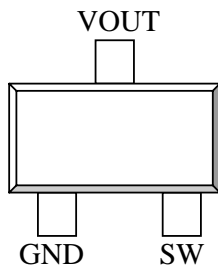
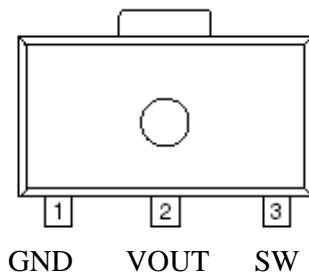


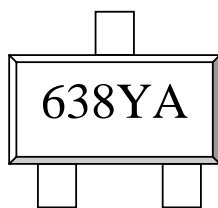
**High Efficiency PFM****DESCRIPTION**

The ST1638 is a high efficiency PFM step-up DC/DC converter for application using battery powered devices. Only three external components are required to construct a low ripple, high efficiency converter. ST1638 can start up from 0.9V input voltage with 1mA load.

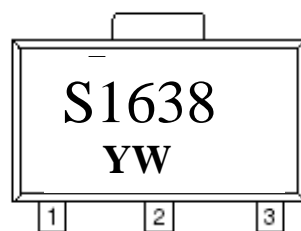
The space saving SOT-89 and SOT-23 packages make ST1638 an ideal choice for space conscious applications.

**PIN CONFIGURATION****SOT-23-3L****SOT-89****APPLICATIONS**

- Battery Powered Devices
- Camera
- PDA
- Hand Held Communication Equipment
- Camcoder
- Power Source for Applications which Require Higher Voltage than Batteries can Provide

**PART MARKING****SOT-23-3L**

Y : Year  
A : Day Code

**SOP-89**

Y : Year  
A : Day Code

**FEATURES**

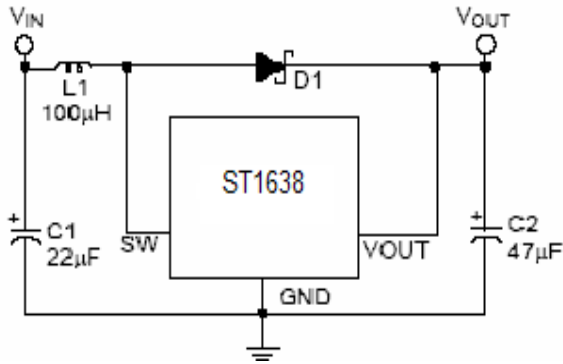
- Larger than 85% Efficiency
- Low Startup Voltage, 0.9V at 1mA
- Low Ripple and Low Noise
- Low Quiescent Current
- Minimum Number of External Components
- SOT-89 and SOT-23 Small Package

**STANSON TECHNOLOGY**

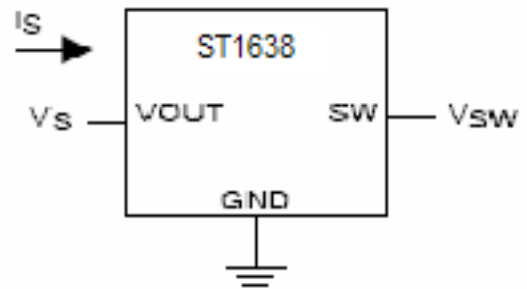
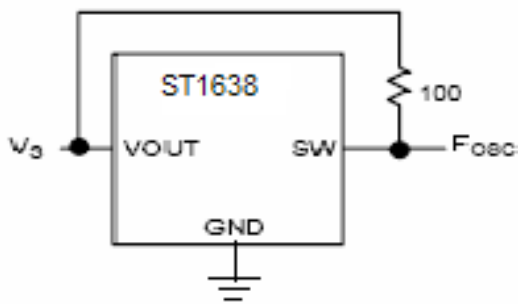
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TEL: (650) 9389294 FAX: (650) 9389295

High Efficiency PFM

TYPICAL APPLCTUON CIRCUIT



TEST CIRCUITS



PIN DESCRIPTION

Pin	Symbol	Descripton
1	GND	Ground
2	VOUT	Output Voltage
3	SW	Switch Voltage

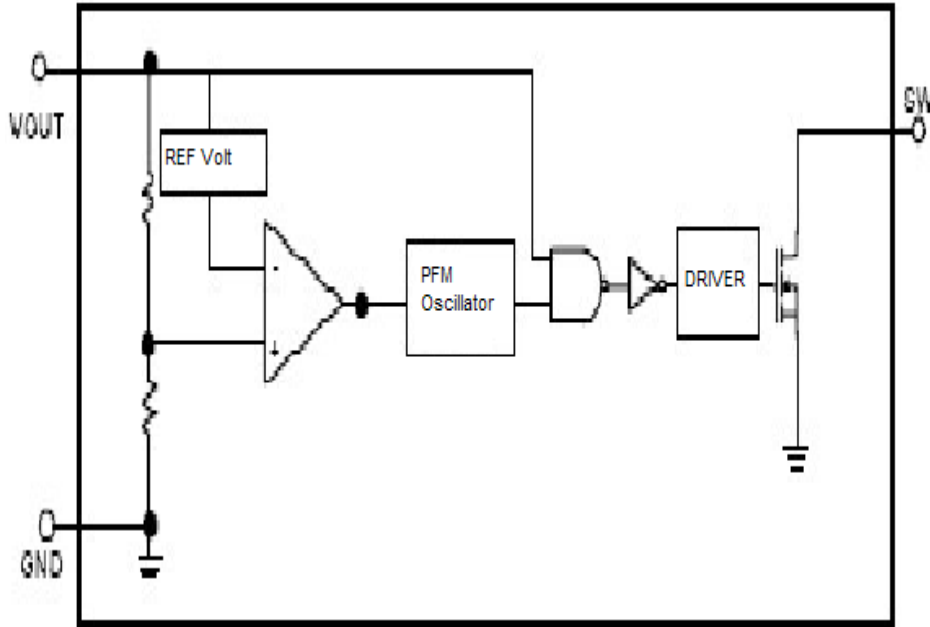


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**BLOCK DIAGRAM**



**ORDERING INFORMATION**

Part Number	Package	Part Marking
ST1638-XXS89	SOT-89	ST1638
ST1638-XXS23	SOT-23	1638

XX: Output Voltage Tape Reel; Pb – Fr



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**High Efficiency PFM****ABSOLUTE MAXIMUM RATINGS** (  $T_a=25$  , unless otherwise specified.)

The following ratings designate persistent limits beyond which damage to the device may occur.

Symbol	Parameter	Value	Unit
$V_{OUT}$	DC Supply Voltage	6	V
$V_{SW}$	SW Pin Voltage	6	V
$I_{SW}$	Switching Current	0.6	A
$P_d$	Power Dissipation @ $T_a=25$ * SOT-89 SOT-23	0.5 0.25	W
$P_j$	Operating Junction Temperature Range	-40 to 85	
$T_{stg}$	Storage Temperature Range	-65 to 150	
$T_{lead}$	Lead Soldering Temperature for 10 sec	SOT-89 SOT-23	260 220
$R_{jc}$	Thermal Resistance Junction-Case(*)	SOT-89 SOT-23	100 95
			/W

(\*)The power dissipation and thermal resistance are evaluated under copper board mounted with free air conditions.

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## High Efficiency PFM

ELECTRICAL CHARACTERISTICS (Ta=25 , Vcc=15V, unless otherwise specified.)

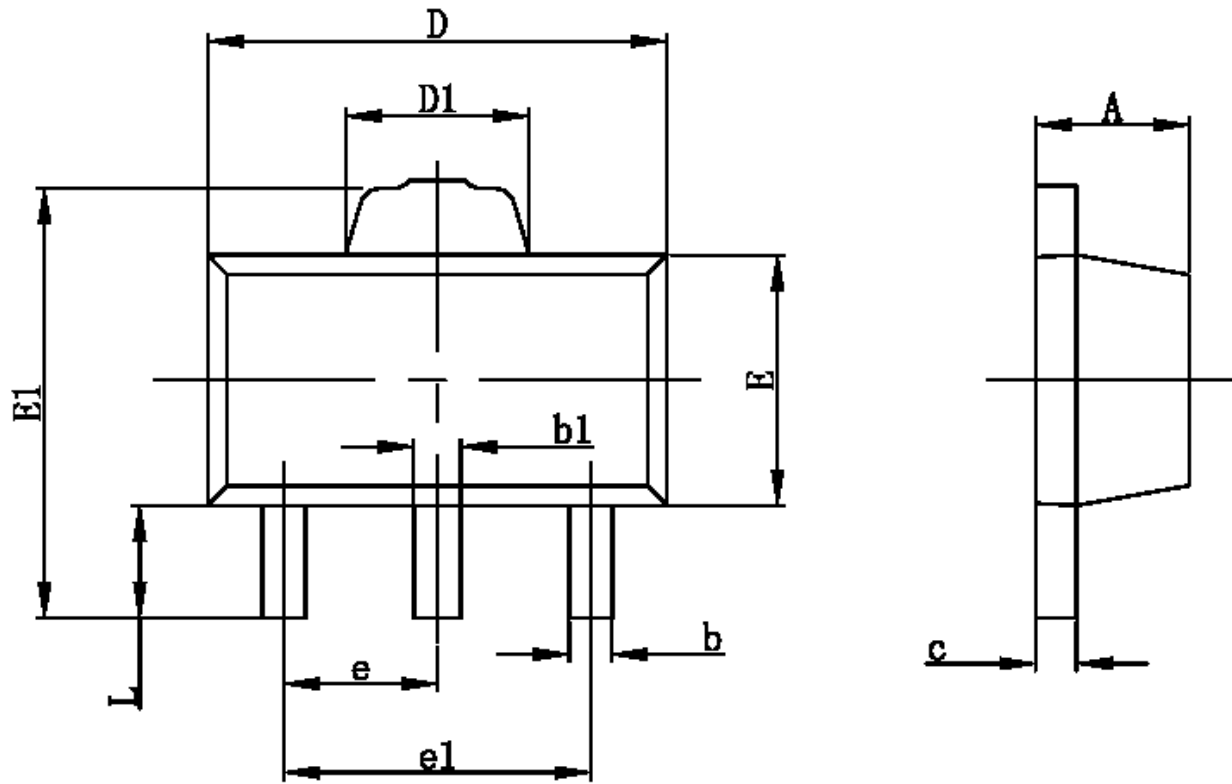
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V <sub>OUT</sub>	Output Voltage Accuracy		-2.5		2.5	%
I <sub>IN</sub>	Input Voltage				6	V
V <sub>START</sub>	Start Up Voltage	I <sub>OUT</sub> = 1 mA, V <sub>IN</sub> : 0 2V		0.8	0.9	V
V <sub>HOLD</sub>	Hold On Voltage	I <sub>OUT</sub> = 1 mA, V <sub>IN</sub> : 2 0V	0.7			V
I <sub>IN</sub>	Input Current at No Load	I <sub>OUT</sub> = 0 mA		15		μ A
I <sub>S1</sub>	Supply Current	V <sub>S</sub> = V <sub>OUT</sub> X 0.95	20		70	μ A
I <sub>S2</sub>	Supply Current	V <sub>S</sub> = V <sub>OUT</sub> + 0.5V		9		μ A
R <sub>ON</sub>	SW Switch-On Resistance	V <sub>S</sub> = V <sub>OUT</sub> X 0.95, V <sub>SW</sub> = 0.4V	1		1.3	
I <sub>LEAKAGE</sub>	SW Leakage Current	V <sub>SW</sub> = 6V			0.5	μ A
F <sub>OSC</sub>	Max Oscillator Freq.	V <sub>S</sub> = V <sub>OUT</sub> X 0.95	80	120	160	KHz
D <sub>OSC</sub>	Oscillator Duty Cycle	V <sub>S</sub> = V <sub>OUT</sub> X 0.95	65	75	85	%
	Efficiency			85		%

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SOT- 89 PACKAGE OUTLINE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.360	0.560	0.014	0.022
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.400	1.800	0.055	0.071
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500TYP		0.060TYP	
e1	2.900	3.100	0.114	0.122
L	0.900	1.100	0.035	0.043



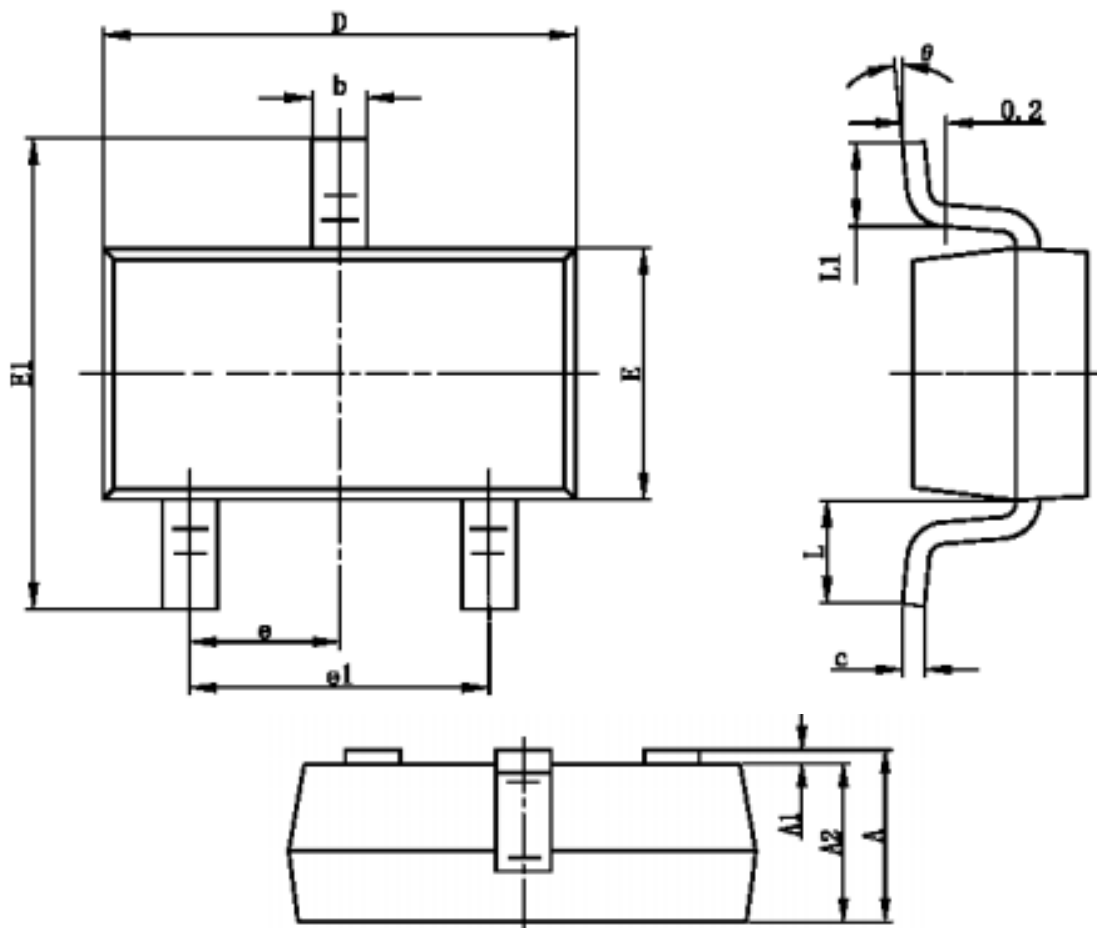
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## 300mA Driving Capability

## SOT-23-3L PACKAGE OUTLINE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.400	0.012	0.016
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.700REF		0.028REF	
L1	0.300	0.600	0.012	0.024
theta	0°	8°	0°	8°

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