

钍地半导体
Tudi Semiconductor

Product Specification

TUDI-SN74LVC1G126

Single Bus Buffer Gate With 3-State Output

网址 www.sztdbdt.com

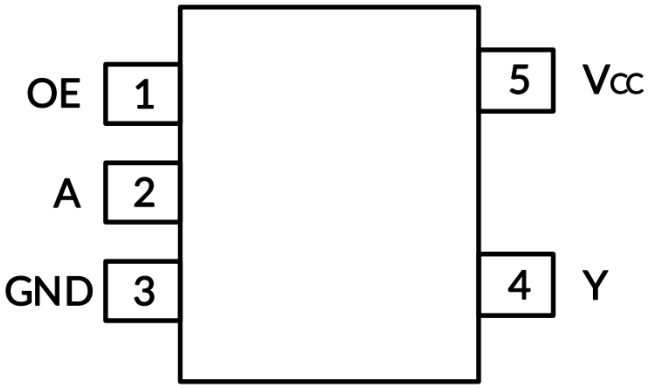
用芯智造·卓越品质

semiconductor device manufacturer

- Design
- research and development
- production
- and sales

FEATURES

- Operating Voltage Range: 1.65V to 5.5V
- Low Power Consumption: 0.1μA (TYP)
- Operating Temperature Range: -40 ° C to 125 ° C
- Inputs Accept Voltage to 5.5V
- ±24mA Output Drive at V_{cc}=3.0V
- Latch-up Performance Exceeds 100mA
- Micro Size Packages: SOT23-5, SC70-5



SOT23/SC70

APPLICATIONS

- AV Receiver
- Cable Modem Termination Systems
- Digital Picture Frame (DPF)
- High-Speed Data Acquisition and Generation
- Motor Controls: High-Voltage
- Personal Navigation Device (GPS)
- Portable Media Player
- Video Communication Systems

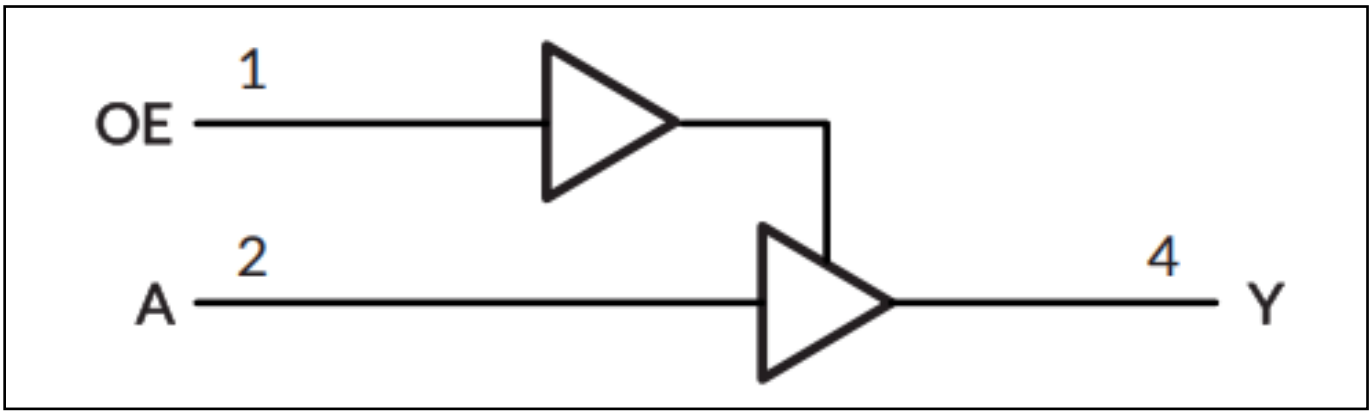
DESCRIPTIONS

The single buffer is designed for 1.65V to 5.5V V_{CC} operation. The SN74LVC1G126 device is single line driver with 3-state output. The output is disabled when the output-enable input is low.

This device is fully specified for partial-power-down applications using I_{off}. The I_{off} circuitry disables the outputs, preventing damaging current backflow through the device when it is powered down. To ensure the high-impedance state during power up or power down, OE should be tied to GND through a pulldown resistor, the minimum value of the resistor is determined by the current-sourcing capability of the driver.

The SN74LVC1G126 is available in Green SOT23-5 and SC70-5 packages. It operates over an ambient temperature range of -40 ° C to 125 ° C.

SIMPLIFIED SCHEMATIC



FUNCTION TABLE

INPUTS		OUTPUT
OE	A	Y
H	H	H
H	L	L
L	X	Z

H=HIGH Logic Level
L =LOW Logic Level
X=Don ' t Care
Z=High-impedance OFF-state

PIN CONFIGURATION AND FUNCTIONS (TOP VIEW)

PIN	NAME	I/O	FUNCTION
1	OE	I	OE Enable/Input
2	A	I	A Input
3	GND	-	Ground Pin
4	Y	O	Y Output
5	V_{CC}	-	Power Pin

Absolute Maximum Ratings

over operating free-air temperature range (unless otherwise noted) (1) (2)

		MIN	MAX	UNIT
V_{cc}	Supply voltage range	-0.5	6.5	V
V_I	Input voltage range (2)	-0.5	6.5	V
V_O	Voltage range applied to any output in the high-impedance orpower-off state(2)	-0.5	6.5	V
V_O	Voltage range applied to any output in the high orlow state(2)(3)	-0.5	V_{cc}+0.5	V
I_{IK}	Input clamp current V_I <0		-50	mA
I_{ok}	Output clamp current V_O<0		-50	mA
I_O	Continuous output current		±50	mA
	Continuous current through V_{cc} or GND		±100	mA

Package Thermal Impedance

	PARAMETER	MIN	MAX	UNIT
θ_{JA}	Package thermal impedance(4)	SOT23-5 SC70-5	230 380	°C/W

Temperature

	PARAMETER	MIN	MAX	UNIT
Temperature	Junction temperature,T_J(5)	-65	150	°C
	Storage temperature,T_{stg}	-65	150	

ESD Ratings

The following ESD information is provided for handling of ESD-sensitive devices in an ESD protected area only.

	VALUE	UNIT
Human-Body Model(HBM)	±4000	V
Charged-Device Model (CDM)	± 1000	
Machine Model(MM)	±200	

ESD SENSITIVITY CAUTION



ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may bemore susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

NOTE:
(1) 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 under Recommended Operating Conditions is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.
(2) The input and output negative-voltage ratings may be exceeded if the input and output current ratings are observed.
(3) The value of V_{CC} is provided in the Recommended Operating Conditions table.
(4) The package thermal impedance is calculated in accordance with JESD-51.
(5) The maximum power dissipation is a function of $T_{J(MAX)}$, $R_{\theta JA}$, and T_A. The maximum allowable power dissipation at any ambient temperature is $P_D = (T_{J(MAX)} - T_A) / R_{\theta JA}$. All numbers apply for packages soldered directly onto a PCB.

ELECTRICAL CHARACTERISTICS

over recommended operating free-air temperature range (TYP values are at T_A = +25 ° C, unless otherwise noted.) (1)

Recommended Operating Conditions

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	MAX	UNIT
Supply Voltage	V_{cc}	Operating Data retention only	1.65 1.5	5.5 5.5	V
High-Level Input Voltage	V_{IH}	V_{cc}=1.65V to 1.95V	0.65×V_{cc}		V
		V_{cc}=2.3V to 2.7V	1.7		
		V_{cc}=3V to 3.6V	2.2		
		V_{cc}=4.5V to 5.5V	0.7×V_{cc}		
Low-Level Input Voltage	V_{IL}	V_{cc}=1.65V to 1.95V		0.3×V_{cc}	V
		V_{cc}=2.3V to 2.7V		0.7	
		V_{cc}=3V to 3.6V		0.8	
		V_{cc}=4.5V to 5.5V		0.3×V_{cc}	
Input Voltage	V_I		0	5.5	V
Output Voltage	V_o		0	V_{cc}	V
Input Transition Rise or Fall	t_r,t_f	V_{cc}=1.8V±0.15V,2.5V±0.2V		20	ns/V
		V_{cc}=3.3V±0.3V		10	
		V_{cc}=5V±0.5V		5	
Operating Temperature	T_A		-40	+125	℃

(1) All unused inputs of the device must be held at V_{CC} or GND to ensure proper device operation.

DC Characteristics

PARAMETER	TEST CONDITIONS	V_{cc}	TEMP	MIN(2)	TYP(3)	MAX(2)	UNIT
V_{oH}	I_{oH}=-100μA	1.65V to 5.5V	Full	Vcc-0.1			V
	I_{oH}=-4mA	1.65V		1.2			
	I_{oH}=-8mA	2.3V		1.9			
	I_{oH}=-16mA			2.4			
	I_{oH}=-24mA	3V		2.3			
	I_{oH}=-32mA	4.5V		3.8			
	I_{oL}=100μA	1.65V to 5.5V	Full			0.1	V
	I_{oL}=4mA	1.65V				0.45	
	I_{oL}=8mA	2.3V				0.3	
	I_{oL}=16mA					0.4	
	I_{oL}=24mA	3V				0.55	
	I_{oL}=32mA	4.5V				0.55	
I_I A or OE inputs	V_I=5.5V or GND	0V to 5.5V	+25°C		± 0.1		μA
			Full			±5	
I_{off}	V_I or V_o =5.5V	0V	+25°C		± 0.1		μA
			Full			±10	
I_{oz}	V_o=0V to 5.5V	3.6V	Full			10	μA
I_{cc}	V_I=5.5V or GND,I_o=0	1.65V to 5.5V	+25°C		0.1		μA
			Full			10	
△I_{cc}	One input at V_{cc}-0.6V, Otherinputs at V_{cc} or GND	3V to 5.5V	Full			500	μA

(1) All unused inputs of the device must be held at V_{CC} or GND to ensure proper device operation.
(2) Limits are 100% production tested at 25 ° C. Limits over the operating temperature range are ensured through correlations using statistical quality control (SQC) method.
(3) Typical values represent the most likely parametric norm as determined at the time of characterization. Actual typical values may vary over time and will also depend on the application and configuration.

Switching Characteristics, C_L=15pF

over recommended operating free-air temperature range (-40 ° C to 125 ° C, unless otherwise noted.) (1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	Vcc=1.8V ±0.15V	Vcc=2.5V ±0.2V	Vcc=3.3V± 0.3V	Vcc=5V ±0.5V	UNIT
			TYP	TYP	TYP	TYP	
tpd	A	Y	6.1	3.7	3.9	2.1	ns

(1) All unused inputs of the device must be held at Vcc or GND to ensure proper device operation.

Switching Characteristics, C_L=30pF or 50pF

over recommended operating free-air temperature range (-40 ° C to 125 ° C, unless otherwise noted.) (1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	Vcc=1.8V± 0.15V	Vcc=2.5V± 0.2V	Vcc=3.3V± 0.3V	Vcc=5V± 0.5V	UNIT
			TYP	TYP	TYP	TYP	
t_{pd}	A	Y	8.6	5.3	4.0	2.9	ns
t_{en}	OE	Y	9.5	5.8	5.0	3.3	ns
t_{dis}	OE	Y	7.4	4.3	4.4	3.0	ns

(1) All unused inputs of the device must be held at Vcc or GND to ensure proper device operation.

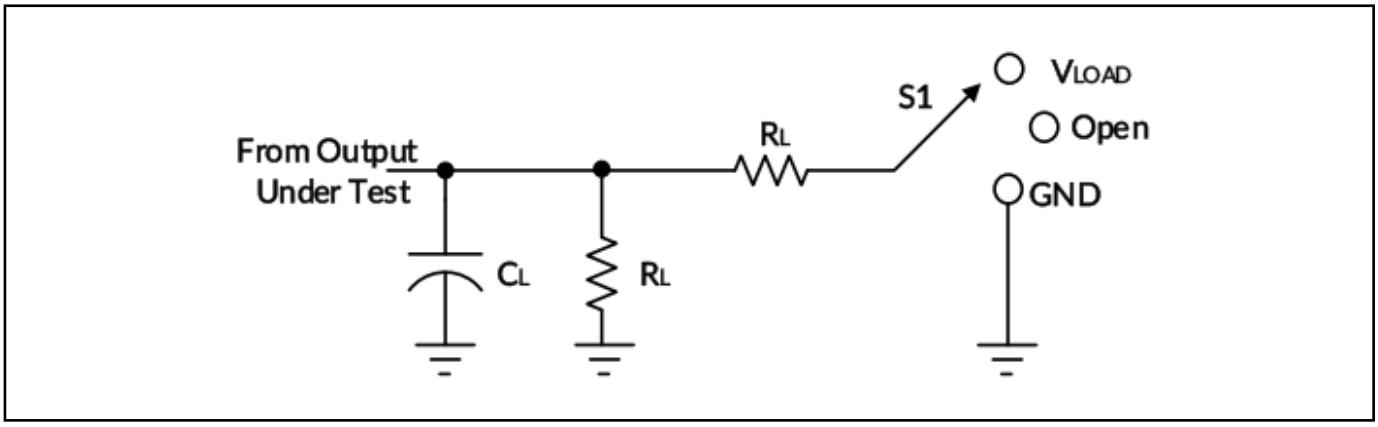
Operating Characteristics

T_A =25 ° C

PARAMETER		TEST CONDITIONS	Vcc= 1.8V	Vcc=2.5V	Vcc= 3.3V	Vcc=5V	UNIT
			TYP	TYP	TYP	TYP	
C_{pd}	Power Dissipation Capacitance Output Enabled	f=10MHz	182	182	192	214	pF
	Output Disabled						

(1) All unused inputs of the device must be held at Vcc or GND to ensure proper device operation.

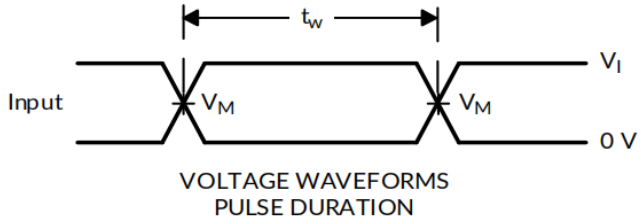
PARAMETER MEASUREMENT INFORMATION



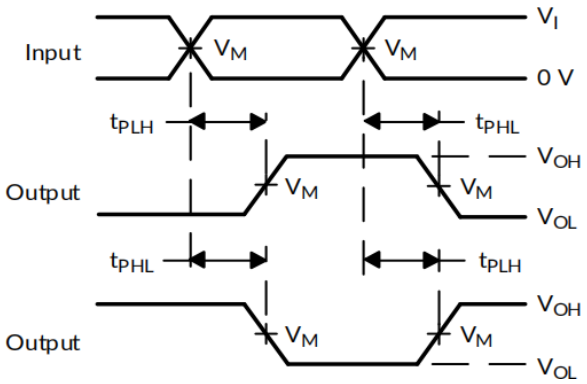
TEST	S1
t_{PLH}/t_{PHL}	Open
t_{pLz}/t_{pzL}	V_{LOAD}
t_{pHz}/t_{pzH}	GND

INPUTS

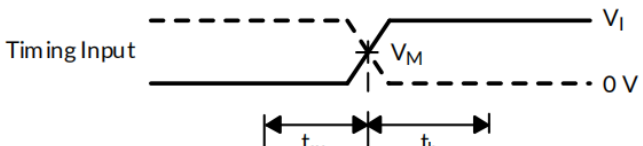
V_{cc}	V_I	t_r/t_f	V_M	V_{LOAD}	C_L		R_L		$V_\triangle$
1.8V±0.15V	V_{cc}	≤2ns	$V_{cc}/2$	$2\times V_{cc}$	15pF	30pF	1MQ	1kΩ	0.15V
2.5V±0.2V	V_{cc}	≤2ns	$V_{cc}/2$	$2\times V_{cc}$	15pF	30pF	1MΩ	500Ω	0.15V
3.3V±0.3V	3V	≤2.5ns	1.5V	6V	15pF	50pF	1MΩ	500Ω	0.3V
5V±0.5V	V_{cc}	≤2.5ns	$V_{cc}/2$	$2\times V_{cc}$	15pF	50pF	1MΩ	500Ω	0.3V



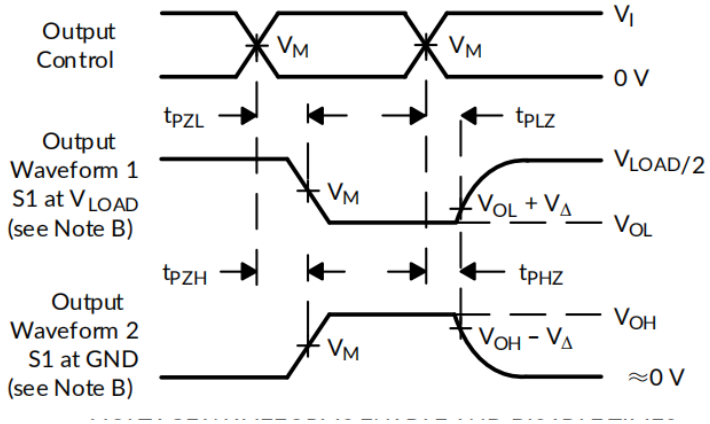
VOLTAGE WAVEFORMS
PULSE DURATION



VOLTAGE WAVEFORMS PROPAGATION DELAY
TIMES INVERTION AND NONINVERTING OUTPUTS



VOLTAGE WAVEFORMS
SETUP AND HOLD TIMES



VOLTAGE WAVEFORMS ENABLE AND DISABLE TIMES
LOW-AND HIGH-LEVEL ENABLING

NOTES: A. C_L includes probe and jig capacitance.
B. Waveform 1 is for an output with internal conditions such that the output is low, except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high, except when disabled by the output control.
C. All input pulses are supplied by generators having the following characteristics: PRR ≤ 10 MHz, Z_O = 50 Ω.
D. The outputs are measured one at a time, with one transition per measurement.
E. t_{PLZ} and t_{PHZ} are the same as t_{dis}.
F. t_{PZL} and t_{PZH} are the same as t_{en}.
G. t_{PLH} and t_{PHL} are the same as t_{pd}.
H. All parameters and waveforms are not applicable to all devices.

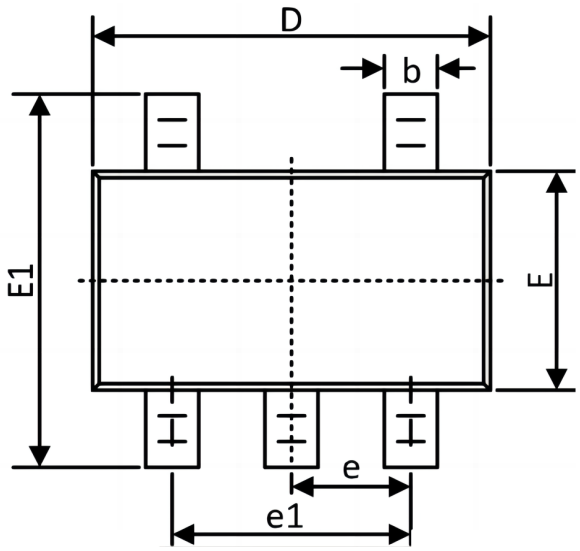
Order information

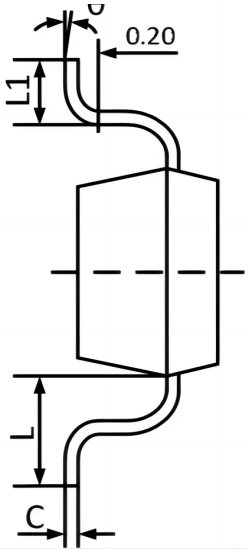
Order Number	Package	Package Quantity	Marking On The park	Temperature
SN74LVC1G126DCKR-TUDI	SC70-5	Tape,Reel,3000	CNK	-40°C~125°C
SN74LVC1G126DBVR-TUDI	SOT23-5	Tape,Reel,3000	C265	

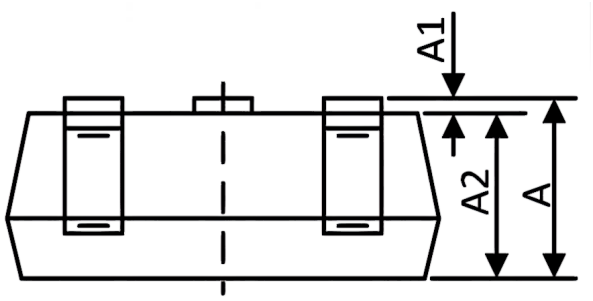
Revision history

Revison Number	Date	Revision	Page
V1.0	2018/6/5	New	1-14

Package SOT23-5

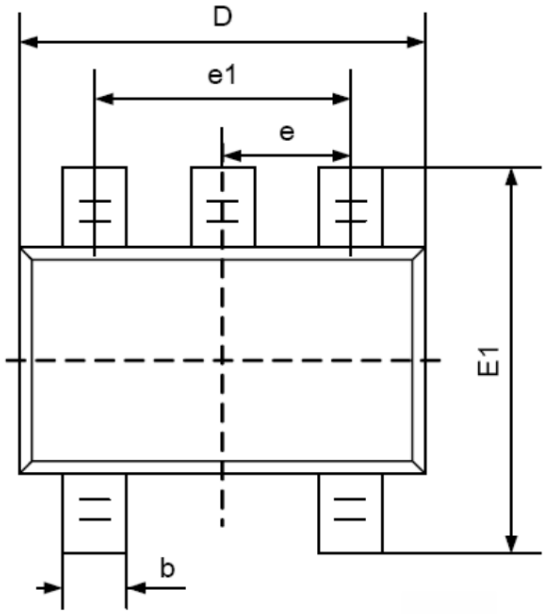


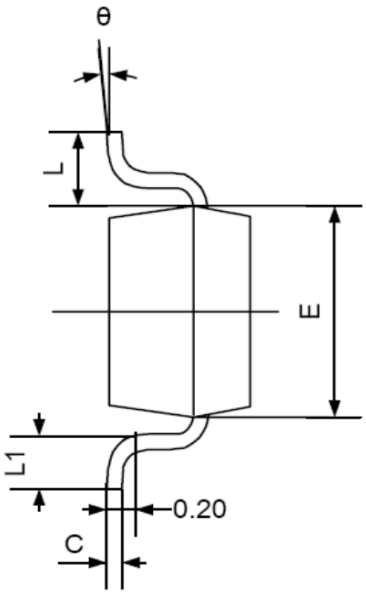


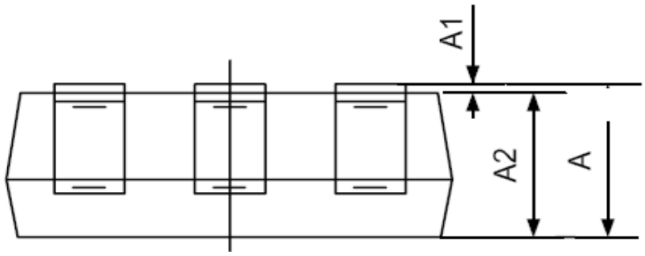


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.400	0.012	0.016
C	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.700REF		0.028REF	
L1	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

Package SC70-5







Symbol	DimensionsIn Millimeters		DimensionsIn Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
C	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650TYP		0.026TYP	
e1	1.200	1.400	0.047	0.055
L	0.525REF		0.021REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

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