



SGM3005CQ

Automotive, Ultra-Low On-Resistance, Low Voltage, Dual, SPDT Analog Switch

GENERAL DESCRIPTION

The SGM3005CQ is a dual, low on-resistance, low voltage, bidirectional, single-pole/double-throw (SPDT) CMOS analog switch designed to operate from a single 1.8V to 5.5V power supply. Targeted applications include battery-powered equipment that benefit from low R_{ON} (0.5Ω) and fast switching speeds ($t_{ON} = 33ns$, $t_{OFF} = 25ns$).

The on-resistance profile is very flat over the full analog signal range. This ensures excellent linearity and low distortion when switching audio signals.

The SGM3005CQ is a committed dual single-pole/double-throw (SPDT) that consists of two normally open (NO) and two normally close (NC) switches. This configuration can be used as a dual 2-to-1 multiplexer.

The device is AEC-Q100 qualified (Automotive Electronics Council (AEC) standard Q100 Grade 1) and it is suitable for automotive applications.

The SGM3005CQ is available in a Green MSOP-10 package. It operates over an ambient temperature range of $-40^{\circ}C$ to $+125^{\circ}C$.

FEATURES

- **AEC-Q100 Qualified for Automotive Applications**
Device Temperature Grade 1
 $T_A = -40^{\circ}C$ to $+125^{\circ}C$
- **Supply Voltage Range: 1.8V to 5.5V**
- **Low On-Resistance: 0.5Ω (TYP) at $V_+ = 5V$**
- **Low On-Resistance Flatness:**
 0.2Ω (TYP) at $V_+ = 5V$
- **-3dB Bandwidth: 15MHz at $V_+ = 5V$**
- **Fast Switching Times at $V_+ = 5V$**
 $t_{ON} = 22ns$
 $t_{OFF} = 20ns$
- **Rail-to-Rail Operation**
- **Low Power Consumption**
- **TTL/CMOS Compatible**
- **$-40^{\circ}C$ to $+125^{\circ}C$ Operating Temperature Range**
- **Available in a Green MSOP-10 Package**

APPLICATIONS

Automotive Applications
Communication Systems
Sample-and-Hold Circuits
Audio Signal Routing
Audio and Video Switching
Portable Test and Measurement

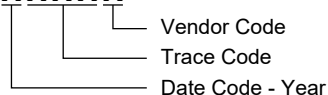
PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE TOP MARKING	PACKING OPTION
SGM3005CQ	MSOP-10	-40°C to +125°C	SGM3005CQMS10G/TR	24IMS10 XXXXXX	Tape and Reel, 4000

MARKING INFORMATION

NOTE: XXXXX = Date Code, Trace Code and Vendor Code.

XXXXX



Green (RoHS & HSF): SG Micro Corp defines "Green" to mean Pb-Free (RoHS compatible) and free of halogen substances. If you have additional comments or questions, please contact your SGMICRO representative directly.

ABSOLUTE MAXIMUM RATINGS

V ₊ to GND	-0.3V to 6V
Analog, Digital Voltage Range	-0.3V to (V ₊ + 0.3V)
Continuous Current NO, NC, or COM	±300mA
Peak Current NO, NC, or COM	±500mA
Package Thermal Resistance	
MSOP-10, θ _{JA}	124.6°C/W
MSOP-10, θ _{JB}	74.6°C/W
MSOP-10, θ _{JC}	47°C/W
Junction Temperature	+150°C
Storage Temperature Range	-65°C to +150°C
Lead Temperature (Soldering, 10s)	+260°C
ESD Susceptibility ^{(1) (2)}	
HBM	±4000V
CDM	±1000V

NOTES:

1. For human body model (HBM), all pins comply with AEC-Q100-002 specification.
2. For charged device model (CDM), all pins comply with AEC-Q100-011 specification.

RECOMMENDED OPERATING CONDITIONS

Operating Temperature Range	-40°C to +125°C
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OVERSTRESS CAUTION

Stresses beyond those listed in Absolute Maximum Ratings may cause permanent damage to the device. Exposure to absolute maximum rating conditions for extended periods may affect reliability. Functional operation of the device at any conditions beyond those indicated in the Recommended Operating Conditions section is not implied.

ESD SENSITIVITY CAUTION

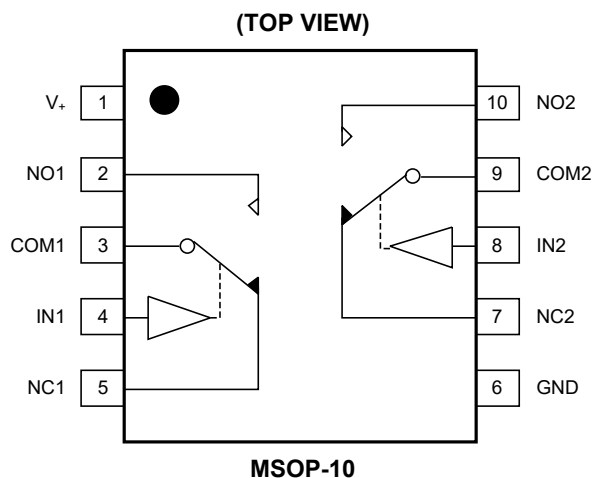
This integrated circuit can be damaged if ESD protections are not considered carefully. SGMICRO recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because even small parametric changes could cause the device not to meet the published specifications.

DISCLAIMER

SG Micro Corp reserves the right to make any change in circuit design, or specifications without prior notice.

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PIN CONFIGURATION



PIN DESCRIPTION

PIN	NAME	FUNCTION
1	V+	Power Supply.
2, 10	NO1, NO2	Normally-Open Pins.
3, 9	COM1, COM2	Common Pins.
4, 8	IN1, IN2	Digital Control Pins to Connect the COM Pins to the NO or NC Pins.
5, 7	NC1, NC2	Normally-Closed Pins.
6	GND	Ground.

NOTE: NO, NC and COM terminals may be an input or output.

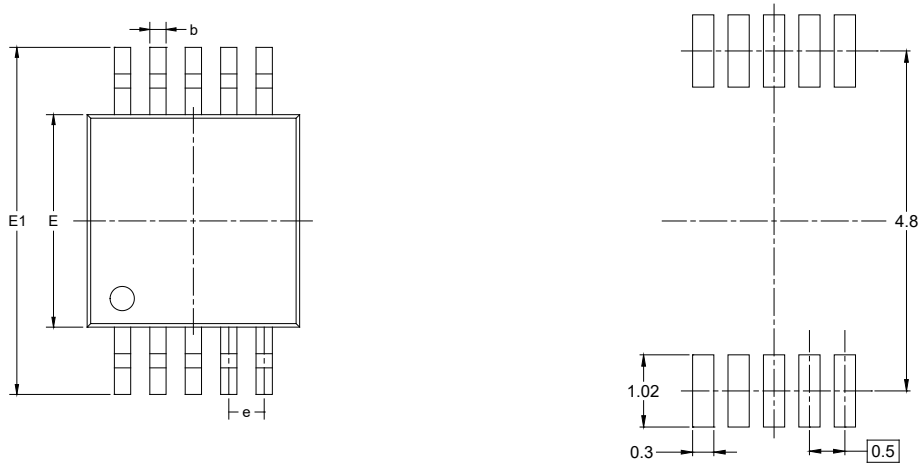
FUNCTION TABLE

LOGIC	NC1, NC2	NO1, NO2
0	ON	OFF
1	OFF	ON

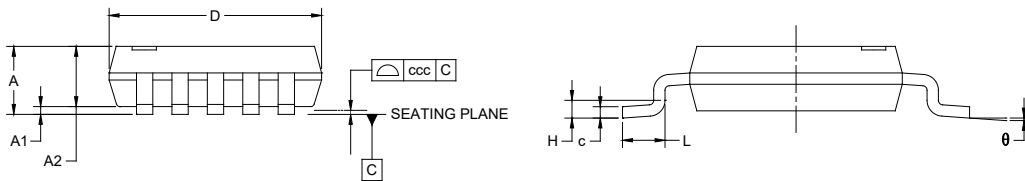
NOTE: Switches shown for logic "0" input.

PACKAGE OUTLINE DIMENSIONS

MSOP-10



RECOMMENDED LAND PATTERN (Unit: mm)



Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A	-	-	1.100
A1	0.000	-	0.150
A2	0.750	-	0.950
b	0.170	-	0.330
c	0.080	-	0.230
D	2.900	-	3.100
E	2.900	-	3.100
E1	4.750	-	5.050
e	0.500 BSC		
H	0.250 TYP		
L	0.400	-	0.800
θ	0°	-	8°
ccc	0.100		

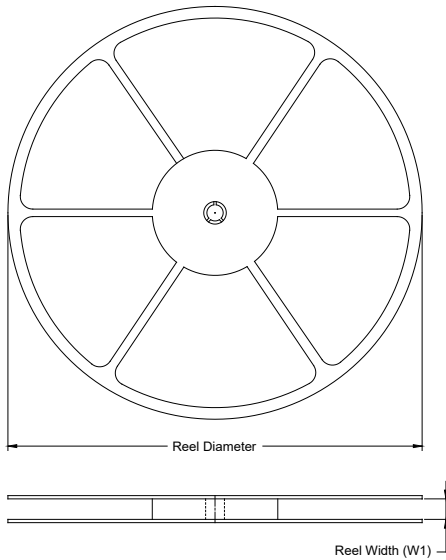
NOTES:

1. This drawing is subject to change without notice.
2. The dimensions do not include mold flashes, protrusions or gate burrs.
3. Reference JEDEC MO-187.

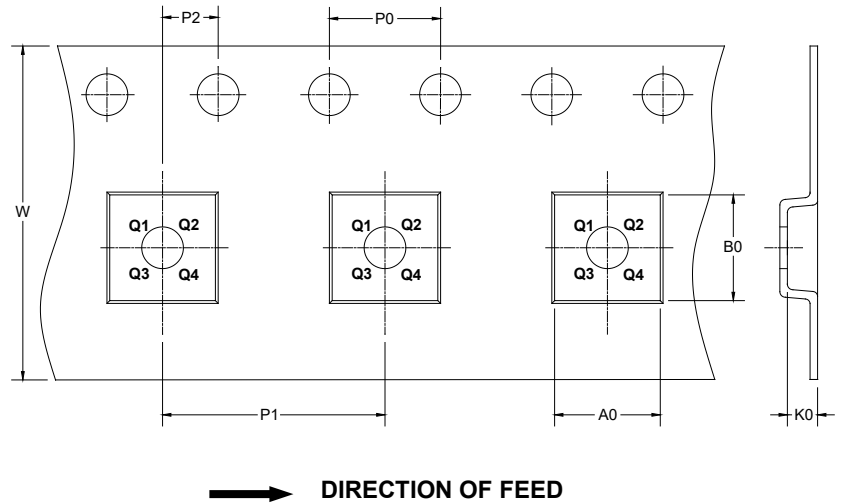
PACKAGE INFORMATION

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



NOTE: The picture is only for reference. Please make the object as the standard.

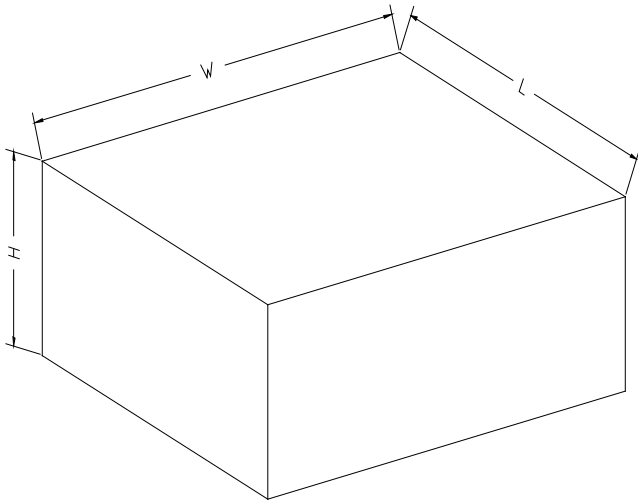
KEY PARAMETER LIST OF TAPE AND REEL

Package Type	Reel Diameter	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
MSOP-10	13"	12.4	5.30	3.20	1.50	4.0	8.0	2.0	12.0	Q1

DD00001

PACKAGE INFORMATION

CARTON BOX DIMENSIONS



NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF CARTON BOX

Reel Type	Length (mm)	Width (mm)	Height (mm)	Pizza/Carton
13"	386	280	370	5

DD0002