SUPER-SMALL PACKAGE PWM CONTROL STEP-UP SWITCHING REGULATOR LN2266 SERIES

■ DESCRIPTION

The LN2266 is a compact, high efficiency, and low voltage step-up DC/DC converter with an Adaptive Current Mode PWM control loop, includes an error amplifier, ramp generator, comparator, switch pass element and driver in which providing a stable and high efficient operation over a wide range of load currents. It operates in stable waveforms without external compensation.

The low start-up input voltage below 1V makes LN2266 suitable for 1 to 4 battery cells applications of providing up to 300mA output current. The 450KHz high switching rate minimized the size of external components. Besides, the 17μA low quiescent current together with high efficiency maintains long battery lifetime. The output voltage is set with two external resistors. Both internal 2A switch and driver for driving external power devices (NMOS or NPN) are provided.

■ FEATURES

- 1.0V Low Start-up Input Voltage
- High Supply Capability to Deliver 3.3V 100mA with 1 Alkaline Cell
- 17uA Quiescent (Switch-off) Supply Current
- Zero Shutdown Mode Supply Current
- 90% Efficiency
- 450kHz Fixed Switching Frequency
- Providing Flexibility for Using Internal and External Power Switches
- Small SOT-26 ， SOT89-5 Package

■ APPLICATIONS

- PDA
- DSC
- LCD Panel
- RF-Tags
- MP3
- Portable Instrument
- Wireless Equipment

■ PACKAGE

- S0T-23-6
- SOT-89-5
- Others packages custom required.

■ BLOCK DIAGRAM

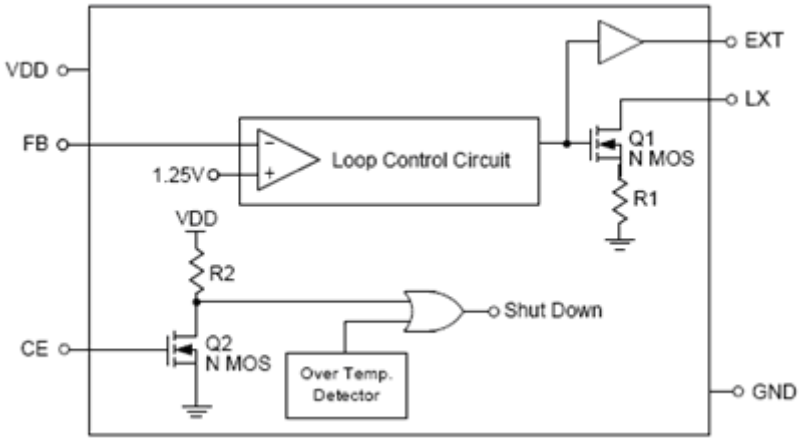


Figure 1

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL		MAXIMUM RATING	UNIT
Input voltage	V_{DD}		Vss-0.3～Vss+10	V
Output voltage	V_{OUT}		Vss-0.3～Vss+10	
	V_{LX}		Vss-0.3～Vss+10	
EXT pin Driver Current	I_{EXT}		200	mA
LX pin Switch Current	I_{LX}		2.5	A
Power dissipation	PD	SOT-23-6	150	mW
		SOT-89-5	500	
Operating ambient temperature	Topr		-40～＋80	℃
Storage ambient temperature	Tstg		-40～＋125	

Caution The absolute maximum ratings are rated values exceeding which the product could suffer physical damage. These values must therefore not be exceeded under any conditions.

■ Electrical Characteristics

(Ta=25°C unless otherwise specified)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Output voltage	V_{OUT}	-	VOUT(s) ×0.98	VOUT(s)	VOUT(S) ×1.02	V
Input Voltage	V_{IN}	-	-	-	10	
Operation start voltage	V_{ST}	I_{OUT}=1mA	-	0.95	1.05	
OSC start voltage	V_{ST2}	No external parts, Voltage applied to V_{OUT}, CONT pin pulled up to V_{OUT} via 300 & resistor	-	-	0.8	
Shut down current	I_{OFF}	CE=0,VIN=4.5V	—	0.01	1	υA
Switch-off Current	Iswitch -off	VIN=6V	—	17	25	uA
Continuous Switching Current	Iswitch	VIN=CE=3.3V,VFB=GND	180	250	400	υA
No load Current	Ino-load	VIN=1.5V,VOUT=3.3V	—	70	—	
Feedback Reference Voltage	Vref	Close Loop Vdd=3.3V	1.225	1.25	1.275	V
Switching Frequency	Fs	Vdd=3.3V	380	450	520	KHz

Maximum Duty	Dmax	Vdd=3.3V	85	95	—	%
LX on resistance		Vdd=3.3V	—	0.3	1.1	Ω
Current Limit Setting	Ilimit	Vdd=3.3V	1.6	2	2.6	A
EXT on resistance to VDD		Vdd=3.3V	—	5	8.5	Ω
EXT on resistance to GND		Vdd=3.3V	—	5	8.5	Ω
Line Regulation	ΔVline	Vin=3.5~6V,IL=1mA	—	1.5	10	mV/V
Load Regulation	ΔVload	VIN=2.5V,IL=1~100mA	—	0.25	—	mV/mA
CE pin Trip level		VDD=3.3V	0.4	0.8	1.2	V
Temperature Stability for Vout	Ts		—	50	—	Ppm/℃
Thermal Shut down Hysterises	ΔTsd		—	10	—	℃

■ TEST CIRCUITS

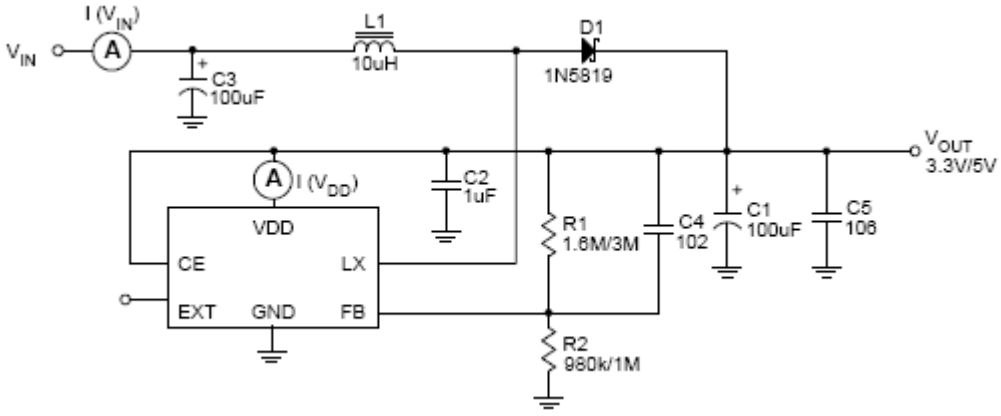


Figure 2

■ TYPICAL APPLICATION CIRCUIT

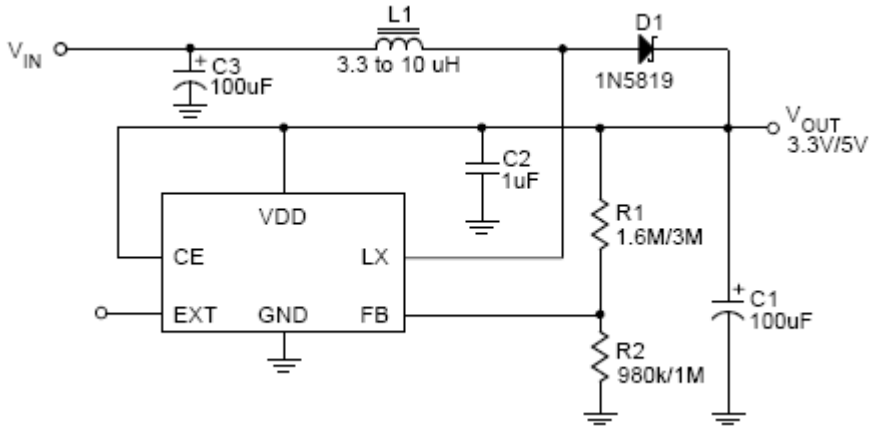


Figure 3 LN2266 Typical Application for Portable Instruments

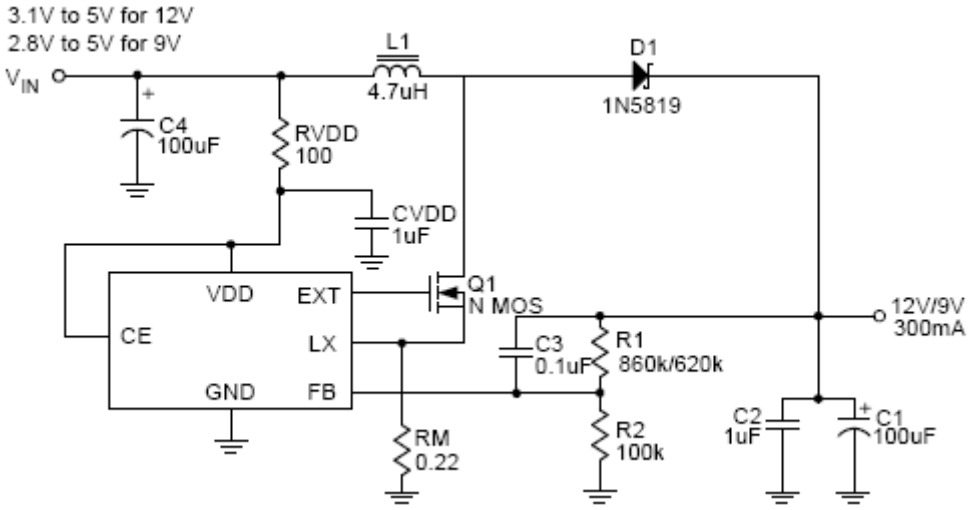


Figure 4 LN2266 High Voltage Application

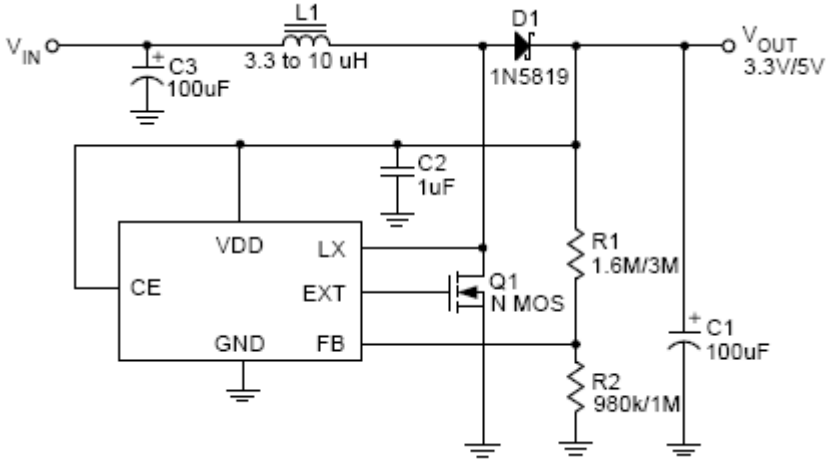


Figure 5 LN2266 for Higher Current Application

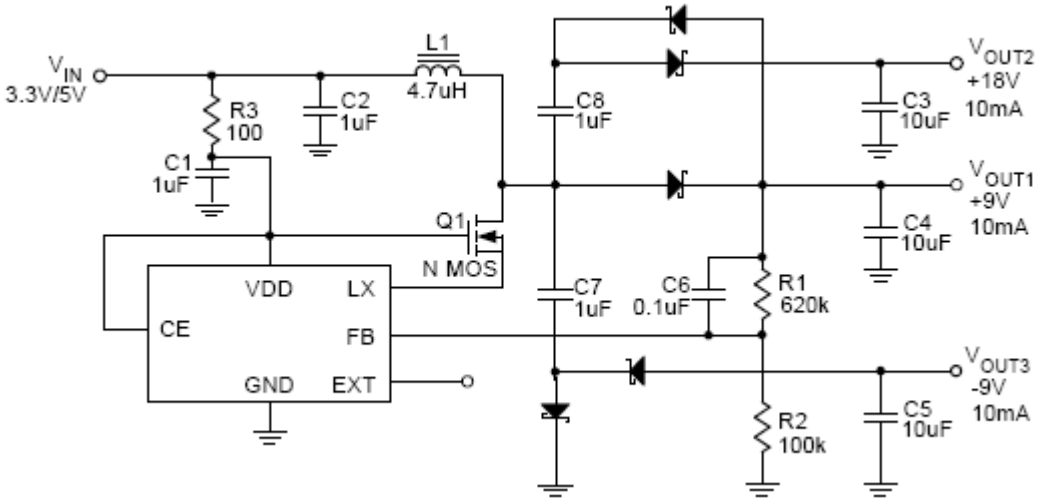
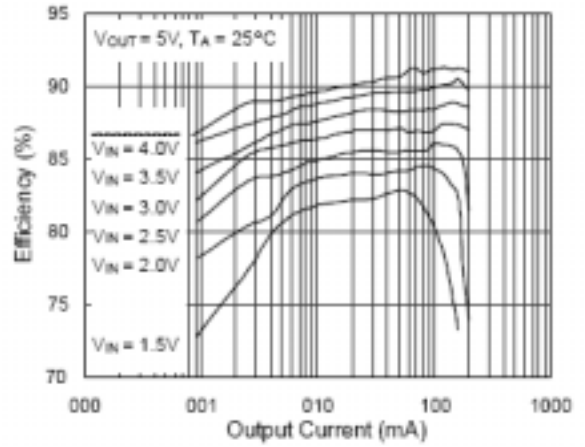


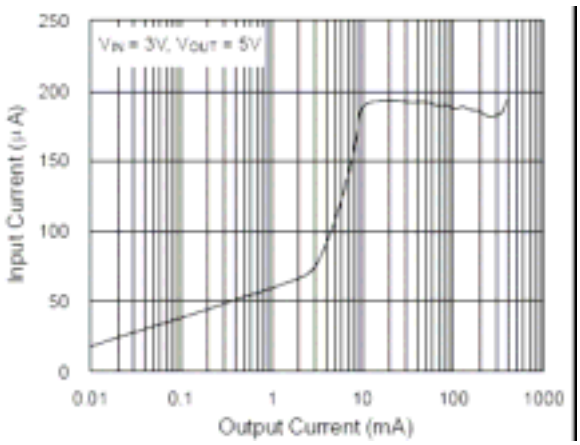
Figure 6 LN2266 for multi-output Application

■ TYPICAL PERFORMANCE CHARACTERISTICS

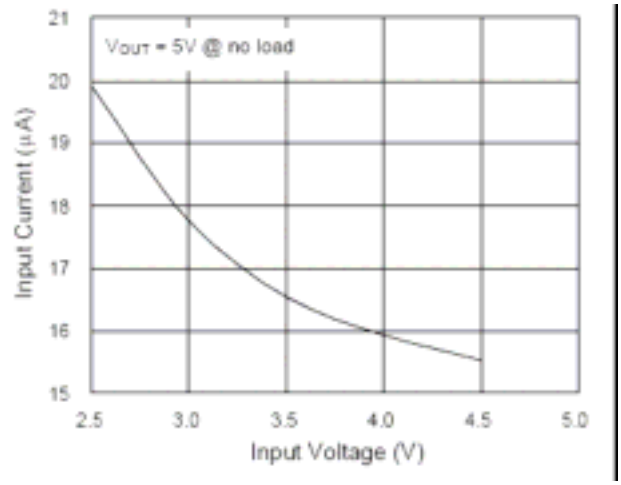
1. Efficiency vs. Output Current



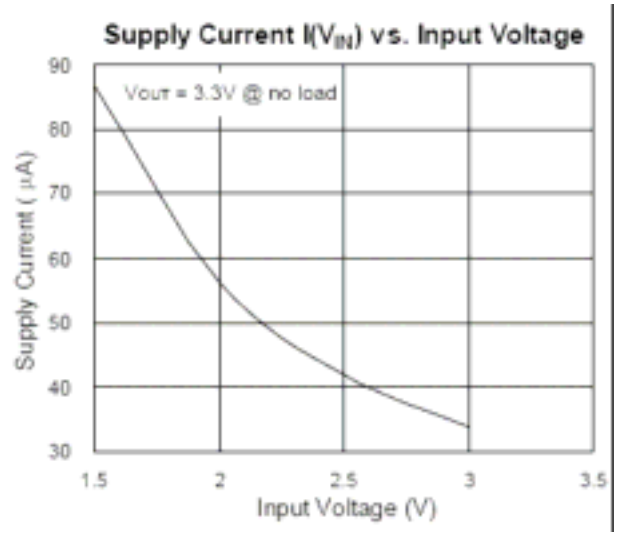
2. Input current vs. Output current



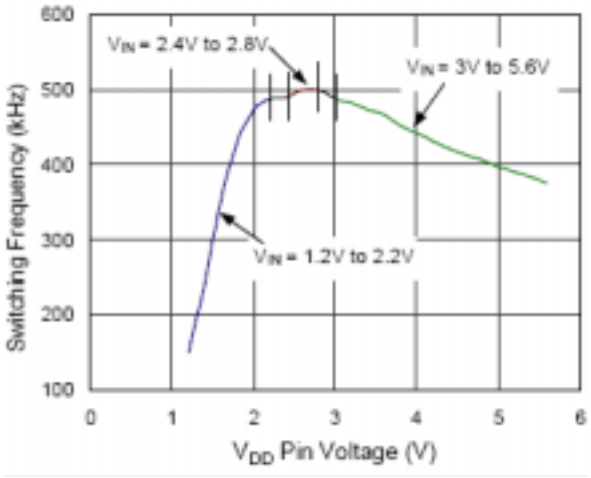
3.Input Current vs. Input Voltage



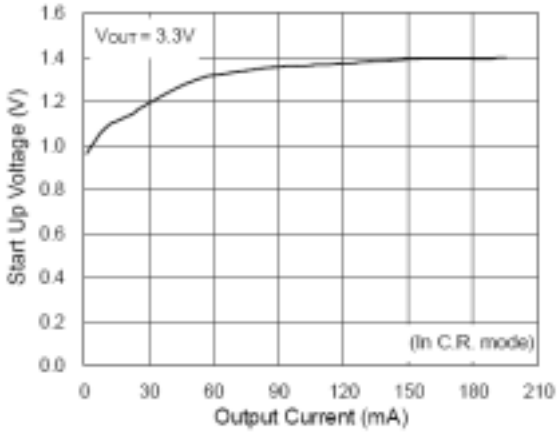
4.Supply Current vs. Input Voltage



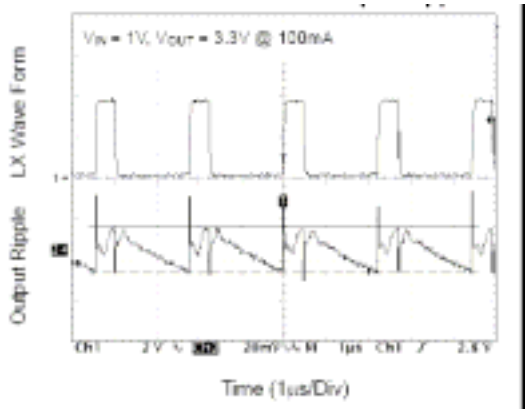
5. Switching Frequency vs. Vdd pin Voltage



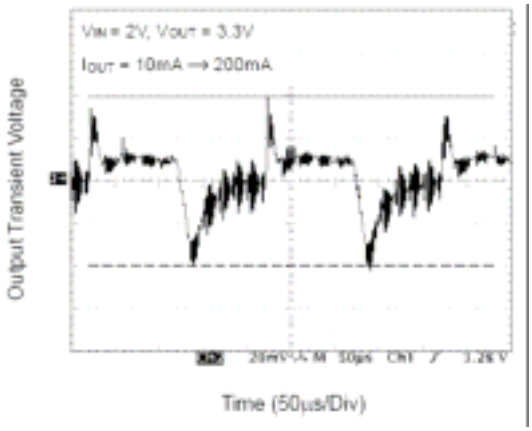
6. Start up voltage vs. Output Current



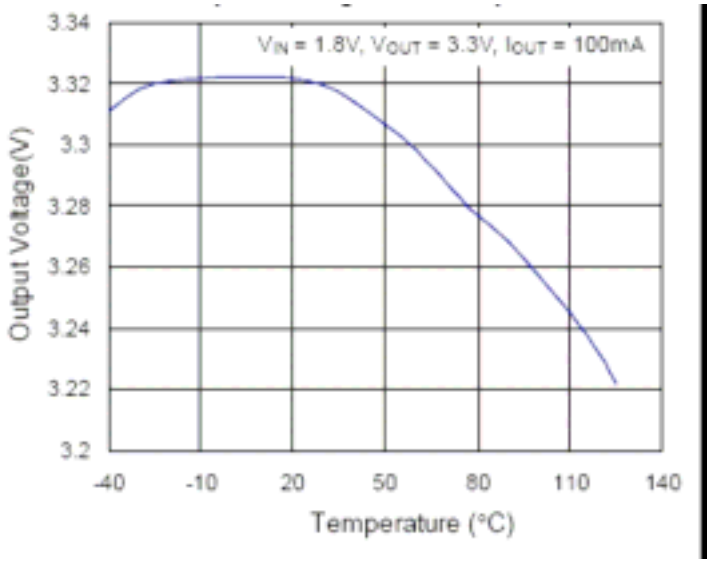
7. LX pin wave form & Output Ripple



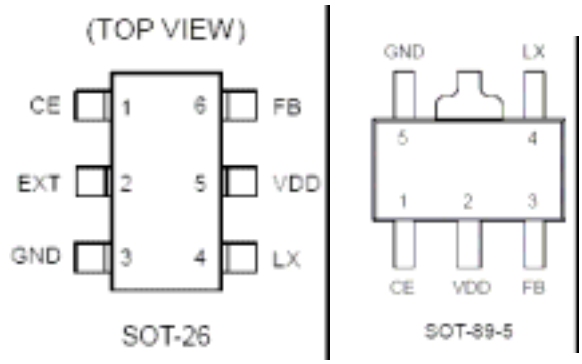
8. Transient Response



9. Output Voltage vs. Temperature



■ Pin Configuration



Remark Please contact the Natlinear marketing department for other packages.

■Pin Assignment

PIN MUMBER		PIN NAME	FUNCTION
SOT26	SOT89-5		
1	1	CE	Chip enable
2	-	EXT	Output pin for driving external NMOS
3	5	GND	Ground
4	4	LX	Pin for switching
5	2	VDD	Input positive power pin of LN2266
6	3	FB	Feedback input pin

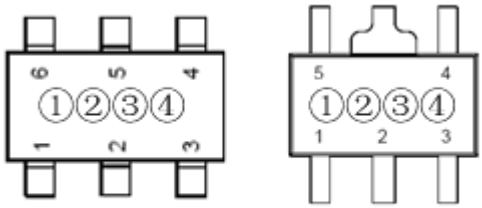
■ ORDERING INFORMATION

LN2266P①②③④

DESIGNATOR	SYMBOL	DESCRIPTION	DESIGNATOR	SYMBOL	DESCRIPTION
①	A	CE with EXT	③	M	SOT26
	B	CE without EXT		P	SOT89
②	1	Reference accuracy:±1%	④	R	Embossed Tape :Standard Feed
	2	Reference accuracy:±2%		L	Embossed Tape :Reverse Feed
	4	Reference accuracy:±4%			

■ MARKING

- SOT26,SOT89-5



SOT-26 SOT-89-5

① Represents the product name

SYMBOL	PRODUCT NAME
A	LN2266P****

② Represents the type of regulator

SYMBOL	A	B
Type	CE with EXT	CE without EXT

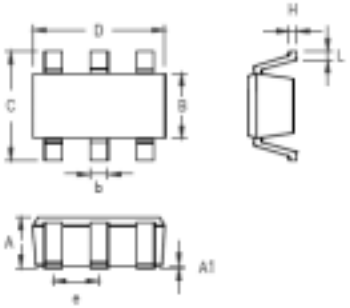
③ Represents the accuracy of reference voltage

SYMBOL	Reference accuracy
1	1%
2	2%
4	4%

④Represents the assembly lot No.
0～9, A～Z repeated (G,I,J,O,Q,W expected)

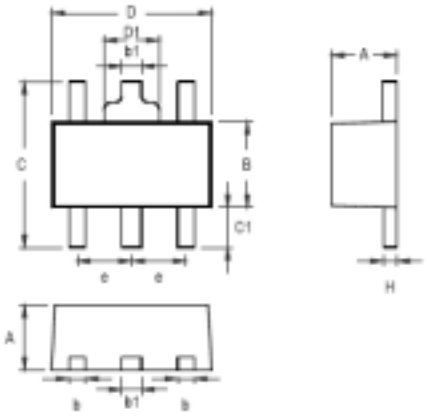
■ PACKAGING INFORMATION

- SOT26



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.889	1.295	0.035	0.051
A1	0.000	0.152	0.000	0.006
B	1.397	1.803	0.055	0.071
b	0.250	0.559	0.010	0.022
C	2.591	2.997	0.102	0.118
D	2.692	3.099	0.106	0.122
e	0.838	1.041	0.033	0.041
H	0.080	0.254	0.003	0.010
L	0.300	0.610	0.012	0.024

- SOT89-5



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.360	0.520	0.014	0.020
B	2.400	2.600	0.094	0.102
b1	0.406	0.533	0.016	0.021
C	--	4.250	--	0.167
C1	0.800	--	0.031	--
D	4.400	4.600	0.173	0.181
D1	--	1.700	--	0.067
e	1.400	1.600	0.055	0.063
H	0.380	0.430	0.014	0.017