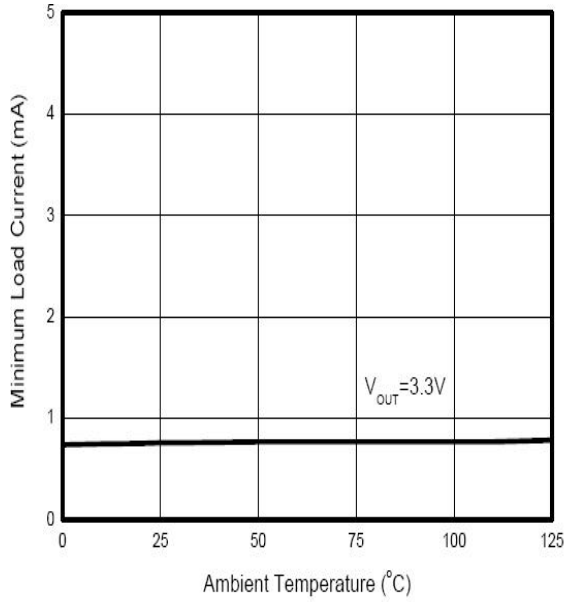
Load Regulation vs. Temperature



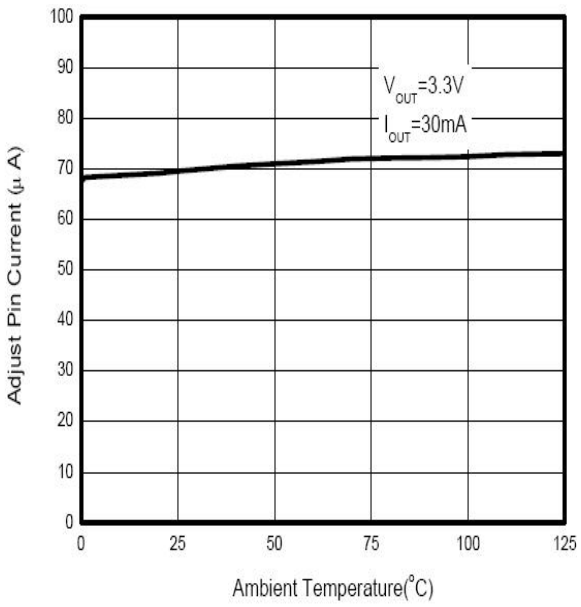
Reference Voltage vs. Temperature



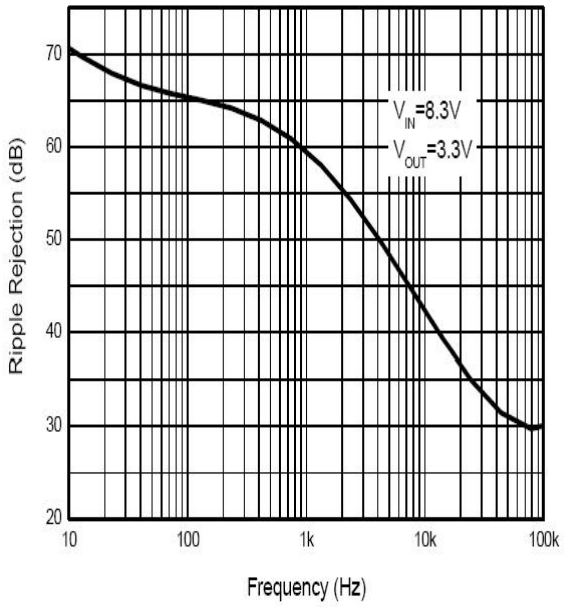
Output Voltage vs. Temperature



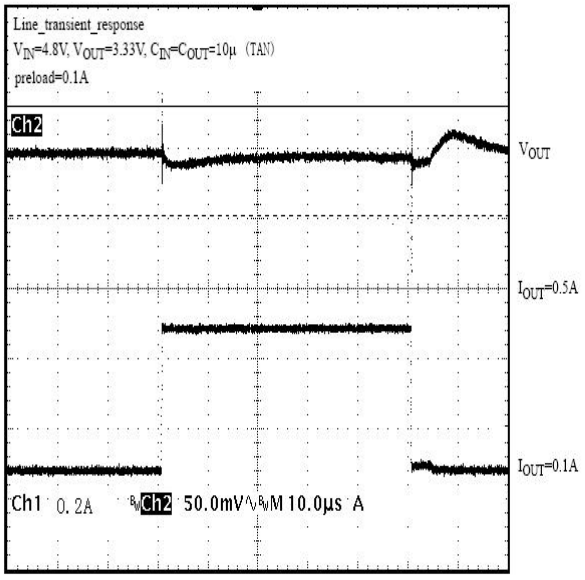
Minimum Load Current vs. Temperature



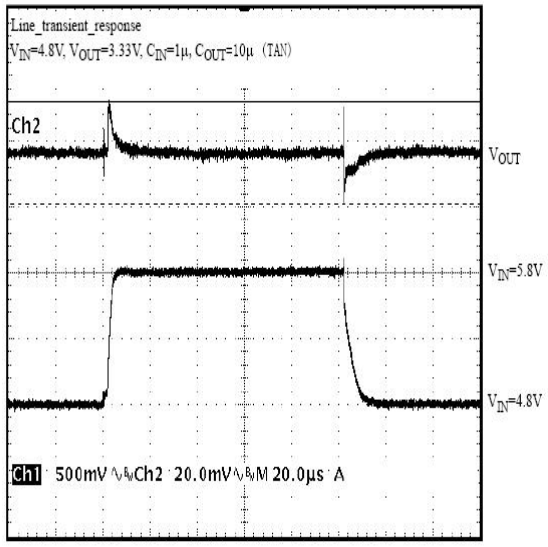
Adjust Pin Current vs. Temperature



Ripple Rejection vs. Frequency



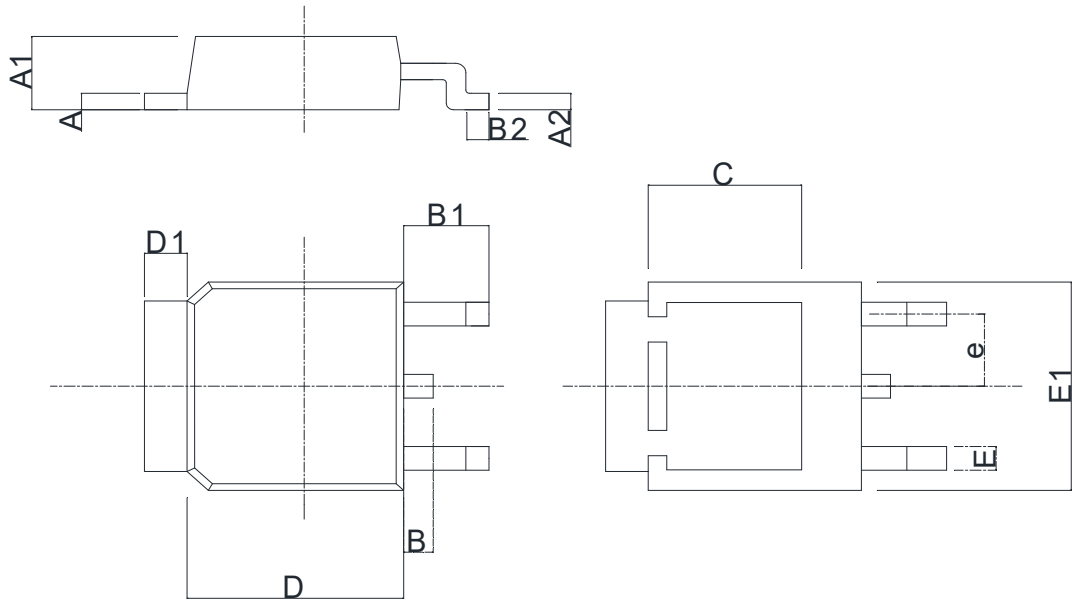
Load Transient Response



Line Transient Response

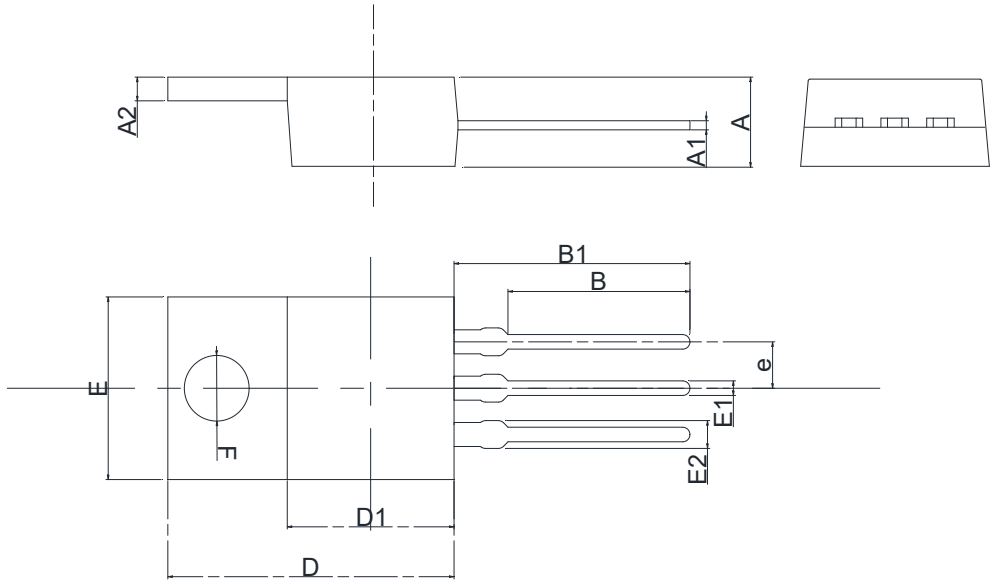
Outline Dimensions

TO252-2 Unit:mm



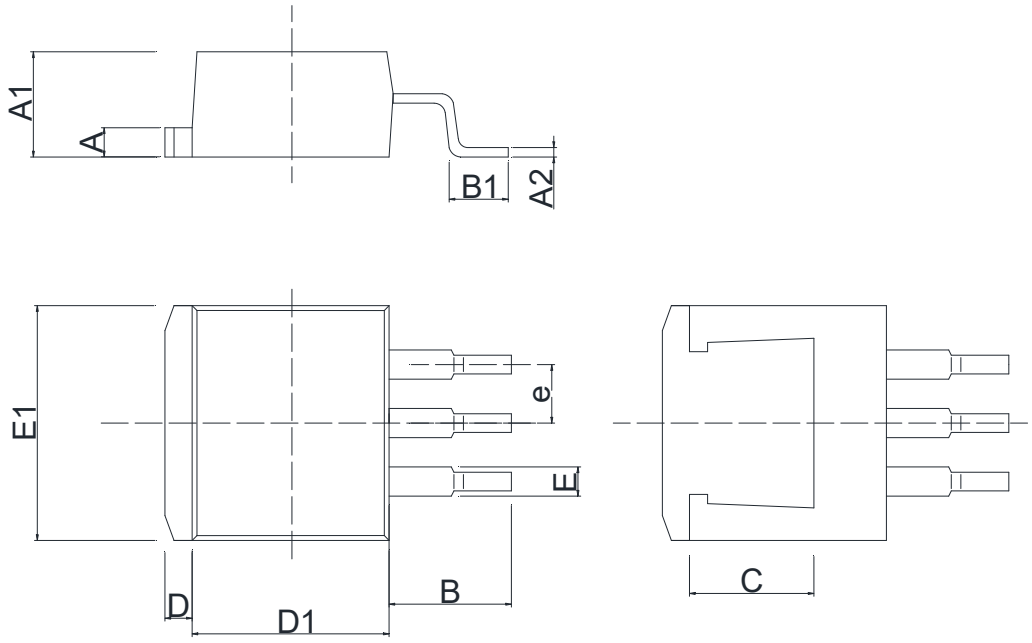
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.470	0.570	0.018	0.023
A1	2.220	2.380	0.087	0.094
A2	0.470	0.570	0.018	0.023
B	0.820	0.840	0.032	0.033
B1	2.380	2.480	0.093	0.098
B2	0.500	0.520	0.019	0.021
C	4.250	4.450	0.167	0.176
D	6.000	6.200	0.236	0.245
D1	1.150	1.250	0.045	0.050
E	0.650	0.850	0.025	0.034
E1	6.450	6.750	0.253	0.266
e	2.285（BSC）		0.090（BSC）	

TO220-3 Unit:mm



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.300	4.700	0.169	0.185
A1	0.450	0.600	0.017	0.023
A2	1.250	1.400	0.049	0.055
B	9.780	10.380	0.385	0.408
B1	12.880	13.280	0.507	0.522
D	15.500	15.900	0.610	0.626
D1	9.000	9.400	0.354	0.370
E	9.700	10.100	0.381	0.398
E1	0.700	0.900	0.027	0.036
E2	1.420	1.620	0.055	0.063
e	2.540（BSC）		0.984（BSC）	
F	Φ3.500	Φ3.700	Φ0.137	Φ0.146

TO263-3 Unit:mm



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.170	1.370	0.046	0.054
A1	4.470	4.670	0.176	0.184
A2	0.310	0.530	0.012	0.021
B	5.080	5.480	0.200	0.216
B1	2.340	2.740	0.092	0.108
C	5.600 REF		0.220 REF	
D	1.170	1.370	0.046	0.054
D1	8.500	8.900	0.335	0.350
E	1.170	1.370	0.046	0.054
E1	10.010	10.310	0.394	0.406
e	2.540（BSC）		0.100（BSC）	

Statements

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