AME, Inc.

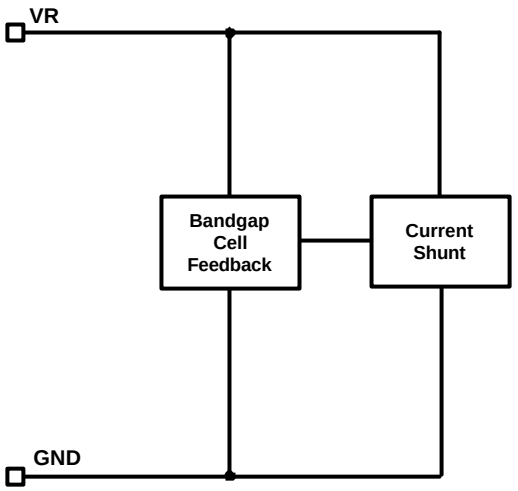
AME4041 Shunt Bandgap Voltage Reference

■ General Description

The AME4041 is a micropower 2-terminal band-gap voltage regulator diode. It operates over a 30μA to 20mA current range. Each circuit is trimmed at wafer sort to provide a ±0.5% initial tolerance. The design of the AME4041 allows for a large range of load capacitances and operating currents. The low start-up current makes these parts ideal for battery applications.

AME, Inc. offers this part in a SOT-23 package.

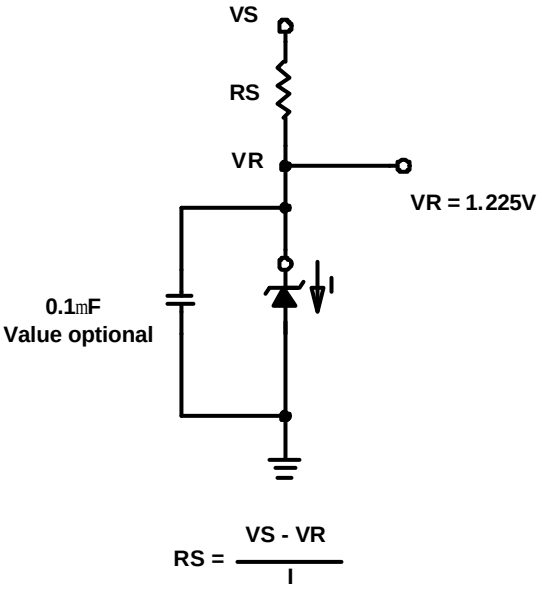
■ Functional Block Diagram



■ Features

- Small Packages: SOT-23
- Tolerates Capacitive Loads
- Fixed Reverse Breakdown Voltage of 1.225V
- Tight Voltage Tolerance ------- ±0.5%
- Wide Operating Current ------- 30μA to 20mA
- Wide Temperature Range ----- -40°C to 85°C
- Low Temperature Coefficient --100ppm/°C (max)
- Excellent Transient Response
- All AME's Lead Free Products Meet RoHS Standards.

■ Typical Application

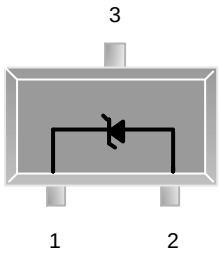


■ Applications

- Portable Electronics
- Power Supplies
- Computer Peripherals
- Data Acquisition Systems
- Battery chargers
- Consumer Electronics

■ Pin Configuration

SOT-23
Top View

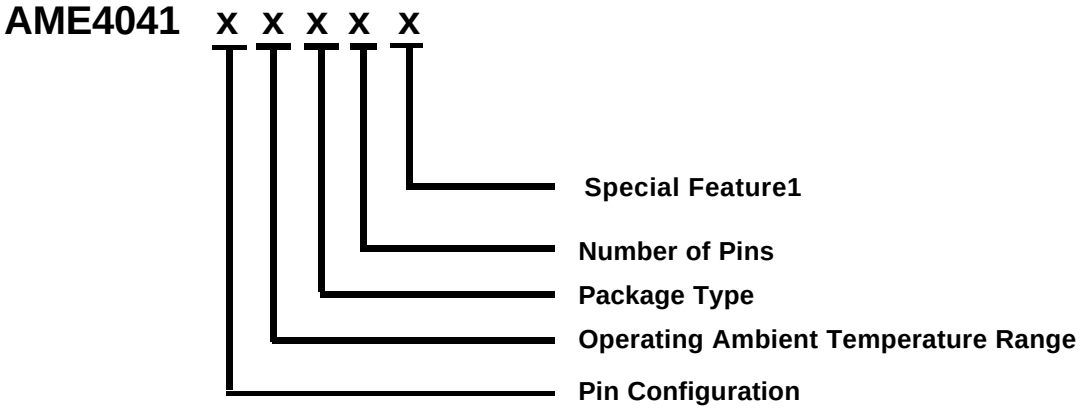


AME 4041

1. +
2. -
3. NC*

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

■ Ordering Information



Accuracy	Operating Ambient Temperature Range	Package Type	Number of Pins	Special Feature1
A: 0.5% (SOT-23)	E: -40^{O}C to 85^{O}C	E: SOT-2X	T: 3	Z: Lead Free

■ Ordering Information

Part Number	Marking*	Accuracy	Package	Operating Ambient Temperature Range
AME4041AEETZ	ASNww	0.5%	SOT-23	- 40^{o}C to 85^{o}C

Note: ww represents the date code pls see the Date Code Rule on Package Dimension.
* A line on top of the first letter represents lead free plating such as ASNww.
Please consult AME sales office or authorized Rep./Distributor for the availability of voltage accuracy and package type.

■ Absolute Maximum Ratings

Parameter	Maximum	Unit
Supply Current	50	mA

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

■ 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
Supply Current	100μA ~ 20mA		

■ Thermal Information

Parameter	Package	Die Attach	Symbol	Maximum	Unit
Thermal Resistance* (Junction to Case)	SOT-23	Non-Conductive Epoxy	θ_{JC}	140	^oC / W
Thermal Resistance (Junction to Ambient)	SOT-23	Non-Conductive Epoxy	θ_{JA}	280	^oC / W
Internal Power Dissipation	SOT-23	Non-Conductive Epoxy	P_D	400	mW
Maximum Junction Temperature				150	^oC
Solder Iron (10 Sec)**				350	^oC

***** Measure θ_{JC} on center of molding compound if IC has no tab.
****** MIL-STD-202G 210F

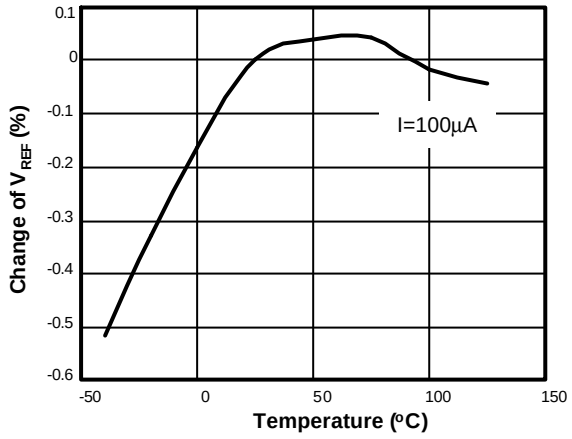
■ Electrical Specifications

Unless otherwise specified, T_A = 0~70°C, I_R = 100μA

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Reference Voltage, ±0.5%	V_{REF}	I_{REF} = 100μA	1.219	1.225	1.231	V
Reference Voltage Change With Current	$dV_{REF/I}$	$I_{MIN} \leq I \leq$ 1mA		1.5	3	mV
		1mA $\leq I \leq$ 20mA		5	20	
Reverse Dynamic Impedence	RDI	I_R= 100μA, f=20Hz		1.5		Ohm
Wideband Noise (rms)	Vn	I_R= 100μA, 10 Hz<f<10KHz		60		μV
Long term Stability		I_R= 100μA, T_A=25°C, T=1000 Hours		20		ppm
Reference Voltage Temp. Coeff.	V_{REFTC}	0°C < T_A < 70°C		100		ppm/°C
Operation Current	I_{OP}		0.030		20	mA

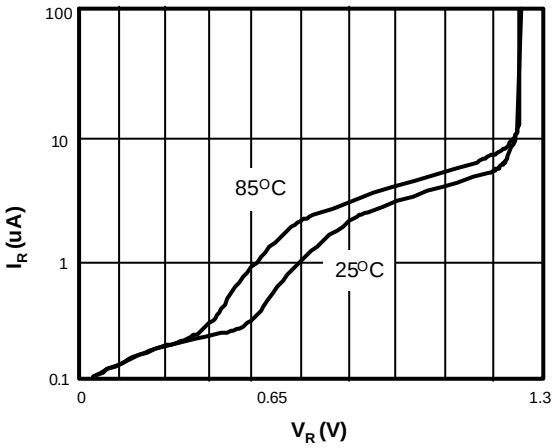
■ Characterization Curve(For reference only)

Normalized Percentage Change vs. Temp.

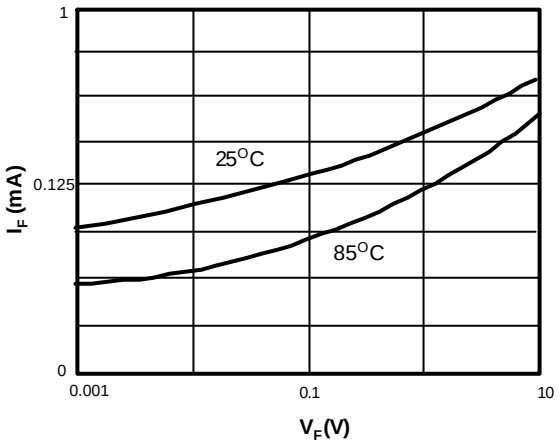


Reference Voltage Change vs. Current

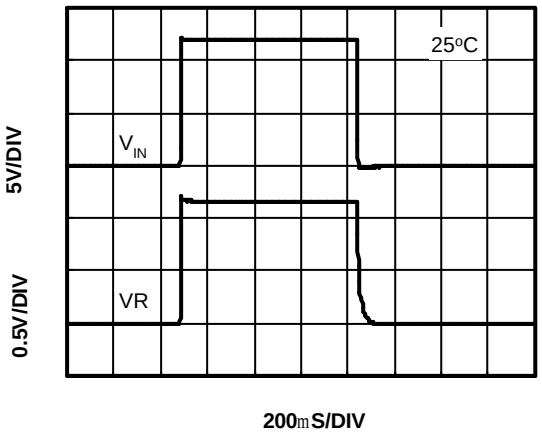
Reverse Characteristic



Forward Characteristic



Line Transient Response

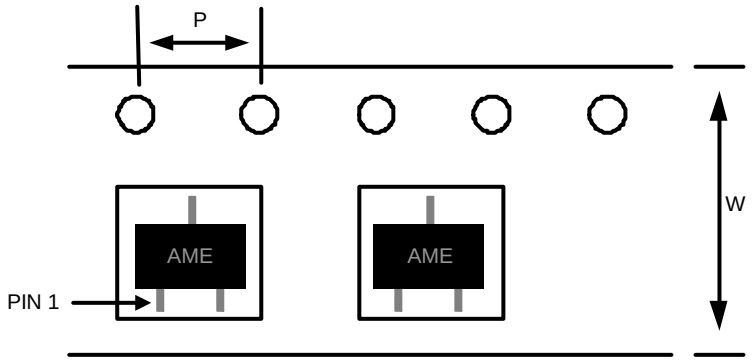


■ Date Code Rule

Marking			Date Code		Year
A	A	A	W	W	xxx0
A	A	A	W	W	xxx1
A	A	A	W	W	xxx2
A	A	A	W	W	xxx3
A	A	A	W	W	xxx4
A	A	A	W	W	xxx5
A	A	A	W	W	xxx6
A	A	A	W	W	xxx7
A	A	A	W	W	xxx8
A	A	A	W	W	xxx9

■ Tape and Reel Dimension

SOT-23



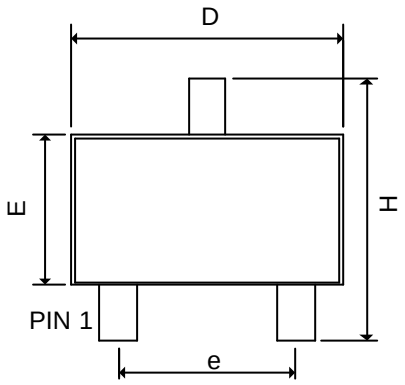
Carrier Tape, Number of Components Per Reel and Reel Size

Package	Carrier Width (W)	Pitch (P)	Part Per Full Reel	Reel Size
SOT-23	8.0±0.1 mm	4.0±0.1 mm	3000pcs	180±1 mm

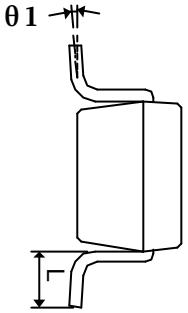
■ Package Dimension

SOT-23

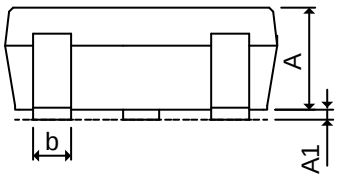
Top View



Side View



Front View



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.00	1.40	0.0394	0.0551
A_1	0.00	0.15	0.0000	0.0059
b	0.35	0.50	0.0138	0.0197
C	0.09	0.25	0.0035	0.0098
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	2.40	3.00	0.09449	0.11811
L	0.35BSC		0.0138BSC	
q1	0^o	10^o	0^o	10^o

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