SGM6515
High Speed, 24Ω R_{ON}, 8:1, ±5V, +12V, +5V and +3.3V Multiplexer

GENERAL DESCRIPTION

The SGM6515 is a high speed monolithic 8:1 analog signal multiplexer. The SGM6515 switches one of 8 inputs to a common output, as determined by the 3-bit binary address lines (A0, A1 and A2). An EN input enables or disables the device. When disabled, all channels switch off; when enabled, each channel conducts equally well in both directions and has an input signal range that extends to the supplies.

The 24Ω on-resistance and 12Ω on-resistance flatness of these switches make them ideal solutions for data acquisition and gain switching applications where low distortion is critical.

The SGM6515 is available in Green TSSOP-16 package. It operates over an ambient temperature range of -40℃ to +85℃.

FEATURES

- **24Ω Typical On-Resistance**
- **12Ω On-Resistance Flatness**
- **±3.3V to ±6.6V Dual Supply Operation**
- **3.3V to 13.2V Single Supply Operation**
- **-3dB Bandwidth: 80MHz**
- **Rail-to-Rail Operation**
- **-40℃ to +85℃ Operating Temperature Range**
- **Available in Green TSSOP-16 Package**

APPLICATIONS

Communication Systems
Medical Systems
Audio Signal Routing
Video Signal Routing
Automatic Test Equipment
Data Acquisition Systems
Battery-Powered Systems
Sample-and-Hold Systems
Relay Replacements

PACKAGE/ORDERING INFORMATION

MODEL	PIN-PACKAGE	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKAGE OPTION
SGM6515	TSSOP-16	-40℃ to +85℃	SGM6515YTS16G/TR	SGM6515 YTS16 XXXXX	Tape and Reel, 3000

NOTE: **XXXXX** = Date Code and Vendor Code.

ABSOLUTE MAXIMUM RATINGS

V_{DD} to V_{SS}.....15V
V_{DD} to GND.....-0.3V to +15V
V_{SS} to GND….....+0.3V to -15V
Analog Input Voltage……..V_{SS} - 0.3V to V_{DD} + 0.3V
Digital Input Voltage…….…… GND - 0.3V to V_{DD} + 0.3V
Operating Temperature Range.....-40℃ to +85℃
Junction Temperature.....150℃
Storage Temperature Range..... -65℃ to +150℃
Lead Temperature (Soldering, 10s).....260℃
ESD Susceptibility
HBM.....4000V
MM.....400V

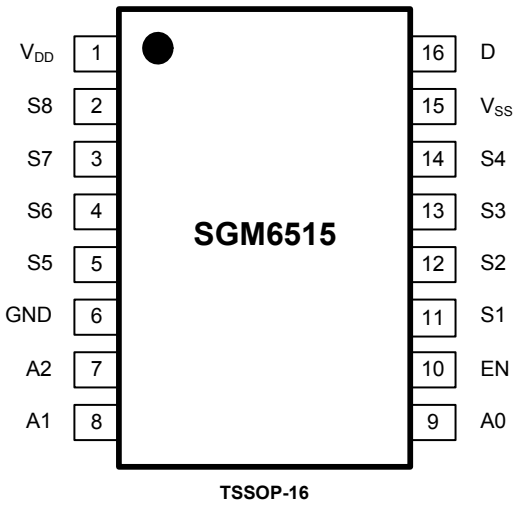
NOTE:
Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

CAUTION

This integrated circuit can be damaged by ESD if you don’t pay attention to ESD protection. 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 very small parametric changes could cause the device not to meet its published specifications.

SGMICRO reserves the right to make any change in circuit design, specification or other related things if necessary without notice at any time. Please contact SGMICRO sales office to get the latest datasheet.

PIN CONFIGURATION (TOP VIEW)

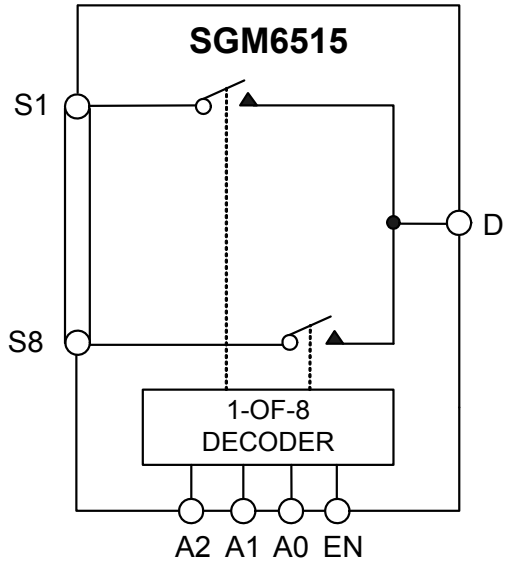


TSSOP-16

PIN DESCRIPTION

PIN	NAME	FUNCTION
1	V_{DD}	Positive Power Supply.
2	S8	Source Terminal 8. This pin can be an input or an output.
3	S7	Source Terminal 7. This pin can be an input or an output.
4	S6	Source Terminal 6. This pin can be an input or an output.
5	S5	Source Terminal 5. This pin can be an input or an output.
6	GND	Ground.
7	A2	Logic Control Input.
8	A1	Logic Control Input.
9	A0	Logic Control Input.
10	EN	Active High Digital Input. When this pin is low, the device is disabled and all switches are turned off. When this pin is high, the Ax logic inputs determine which switch is turned on.
11	S1	Source Terminal 1. This pin can be an input or an output.
12	S2	Source Terminal 2. This pin can be an input or an output.
13	S3	Source Terminal 3. This pin can be an input or an output.
14	S4	Source Terminal 4. This pin can be an input or an output.
15	V_{SS}	Negative Power Supply. For single power supply application, this pin is connected to ground.
16	D	Common Terminal. This pin can be an input or an output.

FUNCTIONAL BLOCK DIAGRAM



TRUTH TABLE

A2	A1	A0	EN	ON SWITCH
X	X	X	0	None
0	0	0	1	S1
0	0	1	1	S2
0	1	0	1	S3
0	1	1	1	S4
1	0	0	1	S5
1	0	1	1	S6
1	1	0	1	S7
1	1	1	1	S8

X = Do not care.

ELECTRICAL CHARACTERISTICS: ±5V Dual Supply

(V_{DD} = +5V ± 10%, V_{SS} = -5V ± 10%, GND = 0V, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	SGM6515			
			+25℃	-40℃ to +85℃	UNITS	MIN/MAX
ANALOG SWITCH						
Analog Signal Range				V_{DD} to V_{SS}	V	
On-Resistance	R_{ON}	V_{DD} = 4.5V, V_{SS} = -4.5V, V_S = V_{SS} to V_{DD}, I_S = -10mA, Test Circuit 1	24		Ω	TYP
			30	39	Ω	MAX
On-Resistance Match Between Channels	ΔR_{ON}	V_{DD} = 4.5V, V_{SS} = -4.5V, V_S = V_{SS} to V_{DD}, I_S = -10mA	0.8		Ω	TYP
			4.3	4.8	Ω	MAX
On-Resistance Flatness	$R_{FLAT(ON)}$	V_{DD} = 4.5V, V_{SS} = -4.5V, V_S = V_{SS} to V_{DD}, I_S = -10mA	12		Ω	TYP
			15	22	Ω	MAX
LEAKAGE CURRENTS						
Source OFF Leakage	$I_{S(OFF)}$	V_{DD} = +5.5V, V_{SS} = -5.5V, V_S = ±4.5V, V_D = ∓4.5V, Test Circuit 2	±0.001		μA	TYP
			±1	±2	μA	MAX
Drain OFF Leakage	$I_{D(OFF)}$	V_{DD} = +5.5V, V_{SS} = -5.5V, V_S = ±4.5V, V_D = ∓4.5V, Test Circuit 2	±0.001		μA	TYP
			±1	±2	μA	MAX
Channel ON Leakage	I_D, $I_{S(ON)}$	V_{DD} = +5.5V, V_{SS} = -5.5V, V_S or V_D = ±4.5V, V_D or V_S= ±4.5V or floating, Test Circuit 3	±0.001		μA	TYP
			±1	±2	μA	MAX
DIGITAL INPUTS						
Input High Voltage	V_{INH}			2.10	V	MIN
Input Low Voltage	V_{INL}			0.40	V	MAX
Input Current	I_{INL} or I_{INH}	V_{IN} = V_{GND} or V_{DD}	±0.001		μA	TYP
			±1	±2	μA	MAX
Digital Input Capacitance	C_{IN}		10		pF	TYP
DYNAMIC CHARACTERISTICS						
Transition Time	t_{TRANS}	V_S = 2.5V, R_L = 300Ω, C_L = 35pF, Test Circuit 4	120		ns	TYP
Break-Before-Make Time Delay	t_D	V_S = 2.5V, R_L = 300Ω, C_L = 35pF, Test Circuit 5	50		ns	TYP
EN Turn-On Time	t_{ON}	V_S = 2.5V, R_L = 300Ω, C_L = 35pF, Test Circuit 6	90		ns	TYP
EN Turn-Off Time	t_{OFF}	V_S = 2.5V, R_L = 300Ω, C_L = 35pF, Test Circuit 6	90		ns	TYP
Charge Injection	Q	C_L = 1nF, V_S = 0V, R_S = 0Ω, Test Circuit 7	25		pC	TYP

ELECTRICAL CHARACTERISTICS: ±5V Dual Supply (Cont.)

(V_{DD} = +5V ± 10%, V_{SS} = -5V ± 10%, GND = 0V, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	SGM6515			
			+25℃	-40℃ to +85℃	UNITS	MIN/MAX
DYNAMIC CHARACTERISTICS						
Off Isolation	O_{ISO}	R_L = 50Ω, C_L = 5pF, f = 1MHz, Test Circuit 8	-90		dB	TYP
-3dB Bandwidth	BW	R_L = 50Ω, C_L = 5pF, Test Circuit 9	80		MHz	TYP
Channel-to-Channel Crosstalk	X_{TALK}	R_L = 50Ω, C_L = 5pF, f = 1MHz, Test Circuit 10	-70		dB	TYP
C_S (OFF)		V_S = 0V, f = 1MHz	8		pF	TYP
C_D (OFF)		V_S = 0V, f = 1MHz	70		pF	TYP
C_D, C_S (ON)		V_S = 0V, f = 1MHz	75		pF	TYP
POWER REQUIREMENTS						
Positive Supply Current	I_{DD}	V_{DD} = +5.5V, V_{SS} = -5.5V, Digital Inputs = 0V or V_{DD}, V_D = V_{DD}/2	230		μA	TYP
			320		μA	MAX
V_{DD}/V_{SS}			±3.3/±6.6		V	MIN/ MAX

ELECTRICAL CHARACTERISTICS: +12V Single Supply

(V_{DD} = +12V ± 10%, V_{SS} = 0V, GND = 0V, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	SGM6515			
			+25℃	-40℃ to +85℃	UNITS	MIN/MAX
ANALOG SWITCH						
Analog Signal Range				V_{DD} to V_{SS}	V	
On-Resistance	R_{ON}	V_{DD} = 10.8V, V_{SS} = 0V, V_S = 0V to V_{DD}, I_S = -10mA, Test Circuit 1	24		Ω	TYP
			30	39	Ω	MAX
On-Resistance Match Between Channels	ΔR_{ON}	V_{DD} = 10.8V, V_{SS} = 0V, V_S = 0V to V_{DD}, I_S = -10mA	0.8		Ω	TYP
			4.4	5	Ω	MAX
On-Resistance Flatness	$R_{FLAT(ON)}$	V_{DD} = 10.8V, V_{SS} = 0V, V_S = 0V to V_{DD}, I_S = -10mA	12		Ω	TYP
			15	22	Ω	MAX
LEAKAGE CURRENTS						
Source OFF Leakage	$I_{S(OFF)}$	V_{DD} = 13.2V, V_{SS} = 0V, V_S = 1V/10V, V_D = 10V/1V, Test Circuit 2	±0.001		μA	TYP
			±1	±2	μA	MAX
Drain OFF Leakage	$I_{D(OFF)}$	V_{DD} = 13.2V, V_{SS} = 0V, V_S = 1V/10V, V_D = 10V/1V, Test Circuit 2	±0.001		μA	TYP
			±1	±2	μA	MAX
Channel ON Leakage	I_D, $I_{S(ON)}$	V_{DD} = 13.2V, V_{SS} = 0V, V_S or V_D = 1V/10V, V_D or V_S = 1V/10V or floating, Test Circuit 3	±0.001		μA	TYP
			±1	±2	μA	MAX
DIGITAL INPUTS						
Input High Voltage	V_{INH}			2.10	V	MIN
Input Low Voltage	V_{INL}			0.40	V	MAX
Input Current	I_{INL} or I_{INH}	V_{IN} = V_{GND} or V_{DD}	±0.001		μA	TYP
			±1	±2	μA	MAX
Digital Input Capacitance	C_{IN}		10		pF	TYP
DYNAMIC CHARACTERISTICS						
Transition Time	t_{TRANS}	V_S = 8V, R_L = 300Ω, C_L = 35pF, Test Circuit 4	120		ns	TYP
Break-Before-Make Time Delay	t_D	V_S = 8V, R_L = 300Ω, C_L = 35pF, Test Circuit 5	50		ns	TYP
EN Turn-On Time	t_{ON}	V_S = 8V, R_L = 300Ω, C_L = 35pF, Test Circuit 6	110		ns	TYP
EN Turn-Off Time	t_{OFF}	V_S = 8V, R_L = 300Ω, C_L = 35pF, Test Circuit 6	80		ns	TYP
Charge Injection	Q	C_L = 1nF, V_S = 6V, R_S = 0Ω, Test Circuit 7	15		pC	TYP

ELECTRICAL CHARACTERISTICS: +12V Single Supply (Cont.)

(V_{DD} = +12V ± 10%, V_{SS} = 0V, GND = 0V, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	SGM6515			
			+25℃	-40℃ to +85℃	UNITS	MIN/MAX
DYNAMIC CHARACTERISTICS						
Off Isolation	O_{ISO}	R_L = 50Ω, C_L = 5pF, f = 1MHz, Test Circuit 8	-90		dB	TYP
-3dB Bandwidth	BW	R_L = 50Ω, C_L = 5pF, Test Circuit 9	80		MHz	TYP
Channel-to-Channel Crosstalk	X_{TALK}	R_L = 50Ω, C_L = 5pF, f = 1MHz, Test Circuit 10	-70		dB	TYP
C_S (OFF)		V_S = 6V, f = 1MHz	8		pF	TYP
C_D (OFF)		V_S = 6V, f = 1MHz	70		pF	TYP
C_D, C_S (ON)		V_S = 6V, f = 1MHz	75		pF	TYP
POWER REQUIREMENTS						
Positive Supply Current	I_{DD}	V_{DD} = 12V, Digital Inputs = 0V or V_{DD}, V_D = V_{DD}/2	240		μA	TYP
			330		μA	MAX
V_{DD}			3.3/13.2		V	MIN/ MAX

ELECTRICAL CHARACTERISTICS: +5V Single Supply

(V_{DD} = +5V ± 10%, V_{SS} = 0V, GND = 0V, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	SGM6515			
			+25℃	-40℃ to +85℃	UNITS	MIN/MAX
ANALOG SWITCH						
Analog Signal Range				V_{DD} to V_{SS}	V	
On-Resistance	R_{ON}	V_{DD} = 4.5V, V_{SS} = 0V, V_S = 0V to V_{DD}, I_S = -10mA, Test Circuit 1	26		Ω	TYP
			32	38	Ω	MAX
On-Resistance Match Between Channels	ΔR_{ON}	V_{DD} = 4.5V, V_{SS} = 0V, V_S = 0V to V_{DD}, I_S = -10mA	0.7		Ω	TYP
			4.5	5.1	Ω	MAX
On-Resistance Flatness	$R_{FLAT(ON)}$	V_{DD} = 4.5V, V_{SS} = 0V, V_S = 0V to V_{DD}, I_S = -10mA	8		Ω	TYP
			12.5	14	Ω	MAX
LEAKAGE CURRENTS						
Source OFF Leakage	$I_{S(OFF)}$	V_{DD} = 5.5V, V_{SS} = 0V, V_S = 1V/4.5V, V_D = 4.5V/1V, Test Circuit 2	±0.001		μA	TYP
			±1	±2	μA	MAX
Drain OFF Leakage	$I_{D(OFF)}$	V_{DD} = 5.5V, V_{SS} = 0V, V_S = 1V/4.5V, V_D = 4.5V/1V, Test Circuit 2	±0.001		μA	TYP
			±1	±2	μA	MAX
Channel ON Leakage	I_D, $I_{S(ON)}$	V_{DD} = 5.5V, V_{SS} = 0V, V_S or V_D = 1V/4.5V, V_D or V_S = 1V/4.5V or floating, Test Circuit 3	±0.001		μA	TYP
			±1	±2	μA	MAX
DIGITAL INPUTS						
Input High Voltage	V_{INH}			2.10	V	MIN
Input Low Voltage	V_{INL}			0.40	V	MAX
Input Current	I_{INL} or I_{INH}	V_{IN} = V_{GND} or V_{DD}	±0.001		μA	TYP
			±1	±2	μA	MAX
Digital Input Capacitance	C_{IN}		10		pF	TYP
DYNAMIC CHARACTERISTICS						
Transition Time	t_{TRANS}	V_S = 2.5V, R_L = 300Ω, C_L = 35pF, Test Circuit 4	150		ns	TYP
Break-Before-Make Time Delay	t_D	V_S = 2.5V, R_L = 300Ω, C_L = 35pF, Test Circuit 5	70		ns	TYP
EN Turn-On Time	t_{ON}	V_S = 2.5V, R_L = 300Ω, C_L = 35pF, Test Circuit 6	130		ns	TYP
EN Turn-Off Time	t_{OFF}	V_S = 2.5V, R_L = 300Ω, C_L = 35pF, Test Circuit 6	100		ns	TYP
Charge Injection	Q	C_L = 1nF, V_S = 2.5V, R_S = 0Ω, Test Circuit 7	5		pC	TYP

ELECTRICAL CHARACTERISTICS: +5V Single Supply (Cont.)

(V_{DD} = +5V ± 10%, V_{SS} = 0V, GND = 0V, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	SGM6515			
			+25℃	-40℃ to +85℃	UNITS	MIN/MAX
DYNAMIC CHARACTERISTICS						
Off Isolation	O_{ISO}	R_L = 50Ω, C_L = 5pF, f = 1MHz, Test Circuit 8	-90		dB	TYP
-3dB Bandwidth	BW	R_L = 50Ω, C_L = 5pF, Test Circuit 9	70		MHz	TYP
Channel-to-Channel Crosstalk	X_{TALK}	R_L = 50Ω, C_L = 5pF, f = 1MHz, Test Circuit 10	-70		dB	TYP
C_S (OFF)		V_S = 2.5V, f = 1MHz	10		pF	TYP
C_D (OFF)		V_S = 2.5V, f = 1MHz	80		pF	TYP
C_D, C_S (ON)		V_S = 2.5V, f = 1MHz	100		pF	TYP
POWER REQUIREMENTS						
Positive Supply Current	I_{DD}	V_{DD} = 5.5V, Digital Inputs = 0V or V_{DD}, V_D = V_{DD}	170		μA	TYP
			240		μA	MAX
V_{DD}			3.3/13.2		V	MIN/ MAX

ELECTRICAL CHARACTERISTICS: +3.3V Single Supply

(V_{DD} = +3.3V, V_{SS} = 0V, GND = 0V, unless otherwise noted.)

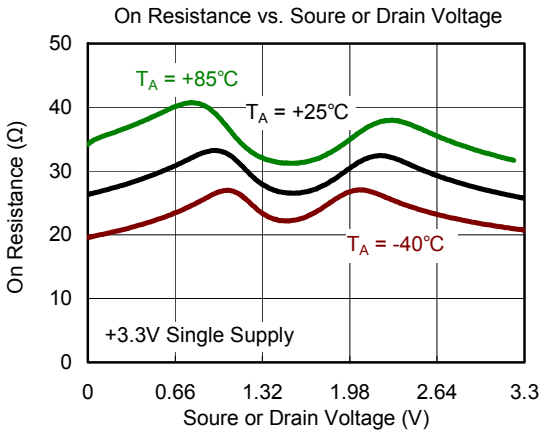
PARAMETER	SYMBOL	CONDITIONS	SGM6515			
			+25℃	-40℃ to +85℃	UNITS	MIN/MAX
ANALOG SWITCH						
Analog Signal Range				V_{DD} to V_{SS}	V	
On-Resistance	R_{ON}	V_{DD} = 3.3V, V_{SS} = 0V, V_S = 0V to V_{DD}, I_S = -10mA, Test Circuit 1	34		Ω	TYP
			40	51	Ω	MAX
On-Resistance Match Between Channels	ΔR_{ON}	V_{DD} = 3.3V, V_{SS} = 0V, V_S = 0V to V_{DD}, I_S = -10mA	0.8		Ω	TYP
			5.6	6.9	Ω	MAX
On-Resistance Flatness	$R_{FLAT(ON)}$	V_{DD} = 3.3V, V_{SS} = 0V, V_S = 0V to V_{DD}, I_S = -10mA	9		Ω	TYP
			15	18.5	Ω	MAX
LEAKAGE CURRENTS						
Source OFF Leakage	$I_{S(OFF)}$	V_{DD} = 3.6V, V_{SS} = 0V, V_S = 0.6V/3V, V_D = 3V/0.6V, Test Circuit 2	±0.001		μA	TYP
			±1	±2	μA	MAX
Drain OFF Leakage	$I_{D(OFF)}$	V_{DD} = 3.6V, V_{SS} = 0V, V_S = 0.6V/3V, V_D = 3V/0.6V, Test Circuit 2	±0.001		μA	TYP
			±1	±2	μA	MAX
Channel ON Leakage	I_D, $I_{S(ON)}$	V_{DD} = 3.6V, V_{SS} = 0V, V_S or V_D = 0.6V/3V, V_D or V_S = 0.6V/3V or floating, Test Circuit 3	±0.001		μA	TYP
			±1	±2	μA	MAX
DIGITAL INPUTS						
Input High Voltage	V_{INH}			2.10	V	MIN
Input Low Voltage	V_{INL}			0.40	V	MAX
Input Current	I_{INL} or I_{INH}	V_{IN} = V_{GND} or V_{DD}	±0.001		μA	TYP
			±1	±2	μA	MAX
Digital Input Capacitance	C_{IN}		10		pF	TYP
DYNAMIC CHARACTERISTICS						
Transition Time	t_{TRANS}	V_S = 1.5V, R_L = 300Ω, C_L = 35pF, Test Circuit 4	230		ns	TYP
Break-Before-Make Time Delay	t_D	V_S = 1.5V, R_L = 300Ω, C_L = 35pF, Test Circuit 5	110		ns	TYP
EN Turn-On Time	t_{ON}	V_S = 1.5V, R_L = 300Ω, C_L = 35pF, Test Circuit 6	190		ns	TYP
EN Turn-Off Time	t_{OFF}	V_S = 1.5V, R_L = 300Ω, C_L = 35pF, Test Circuit 6	150		ns	TYP
Charge Injection	Q	C_L = 1nF, V_S = 1.5V, R_S = 0Ω, Test Circuit 7	5		pC	TYP

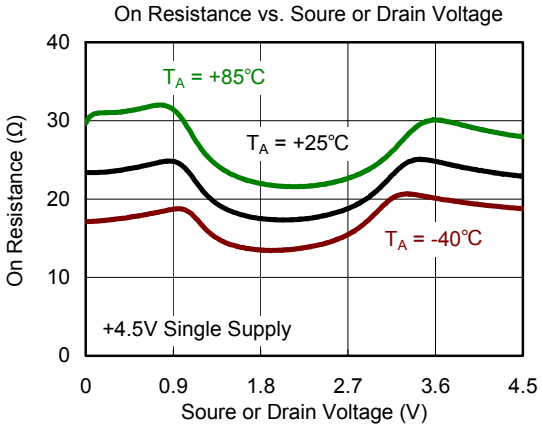
ELECTRICAL CHARACTERISTICS: +3.3V Single Supply (Cont.)

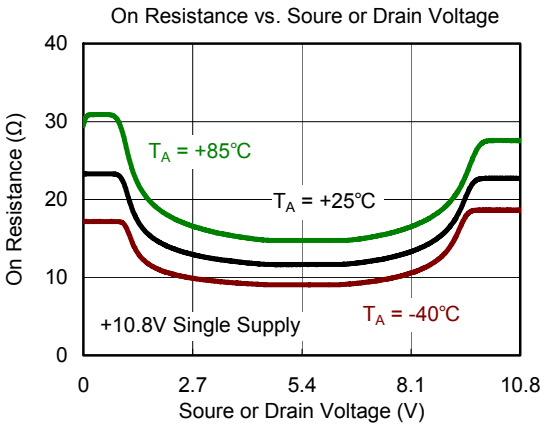
(V_{DD} = +3.3V, V_{SS} = 0V, GND = 0V, unless otherwise noted.)

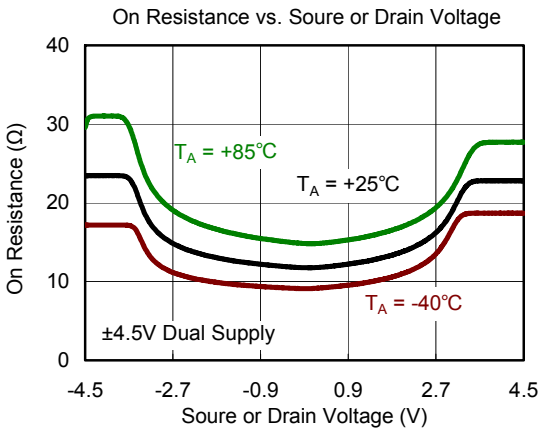
PARAMETER	SYMBOL	CONDITIONS	SGM6515			
			+25℃	-40℃ to +85℃	UNITS	MIN/MAX
DYNAMIC CHARACTERISTICS						
Off Isolation	O_{ISO}	R_L = 50Ω, C_L = 5pF, f = 1MHz, Test Circuit 8	-90		dB	TYP
-3dB Bandwidth	BW	R_L = 50Ω, C_L = 5pF, Test Circuit 9	65		MHz	TYP
Channel-to-Channel Crosstalk	X_{TALK}	R_L = 50Ω, C_L = 5pF, f = 1MHz, Test Circuit 10	-70		dB	TYP
C_S (OFF)		V_S = 1.5V, f = 1MHz	10		pF	TYP
C_D (OFF)		V_S = 1.5V, f = 1MHz	85		pF	TYP
C_D, C_S (ON)		V_S = 1.5V, f = 1MHz	100		pF	TYP
POWER REQUIREMENTS						
Positive Supply Current	I_{DD}	V_{DD} = 3.6V, Digital Inputs = 0V or V_{DD}, V_D = V_{DD}	90		μA	TYP
			110		μA	MAX
V_{DD}			3.3/13.2		V	MIN/ MAX

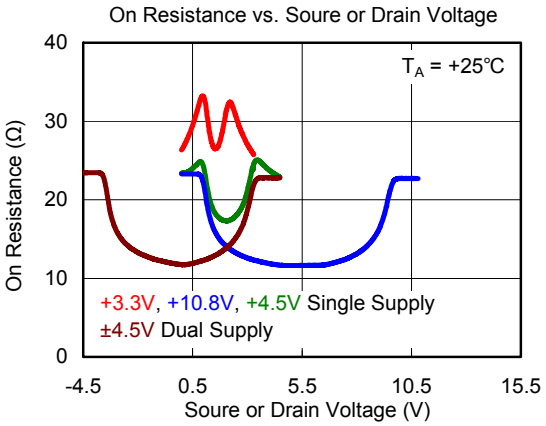
TYPICAL PERFORMANCE CHARACTERISTICS

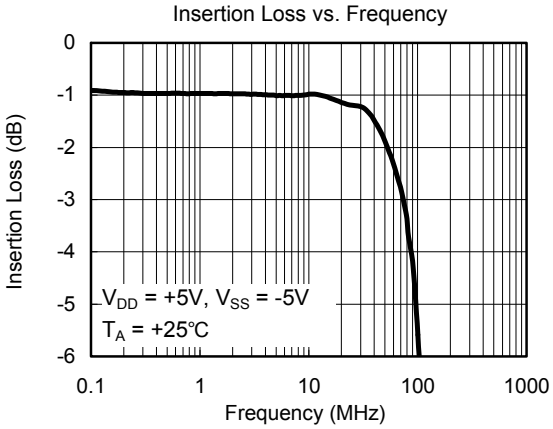






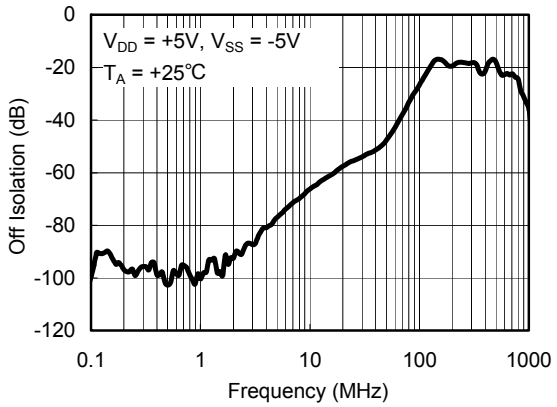




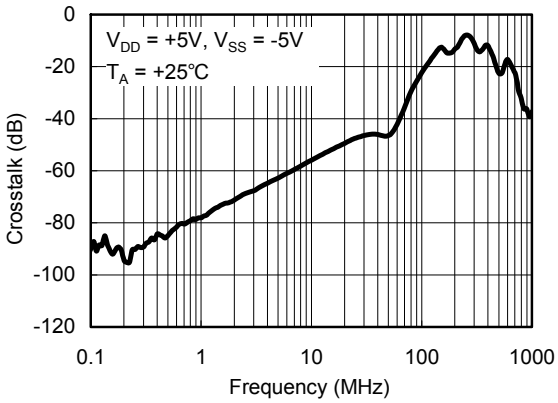


TYPICAL PERFORMANCE CHARACTERISTICS

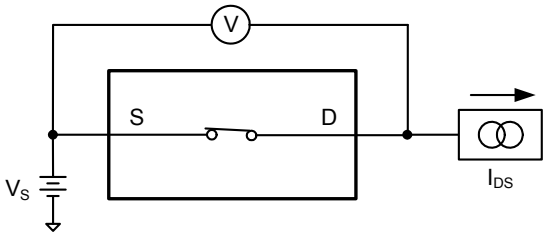
Off Isolation vs. Frequency



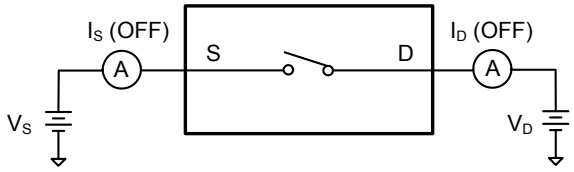
Crosstalk vs. Frequency



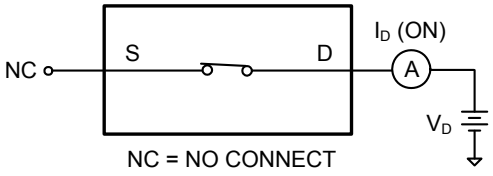
TEST CIRCUITS



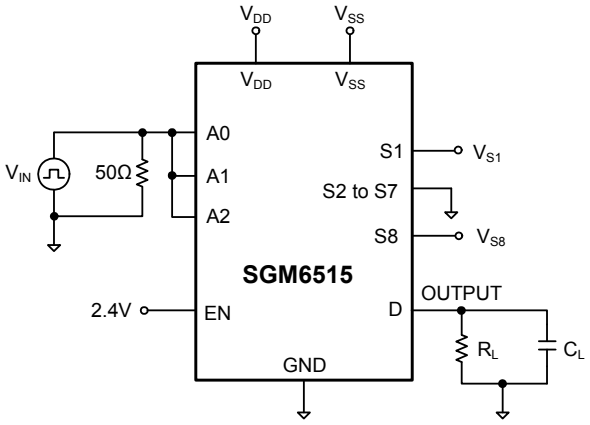
Test Circuit 1. On-Resistance

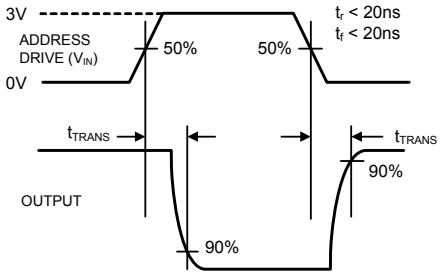


Test Circuit 2. OFF Leakage



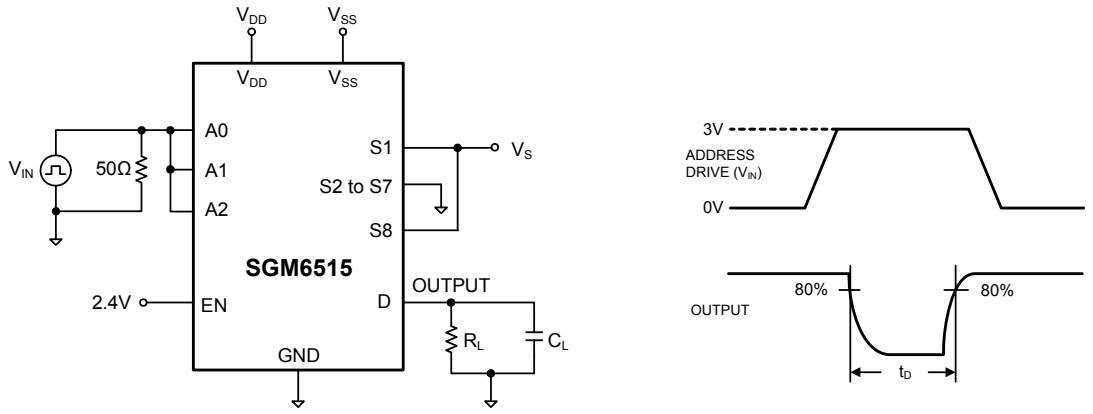
Test Circuit 3. ON Leakage



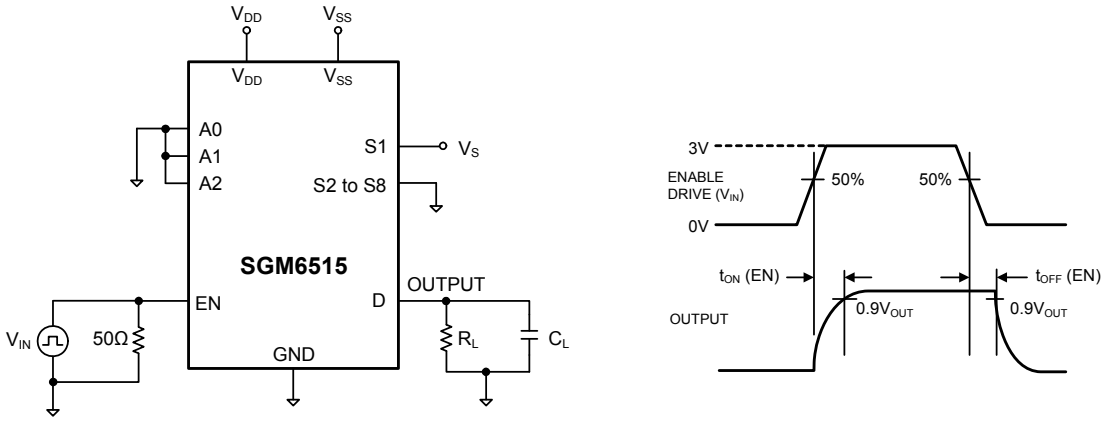


Test Circuit 4. Address to Output Switching Times, t_{TRANS}

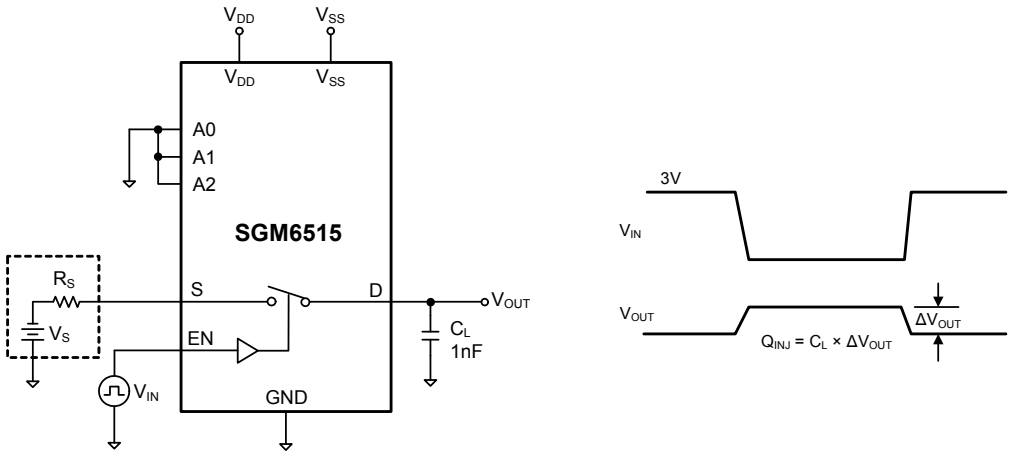
TEST CIRCUITS (Cont.)



Test Circuit 5. Break-Before-Make Time Delay, t_D

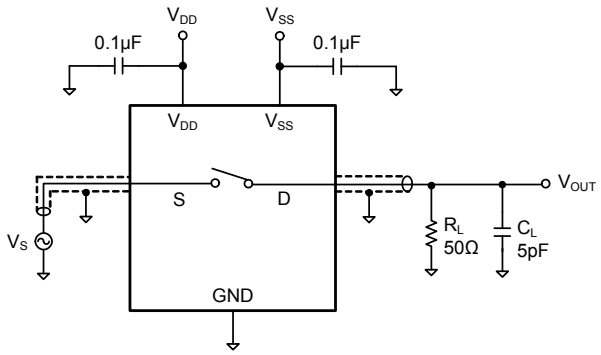


Test Circuit 6. Enable Delay, t_{ON} (EN), t_{OFF} (EN)



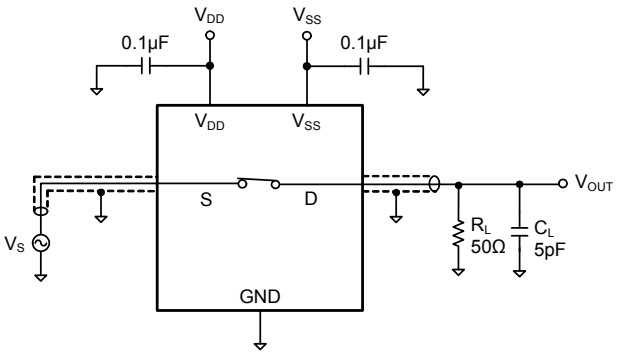
Test Circuit 7. Charge Injection

TEST CIRCUITS (Cont.)



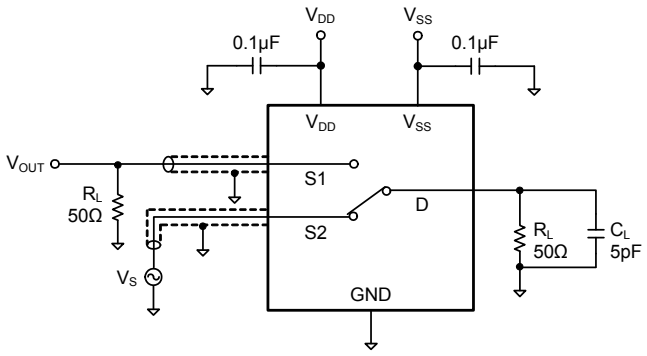
Off Isolation = 20 × log V_{OUT}/V_S

Test Circuit 8. Off Isolation



Insertion Loss = 20 × log $\frac{V_{OUT} \text{ with Switch}}{V_{OUT} \text{ without Switch}}$

Test Circuit 9. -3dB Bandwidth

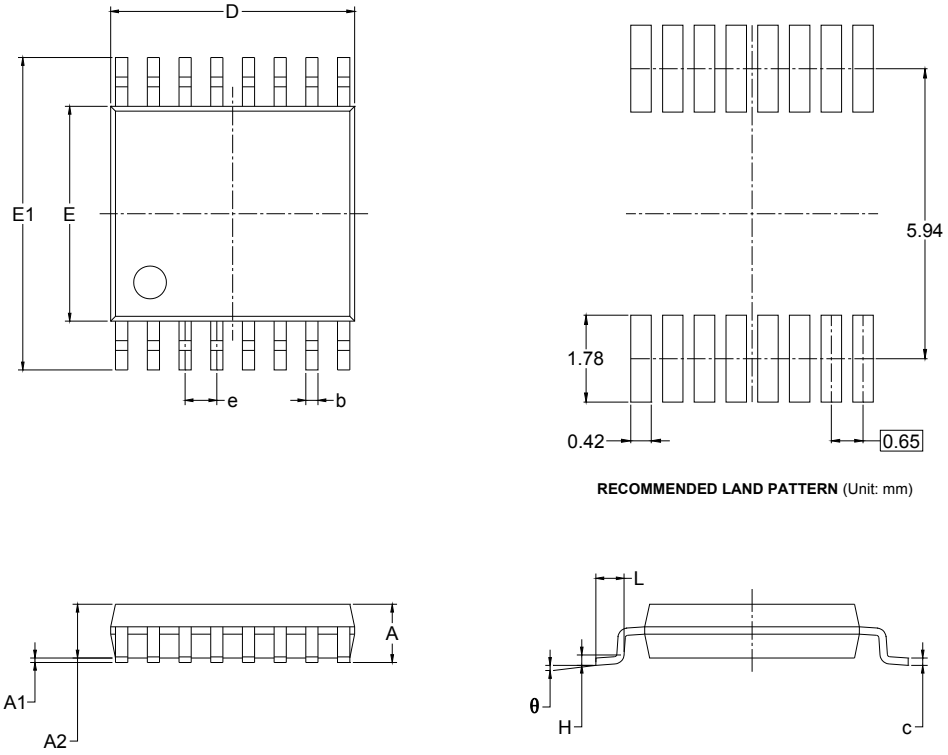


Channel to Channel Crosstalk = 20 × log V_{OUT}/V_S

Test Circuit 10. Channel-to-Channel Crosstalk

PACKAGE OUTLINE DIMENSIONS

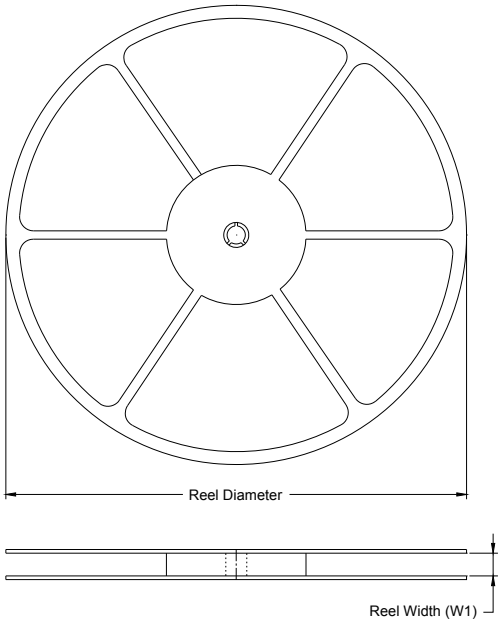
TSSOP-16



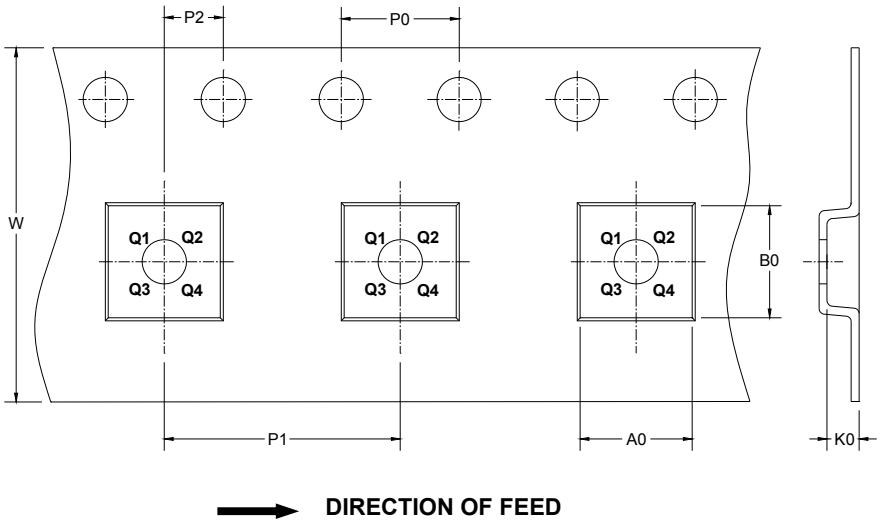
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A		1.100		0.043
A1	0.050	0.150	0.002	0.006
A2	0.800	1.000	0.031	0.039
b	0.190	0.300	0.007	0.012
c	0.090	0.200	0.004	0.008
D	4.900	5.100	0.193	0.201
E	4.300	4.500	0.169	0.177
E1	6.250	6.550	0.246	0.258
e	0.650 BSC		0.026 BSC	
L	0.500	0.700	0.02	0.028
H	0.25 TYP		0.01 TYP	
θ	1°	7°	1°	7°

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS

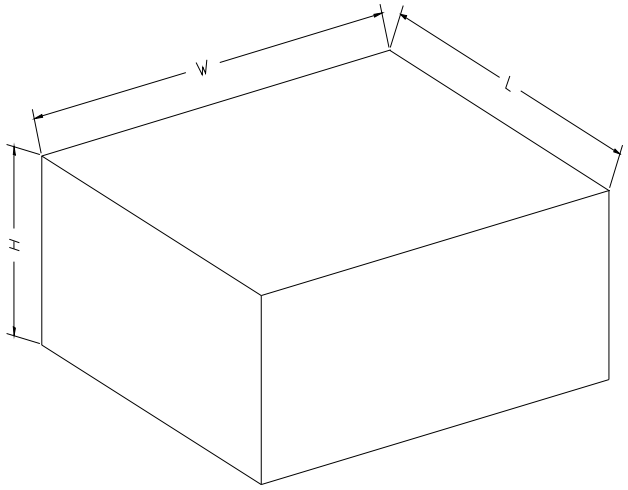


NOTE: The picture is only for reference. Please make the object as the standard.

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
TSSOP-16	13″	12.4	6.9	5.6	1.2	4.0	8.0	2.0	12.0	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
13″	386	280	370	5