

■ General Description

The AME7700 series of economical, Charge-Pump Converters efficiently double a +1.5V to +5.5V input to +3.0V to +11V, with a working current exceeding 100mA. Due to their simplicity, small size, and performance, these CMOS converters have numerous applications.

For most cases, only (2) external capacitors are required, however, in some cases, a single capacitor is acceptable. Minimum capacitance is obtained with the AME7701, while the AME7700 offers the lowest stand-by current. The AME7702 has a Frequency-Select pin for added flexibility. The input voltage can be tripled or quadrupled by cascading 2 Charge-Pumps. A single alkaline battery with it's low start-up voltage, a single alkaline battery can be configured with (2) AME7700's to quadruple the voltage and produce 5V out. Alternately, with a 5V source, (2) AME7700's can be configured to triple the voltage and produce 15V out.

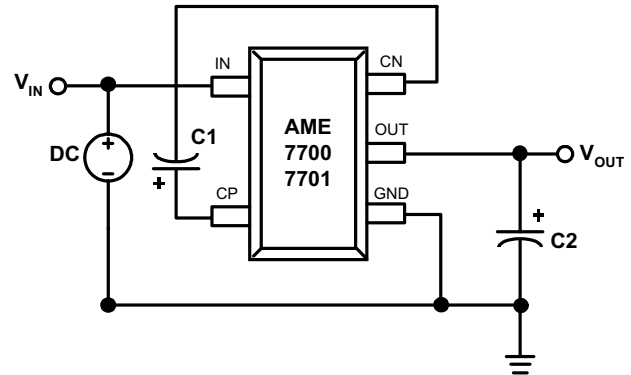
■ Features

- Small packages: SOT-25, SOT-26
- +1.5V to +5.5V Input Range
- 60uA Quiescent Current (AME7700)
- 99% Conversion Efficiency
- Output Current Exceeding 100mA
- User Selectable Frequency (AME7702)

■ Applications

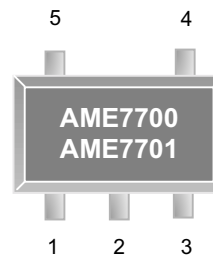
- Cellular Phones
- Digital Cameras
- Battery Chargers
- High Tech Flashlights
- PDA' s - LCD displays
- Consumer Electronics
- Pagers
- Portable Electronics

■ Typical Connctcion



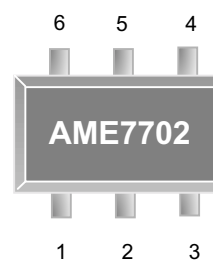
■ Pin Configuration

**SOT-25
TopView**



- AME7700
AME7701**
1. GND
 2. OUT
 3. CN
 4. IN
 5. CP

**SOT-26
TopView**



- AME7702**
1. GND
 2. CN
 3. OUT
 4. IN
 5. FC
 6. CP



■ Pin Description

AME7700AEEV / AME7701AEEV

Pin #	Pin Name	Function
1	GND	Ground (-Supply)
2	OUT	Power Output
3	CN	Capacitor (-)
4	IN	Power Input
5	CP	Capacitor (+)

AME7702AEEY

Pin #	Pin Name	Function
1	GND	Ground (-Supply)
2	CN	Capacitor(-)
3	OUT	Power Output
4	IN	Power Input
5	FC	Frequency Control
6	CP	Capacitor (+)

■ Ordering Information

Part Number	Marking	Output Voltage	Package	Operating Temp. Range
AME7700AEEV	ARGww	N/A	SOT-25	- 40°C to + 85°C
AME7701AEEV	ARHww	N/A	SOT-25	- 40°C to + 85°C
AME7702AEEY	AROww	N/A	SOT-26	- 40°C to + 85°C

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



■ **Absolute Maximum Ratings**

Parameter	Maximum	Unit
Supply Voltage	6	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
Supply Voltage	1.5 - 5.5	V
Ambient Temperature Range	- 40 to + 85	°C
Junction Temperature	- 40 to + 125	°C

■ **Thermal Information**

Parameter	Maximum	Unit
Thermal Resistance (SOT-25 / SOT-26)	250	°C / W
Maximum Junction Temperature	150	°C
Maximum Lead Temperature (10 Sec)	300	°C



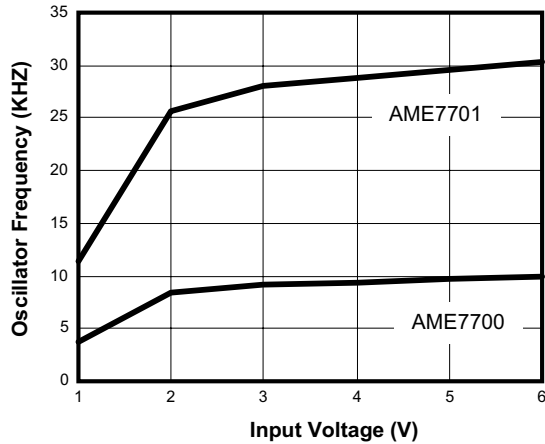
■ Electrical Specifications

TA= 25°C, V_{IN}=5V unless otherwise noted, C₁ = C₂ =3.3μF

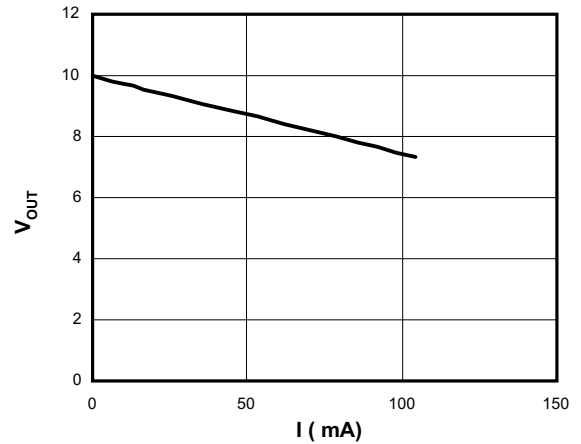
Parameter	Symbol	Test Condition	Min	Typ	Max	Units
No Load Current	I _{IN}	AME7700 AME7702 FC is LO		60	100	μA
		AME7701 AME7702 FC is HI		215	300	
Supply Voltage Range	V _{IN}	R _L = 10 K	1.5		5.5	V
Oscillator Frequency	F _{OSC}	AME7700 AME7702 FC is LO	8.5	12	15.5	KHz
		AME7701 AME7702 FC is HI	24.5	35	45.5	
Output Resistance	R _O	AME7700 AME7702 FC is LO		40	50	ohms
		AME7701 AME7702 FC is HI		20	35	
Voltage Conversion Efficiency	V _{EFF}	No load	97	99		%
Power Efficiency	P _{EFF}	R _L = 10 K	88	92		%



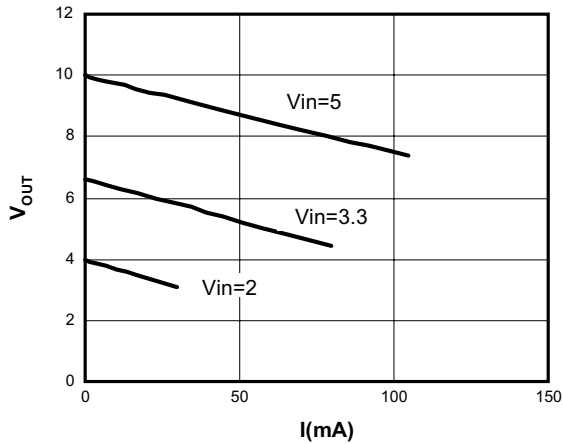
Osc. Freq. @ 25C



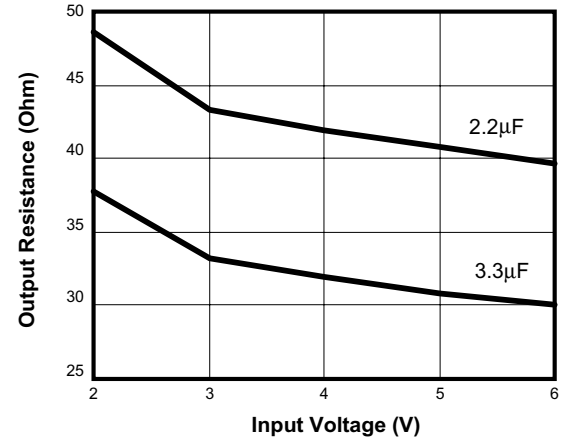
Load Regulation



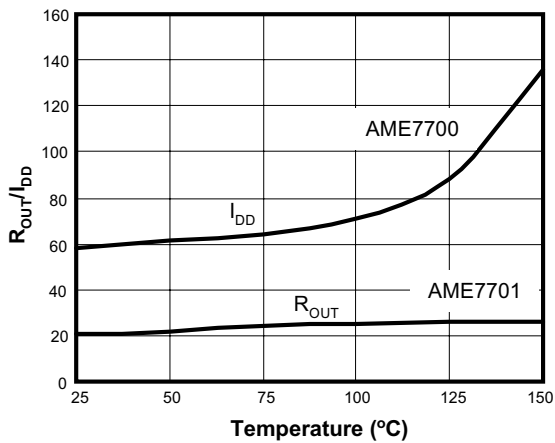
Load Reg



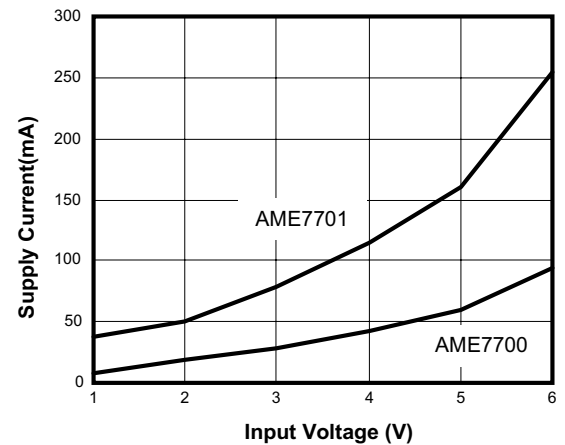
AME7700 Output Resistance @ 25C



Electrical Characteristics vs. Temp

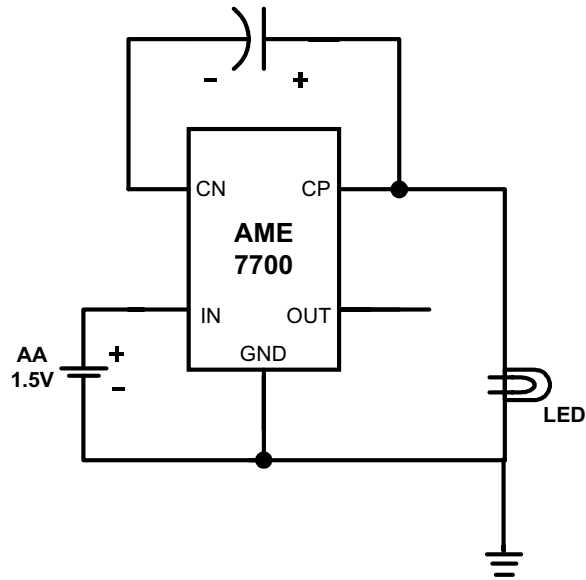


Supply Current @ 25C

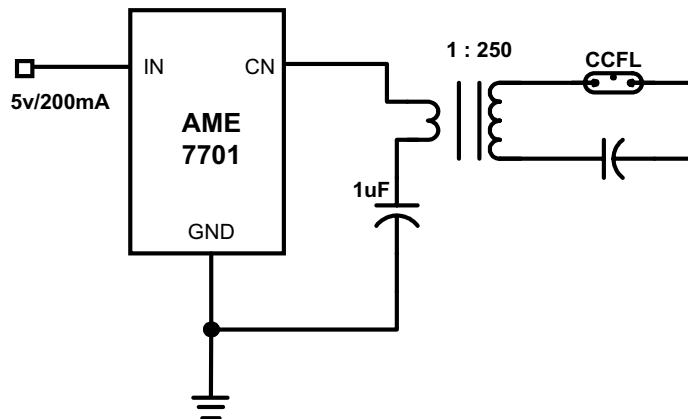


■ Advanced Applications

Single Cell Led Flashlight



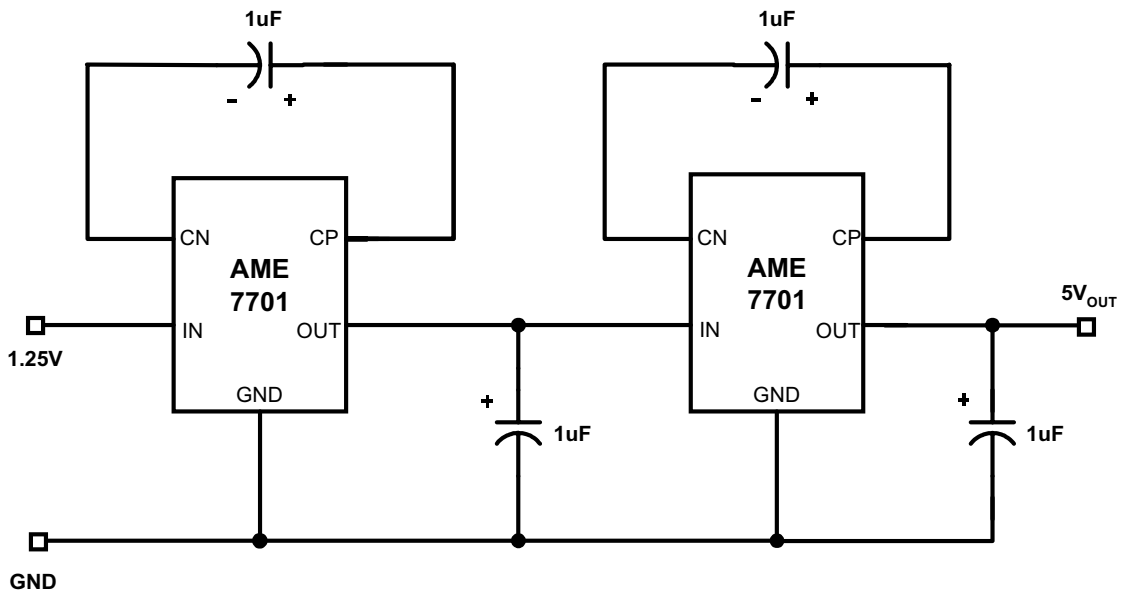
1 Watt Fluorescent Lamp Driver



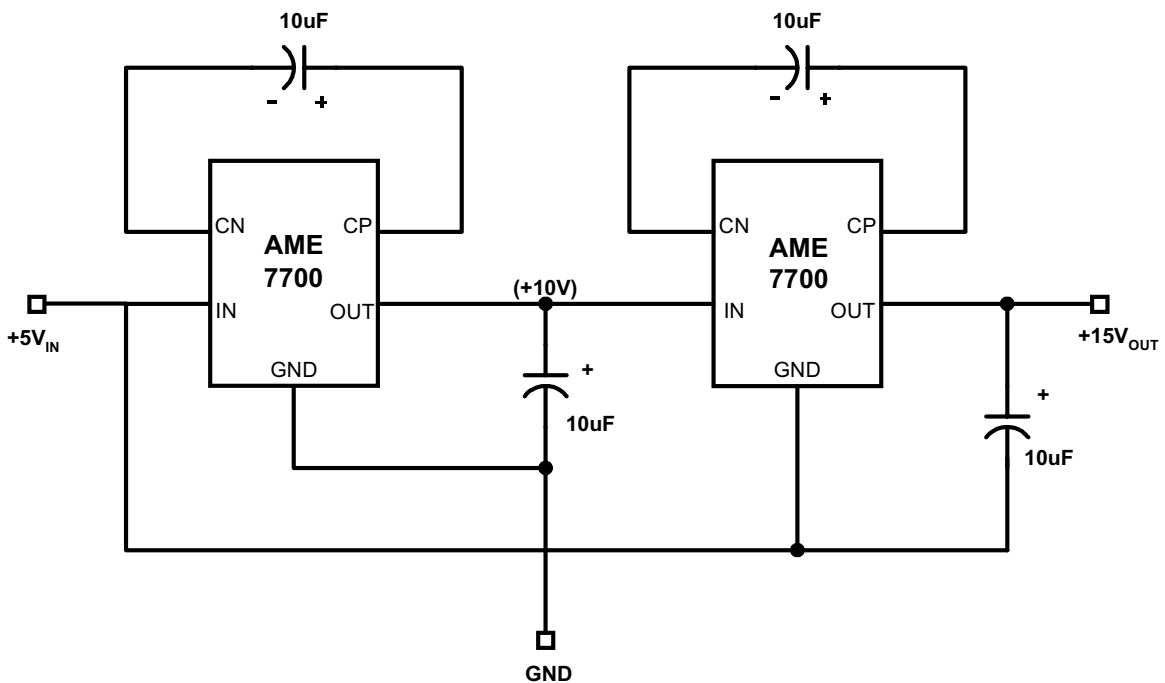


■ Advanced Applications (contd.)

1.25V to 5.0V Converter



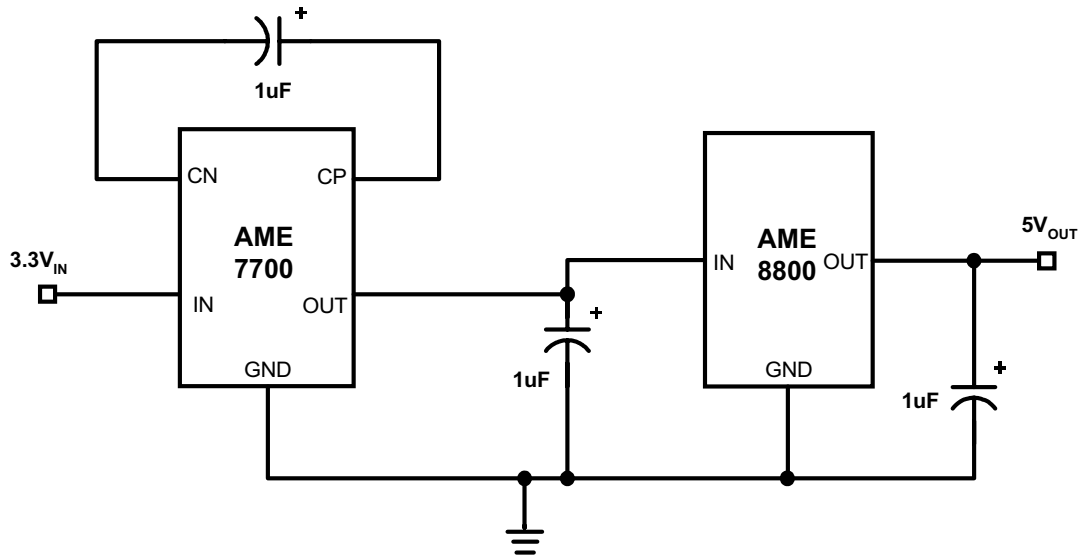
+5V to +15V Converter



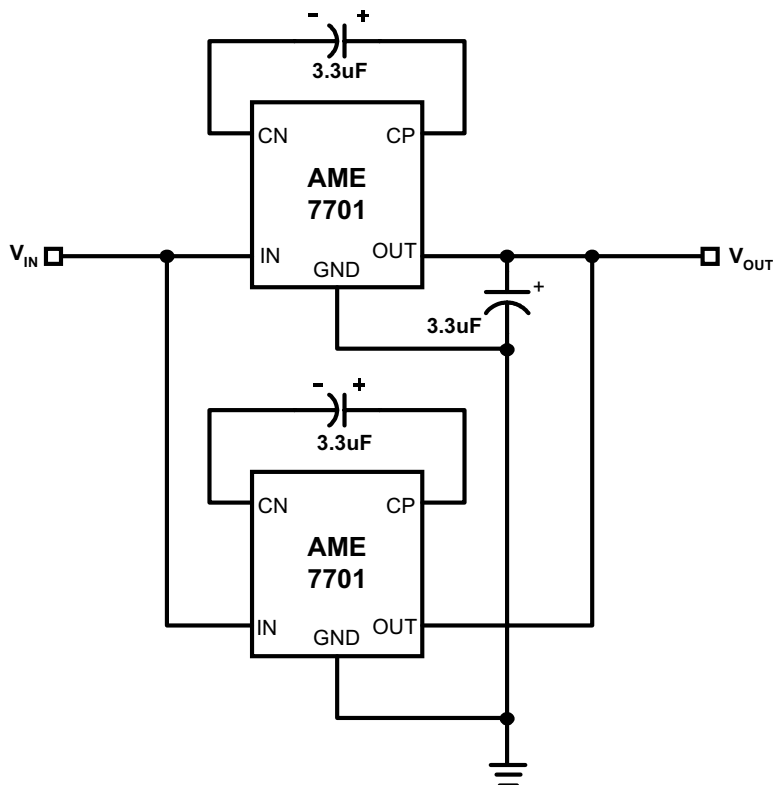


■ Advanced Applications (contd.)

3.3V-Input to Regulated 5V-Output Converter



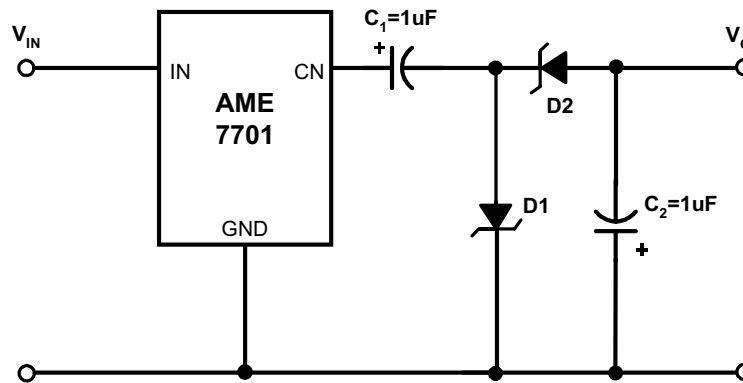
Paralleling Devices





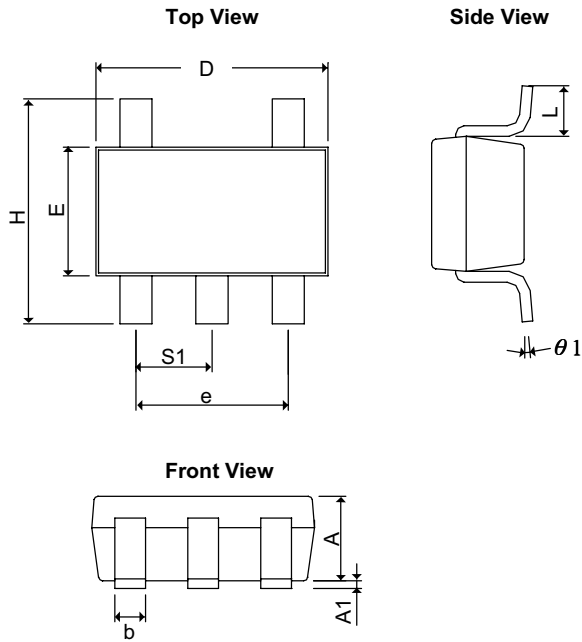
■ Advanced Applications (contd.)

Voltage Inverter

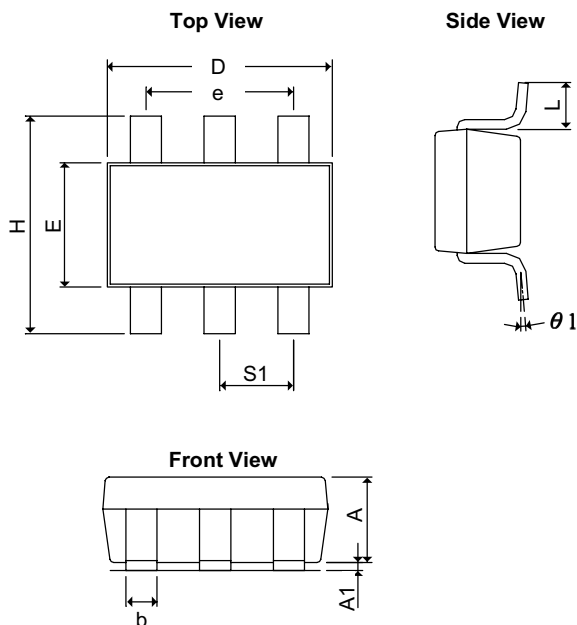


$$V_O \approx -(V_{IN} - 1)$$

Example: For $V_{IN} = 5.0V$, $V_O = -4.0V$

■ Package Dimension
SOT-25


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		0.07480 BSC	
H	2.60	3.00	0.10236	0.11811
L	0.37BSC		0.0146BSC	
$\theta 1$	0°	10°	0°	10°
S ₁	0.95BSC		0.0374BSC	

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	
$\theta 1$	0°	10°	0°	10°
S ₁	0.95REF		0.0374REF	



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