■ General Description

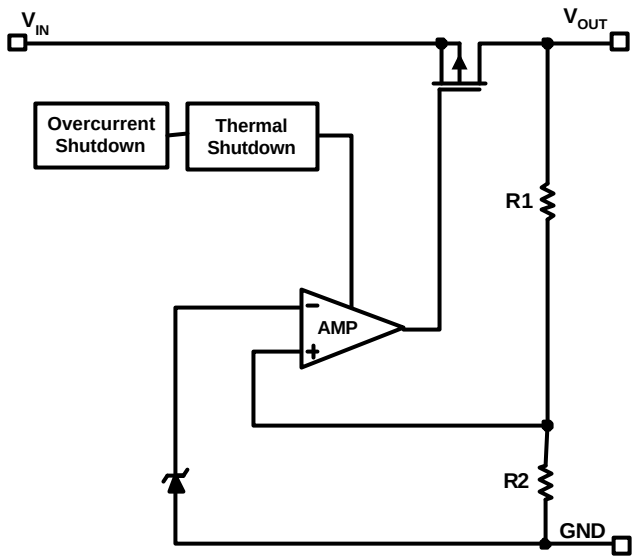
The AME8815 family of linear regulators feature low quiescent current (45µA typ.) with low dropout voltage, making them ideal for battery applications. It is available in TO-252, SOT-223, TO-263 and TO-220 packages.

Output voltages are set at the factory and trimmed to 1.5% accuracy.

These rugged devices have both Thermal Shutdown, and Current Fold-back to prevent device failure under the "Worst" operating conditions.

The AME8815 is stable with an output capacitance of 4.7µF or greater.

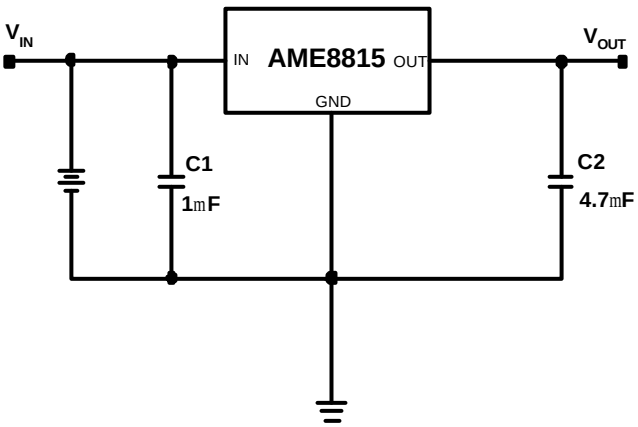
■ Functional Block Diagram



■ Features

- Very Low Dropout Voltage
- Guaranteed 1.5A Output
- Accurate to within 1.5%
- 45µA Quiescent Current Typically
- Over-Temperature Shutdown
- Current Limiting
- Short Circuit Current Fold-back
- Low Temperature Coefficient
- All AME's Lead Free Products Meet RoHS Standards

■ Typical Application

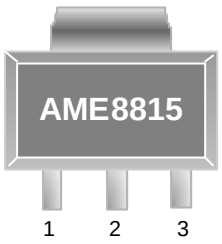


■ Applications

- Instrumentation
- Portable Electronics
- Wireless Devices
- PC Peripherals
- Battery Powered Widgets

■ Pin Configuration

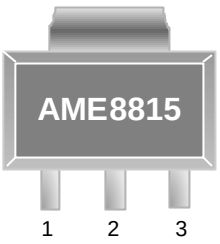
SOT-223
Top View



AME8815AEGTxxx
1. IN
2. GND(TAB)
3. OUT

*** Die Attach:**
Conductive Epoxy

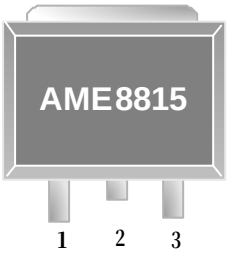
SOT-223
Top View



AME8815BEGTxxx
1. GND
2. OUT(TAB)
3. IN

*** Die Attach:**
Non-Conductive Epoxy

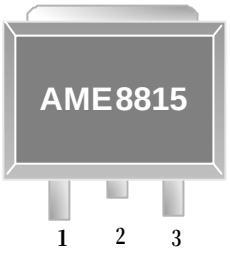
TO-252-2
Top View



AME8815AECSxxx
1. IN
2. GND(TAB)
3. OUT

*** Die Attach:**
Conductive Epoxy

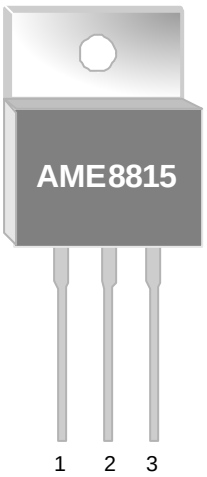
TO-252-2
Top View



AME8815BECSxxx
1. GND
2. OUT(TAB)
3. IN

*** Die Attach:**
Non-Conductive Epoxy

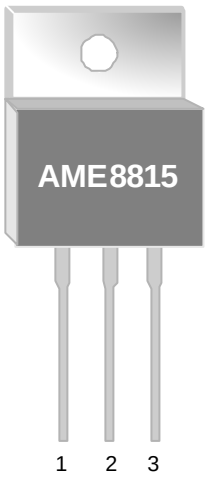
TO-220-3
Top View



AME8815AEBTxxx
1. IN
2. GND(TAB)
3. OUT

*** Die Attach:**
Conductive Epoxy

TO-220-3
Top View

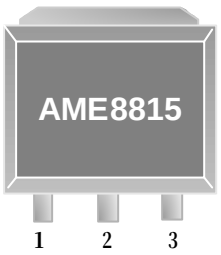


AME8815BEBTxxx
1. GND
2. OUT(TAB)
3. IN

*** Die Attach:**
Non-Conductive Epoxy

■ Pin Configuration

TO-263-3
Top View

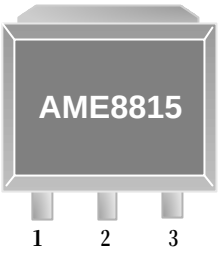


AME8815AEDTxxx

1. IN
2. GND(TAB)
3. OUT

*** Die Attach:**
Conductive Epoxy

TO-263-3
Top View

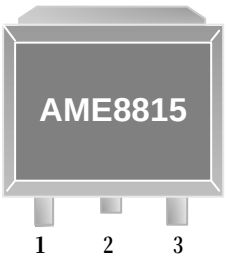


AME8815BEDTxxx

1. GND
2. OUT(TAB)
3. IN

*** Die Attach:**
Non-Conductive Epoxy

TO-263-2
Top View

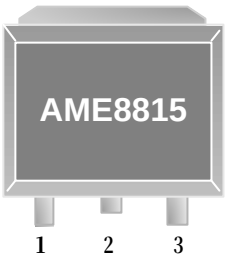


AME8815AEDSxxx

1. IN
2. GND(TAB)
3. OUT

*** Die Attach:**
Conductive Epoxy

TO-263-2
Top View



AME8815BEDSxxx

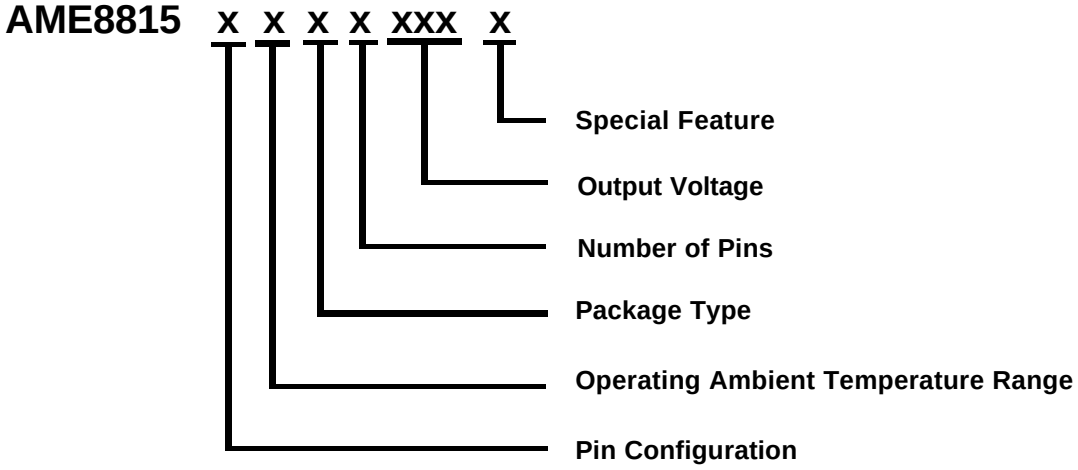
1. GND
2. OUT(TAB)
3. IN

*** Die Attach:**
Non-Conductive Epoxy

■ Pin Description

Pin Name	Pin Description
IN	Input voltage pin. It should be decoupled with 1μF or greater capacitor.
GND	Ground connection pin.
OUT	LDO voltage regulator output pin. It should be decoupled with a 4.7μF or greater value low ESR ceramic capacitor.

■ Ordering Information



Pin Configuration	Operating Ambient Temperature Range	Package Type	Number of Pins	Output Voltage	Special Feature
A: 1. IN (TO-220-3) 2. GND (TO-252-2) 3. OUT (TO-263-3) (SOT-223) B: 1. GND (TO-220-3) 2. OUT (TO-252-2) 3. IN (TO-263-3) (SOT-223)	E: -40^{O}C to 85^{O}C	B: TO-220 C: TO-252 D: TO-263 G: SOT-223	S: 2 T: 3	150: V=1.5V 180: V=1.8V 190: V=1.9V 250: V=2.5V 310: V=3.1V 330: V=3.3V 390: V=3.9V 475: V=4.75V 500: V=5.0V	Z: Lead Free

■ Ordering Information (contd.)

Part Number	Marking*	Output Voltage	Package	Operating Ambient Temperature Range
AME8815AEBT150	AME8815 AEBT150 yyww	1.50	TO-220	- 40°C to 85°C
AME8815AEBT150Z	AME8815 AEBT150 yyww	1.50	TO-220	- 40°C to 85°C
AME8815AEBT180	AME8815 AEBT180 yyww	1.80	TO-220	- 40°C to 85°C
AME8815AEBT180Z	AME8815 AEBT180 yyww	1.80	TO-220	- 40°C to 85°C
AME8815AEBT190	AME8815 AEBT190 yyww	1.90	TO-220	- 40°C to 85°C
AME8815AEBT190Z	AME8815 AEBT190 yyww	1.90	TO-220	- 40°C to 85°C
AME8815AEBT250	AME8815 AEBT250 yyww	2.50	TO-220	- 40°C to 85°C
AME8815AEBT250Z	AME8815 AEBT250 yyww	2.50	TO-220	- 40°C to 85°C
AME8815AEBT330	AME8815 AEBT330 yyww	3.30	TO-220	- 40°C to 85°C
AME8815AEBT330Z	AME8815 AEBT330 yyww	3.30	TO-220	- 40°C to 85°C

Note: yyww & yww represents the date code

* A line on top of the first letter represents lead free plating such as $\overline{\text{A}}$ME8815

Please consult AME sales office or authorized Rep./Distributor for the availability of output voltage and package type.

■ Ordering Information (contd.)

Part Number	Marking*	Output Voltage	Package	Operating Ambient Temperature Range
AME8815AEBT475	AME8815 AEBT475 yyww	4.75	TO-220	- 40°C to 85°C
AME8815AEBT475Z	AME8815 AEBT475 yyww	4.75	TO-220	- 40°C to 85°C
AME8815AEBT500	AME8815 AEBT500 yyww	5.00	TO-220	- 40°C to 85°C
AME8815AEBT500Z	AME8815 AEBT500 yyww	5.00	TO-220	- 40°C to 85°C
AME8815AECS150	AME8815 AECS150 yyww	1.50	TO-252-2	- 40°C to 85°C
AME8815AECS150Z	AME8815 AECS150 yyww	1.50	TO-252-2	- 40°C to 85°C
AME8815AECS180	AME8815 AECS180 yyww	1.80	TO-252-2	- 40°C to 85°C
AME8815AECS180Z	AME8815 AECS180 yyww	1.80	TO-252-2	- 40°C to 85°C
AME8815AECS190	AME8815 AECS190 yyww	1.90	TO-252-2	- 40°C to 85°C
AME8815AECS190Z	AME8815 AECS190 yyww	1.90	TO-252-2	- 40°C to 85°C
AME8815AECS250	AME8815 AECS250 yyww	2.50	TO-252-2	- 40°C to 85°C
AME8815AECS250Z	AME8815 AECS250 yyww	2.50	TO-252-2	- 40°C to 85°C
AME8815AECS330	AME8815 AECS330 yyww	3.30	TO-252-2	- 40°C to 85°C

■ Ordering Information (contd.)

Part Number	Marking*	Output Voltage	Package	Operating Ambient Temperature Range
AME8815AECS330Z	AME8815 AECS330 yyww	3.30	TO-252-2	- 40°C to 85°C
AME8815AECS475	AME8815 AECS475 yyww	4.75	TO-252-2	- 40°C to 85°C
AME8815AECS475Z	AME8815 AECS475 yyww	4.75	TO-252-2	- 40°C to 85°C
AME8815AECS500	AME8815 AECS500 yyww	5.00	TO-252-2	- 40°C to 85°C
AME8815AECS500Z	AME8815 AECS500 yyww	5.00	TO-252-2	- 40°C to 85°C
AME8815AEDS150	AME8815 AEDS150 yyww	1.50	TO-263-2	- 40°C to 85°C
AME8815AEDS150Z	AME8815 AEDS150 yyww	1.50	TO-263-2	- 40°C to 85°C
AME8815AEDS180	AME8815 AEDS180 yyww	1.80	TO-263-2	- 40°C to 85°C
AME8815AEDS180Z	AME8815 AEDS180 yyww	1.80	TO-263-2	- 40°C to 85°C
AME8815AEDS190	AME8815 AEDS190 yyww	1.90	TO-263-2	- 40°C to 85°C
AME8815AEDS190Z	AME8815 AEDS190 yyww	1.90	TO-263-2	- 40°C to 85°C
AME8815AEDS250	AME8815 AEDS250 yyww	2.50	TO-263-2	- 40°C to 85°C
AME8815AEDS250Z	AME8815 AEDS250 yyww	2.50	TO-263-2	- 40°C to 85°C

■ Ordering Information (contd.)

Part Number	Marking*	Output Voltage	Package	Operating Ambient Temperature Range
AME8815AEDS330	AME8815 AEDS330 yyww	3.30	TO-263-2	- 40°C to 85°C
AME8815AEDS330Z	AME8815 AEDS330 yyww	3.30	TO-263-2	- 40°C to 85°C
AME8815AEDS475	AME8815 AEDS475 yyww	4.75	TO-263-2	- 40°C to 85°C
AME8815AEDS475Z	AME8815 AEDS475 yyww	4.75	TO-263-2	- 40°C to 85°C
AME8815AEDS500	AME8815 AEDS500 yyww	5.00	TO-263-2	- 40°C to 85°C
AME8815AEDS500Z	AME8815 AEDS500 yyww	5.00	TO-263-2	- 40°C to 85°C
AME8815AEDT150	AME8815 AEDT150 yyww	1.50	TO-263-3	- 40°C to 85°C
AME8815AEDT150Z	AME8815 AEDT150 yyww	1.50	TO-263-3	- 40°C to 85°C
AME8815AEDT180	AME8815 AEDT180 yyww	1.80	TO-263-3	- 40°C to 85°C
AME8815AEDT180Z	AME8815 AEDT180 yyww	1.80	TO-263-3	- 40°C to 85°C
AME8815AEDT190	AME8815 AEDT190 yyww	1.90	TO-263-3	- 40°C to 85°C
AME8815AEDT190Z	AME8815 AEDT190 yyww	1.90	TO-263-3	- 40°C to 85°C
AME8815AEDT250	AME8815 AEDT250 yyww	2.50	TO-263-3	- 40°C to 85°C

■ Ordering Information (contd.)

Part Number	Marking*	Output Voltage	Package	Operating Ambient Temperature Range
AME8815AEDT250Z	AME8815 AEDT250 yyww	2.50	TO-263-3	- 40°C to 85°C
AME8815AEDT330	AME8815 AEDT330 yyww	3.30	TO-263-3	- 40°C to 85°C
AME8815AEDT330Z	AME8815 AEDT330 yyww	3.30	TO-263-3	- 40°C to 85°C
AME8815AEDT475	AME8815 AEDT475 yyww	4.75	TO-263-3	- 40°C to 85°C
AME8815AEDT475Z	AME8815 AEDT475 yyww	4.75	TO-263-3	- 40°C to 85°C
AME8815AEDT500	AME8815 AEDT500 yyww	5.00	TO-263-3	- 40°C to 85°C
AME8815AEDT500Z	AME8815 AEDT500 yyww	5.00	TO-263-3	- 40°C to 85°C
AME8815BEBT150	AME8815 BEBT150 yyww	1.50	TO-220	- 40°C to 85°C
AME8815BEBT150Z	AME8815 BEBT150 yyww	1.50	TO-220	- 40°C to 85°C
AME8815BEBT180	AME8815 BEBT180 yyww	1.80	TO-220	- 40°C to 85°C
AME8815BEBT180Z	AME8815 BEBT180 yyww	1.80	TO-220	- 40°C to 85°C
AME8815BEBT190	AME8815 BEBT190 yyww	1.90	TO-220	- 40°C to 85°C
AME8815BEBT190Z	AME8815 BEBT190 yyww	1.90	TO-220	- 40°C to 85°C

■ Ordering Information (contd.)

Part Number	Marking*	Output Voltage	Package	Operating Ambient Temperature Range
AME8815BEBT250	AME8815 BEBT250 yyww	2.50	TO-220	- 40°C to 85°C
AME8815BEBT250Z	AME8815 BEBT250 yyww	2.50	TO-220	- 40°C to 85°C
AME8815BEBT330	AME8815 BEBT330 yyww	3.30	TO-220	- 40°C to 85°C
AME8815BEBT330Z	AME8815 BEBT330 yyww	3.30	TO-220	- 40°C to 85°C
AME8815BEBT475	AME8815 BEBT475 yyww	4.75	TO-220	- 40°C to 85°C
AME8815BEBT475Z	AME8815 BEBT475 yyww	4.75	TO-220	- 40°C to 85°C
AME8815BEBT500	AME8815 BEBT500 yyww	5.00	TO-220	- 40°C to 85°C
AME8815BEBT500Z	AME8815 BEBT500 yyww	5.00	TO-220	- 40°C to 85°C
AME8815BECS150	AME8815 BECS150 yyww	1.50	TO-252-2	- 40°C to 85°C
AME8815BECS150Z	AME8815 BECS150 yyww	1.50	TO-252-2	- 40°C to 85°C
AME8815BECS180	AME8815 BECS180 yyww	1.80	TO-252-2	- 40°C to 85°C
AME8815BECS180Z	AME8815 BECS180 yyww	1.80	TO-252-2	- 40°C to 85°C
AME8815BECS190	AME8815 BECS190 yyww	1.90	TO-252-2	- 40°C to 85°C

■ Ordering Information (contd.)

Part Number	Marking*	Output Voltage	Package	Operating Ambient Temperature Range
AME8815BECS190Z	AME8815 BECS190 yyww	1.90	TO-252-2	- 40°C to 85°C
AME8815BECS250	AME8815 BECS250 yyww	2.50	TO-252-2	- 40°C to 85°C
AME8815BECS250Z	AME8815 BECS250 yyww	2.50	TO-252-2	- 40°C to 85°C
AME8815BECS330	AME8815 BECS330 yyww	3.30	TO-252-2	- 40°C to 85°C
AME8815BECS330Z	AME8815 BECS330 yyww	3.30	TO-252-2	- 40°C to 85°C
AME8815BECS475	AME8815 BECS475 yyww	4.75	TO-252-2	- 40°C to 85°C
AME8815BECS475Z	AME8815 BECS475 yyww	4.75	TO-252-2	- 40°C to 85°C
AME8815BECS500	AME8815 BECS500 yyww	5.00	TO-252-2	- 40°C to 85°C
AME8815BECS500Z	AME8815 BECS500 yyww	5.00	TO-252-2	- 40°C to 85°C
AME8815BEDS150	AME8815 BEDS150 yyww	1.50	TO-263-2	- 40°C to 85°C
AME8815BEDS150Z	AME8815 BEDS150 yyww	1.50	TO-263-2	- 40°C to 85°C
AME8815BEDS180	AME8815 BEDS180 yyww	1.80	TO-263-2	- 40°C to 85°C
AME8815BEDS180Z	AME8815 BEDS180 yyww	1.80	TO-263-2	- 40°C to 85°C

■ Ordering Information (contd.)

Part Number	Marking*	Output Voltage	Package	Operating Ambient Temperature Range
AME8815BEDS190	AME8815 BEDS190 yyww	1.90	TO-263-2	- 40°C to 85°C
AME8815BEDS190Z	AME8815 BEDS190 yyww	1.90	TO-263-2	- 40°C to 85°C
AME8815BEDS250	AME8815 BEDS250 yyww	2.50	TO-263-2	- 40°C to 85°C
AME8815BEDS250Z	AME8815 BEDS250 yyww	2.50	TO-263-2	- 40°C to 85°C
AME8815BEDS330	AME8815 BEDS330 yyww	3.30	TO-263-2	- 40°C to 85°C
AME8815BEDS330Z	AME8815 BEDS330 yyww	3.30	TO-263-2	- 40°C to 85°C
AME8815BEDS475	AME8815 BEDS475 yyww	4.75	TO-263-2	- 40°C to 85°C
AME8815BEDS475Z	AME8815 BEDS475 yyww	4.75	TO-263-2	- 40°C to 85°C
AME8815BEDS500	AME8815 BEDS500 yyww	5.00	TO-263-2	- 40°C to 85°C
AME8815BEDS500Z	AME8815 BEDS500 yyww	5.00	TO-263-2	- 40°C to 85°C
AME8815BEDT150	AME8815 BEDT150 yyww	1.50	TO-263-3	- 40°C to 85°C
AME8815BEDT150Z	AME8815 BEDT150 yyww	1.50	TO-263-3	- 40°C to 85°C

■ Ordering Information (contd.)

Part Number	Marking*	Output Voltage	Package	Operating Ambient Temperature Range
AME8815BEDT180	AME8815 BEDT180 yyww	1.80	TO-263-3	- 40°C to 85°C
AME8815BEDT180Z	AME8815 BEDT180 yyww	1.80	TO-263-3	- 40°C to 85°C
AME8815BEDT190	AME8815 BEDT190 yyww	1.90	TO-263-3	- 40°C to 85°C
AME8815BEDT190Z	AME8815 BEDT190 yyww	1.90	TO-263-3	- 40°C to 85°C
AME8815BEDT250	AME8815 BEDT250 yyww	2.50	TO-263-3	- 40°C to 85°C
AME8815BEDT250Z	AME8815 BEDT250 yyww	2.50	TO-263-3	- 40°C to 85°C
AME8815BEDT330	AME8815 BEDT330 yyww	3.30	TO-263-3	- 40°C to 85°C
AME8815BEDT330Z	AME8815 BEDT330 yyww	3.30	TO-263-3	- 40°C to 85°C
AME8815BEDT475	AME8815 BEDT475 yyww	4.75	TO-263-3	- 40°C to 85°C
AME8815BEDT475Z	AME8815 BEDT475 yyww	4.75	TO-263-3	- 40°C to 85°C
AME8815BEDT500	AME8815 BEDT500 yyww	5.00	TO-263-3	- 40°C to 85°C
AME8815BEDT500Z	AME8815 BEDT500 yyww	5.00	TO-263-3	- 40°C to 85°C
AME8815AEGT150	ASPyww	1.50	SOT-223	- 40°C to 85°C
AME8815AEGT150Z	ASPyww	1.50	SOT-223	- 40°C to 85°C
AME8815AEGT180	AQUyww	1.80	SOT-223	- 40°C to 85°C

■ Ordering Information

Part Number	Marking*	Output Voltage	Package	Operating Ambient Temperature Range
AME8815AEGT180Z	AQUyww	1.80	SOT-223	- 40°C to 85°C
AME8815AEGT190	BAYyww	1.90	SOT-223	- 40°C to 85°C
AME8815AEGT190Z	BAYyww	1.90	SOT-223	- 40°C to 85°C
AME8815AEGT250	APRyww	2.50	SOT-223	- 40°C to 85°C
AME8815AEGT250Z	APRyww	2.50	SOT-223	- 40°C to 85°C
AME8815AEGT330	AKCyww	3.30	SOT-223	- 40°C to 85°C
AME8815AEGT330Z	AKCyww	3.30	SOT-223	- 40°C to 85°C
AME8815AEGT475	AQRyww	4.75	SOT-223	- 40°C to 85°C
AME8815AEGT475Z	AQRyww	4.75	SOT-223	- 40°C to 85°C
AME8815AEGT500	AQSyww	5.00	SOT-223	- 40°C to 85°C
AME8815AEGT500Z	AQSyww	5.00	SOT-223	- 40°C to 85°C
AME8815BEGT150	AJYyww	1.50	SOT-223	- 40°C to 85°C
AME8815BEGT150Z	AJYyww	1.50	SOT-223	- 40°C to 85°C
AME8815BEGT180	AJZyww	1.80	SOT-223	- 40°C to 85°C
AME8815BEGT180Z	AJZyww	1.80	SOT-223	- 40°C to 85°C
AME8815BEGT250	AKByww	2.50	SOT-223	- 40°C to 85°C
AME8815BEGT250Z	AKByww	2.50	SOT-223	- 40°C to 85°C
AME8815BEGT330	AKDyww	3.30	SOT-223	- 40°C to 85°C
AME8815BEGT330Z	AKDyww	3.30	SOT-223	- 40°C to 85°C
AME8815BEGT390	AQQyww	3.90	SOT-223	- 40°C to 85°C
AME8815BEGT390Z	AQQyww	3.90	SOT-223	- 40°C to 85°C
AME8815BEGT475	AMNyww	4.75	SOT-223	- 40°C to 85°C
AME8815BEGT475Z	AMNyww	4.75	SOT-223	- 40°C to 85°C
AME8815BEGT500	AQTyww	5.00	SOT-223	- 40°C to 85°C
AME8815BEGT500Z	AQTyww	5.00	SOT-223	- 40°C to 85°C

■ Absolute Maximum Ratings

Parameter	Maximum	Unit
Input Voltage	-0.3 to 8	V
Output Voltage	-0.3 to V_{IN} + 0.3	V
Output Current	P_D / (V_{IN} - V_{OUT})	mA
ESD Classification	B*	

Caution: Stress above the listed absolute maximum rating may cause permanent damage to the device.
* HBM B:2000V~3999V

■ Recommended Operating Conditions

Parameter	Symbol	Rating	Unit
Ambient Temperature Range	T_A	- 40 to 85	^oC
Junction Temperature Range	T_J	- 40 to 125	^oC
Storage Temperature Range	T_{STG}	- 65 to 150	^oC

■ Thermal Information (Contd.)

Parameter	Package	Die Attach	Symbol	Maximum	Unit
Thermal Resistance (Junction to Case)	*SOT-223	Conductive Epoxy	θ_{JC}	25	°C / W
		Non-Conductive Epoxy		31	
	*TO-252-2	Conductive Epoxy		5	
		Non-Conductive Epoxy		30	
	*TO-220	Conductive Epoxy		6	
		Non-Conductive Epoxy		24	
	*TO-263-2	Conductive Epoxy		5	
		Non-Conductive Epoxy		27	
	*TO-263-3	Conductive Epoxy		5	
		Non-Conductive Epoxy		27	
Thermal Resistance (Junction to Ambient)	SOT-223	Conductive Epoxy	θ_{JA}	120	
		Non-Conductive Epoxy		135	
	TO-252-2	Conductive Epoxy		90	
		Non-Conductive Epoxy		140	
	TO-220	Conductive Epoxy		55	
		Non-Conductive Epoxy		80	
	TO-263-2	Conductive Epoxy		80	
		Non-Conductive Epoxy		100	
	TO-263-3	Conductive Epoxy		80	
		Non-Conductive Epoxy		100	

* Measure θ_{JC} on backside center of tab.

■ Thermal Information

Parameter	Package	Die Attach	Symbol	Maximum	Unit
Internal Power Dissipation	SOT-223	Conductive Epoxy	P_D	900	mW
		Non-Conductive Epoxy		800	
	TO-252-2	Conductive Epoxy		1200	
		Non-Conductive Epoxy		1000	
	TO-220	Conductive Epoxy		2200	
		Non-Conductive Epoxy		1600	
	TO-263-2	Conductive Epoxy		1700	
		Non-Conductive Epoxy		1400	
	TO-263-3	Conductive Epoxy		1700	
		Non-Conductive Epoxy		1400	
Maximum Junction Temperature				150	^oC
Solder Iron (10 Sec)**				350	

****** MIL-STD-202G 210F

■ Electrical Specifications

V_{IN} = $V_{O(Nom)}$ +2V, T_A = 25°C unless otherwise noted

Parameter	Symbol	Test Condition		Min	Typ	Max	Units
Input Voltage	V_{IN}			Note 1		7	V
Output Voltage Accuracy	V_O	I_O=1mA		-1.5		1.5	%
Dropout Voltage	$V_{DROPOUT}$	I_O=1.5A V_O=$V_{O(NOM)}$ -2.0%	1.4V<$V_{O(NOM)}$<=2.0V		See chart	1300	mV
			2.0V<$V_{O(NOM)}$<=2.8V			800	
			2.8V<$V_{O(NOM)}$			600	
Output Current	I_O	V_O>1.2V		1500			mA
Current Limit	I_{LIM}	V_O>1.2V		1500	2000		mA
Short Circuit Current	I_{SC}	V_{IN}= $V_{O(NOM)}$+1V, V_O<0.4V			750		mA
Quiescent Current	I_Q	I_O=0mA			45	70	µA
Ground Pin Current	I_{GND}	I_O=1mA to 1500mA			45		µA
Line Regulation	REG_{LINE}	I_O=1mA V_{IN}=V_O+1 to V_O+2	V_O < 2.0V	-0.15		0.15	%
			4.0V > V_O >= 2.0V	-0.1	0.02	0.1	%
			4.0V <= V_O	-0.4		0.4	%
Load Regulation	REG_{LOAD}	I_O=1mA to 1500mA		-1	0.2	1	%
Over Temperature Shutdown	OTS				150		°C
Over Temperature Hysterisis	OTH				30		°C
V_O Temperature Coefficient	TC				30		ppm/°C
Power Supply Rejection	PSRR	I_O=100mA C_O=4.7µF	f=100Hz		70		dB
			f=1kHz		50		
			f=10kHz		20		
Output Voltage Noise	eN	f=10Hz to 100kHz I_O=10mA	Co=4.7µF		30		µVrms

Note1:$V_{IN(min)}$=V_{OUT}+$V_{DROPOUT}$

■ Detailed Description

The AME8815 family of CMOS regulators contain a PMOS pass transistor, voltage reference, error amplifier, over-current protection, and thermal shutdown.

The P-channel pass transistor receives data from the error amplifier, over-current shutdown, and thermal protection circuits. During normal operation, the error amplifier compares the output voltage to a precision reference. Over-current and Thermal shutdown circuits become active when the junction temperature exceeds 150^{o}C, or the current exceeds 2.2A. During thermal shutdown, the output voltage remains low. Normal operation is restored when the junction temperature drops below 120^{o}C.

The AME8815 behaves like a current source when the load reaches 2.2A. However, if the load impedance drops below 0.3 ohms, the current drops back to 600mA to prevent excessive power dissipation. Normal operation is restored when the load resistance exceeds 0.75 ohms.

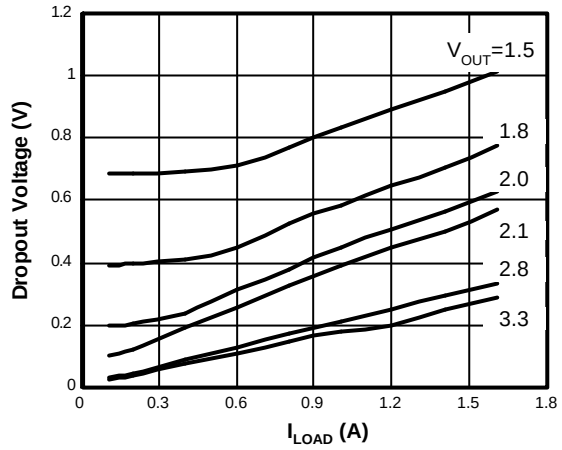
■ External Capacitors

The AME8815 is stable with an output capacitor to ground of 4.7μF or greater. Ceramic capacitors have the lowest ESR, and will offer the best AC performance. Conversely, Aluminum Electrolytic capacitors exhibit the highest ESR, resulting in the poorest AC response. Unfortunately, large value ceramic capacitors are comparatively expensive. One option is to parallel a 0.1μF ceramic capacitor with a 10μF Aluminum Electrolytic. The benefit is low ESR, high capacitance, and low overall cost.

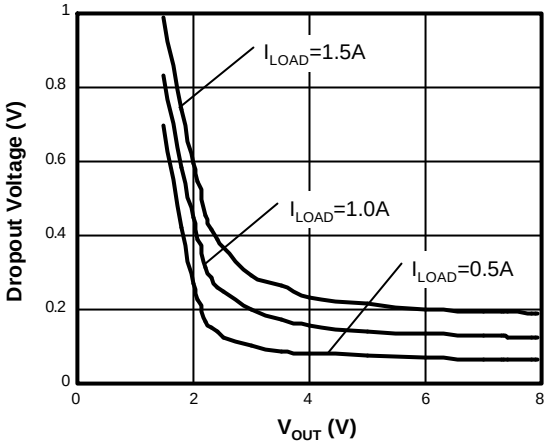
A second capacitor is recommended between the input and ground to stabilize Vin. The input capacitor should be at least 0.1μF to have a beneficial effect.

All capacitors should be placed in close proximity to the pins. A "Quiet" ground termination is desirable. This can be achieved with a "Star" connection.

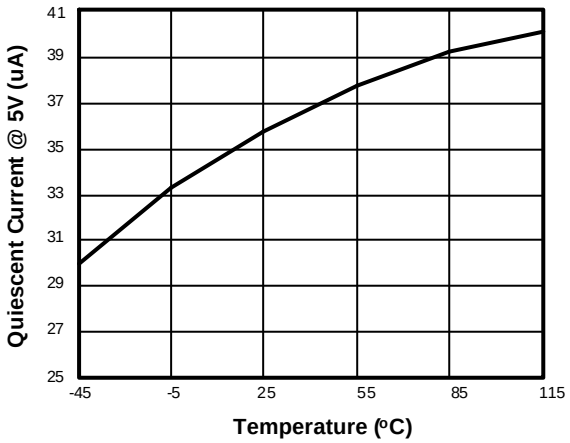
Dropout Voltage vs. I_{LOAD}



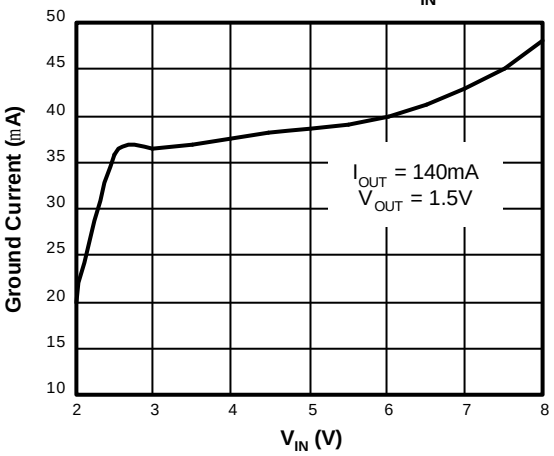
Dropout Voltage vs. V_{OUT}



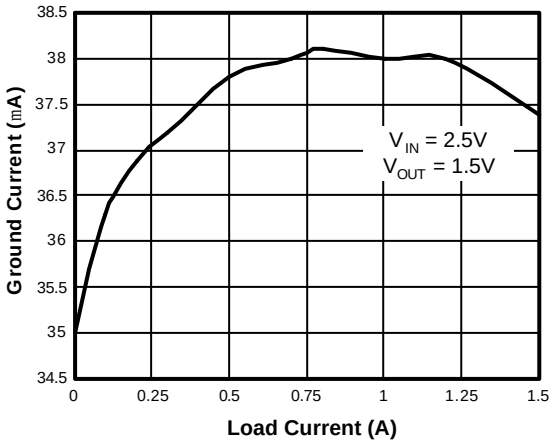
Quiescent Current vs. Temperature



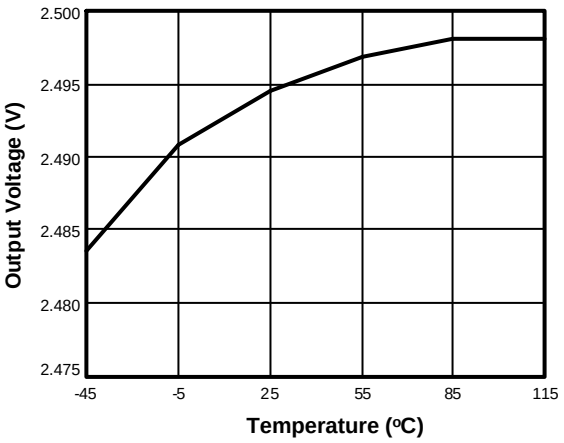
Ground Current vs. V_{IN}



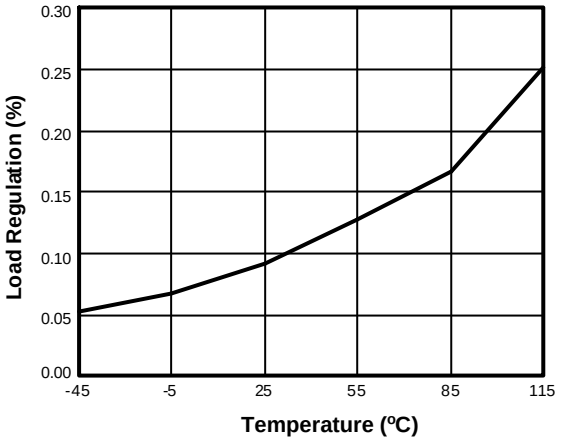
Ground Current vs. Load Current



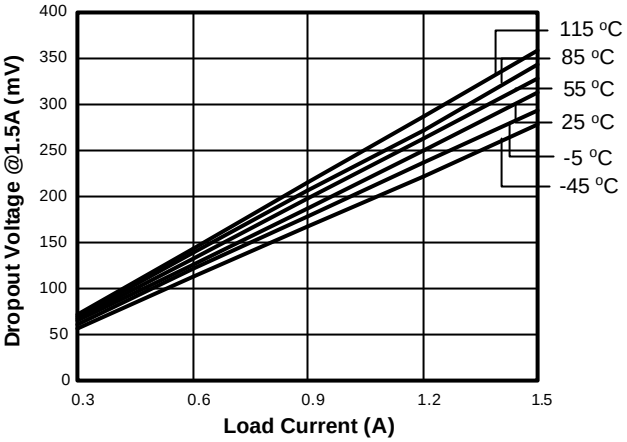
V_{OUT} vs. Temperature(2.5V)



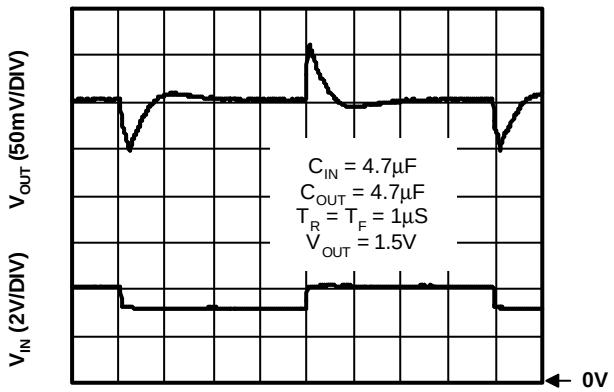
Load Regulation vs. Temperature



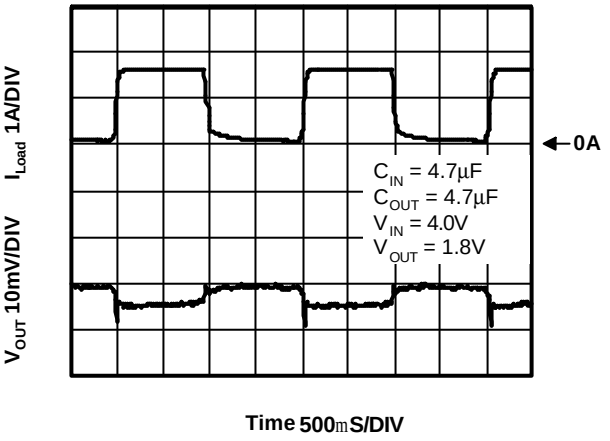
Dropout Voltage vs. Load Current(2.5V)



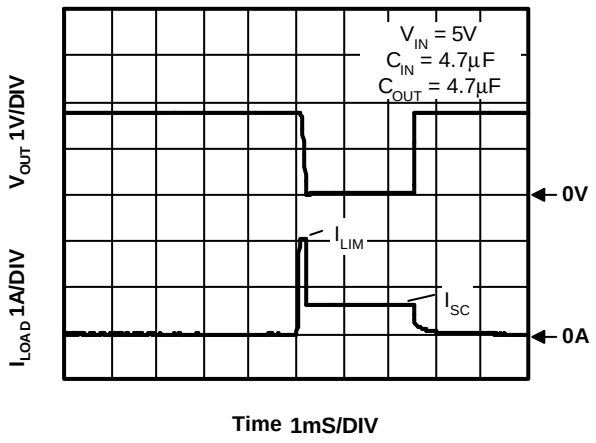
Line Transient Response



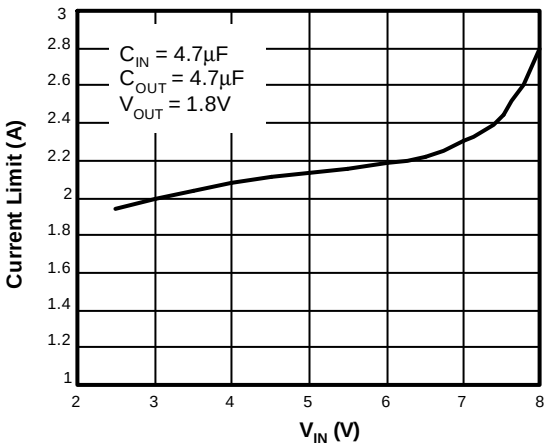
Load Step 40mA to 1.5A



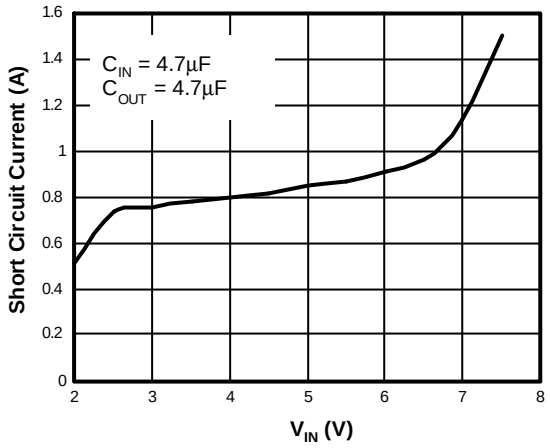
Current Limit Response



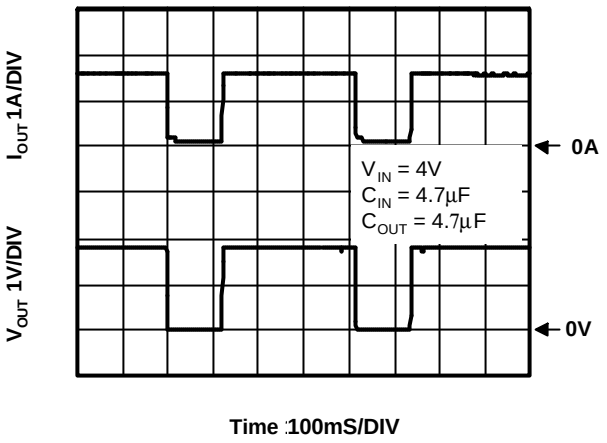
Current Limit vs. V_{IN}



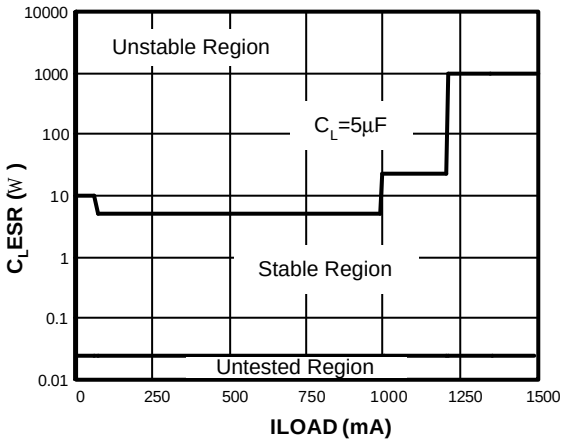
Short Circuit Current vs. V_{IN}



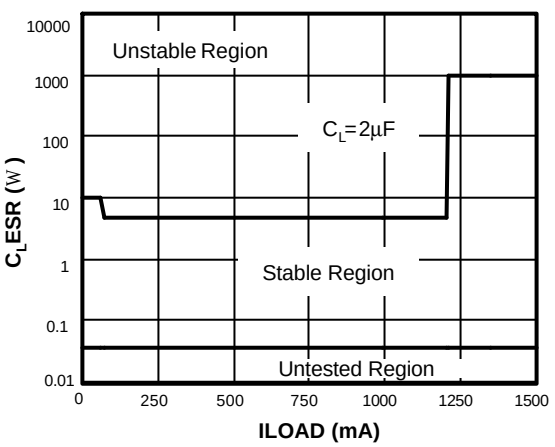
Overtemperature Shutdown



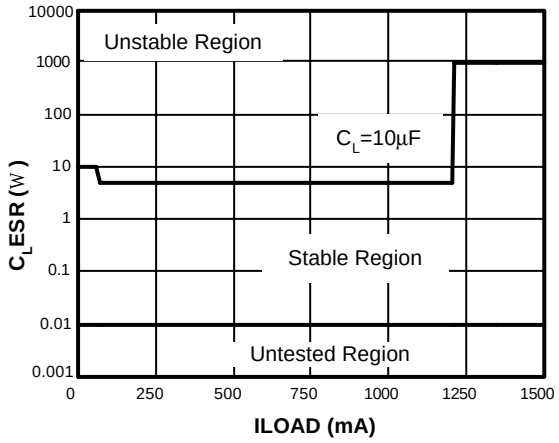
Stability vs. ESR vs. I_{Load}



Stability vs. ESR vs. I_{Load}

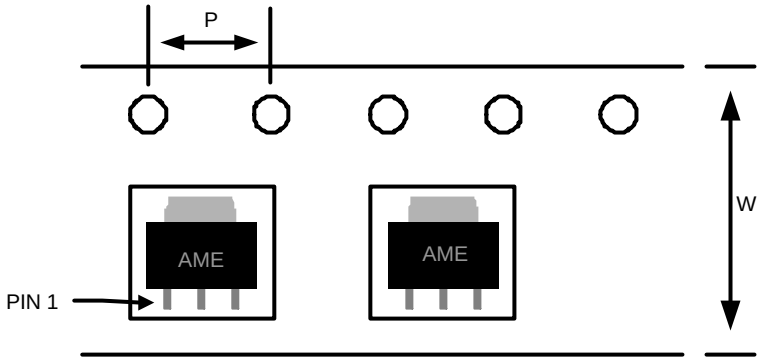


Stability vs. ESR vs. I_{Load}



■ Tape and Reel Dimension

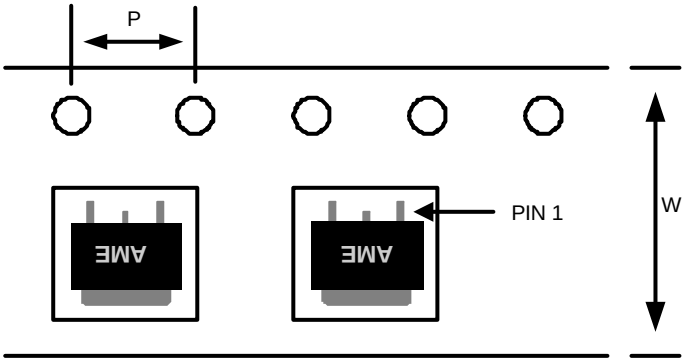
SOT-223



Carrier Tape, Number of Components Per Reel and Reel Size

Package	Carrier Width (W)	Pitch (P)	Part Per Full Reel	Reel Size
SOT-223	12.0±0.1 mm	4.0±0.1 mm	2500pcs	330±1 mm

TO-252

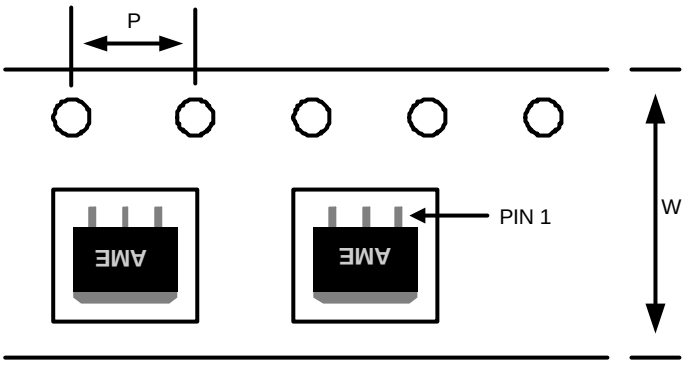


Carrier Tape, Number of Components Per Reel and Reel Size

Package	Carrier Width (W)	Pitch (P)	Part Per Full Reel	Reel Size
TO-252	16.0±0.1 mm	4.0±0.1 mm	2500pcs	330±1 mm

■ Tape and Reel Dimension

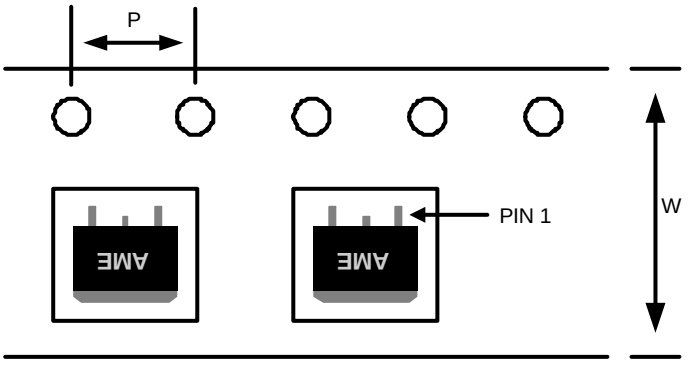
TO-263-3



Carrier Tape, Number of Components Per Reel and Reel Size

Package	Carrier Width (W)	Pitch (P)	Part Per Full Reel	Reel Size
TO-263-3	24.0±0.1 mm	4.0±0.1 mm	800pcs	330±1 mm

TO-263-2

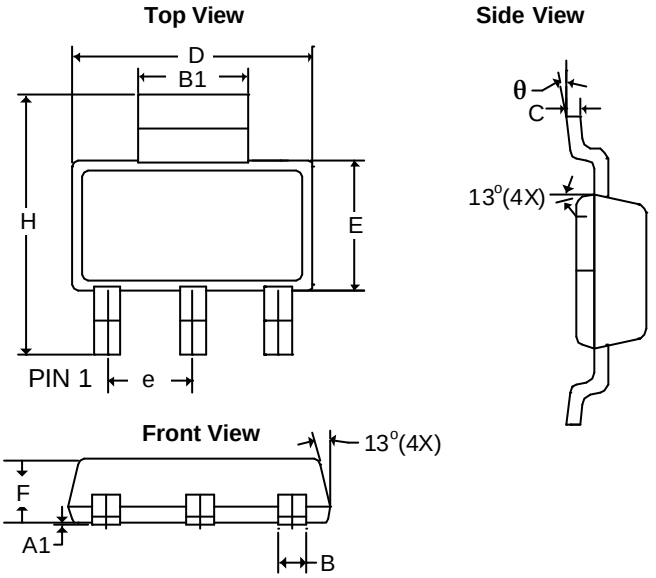


Carrier Tape, Number of Components Per Reel and Reel Size

Package	Carrier Width (W)	Pitch (P)	Part Per Full Reel	Reel Size
TO-263-2	24.0±0.1 mm	4.0±0.1 mm	800pcs	330±1 mm

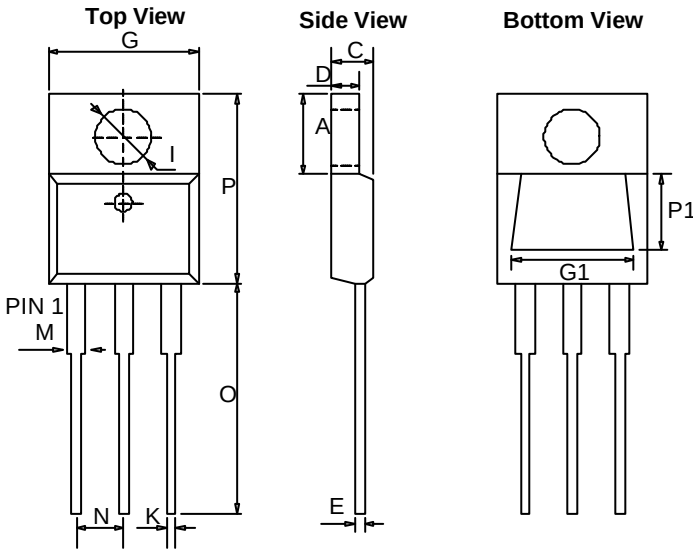
■ Package Dimension

SOT-223



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A_1	0.01	0.10	0.0004	0.0039
B	0.60	0.84	0.0236	0.0330
B_1	2.90	3.15	0.1140	0.1240
C	0.24	0.38	0.0094	0.0150
D	6.30	6.71	0.2480	0.2640
E	3.30	3.71	0.1299	0.1460
F	1.40	1.80	0.0551	0.0709
e	2.30 BSC		0.0906 BSC	
H	6.70	7.30	0.2638	0.2874
q	0°	10°	0°	10°

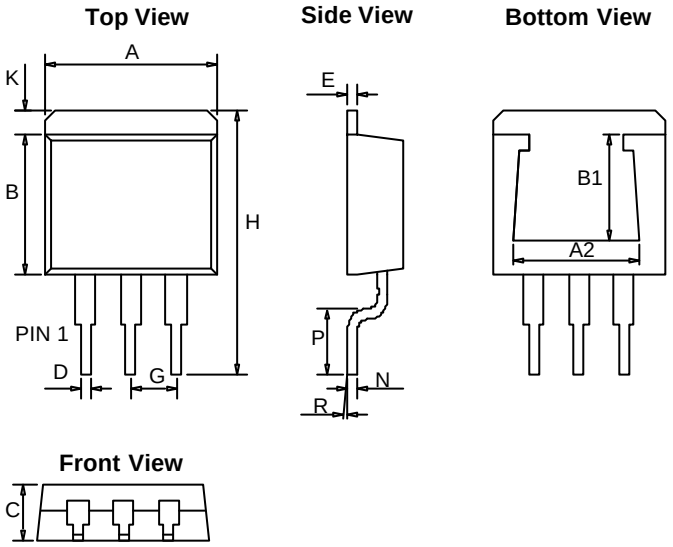
TO-220-3



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	5.58	7.49	0.2197	0.2949
C	2.03	4.83	0.0799	0.1902
D	0.50	1.40	0.0197	0.0551
E	0.30	1.15	0.0118	0.0453
G	9.65	10.67	0.3799	0.4201
I	3.53	4.09	0.1390	0.1610
K	0.50	1.15	0.0197	0.0453
M	1.14	1.78	0.0449	0.0701
N	2.28	2.80	0.0898	0.1102
O	12.70	14.74	0.5000	0.5803
P	14.22	16.51	0.5598	0.6500
P1	5.00	5.70	0.1969	0.2244
G1	7.30	8.05	0.2874	0.3169

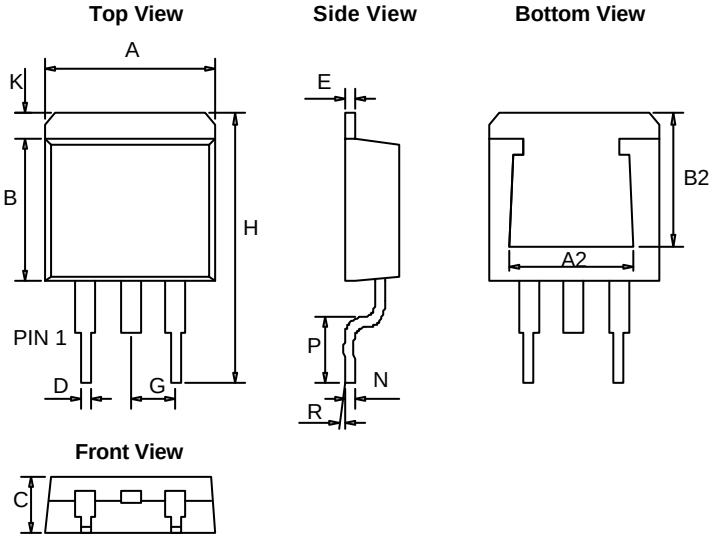
■ Package Dimension

TO-263-3



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	9.65	10.67	0.380	0.420
B	8.28	9.66	0.326	0.380
C	4.06	4.83	0.160	0.190
D	0.50	1.36	0.020	0.054
E	1.14	1.45	0.045	0.057
G	*2.54		*0.100	
H	14.60	15.875	0.5748	0.625
K	0.99	2.93	0.03898	0.11535
N	0.31		0.012	
P	2.28	2.80	0.08976	0.11024
R	0^o	8^o	0^o	8^o
B1	5.00	5.70	0.197	0.224
A2	7.30	8.05	0.287	0.317

TO-263-2



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	9.65	10.42	0.380	0.410
B	8.28	9.66	0.326	0.380
C	4.06	4.83	0.160	0.190
D	0.50	1.36	0.020	0.054
E	1.14	1.45	0.045	0.057
G	*2.54		*0.100	
H	14.60	15.60	0.5748	0.61417
K	0.99	2.93	0.03898	0.11535
N	0.381 REF		0.015 REF	
P	2.28	2.80	0.08976	0.11024
R	0^o	8^o	0^o	8^o
B2	6.30	8.20	0.248	0.323
A2	7.30	8.95	0.287	0.352

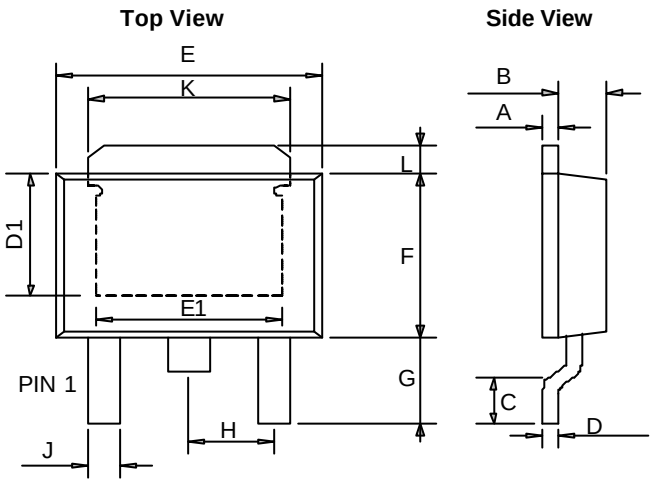
***: Typical Value**

Notes:

1. Controlling dimension: Millimeters.
2. Maximum lead thickness includes lead finish thickness Minimum lead thickness is the minimum thickness of base material.

■ Package Dimension

TO-252-EIAJ



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.43	0.58	0.0169	0.0230
B	1.60	1.95	0.0630	0.0768
C	0.51	1.78	0.0200	0.0701
D	0.43	0.60	0.0169	0.0236
E	6.35	6.80	0.2500	0.2677
F	5.36	7.20	0.2110	0.2835
G	2.20	3.00	0.0866	0.1181
H	-	* 2.30	-	*0.0906
J	-	0.97	-	0.0380
K	5.20	5.50	0.2047	0.2165
L	1.40 REF		0.0551 REF	
D1	3.80 REF		0.1496 REF	
E1	3.81	5.10	0.1500	0.2008

***: Typical Value**

Notes:

1. Controlling dimension: Millimeters.
2. Maximum lead thickness includes lead finish thickness Minimum lead thickness is the minimum thickness of base material.

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Document: 2013-DS8815-S.04

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