

SCM9602A Ultra-high Voltage Start-up controller

Features

- Ideal for applications requiring an ultra-wide input voltage range (40V_{DC} to 5000V_{DC})
- Low-cost design featuring large starting current in small physical package

Package



Mechanical package: SOT-23
(see "Ordering information" for details).

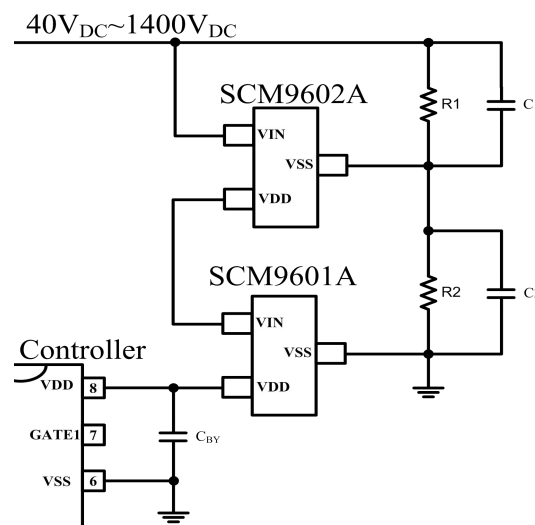
Applications

- Used for converters with ultra-wide input voltage of 40V_{DC} to 5000V_{DC}.

Functional Description

The SCM9602A chip can be used stand-alone or to increase the input voltage range from 40V_{DC} to 5,000V_{DC} when used in combination with our SCM9601A part.

Typical Application Circuit



Application shown with an Input Voltage of 40V_{DC} to 1400V_{DC} where SCM9601A and SCM9602A are combined and connected in series

Absolute Maximum Ratings

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

Parameter	Symbol	Min	Max	Unit
Bias mains voltage	V_{VDD}		40	V
Voltage at the VIN pin	V_{VIN}		700	
Operating junction temperature	T_J	-40	150	°C
Storage temperature	T_{STG}	-40	150	
Lead temperature for soldering (0.6mm from the case within 10s)			260	
Electrostatic Discharge (ESD) rating	Human body model (HBM)		2000	V
	Charging device model (CDM)		1000	

Important: Exposure to Absolute Maximum Rated conditions for an extended period may severely affect the device reliability, and stress levels exceeding the "Absolute Maximum Ratings" may result in permanent damage.

Recommended Operating Conditions

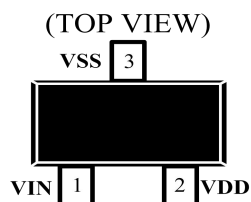
Parameter	Symbol	Min	Max	Unit
Bias mains voltage	V_{VDD}	9	20	V
Operating junction temperature	T_J	-40	125	°C

Electrical Characteristics

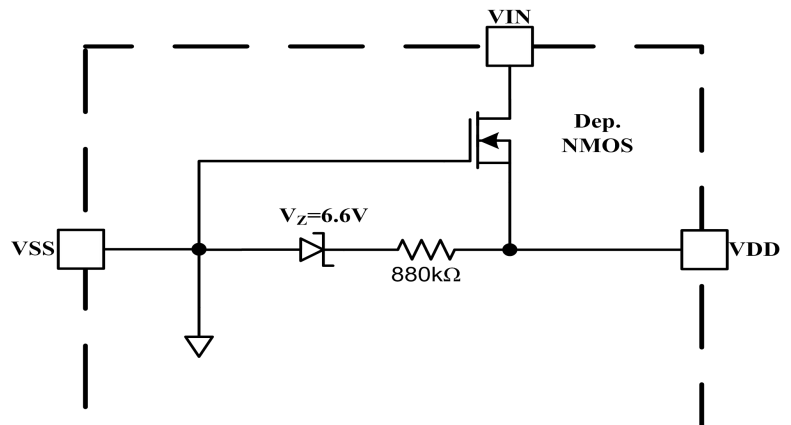
General test conditions: Free-air, normal operating temperature range, $V_{SS}=0V$ (unless otherwise specified).

Symbol	Parameter	Test condition	Min	Typ	Max	Unit
V_{BR}	Breakdown voltage of the VIN pin	$V_{VSS} = -8V, I_{VIN} = 10\mu A, V_{VDD} = 0V$	700	-	-	V
V_{TH}	Threshold voltage	$V_{VIN} = 40V, I_{VDD} = 1\mu A$	2	3	4	V
I_{STH}	Maximum starting current	$V_{VIN} = 40V, V_{VDD} = 0V$	1	2	4	mA
I_{DSS}	Leak current of the leakage source	$V_{VSS} = -8V, V_{VIN} = 700V, V_{VDD} = 0V$	-	-	2	μA

Pin Connection



Internal Block Diagram



Pin descriptions

Pin No.	Pin name	I/O	Description
1	VIN	P	The high voltage input obtains power from the input voltage and charges the bypass capacitor of the VDD pin to start the controller.
2	VDD	P	Power pin.
3	VSS	P	IC Ground connection

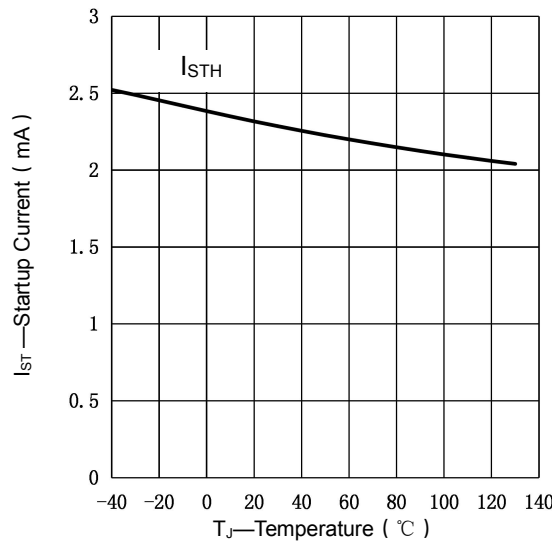


Figure 1 Starting Current versus Temperature

Ordering Information

Part number	Package	Number of pins	Product Marking	Tape & Reel
SCM9602ATA	SOT-23	3	9602	3K/REEL

Product marking and date code

SCM9602XYZ:

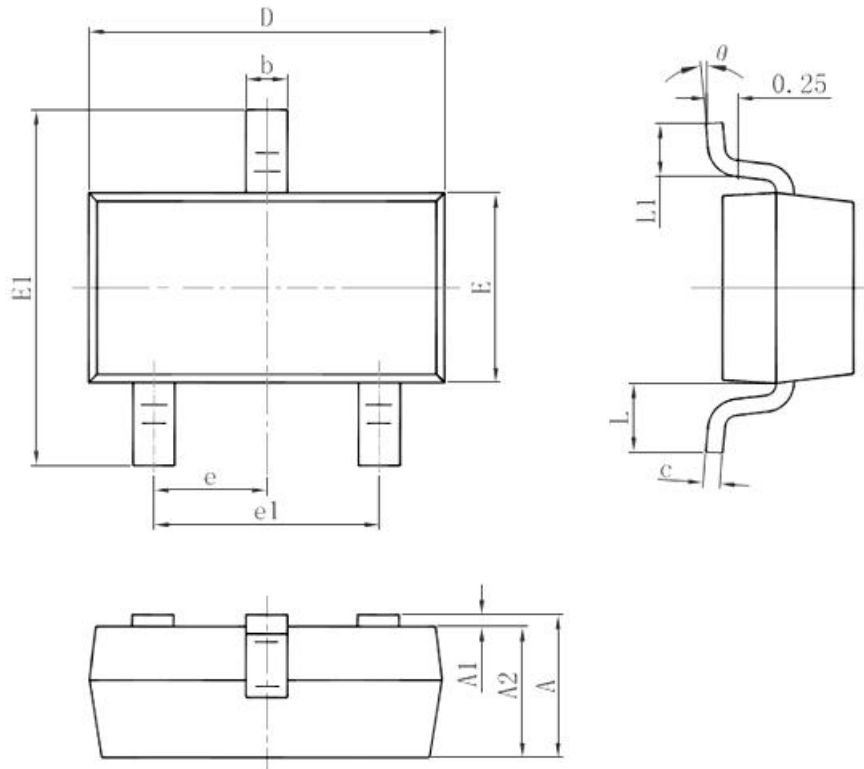
(1) SCM9602 = Product designation.

(2) X = Version code information (A-Z).

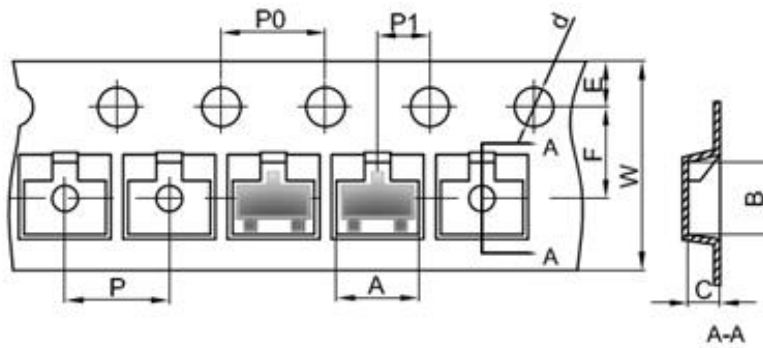
(3) Y = Packaging definition code; T for SOT package.

(4) Z = Operating temperature range (C = 0°C to +70°C, I = -40°C to +85°C, A = -40°C to +125°C, M = -55°C to +125°C).

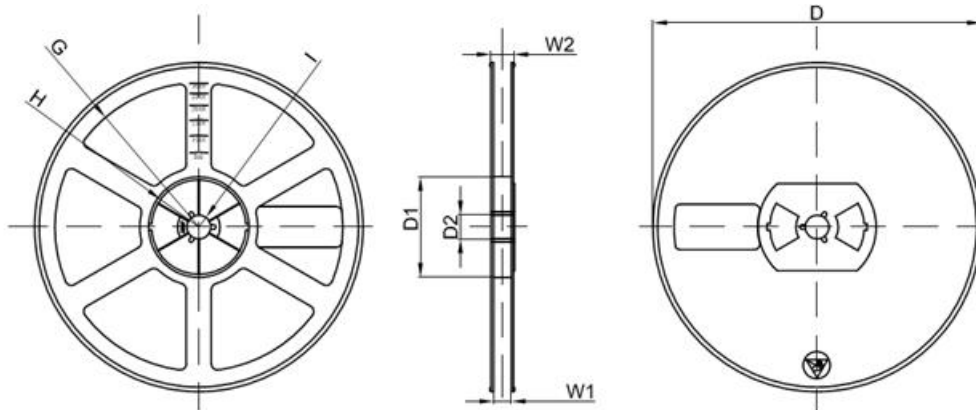
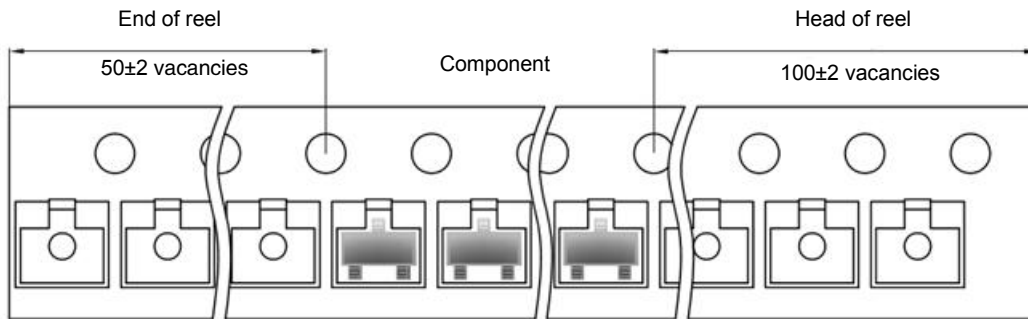
Package Information (SOT-23)



SOT-23				
Mark	Dimensions (mm)		Dimensions (")	
	Minimum	Maximum	Minimum	Maximum
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.1
e	0.950 Typical value		0.037 Typical value	
e1	1.800	2.000	0.071	0.079
L	0.550 reference value		0.022 reference value	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°



Dimensions (mm)									
Mark	A	B	C	d	E	F	P0	P1	W
SOT-23	3.15	2.77	1.22	Φ1.50	1.75	3.50	4.00	2.00	8.00
Tolerance	+/-0.1	+/-0.1	+/-0.1	+/-0.1	+/-0.1	+/-0.1	+/-0.1	+/-0.1	+0.3/-0.1



Dimensions (mm)								
Mark	D	D1	D2	G	H	I	W1	W2
7" reel	Φ178.00	54.40	13.00	78.00 (radius)	25.60 (radius)	6.50 (radius)	9.50	12.30
Tolerance	+/-2	+/-1	+/-1	+/-1	+/-1	+/-1	+/-1	+/-1

On reel	Reel dimensions	In carton	Carton dimensions (mm)	In plate box	Plate box dimensions (mm)
3000PCS	7"	45,000PCS	203*203*195	180,000PCS	438*438*220

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