

## SCM3560A Electromagnetic Buzzer Driving Control IC

### Features

- Ultra-wide operating voltage range: 3~24V
- Needing no peripheral circuit
- Needing no buzzer feedback winding, cost saving
- Output quasi-constant sound pressure in full voltage input range
- Buzzer model normalization based on a wide input voltage range
- Solve the problem of self-oscillation reliability and good consistency
- Typical output frequency: 2.04K, 2.3K or 2.7K
- Frequency accuracy:  $\pm 3\%$
- Overtemperature protection
- Operating ambient temperature:  $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$

### Applications

- Electromagnetic buzzer

### Function

SCM3560A chip is an electromagnetic buzzer driving controller integrating a MOS power tube and a demagnetizing diode. It can work with a wide voltage range (3V~24V). It has an operating frequency of 2.04K, 2.3K or 2.7KHz, and a frequency accuracy up to  $\pm 3\%$  with help of the FUSE correction technology. Its internal feedback mechanism can detect the input voltage and adjust the driving waveform automatically according to it to output a quasi-constant sound pressure based on a wide voltage range (3V~24V).

The chip also has a function of overtemperature protection: when the actual temperature is beyond the set temperature, it will enter the sleep mode automatically and recover automatically upon the set temperature.

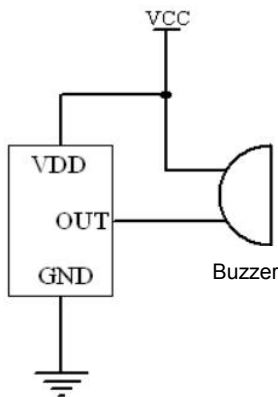
The typical static power consumption of the chip is about 300uA and a pin ESD capability larger than 3kV.

### Package



Optional package of product :SOT-23-G. Please see "Ordering information" for details"

### Typical application circuit



### Pin package



### Pins Description

No.	Pin	I/O	Description
1	OUT	O	IC output pin (for driving the electromagnetic buzzer)
2	VDD	I	IC power supply pin (input voltage: 3~24V)
3	GND	I	IC ground pin

## Contents

Features.....	1	Absolute Maximum Ratings.....	2
Package.....	1	Recommended Operating Conditions.....	2
Applications.....	1	Electrical Characteristics.....	2
Functional Description.....	1	Ordering Information.....	2
Typical Application Circuit.....	1	Screen Information.....	3
Pin package.....	1	Mechanical Package Information.....	3
Pin Descriptions.....	1	Tape & Reel Information.....	4

### Absolute Maximum Ratings

General test conditions: Free-air, normal operating temperature range (unless otherwise specified).

Parameter	Symbol	Minimum	Maximum	Unit
Input supply voltage	$V_{VDD}$	-0.4	30	V
Drain voltage of MOS field effect transistor	$V_{VD1}/V_{VD2}$	-0.7	30	V
Working junction temperature	$T_J$	-40	150	°C
Storage temperature	$T_{STG}$	-55	150	
Welding temperature ( allowable reflow soldering temperature of the chip within 10S)			260	
Moisture sensitivity level	MSL		MSL3	
Rated value of electrostatic discharge (ESD)	Human body model ( HBM)		3000	V

Note: exceeding stress value listed in the "maximum rating" table may cause permanent damage to components. If working under extreme conditions for a long time, reliability of components may be affected. All voltage values is on the basis of GND.

### Recommended Operating Conditions

Parameter	Symbol	Minimum	Maximum	Unit
Input supply voltage	$V_{VDD}$	3	24	V
Operating ambient temperature	$T_A$	-40	125	°C

### Electrical Characteristics

$V_{VDD}=12V$ ; ambient temperature: 25°C (unless otherwise specified)

Symbol	Corresponding parameter	Test condition	Min	Typ	Max	Unit
<b>Power supply ( VDD pin)</b>						
$V_{VDD}$	Operating voltage		3		24	V
$I_{START}$	$I_{VDD}$ when in unloaded standby status	$V_{VCC}=12V$		300		uA
$T_{OTP}$	Temperature of overtemperature protection		139	145	152	°C
$T_{OTPH}$	Return difference of overtemperature protection			24		°C
<b>Drain port of power tube ( OUT pin)</b>						
$R_{NDS\_ON}$	On-resistance of NMOS	$V_{VCC}=12V, T_J=25^\circ C, I_{DS}=0.1A$		1.68		Ω
<b>Output sound pressure control parameters</b>						
$I_{peak}$	Peak current of inductor	$V_{VDD}=3V, L=1.2mH, F_{OSC}=2.04KHz, Re=16ohm$		100		mA
$D_{max}$	Maximum duty ratio of open loop			50		%
<b>Internal time parameters</b>						
$F_{OSC}$	Typical operating frequency	SCM3560ATA-20		2.04		KHz
		SCM3560ATA-23		2.3		KHz
		SCM3560ATA-27		2.7		KHz
$F_{OSC\_al}$	Accuracy of operating frequency	$F_{OSC}=2.04KHz, 2.3KHz, 2.7KHz$	-3	0	3	%
$T_r$	Rise time in turn-on status	$V_{VDD}=12V$		300		ns
$T_f$	Full time in turn-off status	$V_{VDD}=12V$		500		ns

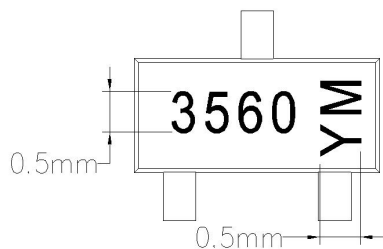
### Ordering information

Model	Package	Pin quantity	Screen printing	Packing size
SCM3560ATA-20	SOT-23-G	3	3560YM	3K/tray
SCM3560ATA-23	SOT-23-G	3	3560YM	3K/tray
SCM3560ATA-27	SOT-23-G	3	3560YM	3K/tray

Product model and screen printing:  
SCM3560XYZ:

- ( 1 ) SCM3560, produce code
- ( 2 ) X = A-Z, version code
- ( 3 ) Y = T, package code; T: SOT package
- ( 4 ) Z = C, I, A, M, temperature rating code; C: 0°C-70°C, I: -40°C-85°C, A: -40°C-125°C, M: -55°C-125°C.
- ( 5 ) YM: product tracing code; Y: product's production year code; M: product's production month code

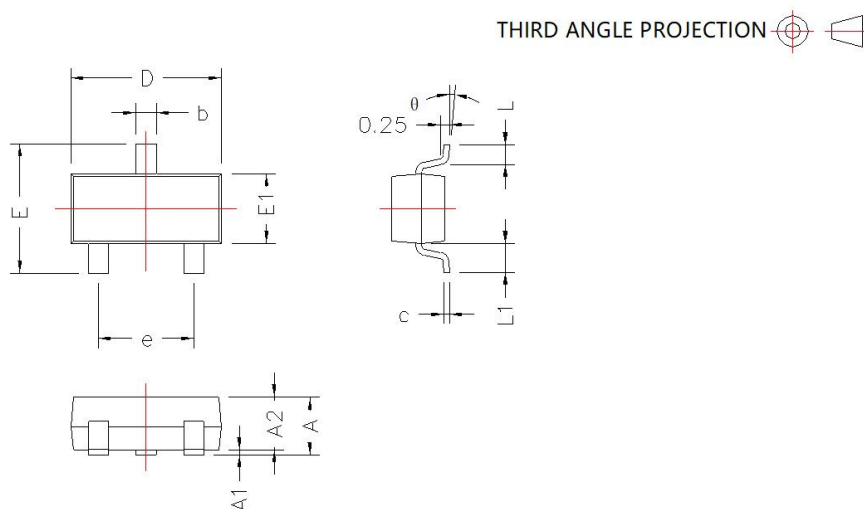
### Silk Screen Information



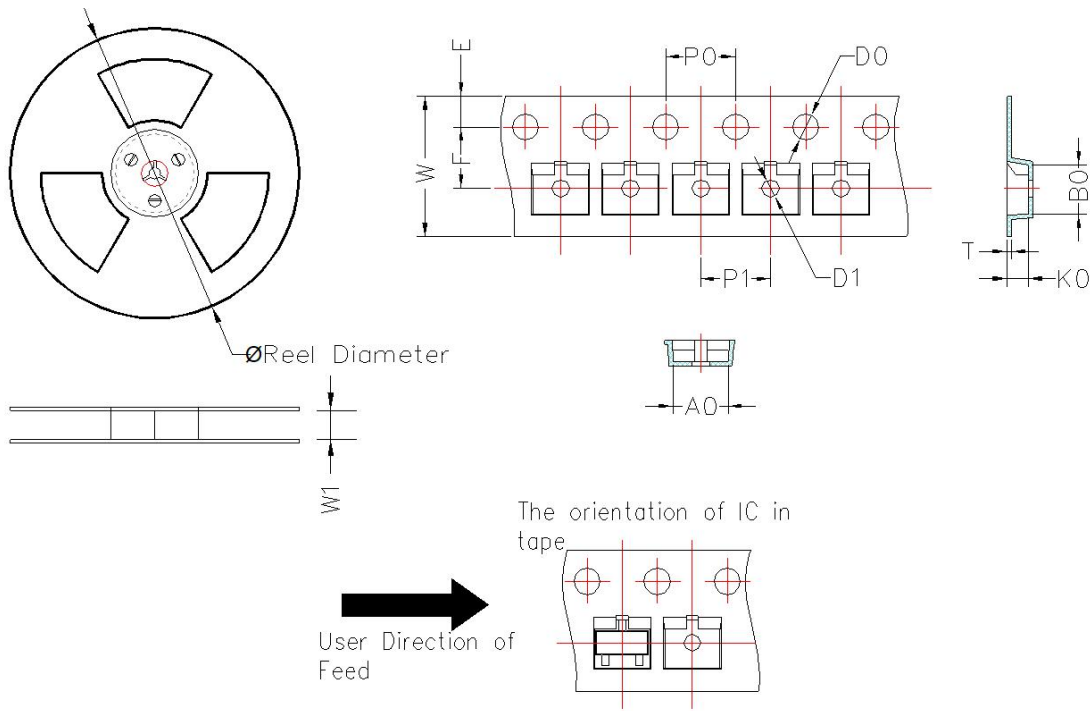
Note:

- 1、Typeface: Arial;
- 2、Character size:  
Height: 0.5mm, Spacing: 0.1mm

### Mechanical Package Information



SOT-23-G				
Mark	Dimension(mm)		Dimension(inch)	
	Min	Max	Min	Max
A	1.15Max		0.045Max	
A1	0.000	0.100	0.000	0.004
A2	0.900	1.100	0.035	0.043
b	0.300	0.500	0.012	0.020
c	0.132	0.202	0.005	0.008
D	2.800	3.000	0.110	0.118
E	2.250	2.550	0.089	0.100
E1	1.200	1.400	0.047	0.055
e	1.800	2.000	0.071	0.079
L	0.300	0.500	0.012	0.020
L1	0.550 TYP		0.022 TYP	
θ	0°	8°	0°	8°



Device	Package Type	MPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	T (mm)	W (mm)	E (mm)	F (mm)	P1 (mm)	P0 (mm)	D0 (mm)	D1 (mm)
SCM3560ATA	SOT-23-G	3000	180.0	8.5	3.15±0.1	2.77±0.1	1.22±0.1	0.25±0.03	8.0±0.3	1.75±0.1	3.5±0.1	4±0.1	4±0.1	1.5±0.1	1.0±0.1

## Mornsun Guangzhou Science & Technology Co.,Ltd.

Address: No.5,Kehui St.1,Kehui Development Center,Science Ave.,Guangzhou Science City,huangpu District,Guangzhou,P.R.China

Tel: 86-20-38601850

Fax: 86-20-38601272

Email: info@mornsun.cn