

GENERAL DESCRIPTION

The SGM3715 is a dual SPDT (single-pole/double-throw) analog switch. It operates from a 2.7V to 12V single power supply and allows negative signal passing with low distortion.

The SGM3715 features low on-resistance, high voltage and fast switching times. The high performances make it very suitable for multiple applications. In addition, the SGM3715 can be used as a dual 2-to-1 multiplexer because it has two normally open and close switches, respectively.

The SGM3715 is available in Green WLCSP- 1.27×2.13 -15B package. It operates over an ambient temperature range of -40°C to +85°C.

FEATURES

- Single Supply Voltage Range: 2.7V to 12V
- On-Resistance for Switches: 0.8Ω (TYP)
- -V_{cc} to +V_{cc} Rail-to-Rail Low Distortion Positive and Negative Signal Passing
- High Off-Isolation
- Very Low Crosstalk
- 1.8V Logic Compatible Control Pin
- Break-Before-Make Switching
- -40°C to +85°C Operating Temperature Range
- Available in Green WLCSP-1.27×2.13-15B Package

APPLICATIONS

Portable Equipment Battery-Powered Systems

PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM3715	WLCSP-1.27×2.13-15B	-40°C to +85°C	SGM3715YG/TR	XXXXX 3715	Tape and Reel, 3000

NOTE: XXXXX = Date Code and Vendor Code.

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 _{CC} to GND0V to 13.2V
IN1, IN2, EN to GND0V to 6V
Analog Voltage Range $^{(1)}$ (-V _{CC} - 0.3V) to (V _{CC} + 0.3V)
Continuous Current from NO to COM±350mA
Continuous Current from NC to COM
Peak Current from NO to COM±400mA
Peak Current from NC to COM ±400mA
I/O Clamp Current (VI < 0)30mA
Junction Temperature+150°C
Storage Temperature Range65°C to +150°C
Lead Temperature (Soldering, 10s)+260°C
ESD Susceptibility
HBM
MM400V
CDM

NOTE:

1. Internal diodes will clamp voltages at NC, NO, or COM that exceed Vcc or GND. Limit the current through the forward diode to the maximum ratings.

RECOMMENDED OPERATING CONDITIONS

Supply Voltage Range	2.7V to 12V
Operating Temperature Range	40°C to +85°C

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.

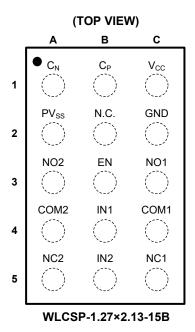
DISCLAIMER

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



SGM3715

PIN CONFIGURATION



PIN DESCRIPTION

PIN	NAME	FUNCTION
A1	C _N	Charge Pump Flying Capacitor Negative Pin.
B1	CP	Charge Pump Flying Capacitor Positive Pin.
C1	Vcc	Power Supply Pin.
A2	PVss	Negative Supply Voltage Output Pin. Connect one $0.1 \mu F$ ceramic capacitor from PV_{SS} to GND.
B2	N.C.	No Connection.
C2	GND	Ground.
A3	NO2	Normally-Open Pin.
В3	EN	Enable Control Pin. When EN = "Low", both NC and NO are disconnected with COM, negative charge pump does not work and the SGM3715 is in shutdown state. When EN = "High", negative charge pump works, the SGM3715 is in working state, and NC or NO is connected with COM depending on the logical state of IN.
C3	NO1	Normally-Open Pin.
A4	COM2	Common Pin.
B4	IN1	Digital Control Pin. It is used to connect COM1 to NO1 or NC1.
C4	COM1	Common Pin.
A5	NC2	Normally-Closed Pin.
B5	IN2	Digital Control Pin. It is used to connect COM2 to NO2 or NC2.
C5	NC1	Normally-Closed Pin.

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



FUNCTION TABLE

 Table 1. Function Table of Switch 1:

EN	IN1	COM1	NEGATIVE CHARGE PUMP
0	Х	COM1 is disconnected with NO1 and NC1	Turn off
1	0	COM1 = NC1	Turn on
1	1	COM1 = NO1	Turn on

Table 2. Function Table of Switch 2:

EN	IN2	COM2	NEGATIVE CHARGE PUMP
0	Х	COM2 is disconnected with NO2 and NC2	Turn off
1	0	COM2 = NC2	Turn on
1	1	COM2 = NO2	Turn on



ELECTRICAL CHARACTERISTICS

(V_{CC} = 3.3V, Full = -40°C to +85°C. Typical values are at T_A = +25°C, unless otherwise noted.)

20, V _{NC} , V _{COM} R _{ON} ΔR _{ON} RFLAT(ON) (OFF), I _{NO(OFF)} (ON), I _{NO(ON)} , I _{COM(ON)} V _{INH}	$I_{COM} = -50 \text{mA},$ $-V_{CC} \le V_{NO} \text{ or } V_{I_{COM}} = -50 \text{mA},$ $-V_{CC} \le V_{NO} \text{ or } V_{I_{COM}} = -50 \text{mA},$ $V_{NO} \text{ or } V_{NC} = -20 \text{ or } V_{COM} = 2.8 \text{ V}, -100 \text{ or } V_{NC} = -20 \text{ or } V_{NO} \text{ or } V_{NC} = -20 \text{ or } V_{NC} =$	Test Circuit 1 $V_{NC} \leq V_{CC}$, Test Circuit 1 $V_{NC} \leq V_{CC}$, Test Circuit 1 2.8V, 2.8V, 2.8V, 2.8V, V _{COM} = floating,	Full +25°C Full +25°C Full +25°C Full +25°C Full +25°C	-V _{cc}	0.8	+V _{cc} 1.1 1.7 0.15 0.25 0.15 0.2 0.5	ν Ω Ω
R _{ON} ΔR _{ON} RFLAT(ON) (OFF), INO(OFF) (ON), INO(ON), ICOM(ON) VINH	$I_{COM} = -50 \text{mA},$ $-V_{CC} \le V_{NO} \text{ or } V_{I_{COM}} = -50 \text{mA},$ $-V_{CC} \le V_{NO} \text{ or } V_{I_{COM}} = -50 \text{mA},$ $V_{NO} \text{ or } V_{NC} = -20 \text{ or } V_{COM} = 2.8 \text{ V}, -100 \text{ or } V_{NC} = -20 \text{ or } V_{NO} \text{ or } V_{NC} = -20 \text{ or } V_{NC} =$	Test Circuit 1 $V_{NC} \leq V_{CC}$, Test Circuit 1 $V_{NC} \leq V_{CC}$, Test Circuit 1 2.8V, 2.8V, 2.8V, 2.8V, V _{COM} = floating,	+25°C Full +25°C Full +25°C Full Full		0.01	1.1 1.7 0.15 0.25 0.15 0.25	Ω
ΔR _{ON} R _{FLAT(ON)} (OFF), I _{NO(OFF)} (ON), I _{NO(ON)} , I _{COM(ON)} V _{INH}	$I_{COM} = -50 \text{mA},$ $-V_{CC} \le V_{NO} \text{ or } V_{I_{COM}} = -50 \text{mA},$ $-V_{CC} \le V_{NO} \text{ or } V_{I_{COM}} = -50 \text{mA},$ $V_{NO} \text{ or } V_{NC} = -20 \text{ or } V_{COM} = 2.8 \text{ V}, -100 \text{ or } V_{NC} = -20 \text{ or } V_{NO} \text{ or } V_{NC} = -20 \text{ or } V_{NC} =$	Test Circuit 1 $V_{NC} \leq V_{CC}$, Test Circuit 1 $V_{NC} \leq V_{CC}$, Test Circuit 1 2.8V, 2.8V, 2.8V, 2.8V, V _{COM} = floating,	Full +25°C Full +25°C Full +25°C Full	-0.5	0.01	1.7 0.15 0.25 0.15 0.2	Ω
ΔR _{ON} R _{FLAT(ON)} (OFF), I _{NO(OFF)} (ON), I _{NO(ON)} , I _{COM(ON)} V _{INH}	$I_{COM} = -50 \text{mA},$ $-V_{CC} \le V_{NO} \text{ or } V_{I_{COM}} = -50 \text{mA},$ $-V_{CC} \le V_{NO} \text{ or } V_{I_{COM}} = -50 \text{mA},$ $V_{NO} \text{ or } V_{NC} = -20 \text{ or } V_{COM} = 2.8 \text{ V}, -100 \text{ or } V_{NC} = -20 \text{ or } V_{NO} \text{ or } V_{NC} = -20 \text{ or } V_{NC} =$	Test Circuit 1 $V_{NC} \leq V_{CC}$, Test Circuit 1 $V_{NC} \leq V_{CC}$, Test Circuit 1 2.8V, 2.8V, 2.8V, 2.8V, V _{COM} = floating,	+25°C Full +25°C Full +25°C Full	-0.5	0.05	0.15 0.25 0.15 0.2	Ω
R _{FLAT(ON)} (OFF), I _{NO(OFF)} (ON), I _{NO(ON)} , I _{COM(ON)} V _{INH}	$I_{COM} = -50 \text{mA},$ $-V_{CC} \le V_{NO} \text{ or } V_{I_{COM}} = -50 \text{mA},$ $V_{NO} \text{ or } V_{NC} = -2 \text{ or } V_{COM} = 2.8 \text{ V}, -1 \text{ or } V_{NC} = -2 \text{ or } V_{N$	Test Circuit 1 $V_{NC} \leq V_{CC},$ Test Circuit 1 2.8V, 2.8V, 2.8V, 2.8V, 2.8V, 2.8V, V _{COM} = floating,	Full +25°C Full +25°C Full	-0.5	0.05	0.25 0.15 0.2	
R _{FLAT(ON)} (OFF), I _{NO(OFF)} (ON), I _{NO(ON)} , I _{COM(ON)} V _{INH}	$-V_{CC} \le V_{NO} \text{ or } V_{I_{COM}} = -50 \text{mA},$ $V_{NO} \text{ or } V_{NC} = -2 \text{ or } V_{COM} = 2.8 \text{ V}, -1 \text{ or } V_{NC} = -2 \text{ or } V_{NC}$	$V_{\rm NC} \leq V_{\rm CC}$, Test Circuit 1 2.8V, 2.8V, 2.8V 2.8V, 2.8V, V _{COM} = floating,	+25°C Full +25°C Full	-0.5		0.15 0.2	
(0FF), INO(0FF) ((ON), INO(ON), ICOM(ON) VINH	$I_{COM} = -50 \text{mA},$ $V_{NO} \text{ or } V_{NC} = -2$ $V_{COM} = 2.8 \text{V}, -2$ $V_{NO} \text{ or } V_{NC} = -2$	2.8V, 2.8V, 2.8V, 2.8V, 2.8V, 2.8V, V _{COM} = floating,	Full +25°C Full	-0.5		0.2	Ω
(0FF), INO(0FF) ((ON), INO(ON), ICOM(ON) VINH	V_{NO} or $V_{NC} = -2$ $V_{COM} = 2.8V$, - V_{NO} or $V_{NC} = -2$	2.8V, 2.8V, 2.8V 2.8V, 2.8V, V _{COM} = floating,	+25℃ Full	-0.5	0.01	-	Ω
(_(ON) , I _{NO(ON)} , I _{COM(ON)} V _{INH}	$V_{COM} = 2.8V, -$	2.8V 2.8V, 2.8V, V _{COM} = floating,	Full	-0.5	0.01	0.5	
(_(ON) , I _{NO(ON)} , I _{COM(ON)} V _{INH}	V_{NO} or $V_{NC} = -2$	2.8V, 2.8V, V _{сом} = floating,					
I _{COM(ON)} V _{INH}	$V_{CC} = V_{NO}, V_{NC} = V_{CC},$ $I_{COM} = -50mA, Test Circuit 1$ $-V_{CC} \leq V_{NO} \text{ or } V_{NC} \leq V_{CC},$ $I_{COM} = -50mA, Test Circuit 1$ $-V_{CC} \leq V_{NO} \text{ or } V_{NC} \leq V_{CC},$ $I_{COM} = -50mA, Test Circuit 1$ $V_{NO} \text{ or } V_{NC} = -2.8V, 2.8V,$ $V_{COM} = floating,$ $V_{COM} = 2.8V, -2.8V$ $V_{NO} \text{ or } V_{NC} = -2.8V, 2.8V,$ $V_{COM} = -2.8V, 2.8V,$ $V_{CC} = 2.7V \text{ to } 12V$ $V_{CC} $	+25°C			1	μA	
I _{COM(ON)} V _{INH}	or V _{NO} or V _{NC} =	= floating, V _{COM} = -2.8V, 2.8V		-0.5	0.01	0.5	
		U . I . I . I . I . I .	Full			1	μA
N/	V_{CC} = 2.7V to	12V	Full	1.5		5.5	V
V _{INL}	V_{CC} = 2.7V to	12V	Full	0		0.5	V
			+25°C		600		kΩ
	ı						
t _{on}		V, R _L = 50Ω, C _L = 35pF,	+25°C		820		μs
t _{OFF}		+25°C		180		μs	
t _D					680		μs
				-130			
O _{ISO}			+25℃		-50		dB
	f = 1kHz, R _L =				-120		
X _{TALK}	f = 1MHz, R _L =	+25℃		-60		dB	
BW	$R_L = 50\Omega, C_L =$		+25°C		100		MHz
C _{ON}			+25°C		60		pF
Q	$V_{G} = GND, R_{G}$	= 0Ω , C _L = 1nF, Test Circuit 7	+25°C		1000		pС
					-113		•
			-		-115		dB
					-113		
THD	A-Weighting,		+25°C				
	Iest Circuit 8						
	Quaitab March		. 0500				ms
	PULL DOWN t _{ON} t _{OFF} t _D O _{ISO} X _{TALK} BW	ULL DOWN t_{ON} V_{NO} or $V_{NC} = 1$ Test Circuit 2 t_{OFF} V_{NO} or $V_{NC} = 1$ Test Circuit 2 t_D V_{NO} or $V_{NC} = 1$ Test Circuit 2 t_D V_{NO} or $V_{NC} = 1$ Test Circuit 2 t_D V_{NO} or $V_{NC} = 1$ Test Circuit 4 0_{ISO} $f = 1$ KHz, $R_L =$ Test Circuit 4 $f = 1$ MHz, $R_L =$ Signal = 0dBm X_{TALK} $f = 1$ KHz, $R_L =$ Test Circuit 6BW $R_L = 50\Omega$, $C_L =$ Test Circuit 6Q $V_G = GND$, R_G THDA-Weighting, Test Circuit 8	PULL DOWN VNO OF VNC = 1V, RL = 50Ω, CL = 35pF, Test Circuit 2 toFF V_{NO} or V_{NC} = 1V, RL = 50Ω, CL = 35pF, Test Circuit 2 tD V_{NO1} or V_{NC1} = V_{NO2} or V_{NC2} = 1V, RL = 50Ω, CL = 35pF, Test Circuit 3 T_{D} V_{NO1} or V_{NC1} = $32Ω$, Signal = 0dBm, Test Circuit 4 O_{ISO} f = 1kHz, RL = 50Ω, CL = 5pF, Signal = 0dBm, Test Circuit 4 T = 1MHz, RL = 50Ω, CL = 5pF, Signal = 0dBm, Test Circuit 4 T = 1MHz, RL = 50Ω, CL = 5pF, Signal = 0dBm, Test Circuit 5 T_{TALK} f = 1kHz, RL = 50Ω, CL = 5pF, Signal = 0dBm, Test Circuit 5 BW R_L = 50Ω, CL = 5pF, Signal = 0dBm, Test Circuit 5 BW R_L = 50Ω, CL = 5pF, Signal = 0dBm, Test Circuit 6 CON V_G = GND, RG = 0Ω, CL = 1nF, Test Circuit 7 Q V_G = GND, RG = 0Ω, CL = 1nF, Test Circuit 7 VNO, VNC = 2V_{PP}, RL = 600Ω V_{NO} , V_{NC} = 2V_{PP}, RL = 600Ω VNO, VNC = 1V_{PP}, RL = 32Ω V_{NO} , V_{NC} = 0.5V_{PP}, RL = 32Ω THD Ferticular V_{NO} , V_{NC} = 0.5V_{PP}, RL = 32Ω	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	PULL DOWN +25°C t_{ON} V_{NO} or $V_{NC} = 1V$, $R_L = 50\Omega$, $C_L = 35pF$, $+25°C$ t_{OFF} V_{NO} or $V_{NC} = 1V$, $R_L = 50\Omega$, $C_L = 35pF$, $+25°C$ t_D V_{NO1} or $V_{NC1} = V_{NO2}$ or $V_{NC2} = 1V$, $R_L = 50\Omega$, $C_L = 35pF$, Test Circuit 3 $+25°C$ t_D V_{NO1} or $V_{NC1} = 32\Omega$, Signal = 0dBm, Test Circuit 4 $+25°C$ O_{ISO} $f = 1kHz$, $R_L = 32\Omega$, Signal = 0dBm, Test Circuit 4 $+25°C$ N_{TALK} $f = 1kHz$, $R_L = 32\Omega$, Signal = 0dBm, Test Circuit 4 $+25°C$ X_{TALK} $f = 1kHz$, $R_L = 32\Omega$, Signal = 0dBm, Test Circuit 4 $+25°C$ N_{TALK} $f = 1kHz$, $R_L = 50\Omega$, $C_L = 5pF$, Signal = 0dBm, Test Circuit 5 $+25°C$ BW $R_L = 50\Omega$, $C_L = 5pF$, Signal = 0dBm, Test Circuit 5 $+25°C$ BW $R_L = 50\Omega$, $C_L = 5pF$, Signal = 0dBm, Test Circuit 7 $+25°C$ Q $V_G = GND$, $R_G = 0\Omega$, $C_L = 1nF$, Test Circuit 7 $+25°C$ Q $V_G = GND$, $R_G = 0\Omega$, $C_L = 1nF$, Test Circuit 7 $+25°C$ THD A -Weighting, Test Circuit 8 V_{NO} , $V_{NC} = 2V_{PP}$, $R_L = 32\Omega$ V_{NO} , V_{NO} , $V_{NC} = 1V_{PP}$, $R_L = 32\Omega$ THD A -Weighting, Test Circuit 8 V_{NO} , $V_{NC} = 1V_{PP}$, $R_L = 32\Omega$	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $



ELECTRICAL CHARACTERISTICS (continued)

(V_{CC} = 5V, Full = -40°C to +85°C. Typical values are at T_A = +25°C, unless otherwise noted.)

PARAMETER	SYMBOL		CONDITIONS	TEMP	MIN	TYP	MAX	UNITS
Analog Switch								
Analog Signal Range	V_{NO}, V_{NC}, V_{COM}			Full	-V _{CC}		+V _{CC}	V
	_	-V _{CC} ≤ V _{NO} , V _N	ıc ≤ Vcc.	+25°C		0.8	1.1	
On-Resistance	R _{ON}	$I_{COM} = -50 \text{mA},$		Full			1.7	Ω
On-Resistance Match between		$-V_{CC} \le V_{NO} \text{ or } V_{NC} \le V_{CC},$		+25°C		0.01	0.15	0
Channels	ΔR_{ON}	I _{сом} = -50mA,		Full			0.25	12
On-Resistance Flatness	R _{FLAT(ON)}	-V _{CC} ≤ V _{NO} or V	V _{NC} ≤ V _{CC} ,	+25°C		0.01	0.15	0
	INFLAT(ON)	I _{сом} = -50mA,	Test Circuit 1	Full			0.2	12
Source Off Leakage Current	I _{NC(OFF)} , I _{NO(OFF)}	$V_{\rm NO}$ or $V_{\rm NC}$ = -		+25°C	-0.5	0.01	0.5	
Course on Ecology Current	INC(UFF), INO(UFF)	V _{сом} = 4.5V, -	4.5V	Full			1	μι
Channel On Leakage Current	I _{NC(ON)} , I _{NO(ON)} ,		4.5V, 4.5V, V_{COM} = floating,	+25°C	-0.5	0.01	0.5	μА
Chamiler on Loakage Carlon	I _{COM(ON)}	or V _{NO} or V _{NC}	= floating, V_{COM} = -4.5V, 4.5V	Full			1	μ, ι
Dynamic Characteristics	1	T				1	1	
Turn-On Time	t _{on}	V_{NO} or V_{NC} = 1 Test Circuit 2	$V, R_L = 50\Omega, C_L = 35 pF,$	+25℃		880		μs
Turn-Off Time	t _{OFF}	V_{NO} or V_{NC} = 1 Test Circuit 2				190		μs
Break-Before-Make Delay Time	t _D	V_{NO1} or $V_{NC1} = R_L = 50\Omega, C_L = 0$	+25°C		720		μs	
Off-Isolation		f = 1kHz, R∟ = 32Ω, Signal = 0dBm, Test Circuit 4				-130		
	O _{ISO}	f = 1MHz, R _L = Signal = 0dBn	+25℃		-50		ав	
		f = 1kHz, R _L = 32Ω, Signal = 0dBm, Test Circuit 5				-120		
Channel-to-Channel Crosstalk	X _{TALK}	Test Circuit 5 f = 1MHz, R_L = 50 Ω , C_L = 5pF,		+25℃		-60		dB
-3dB Bandwidth	BW	R _L = 50Ω, C _L = 5pF, Signal = 0dBm, Test Circuit 6		+25°C		100		MHz
Channel On Capacitance	C _{ON}			+25°C		60		pF
Charge Injection	Q	$f = 1MHz, R_{L} = 50\Omega, C_{L} = 5pF,$ Signal = 0dBm, Test Circuit 5 $R_{L} = 50\Omega, C_{L} = 5pF, Signal = 0dBm,$ Test Circuit 6 $V_{G} = GND, R_{G} = 0\Omega, C_{L} = 1nF, Test Circuit 7$ $V_{NO}, V_{NC} = 2V_{RMS}, R_{L} = 600\Omega$		+25°C		1000		рС
			V_{NO} , V_{NC} = $2V_{RMS}$, R_L = 600Ω			-117		
			V_{NO} , V_{NC} = $2V_{PP}$, R_L = 600Ω	$\begin{array}{c c c c c c c c c c c c c c c c c c c $				
			V_{NO} , V_{NC} = $2V_{PP}$, R_L = 32Ω			-113		dB
Total Harmonic Distortion	THD	A-Weighting, Test Circuit 8	V_{NO} , V_{NC} = $1V_{PP}$, R_L = 600Ω	+25°C		-112		
			V_{NO} , V_{NC} = $1V_{PP}$, R_L = 32Ω			-110		
			$V_{NO}, V_{NC} = 0.5 V_{PP}, R_{L} = 600 \Omega$			-108		-
			V_{NO}, V_{NC} = 0.5 V_{PP}, R_{L} = 32 Ω			-104		
Start-Up Time	t _{start}	Switch V _{EN} = 0	VV to V_{EN} = 1.5V	+25°C		0.5		ms
Power Requirements								
Power Supply Current	L	V _{IN} = 0V or 1.5	5// // = 1.5//	+25°C		520	650	
Power Supply Current	Icc	$v_{\rm IN} = 0$ V OI 1.3	JV, VEN - 1.JV	Full			680	μΑ
Power Supply Current in		V _{IN} = 0V or 1.5	5V/ V _{EN} = 0V	+25°C		0.4	1	11Δ
Shutdown State	I _{CC}	$ $ $V_{\rm IN} = 0$ V OI 1.	$v_{\rm EN} = 0v$	Full			1.5	μΛ

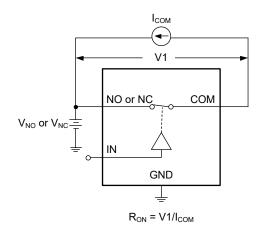
ELECTRICAL CHARACTERISTICS (continued)

(V_{CC} = 12V, Full = -40°C to +85°C. Typical values are at T_A = +25°C, unless otherwise noted.)

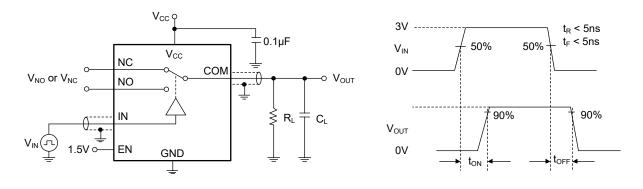
PARAMETER	SYMBOL		CONDITIONS	TEMP	MIN	TYP	MAX	UNITS
Analog Switch								
Analog Signal Range	V_{NO}, V_{NC}, V_{COM}			Full	-V _{CC}		+V _{CC}	V
	_	$-V_{CC} \leq V_{NO}, V_{N}$	uc ≤Vcc.	+25°C		0.8	1.1	
On-Resistance	R _{on}	$I_{COM} = -50 \text{mA},$		Full			1.7	Ω
On-Resistance Match between		-V _{CC} ≤ V _{NO} or V	$V_{NC} \leq V_{CC}$	+25°C		0.01	0.15	0
Channels	ΔR_{ON}	$I_{COM} = -50 \text{mA},$		Full			0.25	Ω
On Resistance Flatness	Р	$-V_{CC} \le V_{NO}$ or V	V _{NC} ≤ V _{CC} ,	+25°C		0.01	$\begin{array}{c c} & \Omega \\ \hline 0.25 \\ \hline 0.15 \\ 0.2 \\ \hline 0.6 \\ \Omega \\ \hline 0.7 \\ \Omega \\ \hline 0.7 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ $	0
On-Resistance Flatness	R _{FLAT(ON)}	I _{сом} = -50mA,	Test Circuit 1	Full			0.2	12
Source Off Lookage Current		V_{NO} or V_{NC} = -	11.5V, 11.5V,	+25°C	-1.5	0.05	1.5	
Source Off Leakage Current	I _{NC(OFF)} , I _{NO(OFF)}	V _{сом} = 11.5V,	V_{NO} or V_{NC} = 1V, R_L = 50 Ω , C_L = 35pF, Test Circuit 2 V_{NO1} or V_{NC1} = V_{NO2} or V_{NC2} = 1V, R_L = 50 Ω , C_L = 35pF, Test Circuit 3 = 1kHz, R_L = 32 Ω , Signal = 0dBm,				9	μΑ
Channel On Leakage Current	I _{NC(ON)} , I _{NO(ON)} ,	V_{NO} or $V_{NC} = -$	11.5V, 11.5V,	+25°C	-1.5	0.05	1.5	
Channel On Leakage Current	I _{COM(ON)}			Full			9	μΑ
Dynamic Characteristics								
Turn-On Time	t _{on}	V_{NO} or V_{NC} = 1 Test Circuit 2	V, $R_L = 50\Omega$, $C_L = 35pF$,	+25℃		1100		μs
Turn-Off Time	t _{OFF}	V_{NO} or V_{NC} = 1V, R_{L} = 50 $\Omega,~C_{\text{L}}$ = 35pF, Test Circuit 2		+25°C		200		μs
Break-Before-Make Delay Time	t _D		+25°C		950		μs	
Off-Isolation	_	f = 1kHz, R_L = 32 Ω , Signal = 0dBm, Test Circuit 4		. 05%0		-130		dB
	O _{ISO}		+25℃		-50			
		f = 1kHz, R _L = Test Circuit 5	+25℃		-120		- dB	
Channel-to-Channel Crosstalk	X _{TALK}		Test Circuit 5 f = 1MHz, R_L = 50 Ω , C_L = 5pF, Signal = 0dBm, Test Circuit 5			-60		
-3dB Bandwidth	BW	$R_L = 50\Omega$, $C_L = 5pF$, Signal = 0dBm, Test Circuit 6		+25°C		100		MHz
Channel On Capacitance	C _{ON}			+25°C		60		pF
Charge Injection	Q	V_{G} = GND, R_{G}	$_{s} = 0\Omega, C_{L} = 1nF$, Test Circuit 7	+25°C		1100		рС
			V_{NO} , V_{NC} = $2V_{RMS}$, R_L = 600Ω			-117		
			V_{NO} , V_{NC} = $2V_{PP}$, R_L = 600Ω		1100 μs 200 μs 950 μs -130 μs -130 μs -130 μs -130 μs -130 μs -100 μs -120 μ			
			V_{NO} , V_{NC} = $2V_{PP}$, R_L = 32Ω			-113		
Total Harmonic Distortion	THD	A-Weighting, Test Circuit 8	V_{NO} , V_{NC} = $1V_{PP}$, R_L = 600Ω	+25°C		-112		dB
			V_{NO} , V_{NC} = $1V_{PP}$, R_L = 32Ω			-110		
			$V_{NO}, V_{NC} = 0.5 V_{PP}, R_{L} = 600 \Omega$			-108		1
		$V_{NO}, V_{NC} = 0.5 V_{PP}, R_L = 32 \Omega$				-104		
Start Up Time	t _{start}	Switch $V_{EN} = 0V$ to $V_{EN} = 1.5V$		+25°C		0.5		ms
Power Requirements								
Power Supply Current		V = 0 V or 1 V	5)/)/ - 1 5)/	+25°C		620	780	
Power Supply Current	Icc	v _{IN} – UV OF 1.3	5V, V _{EN} = 1.5V	Full			800	μA
Power Supply Current in	I	V _{IN} = 0V or 1.5	5V/ V = 0V	+25°C		0.5	1.5	۸۱
Shutdown State	I _{CC}	$v_{\rm IN} = 0$ V OI 1.5	$v_{\rm N}$, $v_{\rm EN} = 0$	Full			2	μA

SGM3715

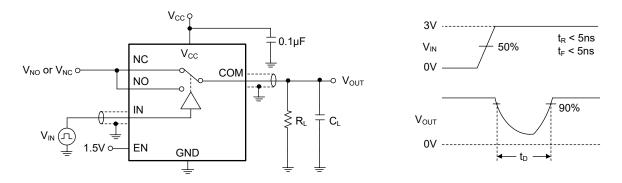
TEST CIRCUITS



Test Circuit 1. On-Resistance

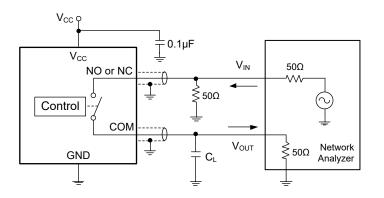


Test Circuit 2. Switching Times (ton, toff)

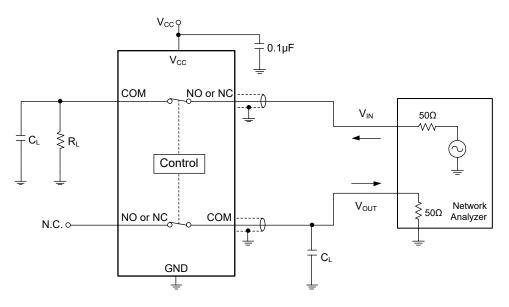


Test Circuit 3. Break-Before-Make Delay Time (t_D)

TEST CIRCUITS (continued)

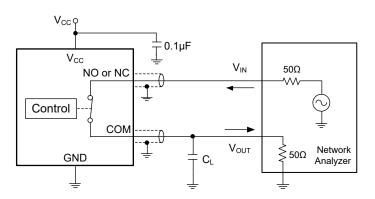


Test Circuit 4. Off-Isolation



Channel-to-Channel Crosstalk = -20log(V_{IN}/V_{OUT})

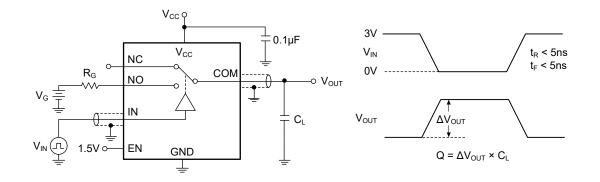
Test Circuit 5. Channel-to-Channel Crosstalk



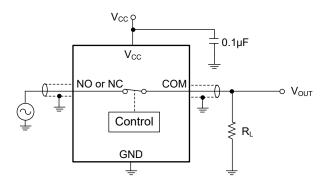
Test Circuit 6. -3dB Bandwidth



TEST CIRCUITS (continued)



Test Circuit 7. Charge Injection (Q)

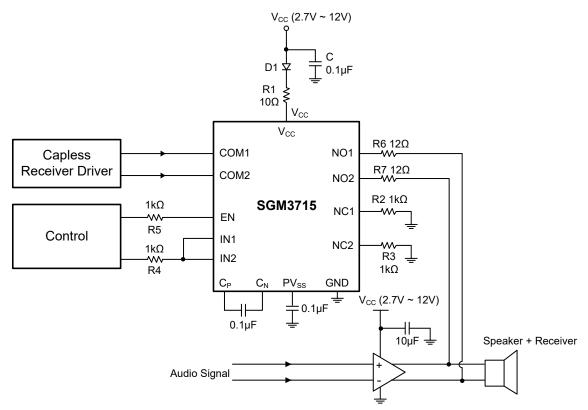


Test Circuit 8. Total Harmonic Distortion (THD)



APPLICATION INFORMATION

The combination of Speaker and Receiver is always used in portable devices, and high voltage class D speaker driver is used to drive speaker in order to provide high audio volume. But the high output voltage of class D speaker driver will damage the receiver driver. The SGM3715 provides the safe isolation between receiver driver and high voltage class D speaker driver. The SGM3715 provides low R_{ON} channels to pass the positive and negative signals from capless receiver driver. The circuit is shown in Figure 1.



High Voltage Class D Speaker Driver

Figure 1. Typical Application Circuit for Speaker + Receiver



APPLICATION INFORMATION (continued)

In order to improve audio performance of portable equipment, external speaker power amplifier is always selected to replace the internal integrated speaker power amplifier. Because the audio signal quality of audio line out or headset driver is better than that of the integrated speaker power amplifier, the audio signal of line out or headset driver is selected as the high performance audio signal source for external speaker power amplifier. High performance SGM3715 is used as the 1-to-2 HiFi signal switch in this application. The circuit is shown in Figure 2, and a stable 3.3V power supply is required in this circuit.

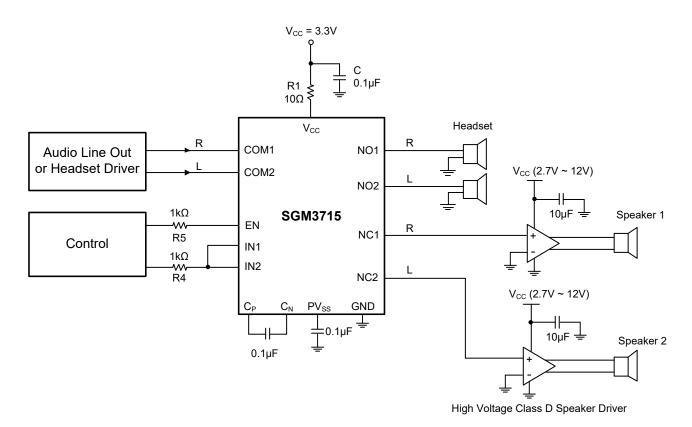


Figure 2. Typical Application Circuit for 1-to-2 HiFi Audio Signal Switch

REVISION HISTORY

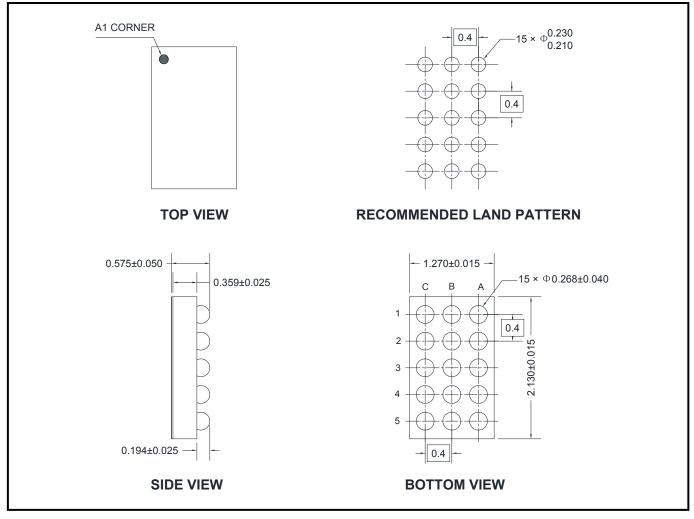
NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

Changes from Original (NOVEMBER 2017) to REV.A

Changed from product preview to production data.....All



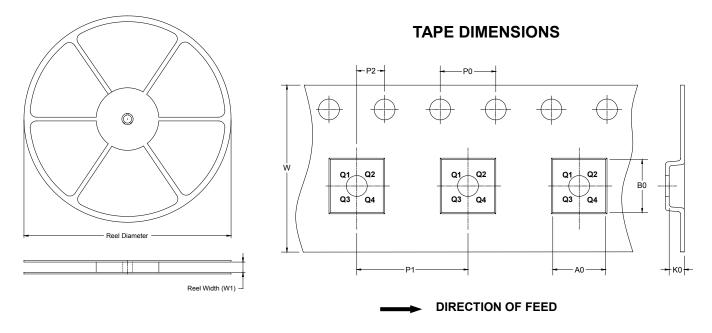
PACKAGE OUTLINE DIMENSIONS WLCSP-1.27×2.13-15B



NOTE: All linear dimensions are in millimeters.

TAPE AND REEL INFORMATION

REEL DIMENSIONS

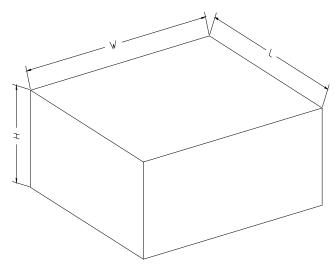


NOTE: The picture is only for reference. Please make the object as the standard.

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
WLCSP-1.27×2.13-15B	7″	9.5	1.47	2.37	0.78	4.0	4.0	2.0	8.0	Q1

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	
7" (Option)	368	227	224	8	
7"	442	410	224	18	DD0002



单击下面可查看定价,库存,交付和生命周期等信息

>>SGMICRO(圣邦微电子)