



CST4N150 N-Ch 150V Fast Switching MOSFETs

- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent Cdv/dt effect decline
- ★ Advanced high cell density Trench technology

CST4N150 Product Summary



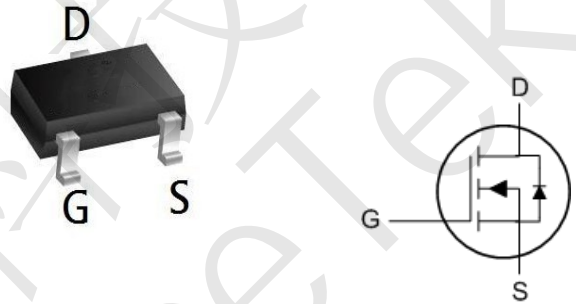
BVDSS	RDSON	ID
150V	245mΩ	4.0 A

CST4N150 Description

The CST4N150 is the high cell density trenched N-ch MOSFETs, which provides excellent RDSON and efficiency for most of the small power switching and load switch applications.

The CST4N150 meet the RoHS and Green Product requirement with full function reliability approved.

CST4N150 SOT23-3L Pin Configuration



CST4N150 Absolute Maximum Ratings (T_A = 25°C, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	150	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current	I _D	T _C =25°C	4.0
		T _C =100°C	2.0
Pulsed Drain Current ¹	I _{DM}	15	A
Single Pulse Avalanche Energy ²	EAS	1.25	mJ
Total Power Dissipation	P _D	3	W
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction-to-Ambient ³	R _{θJA}	85	°C/W



CST4N150 Electrical Characteristics ($T_J = 25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit	
Static Characteristics							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	150	-	-	V	
Gate-body Leakage current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	± 100	nA	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 150V, V_{GS} = 0V$	$T_J = 25^\circ\text{C}$	-	-	1	μA
			$T_J = 100^\circ\text{C}$	-	-	100	
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.5	2	2.5	V	
Drain-Source on-Resistance ⁴	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 4A$	-	245	300	m Ω	
Forward Transconductance ⁴	g_{fs}	$V_{DS} = 10V, I_D = 4A$	-	25	-	S	
Dynamic Characteristics⁵							
Input Capacitance	C_{iss}	$V_{DS} = 75V, V_{GS} = 0V, f = 1\text{MHz}$	-	450	-	pF	
Output Capacitance	C_{oss}		-	23	-		
Reverse Transfer Capacitance	C_{rss}		-	14	-		
Gate Resistance	R_g	$f = 1\text{MHz}$	-	1.5	-	Ω	
Switching Characteristics⁵							
Total Gate Charge	Q_g	$V_{GS} = 10V, V_{DS} = 75V, I_D = 1.5A$	-	8.2	-	nC	
Gate-Source Charge	Q_{gs}		-	1.5	-		
Gate-Drain Charge	Q_{gd}		-	2.2	-		
Turn-on Delay Time	$t_{d(on)}$	$V_{GS} = 10V, V_{DD} = 75V, R_G = 6\Omega, I_D = 1A, R_{\theta} = 75\Omega$	-	8.2	-	ns	
Rise Time	t_r		-	10.2	-		
Turn-off Delay Time	$t_{d(off)}$		-	20.5	-		
Fall Time	t_f		-	15.3	-		
Drain-Source Body Diode Characteristics							
Diode Forward Voltage ⁴	V_{SD}	$I_S = 1A, V_{GS} = 0V$	-	-	1.2	V	
Continuous Source Current	I_S	$T_C = 25^\circ\text{C}$	-	-	4.0	A	

Notes:

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)} = 150^\circ\text{C}$.
2. The EAS data shows Max. rating . The test condition is $V_{DD} = 25V, V_{GS} = 10V, L = 0.1\text{mH}, I_{AS} = 5A$.
3. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
4. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
5. This value is guaranteed by design hence it is not included in the production test.



CST4N150 Typical Characteristics

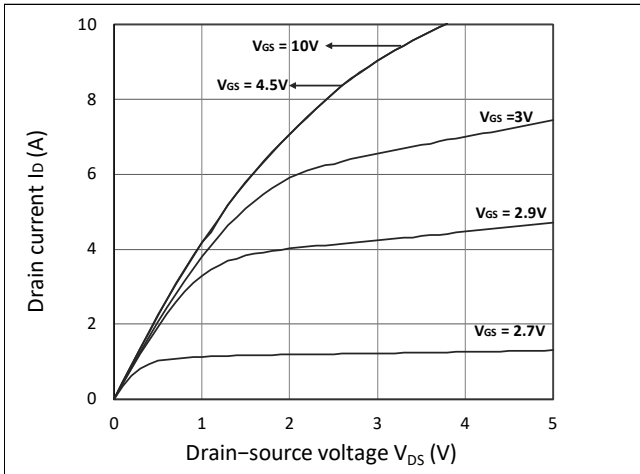


Figure 1. Output Characteristics

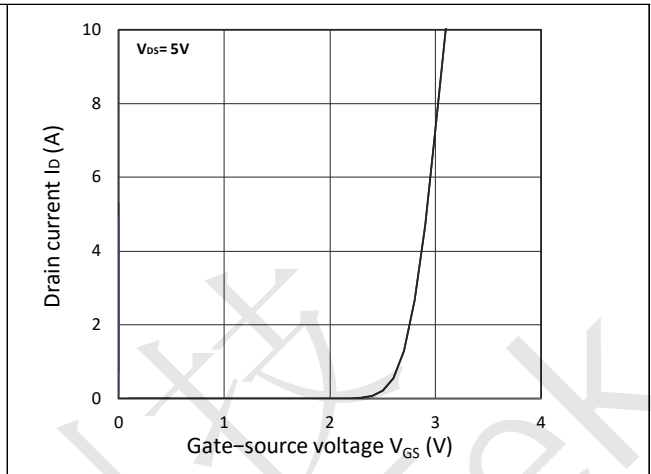


Figure 2. Transfer Characteristics

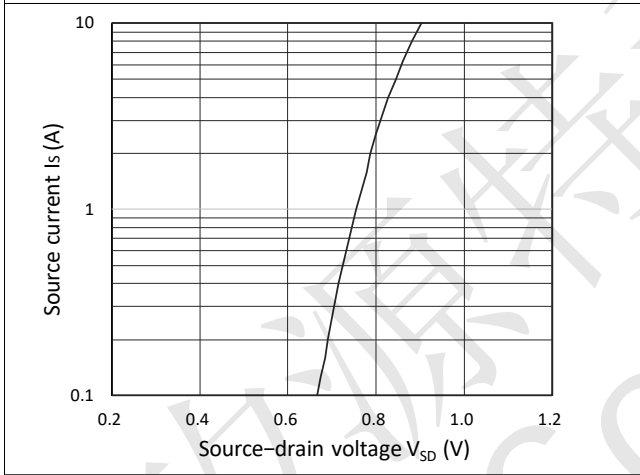


Figure 3. Forward Characteristics of Reverse

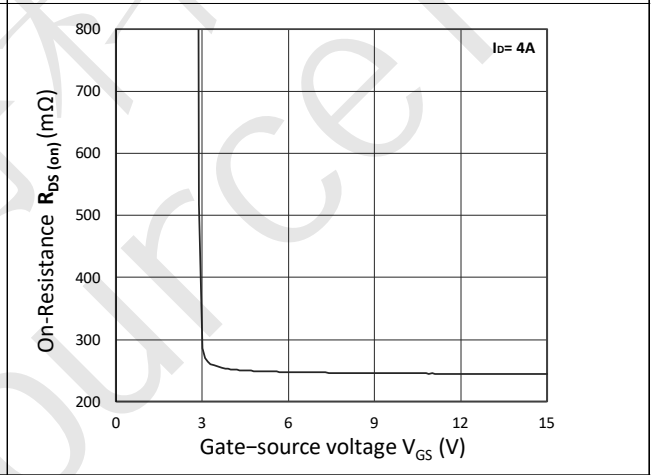


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

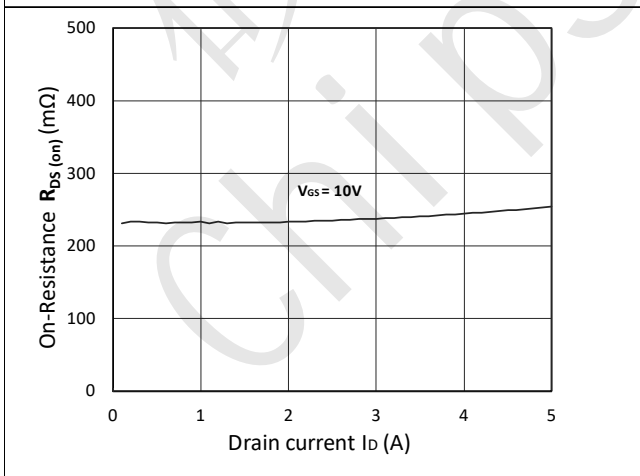


Figure 5. $R_{DS(ON)}$ vs. I_D

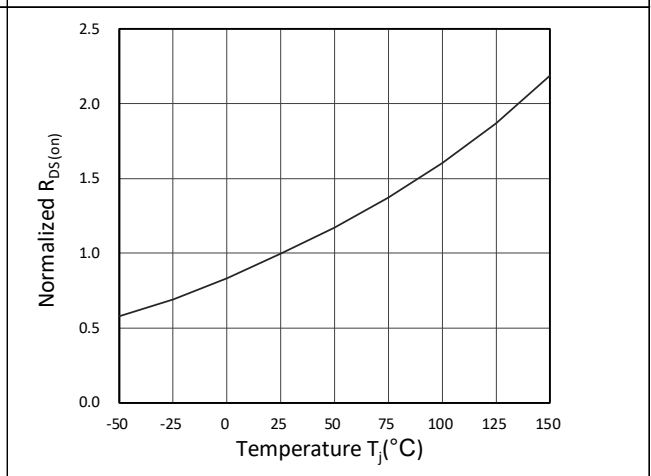


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

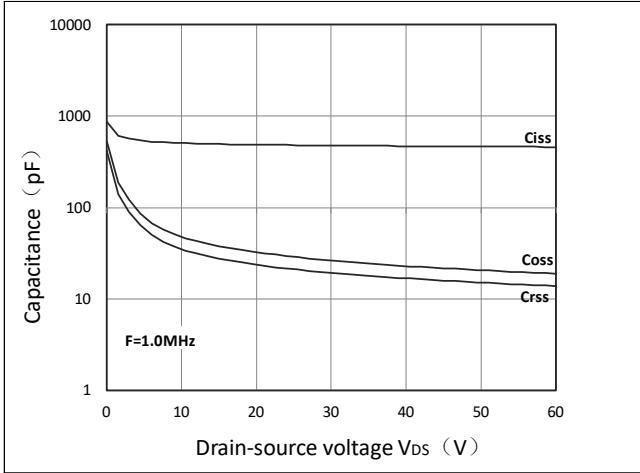


Figure 7. Capacitance Characteristics

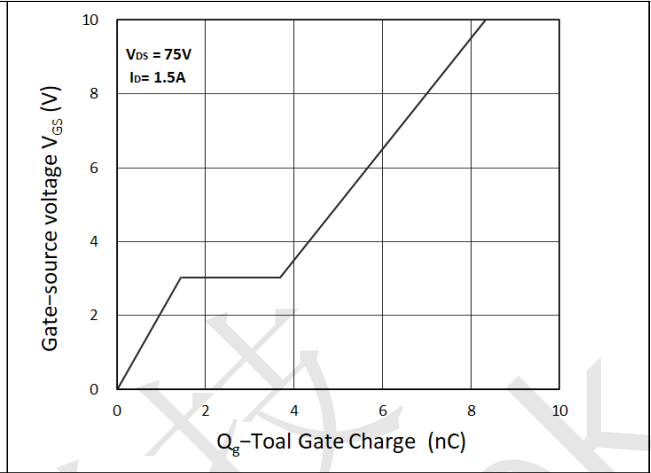


Figure 8. Gate Charge Characteristics

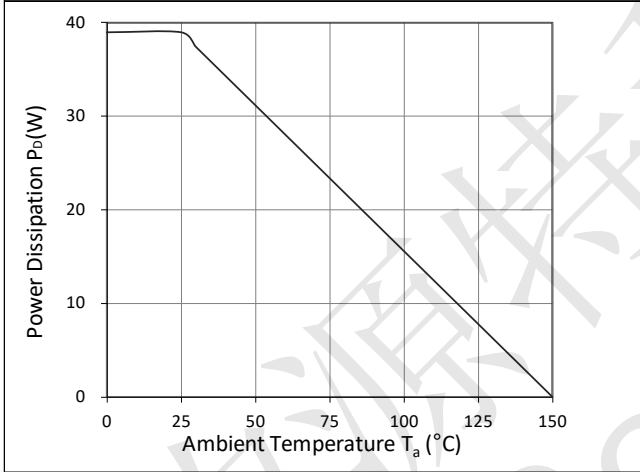


Figure 9. Power Dissipation

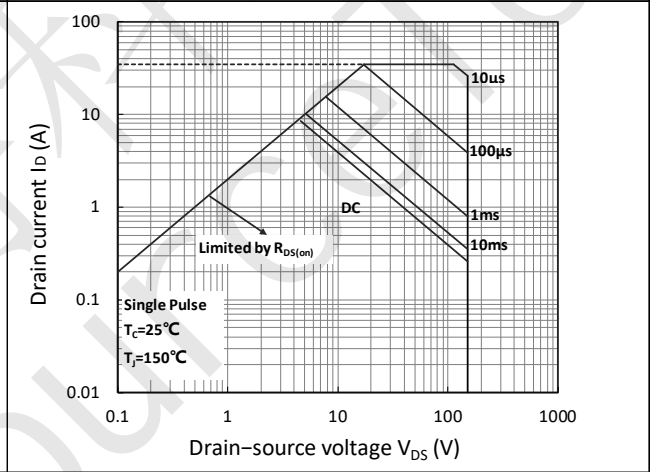


Figure 10. Safe Operating Area

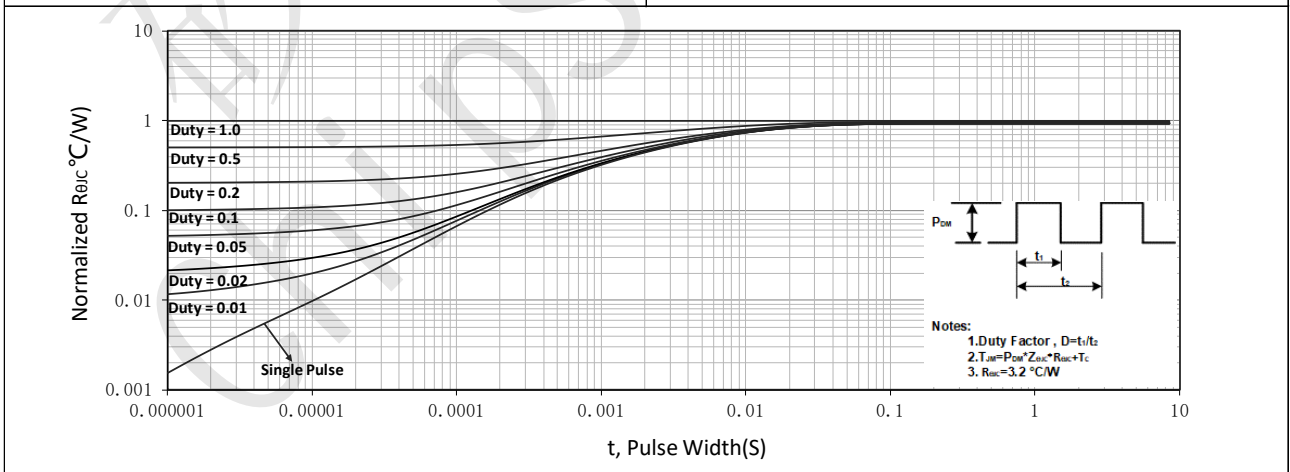


Figure 11. Normalized Maximum Transient Thermal Impedance



CST4N150 Test Circuit

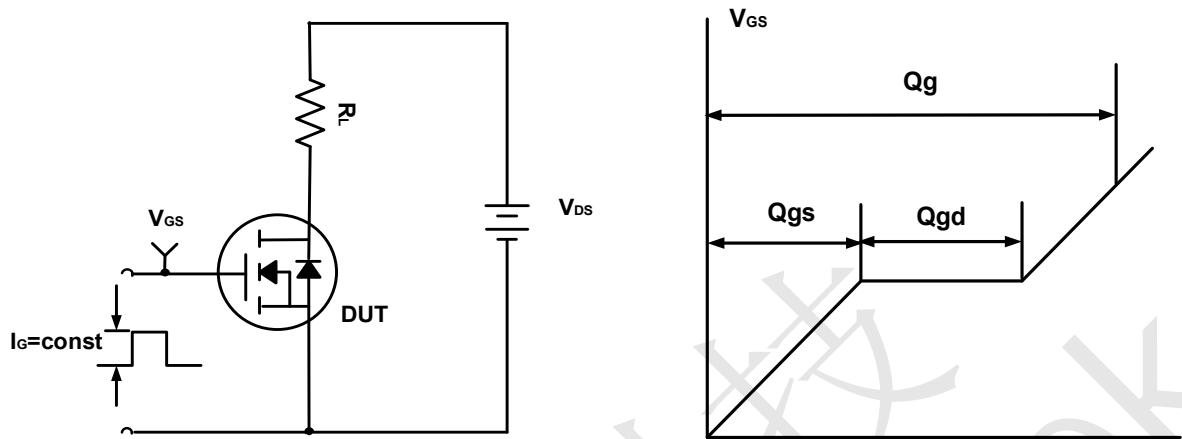


Figure A. Gate Charge Test Circuit & Waveforms

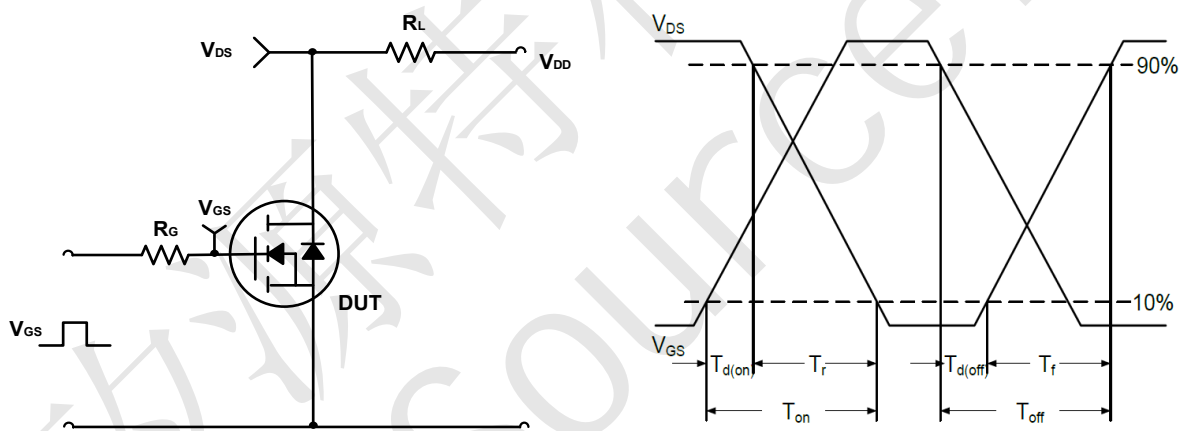


Figure B. Switching Test Circuit & Waveforms

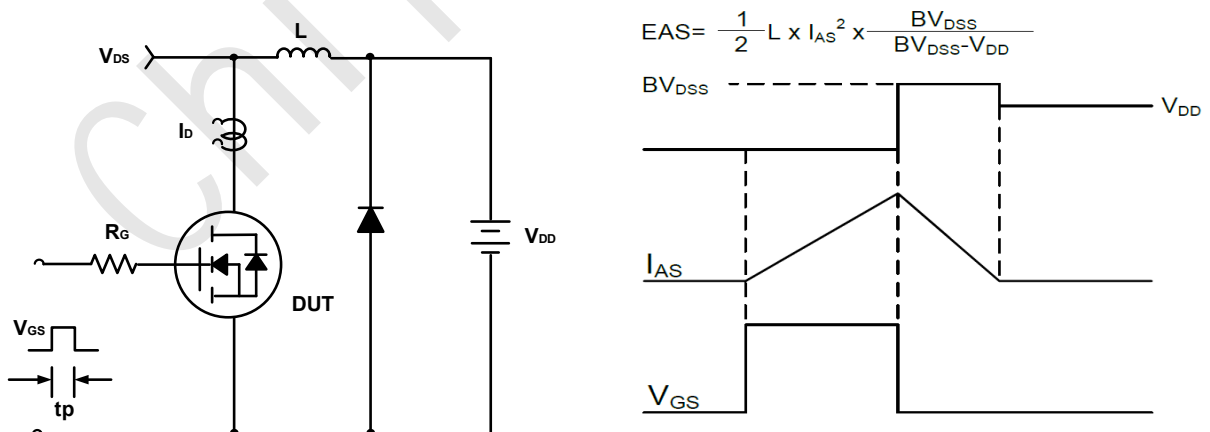
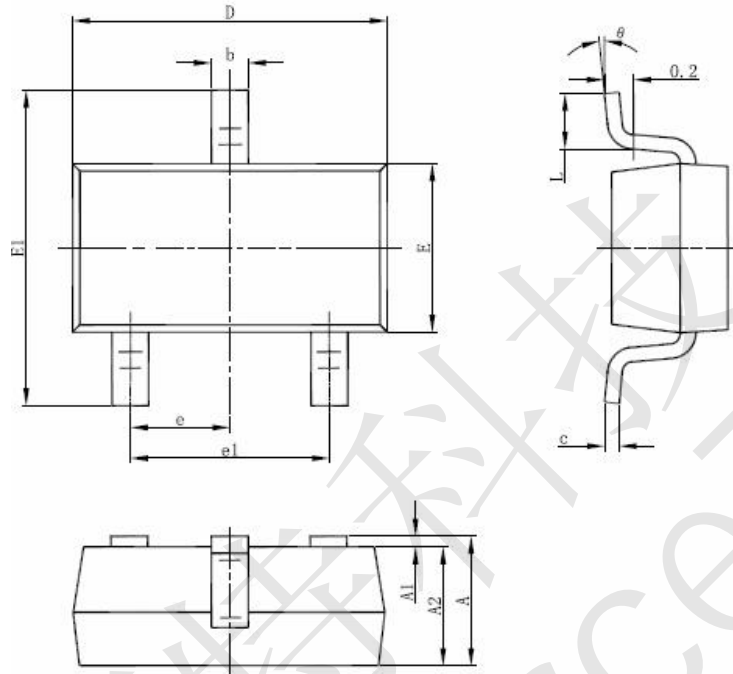


Figure C. Unclamped Inductive Switching Circuit & Waveforms



CST4N150 SOT-23-3L Package Information



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	0.500	0.012	0.020
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	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°