

AME8824

300mA CMOS LDO

■ General Description

The AME8824 family of positive, linear regulators feature low quiescent current (30µA typ.) with low dropout voltage, making them ideal for battery applications. The space-saving SOT-26 package are attractive for "Pocket" and "Hand Held" applications.

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

The SOT-26 version also features a "Power Good" detector, which pulls low when the output is out of regulation.

The AME8824 is stable with an output capacitance of 2.2µF or greater.

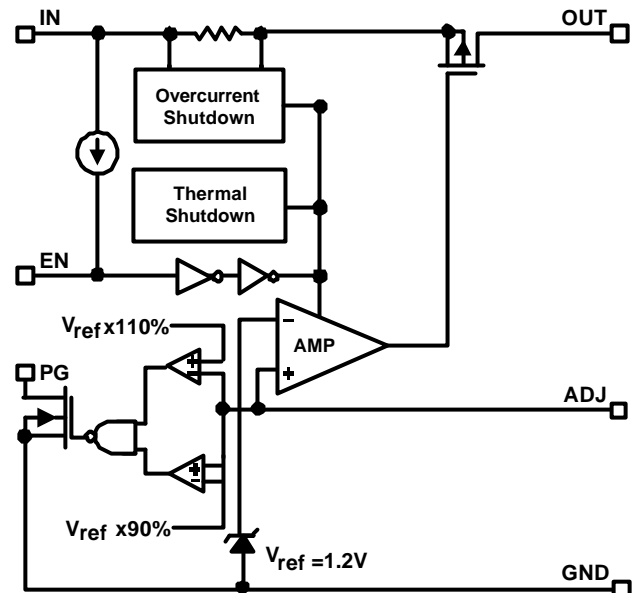
■ Features

- Very Low Dropout Voltage
- Guaranteed 300mA Output
- Typical accuracy within 2%
- 30µA Quiescent Current
- Over-Temperature Shutdown
- Current Limiting
- Short Circuit Current Fold-back
- Power Good Detector (6 pin version only)
- Power-Saving Shutdown Mode
- Space-Saving SOT-26
- Adjustable Output Voltages
- Low Temperature Coefficient

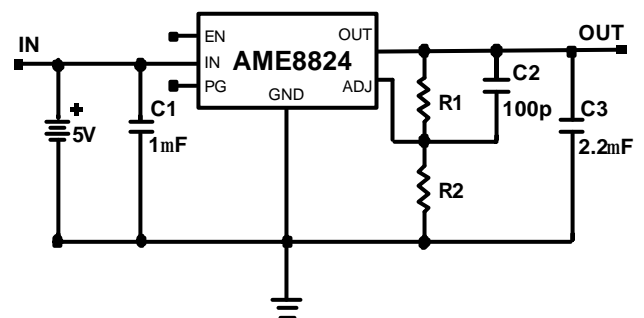
■ Applications

- Instrumentation
- Portable Electronics
- Wireless Devices
- Cordless Phones
- PC Peripherals
- Battery Powered Widgets
- Electronic Scales

■ Functional Block Diagram



■ Typical Application

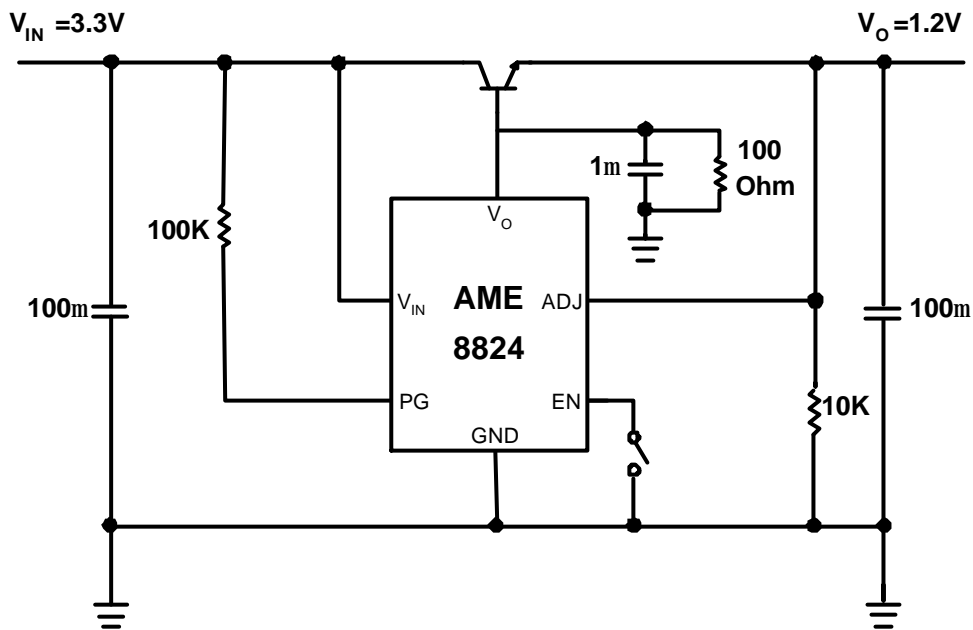


$$V_{OUT} = 1.2 (R1 + R2) / R2$$

C2 is unnecessary when R1 or R2 < 20K

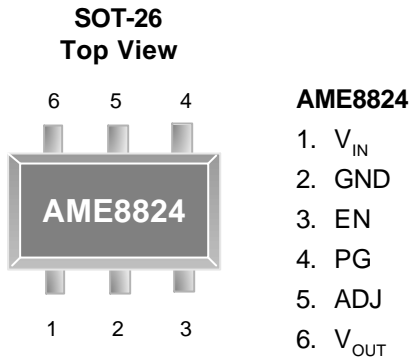
PG pin is only available in the SOT-26 package option

■ Advanced Application

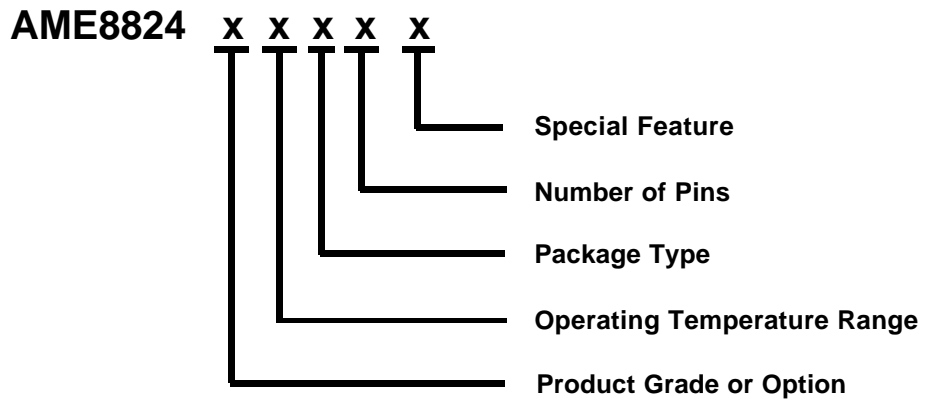




Pin Configuration



Ordering Information



Product Grade or Option	Operating Temperature Range	Package Type	Number of Pins	Special Feature
A: ADJ	E: -40°C to 85°C	E: SOT-2X	Y: 6	L: Low Profile Y: Lead Free & Low Profile Z: Lead Free



Ordering Information (contd.)

Part Number	Marking	Output Voltage	Package	Operating Temp. Range
AME8824AEEY	AUEww	ADJ	SOT-26	- 40°C to + 85°C
AME8824AEEYL	AUEww	ADJ	TSOT-26	- 40°C to + 85°C
AME8824AEEYY	AUEww	ADJ	TSOT-26	- 40°C to + 85°C
AME8824AEEYZ	AUEww	ADJ	SOT-26	- 40°C to + 85°C

ww: represents the date code

* A line on top of the first character represents lead free plating

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

Absolute Maximum Ratings

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

Caution: Stress above the listed absolute maximum rating may cause permanent damage to the device

Recommended Operating Conditions

Parameter	Rating	Unit
Ambient Temperature Range	- 40 to + 85	°C
Junction Temperature	- 40 to + 125	°C

Thermal Information

Parameter	Maximum	Unit
Thermal Resistance (θ_{ja})	SOT-26 260	°C / W
Internal Power Dissipation (P_D) ($\Delta T = 100^\circ C$)	SOT-26 380	mW
Maximum Junction Temperature	150	°C
Maximum Lead Temperature (10 Sec)	300	°C



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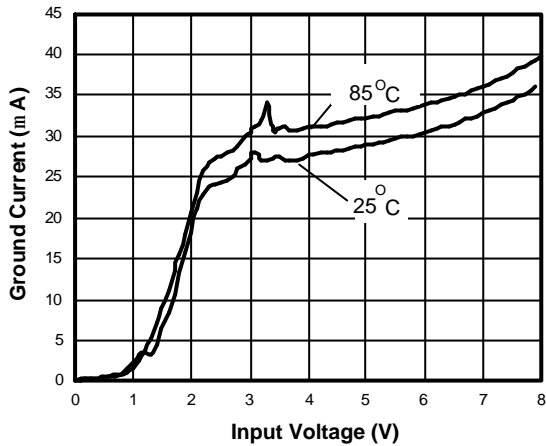
■ Electrical Specifications

TA = 25°C, V_{IN}=5V unless otherwise noted

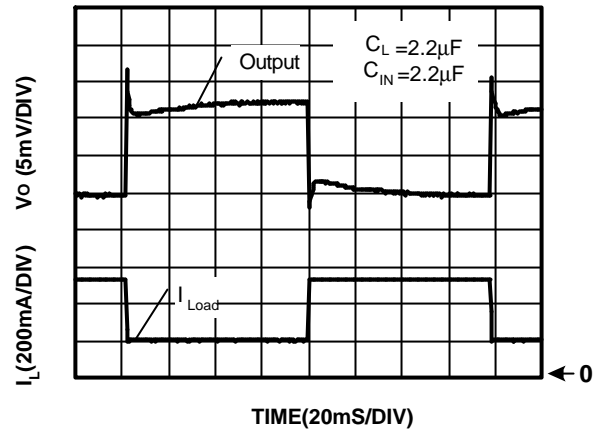
Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Input Voltage	V _{IN}		Note 1		7	V
Output Voltage	V _O	I _O =1mA	-3		3	%
Dropout Voltage	V _{DROPOUT}	I _O =300mA V _O =V _{ONOM} -2.0%	1.2V<=V _{O(NOM)} <=2.0V		1300	mV
			2.0V<V _{O(NOM)} <=2.8V		400	
			2.8V<V _{O(NOM)} <3.8V		300	
Output Current	I _O	V _O >1.2V	300			mA
Current Limit	I _{LIM}	V _O >1.2V	300	450		mA
Short Circuit Current	I _{SC}	V _O <0.8V		150	300	mA
Quiescent Current	I _Q	I _O =0mA		30	50	μA
Ground Pin Current	I _{GND}	I _O =1mA to 300mA		35		μA
Line Regulation	REG _{LINE}	I _O =5mA V _{IN} =V _O +1 to V _O +2	V _O < 2.0V		0.15	%
			V _O >= 2.0V		0.02	0.1
Load Regulation	REG _{LOAD}	I _O =1mA to 300mA		0.2	1	%
Over Temperature Shutdown	OTS			150		°C
Over Temperature Hysteresis	OTH			30		°C
V _O Temperature Coefficient	TC			30		ppm/°C
Power Supply Rejection	PSRR	I _O =100mA C _O =2.2μF	f=1kHz		50	dB
			f=10kHz		20	
			f=100kHz		15	
Output Voltage Noise	e _N	f=10Hz to 100kHz I _O =10mA, C _{BYP} =0μF			30	μVrms
ADJ Input Bias Current	I _{ADJ}			1		μA
ADJ Reference Voltage	V _{REF}		1.176	1.2	1.224	V
EN Input Threshold	V _{EH}	V _{IN} =2.7V to 7V	2.0		V _{in}	V
	V _{EL}	V _{IN} =2.7V to 7V	0		0.4	V
EN Input Bias Current	I _{EH}	V _{EN} =V _{IN} , V _{IN} =2.7V to 7V			0.1	μA
	I _{EL}	V _{EN} =0V, V _{IN} =2.7V to 7V			0.5	μA
Shutdown Supply Current	I _{SD}	V _{IN} =5V, V _O =0V, V _{EN} <V _{EL}		0.5	1	μA
Shutdown Output Voltage	V _{O,SD}	I _O =35μA, V _{EN} <V _{EL}	0		0.1	V
Output Under Voltage	V _{UV}				85	%V _{O(NOM)}
Output Over Voltage	V _{OV}		115			%V _{O(NOM)}
PG Leakage Current	I _{LC}	V _{PG} =7V			1	μA
PG Voltage Rating	V _{PG}	V _O in regulation			7	V
PG Voltage Low	V _{OL}	I _{SINK} =0.4mA			0.4	V

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

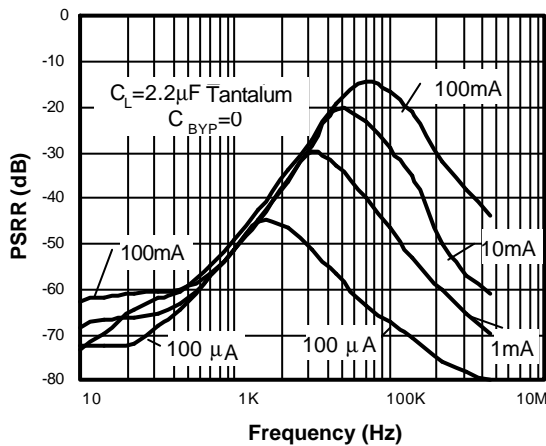
Ground Current vs. Input Voltage



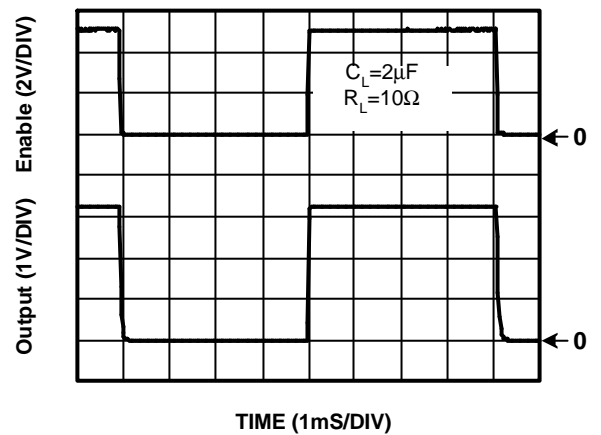
Load Step (1mA-300mA)



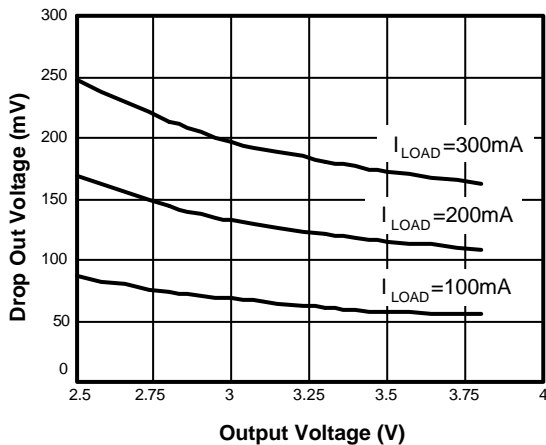
Power Supply Rejection Ratio



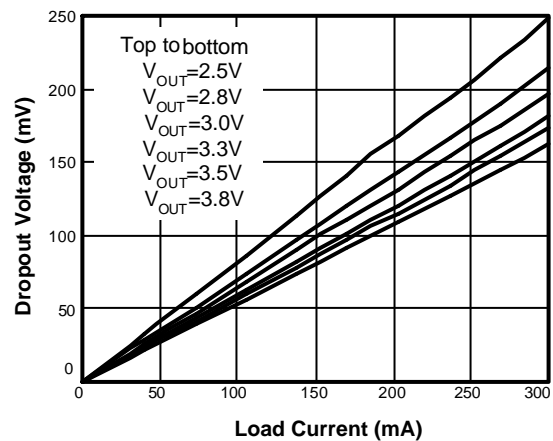
Chip Enable Transient Response



Drop Out Voltage vs. Output Voltage

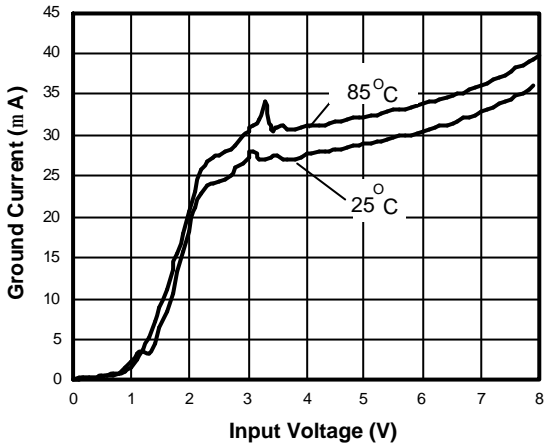


Drop Out Voltage vs. Load Current

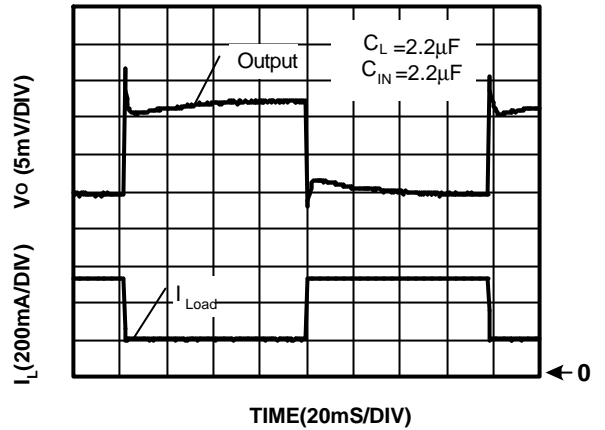




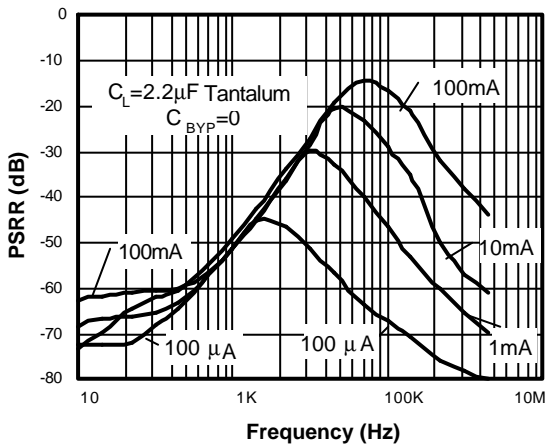
Ground Current vs. Input Voltage



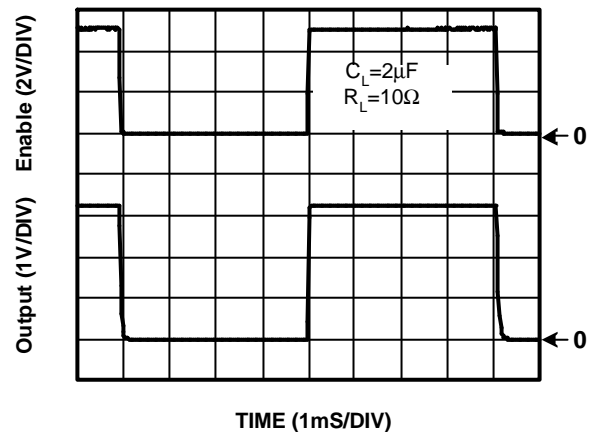
Load Step (1mA-300mA)



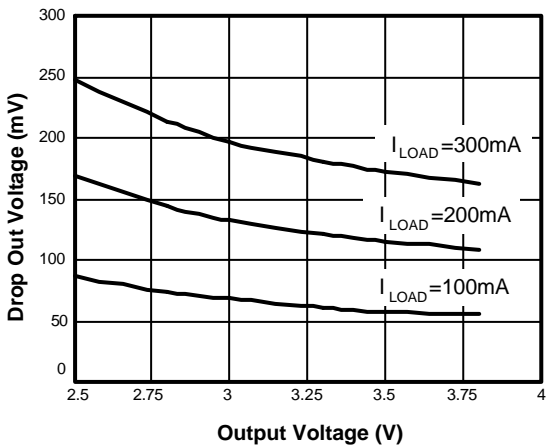
Power Supply Rejection Ratio



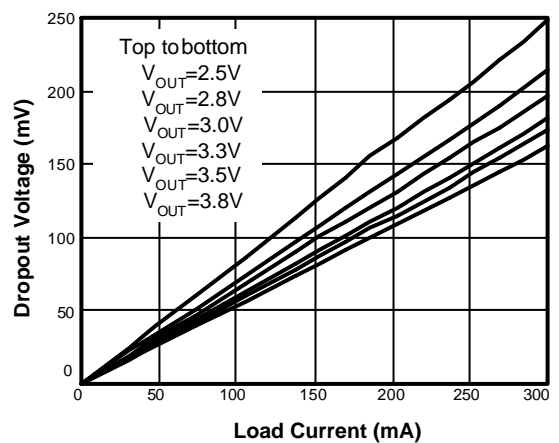
Chip Enable Transient Response

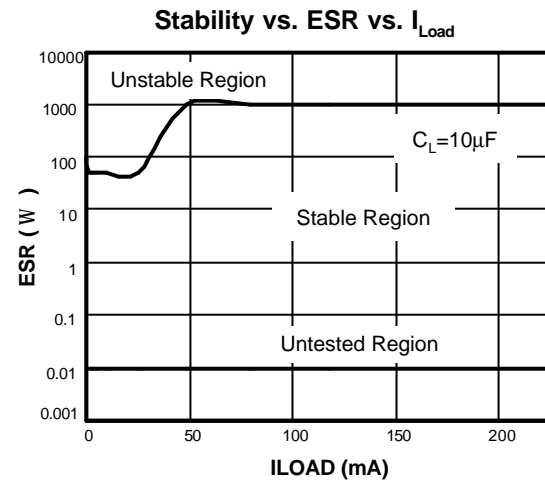
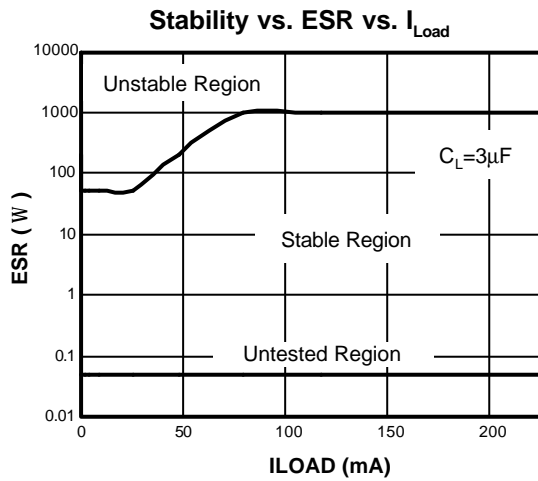
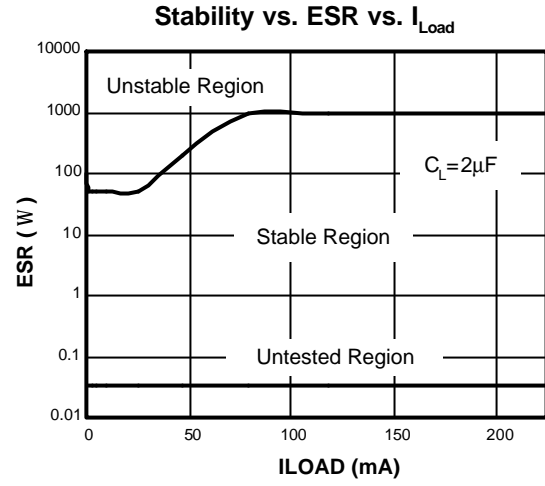
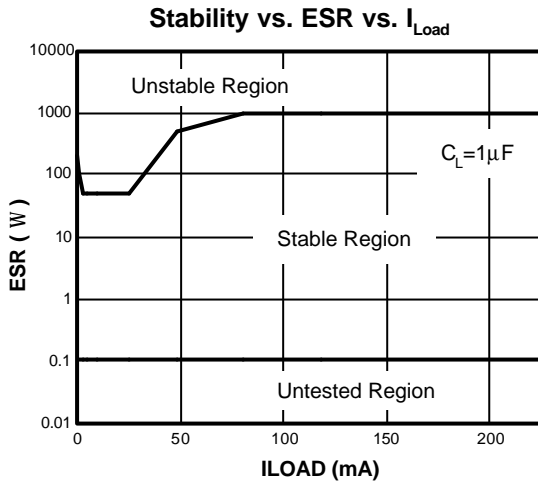


Drop Out Voltage vs. Output Voltage



Drop Out Voltage vs. Load Current

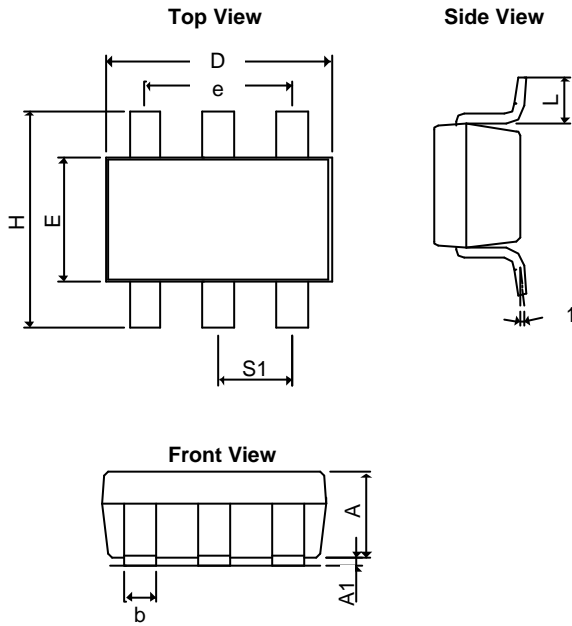






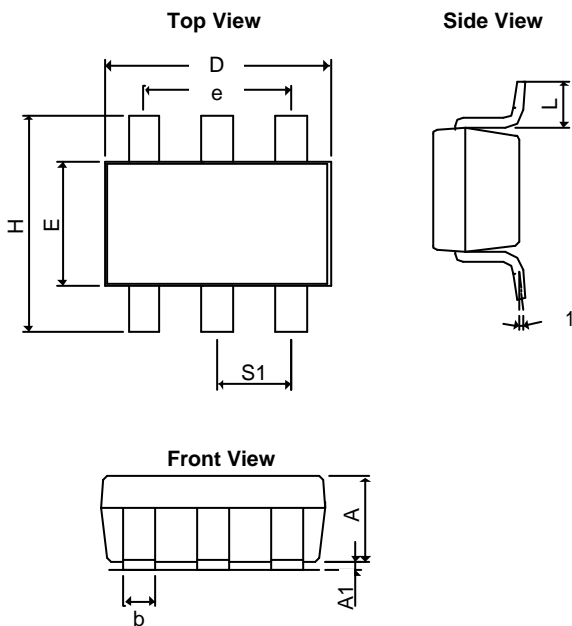
■ Package Dimension

SOT-26



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.20REF		0.0472REF	
A ₁	0.00	0.15	0.0000	0.0059
b	0.30	0.55	0.0118	0.0217
D	2.70	3.10	0.1063	0.1220
E	1.40	1.80	0.0551	0.0709
e	1.90 BSC		0.0748 BSC	
H	2.60	3.00	0.10236	0.11811
L	0.37REF		0.0146REF	
q1	0°	10°	0°	10°
S ₁	0.95REF		0.0374REF	

TSOT-26



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A+A ₁	0.90	1.25	0.0354	0.0492
b	0.30	0.50	0.0118	0.0197
D	2.70	3.10	0.1063	0.1220
E	1.40	1.80	0.0551	0.0709
e	1.90 BSC		0.07480 BSC	
H	2.40	3.00	0.09449	0.11811
L	0.35BSC		0.0138BSC	
q1	0°	10°	0°	10°
S ₁	0.95BSC		0.0374BSC	



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