

## High Efficiency ,synchronous PFM step-up DC-DC converter

### General Description

ME2180 Series is a PFM Step-up DC/DC converter IC with low supply current by CMOS process. High frequency noise that occurs during switching is reduced by using advanced circuit designed, output voltage is programmable in 0.1V steps between 2.0~5.0V and maximum frequency is 250KHz(TYP.). A low ripple, high efficiency step-up DC/DC converter can be constructed of ME2180Xxx with only two external components. ME2180Xxx is suitable for use with battery-powered instruments with low noise and low supply current.

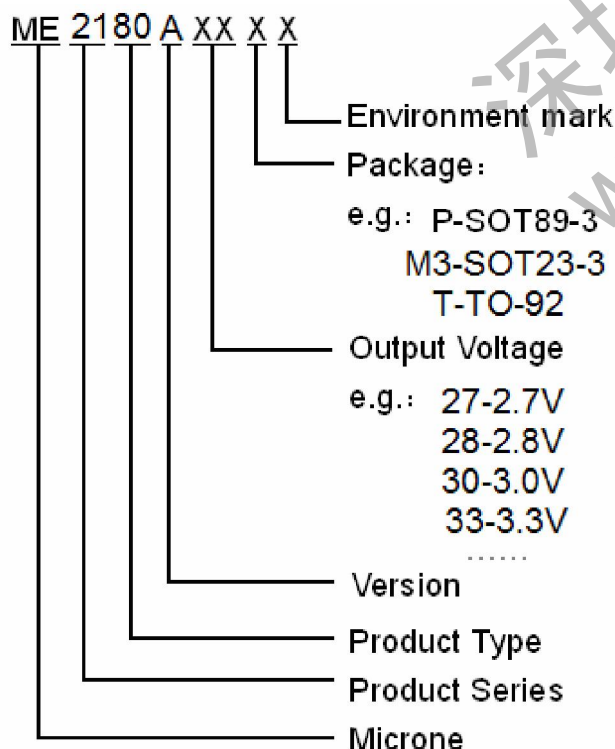
### Features

- | High efficiency : 95%
- | Maximum frequency : 250KHz
- | Low Quiescent Current : 15uA
- | Input Voltage: 0.9V~5.0V
- | Output Voltage Range:2.5V to 5.0V
- | High Accuracy:± 2%
- | Low ripple and Low noise
- | Package:SOT89-3 , SOT23-3 , TO-92

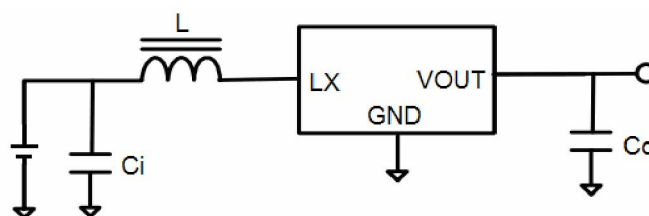
### Typical Application

- | Power source for battery-powered equipment
- | Power source for Wireless mouse,toys, Cameras, VCRs, PDAs, MP3, and Led lighting etc

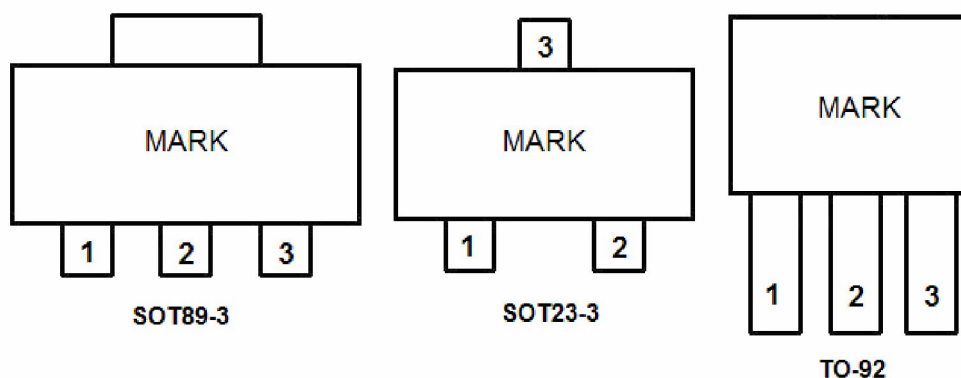
### Selection Guide



### Typical Application Circuit



## Pin Configuration



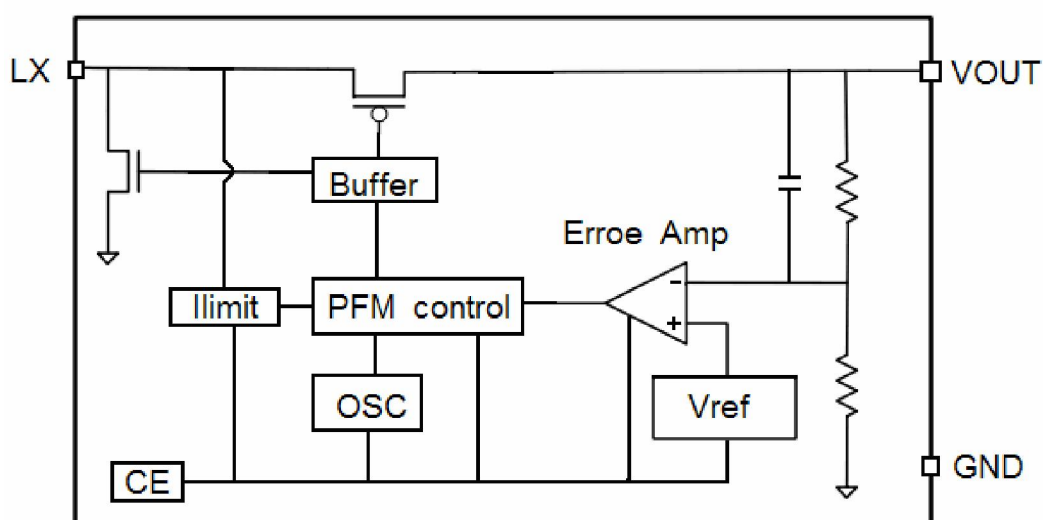
## Pin Assignment

Pin Number			Pin Name	Description
SOT89-3	SOT23-3	TO-92		
1	1	1	GND	Ground
2	3	2	VOUT	Voltage output
3	2	3	LX	Switch pin

## Absolute Maximum Ratings

Parameter	Symbol	Ratings	Units
Supply Voltage	$V_{max}$	8	V
LX pin current	$ILX_{max}$	1000	mA
Power Dissipation	$P_D$	SOT-89: 500	mW
Operating Temperature Range	$T_{OPR}$	- 20 ~ + 85	
Storage Temperature Range	$T_{STG}$	- 40~125	
ESD	$V_{esd}$	2000	V

## Block Diagram



## Electrical Characteristics

$T_A=25^{\circ}C$ ,  $V_{in}=V_{out} \times 0.6V$ ,  $L=22\mu H$ ,  $C_{in}=10\mu$ ,  $C_{out}=47\mu$ , unless otherwise noted.

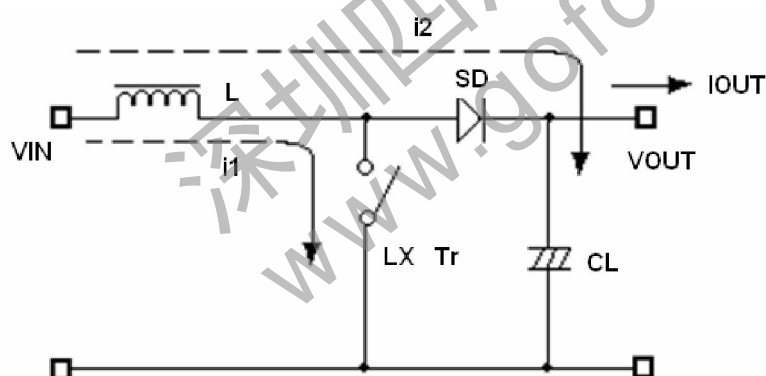
Symbol	Parameter	Test Conditions	MIN	TYP	MAX	UNIT
$V_{OUT}$	Output Voltage		$V_{out} \times 0.98$	$V_{out}$	$V_{out} \times 1.02$	V
$V_{in}$	Supply Voltage		0.9		5	V
$V_{start}$	Start voltage	$I_{load}=1mA, V_{in} : 0 \quad 2V$			0.95	V
$V_{hold}$	Hold voltage	$I_{load}=1mA, V_{in} : 2 \quad 0V$	0.5			V
$F_{osc}$	oscillation frequency			250		KHz
	Efficiency			90	95	%
$I_{limit}$	Current limit		800	1000	1200	mA
$I_{in}$	Quiescent Current			15		$\mu A$

Note : 1、 Inductor :  $22\mu H$  ( $r < 0.5$  )

2、 Capacitor : Tantalum type

## Operation Description

ME2180 step-up DC/DC converter charges energy in the inductor when LX Transistor is on, and discharges the energy with the addition of the energy from input power source thereto, so that a higher output voltage than the input voltage is obtained. Following is the operation diagram.



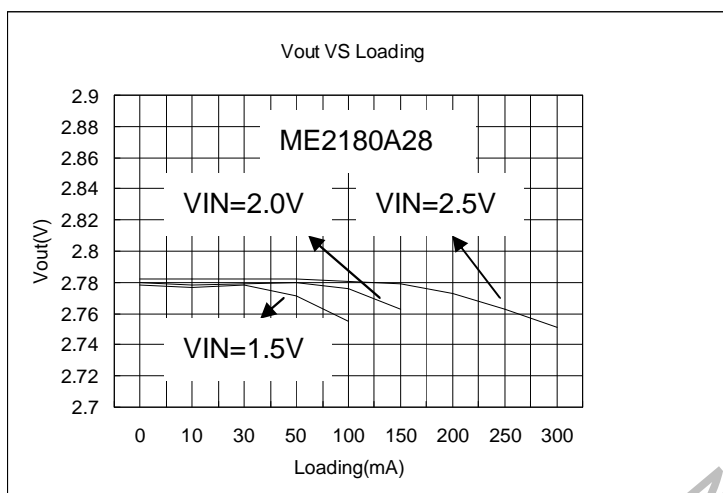
Switching DC/DC Step up Converter operating process

### Ø PCB Layout :

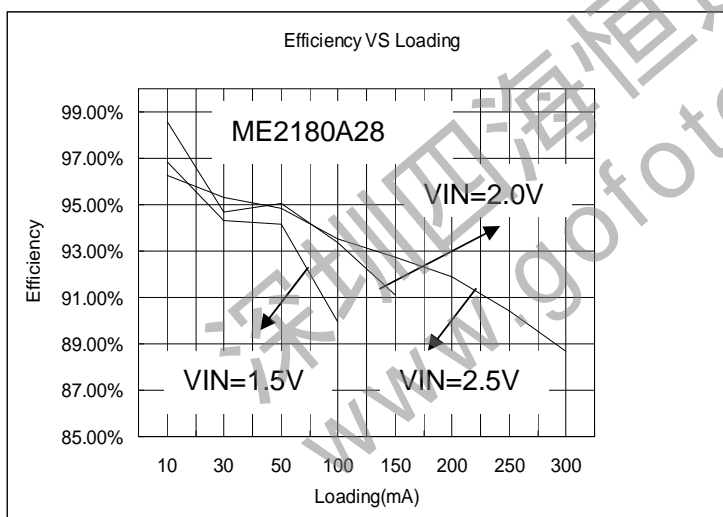
- 2 Set external components as close as possible to the IC and minimize the connection between the components and the IC. In particular, when an external component is connected to VOUT Pin, make minimum connection with the capacitor.
- 2 Make Vss pin sufficient grounding, otherwise, the zero level within IC will varied with the switching current. This may result in unstable operation of IC.

## Type Characteristics

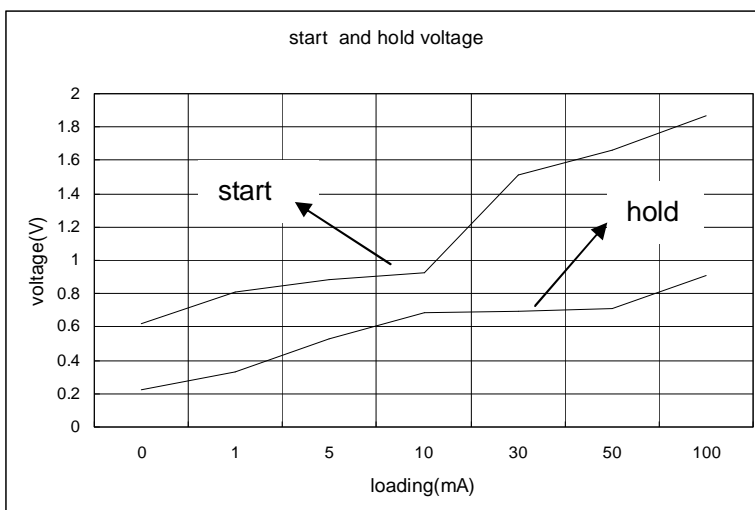
### 1、 output voltage VS output current



### 2、 efficiency VS output current

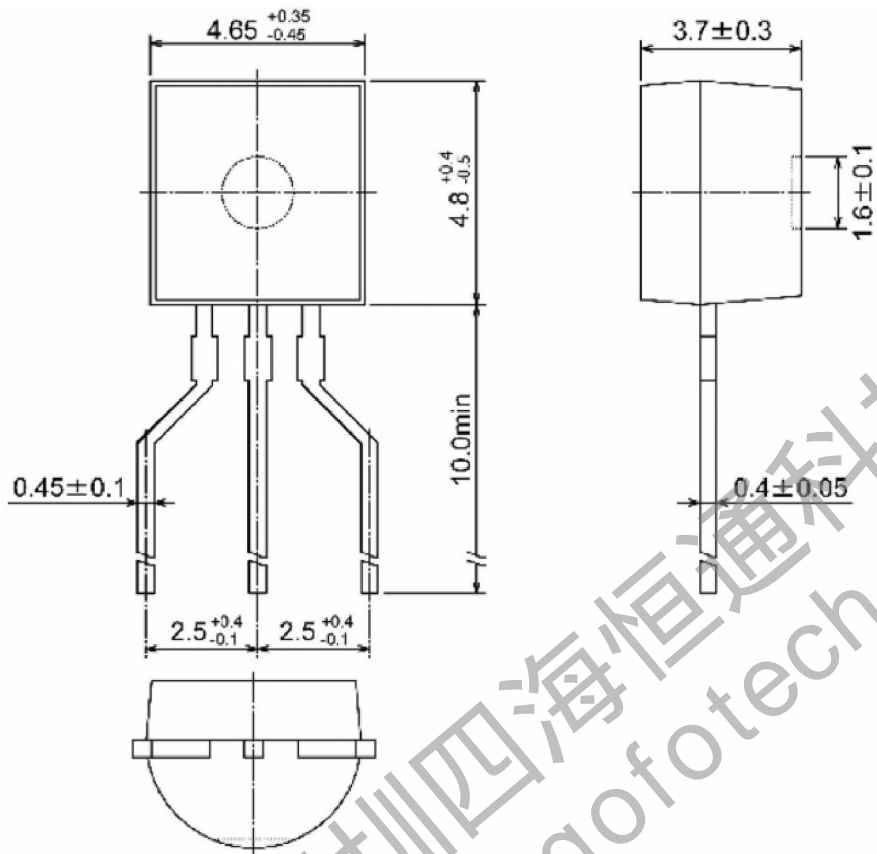


### 3、 Start & Hold voltage VS output current





TO-92



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