20V Dual N-Channel Enhancement Mode MOSFET

Description

The NP9926A uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

General Features

- V_{DS} =20V，I_D =6.5A
  $R_{DS(ON)}$(Typ.)=19mΩ @V_{GS}=2.5V
  $R_{DS(ON)}$(Typ.)=14mΩ @V_{GS}=4.5V
- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current

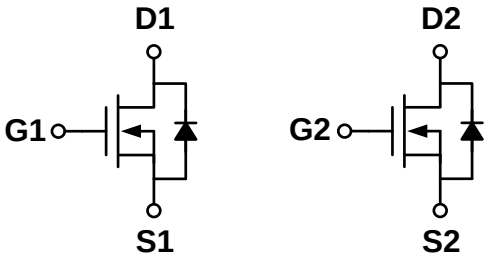
Application

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package

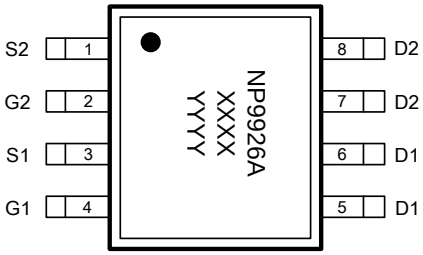
- SOP-8

Schematic diagram



Marking and pin assignment

SOP-8
(TOP VIEW)



Note：XXXX is the date code , YYYY is the wafer lot number.

Ordering Information

Part Number	Storage Temperature	Package	Devices Per Reel
NP9926ASR	-55°C to +150°C	SOP-8	3000

Absolute Maximum Ratings (TA=25℃ unless otherwise noted)

parameter		symbol	limit	unit
Drain-source voltage		V_{DS}	20	V
Gate-source voltage		V_{GS}	±12	V
Drain Current-Continuous (Silicon Limited)	T_A=25°C	I_D	6.5	A
	T_A=75°C		4	
Pulsed Drain Current (Package Limited)		I_{DM}	26	A
Maximum power dissipation	T_A=25°C	P_D	1.25	W
	T_A=75°C		0.8	
Operating junction Temperature range		Tj	-55—150	℃

Electrical Characteristics (TA=25℃ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF Characteristics						
Drain-source breakdown voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	20	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=20V, V_{GS}=0V	-	-	1	μA
Gate-body leakage	I_{GSS}	V_{DS}=0V, V_{GS}=±12V	-	-	±100	nA
ON Characteristics						
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	-0.5	0.7	1.2	V
Drain-source on-state resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=6.5A	-	14	22	mΩ
		V_{GS}=2.5V, I_D=5.5A	-	19	27	
Forward transconductance	gfs	V_{GS}=5V, I_D=6A	-	10	-	S
Dynamic Characteristics						
Input capacitance	C_{ISS}	V_{DS}=10V ,V_{GS}=0V f=1.0MHz	-	900	-	pF
Output capacitance	C_{OSS}		-	220	-	
Reverse transfer capacitance	C_{RSS}		-	100	-	
Switching Characteristics						
Turn-on delay time	$t_{D(ON)}$	V_{DD}=10V I_D=6A V_{GEN}=4.5V R_{GEN}=6ohm	-	10	-	ns
Rise time	tr		-	11	-	
Turn-off delay time	$t_{D(OFF)}$		-	35	-	
Fall time	tf		-	30	-	
Total gate charge	Qg	V_{DS}=10V,I_D=6A V_{GS}=4.5V	-	12	-	nC
Gate-source charge	Qgs		-	2.3	-	
Gate-drain charge	Qgd		-	1	-	

Thermal Characteristics

Thermal Resistance junction-to ambient	Rth JA	100	℃/W

Typical Performance Characteristics

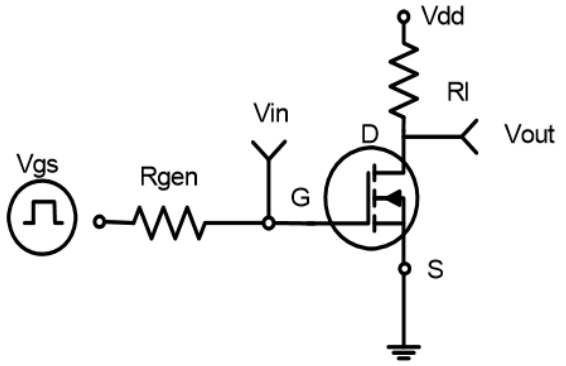


Figure 1:Switching Test Circuit

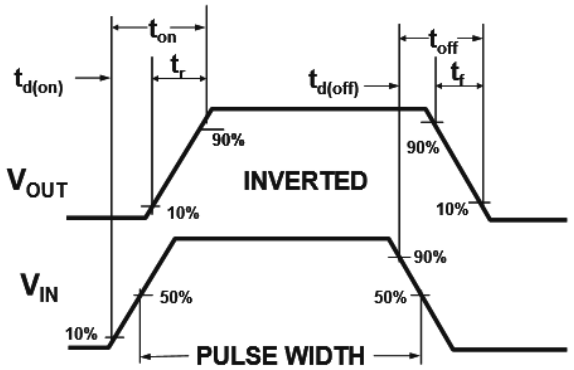


Figure 2:Switching Waveforms

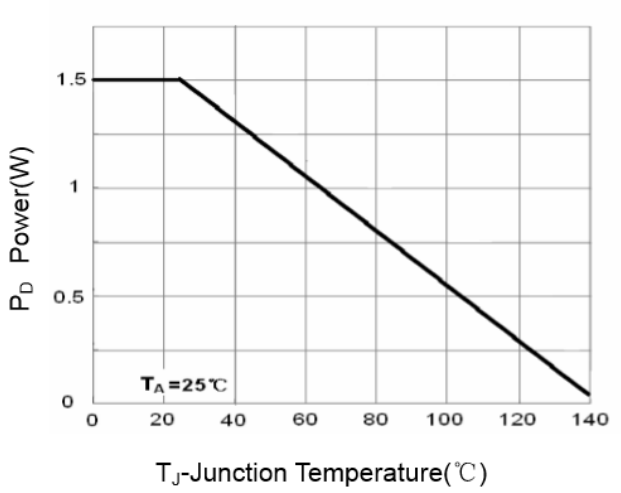


Figure 3 Power Dissipation

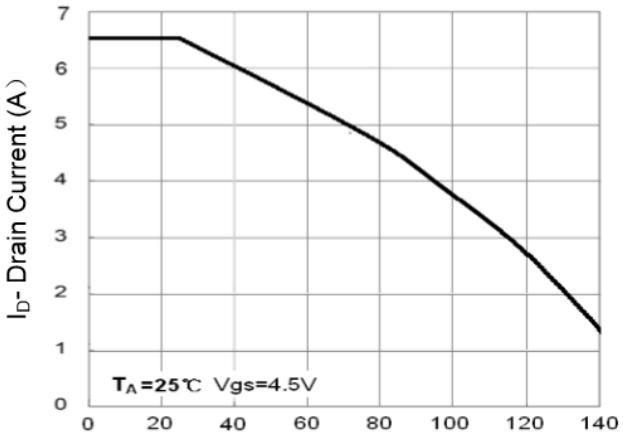


Figure 4 Drain Current

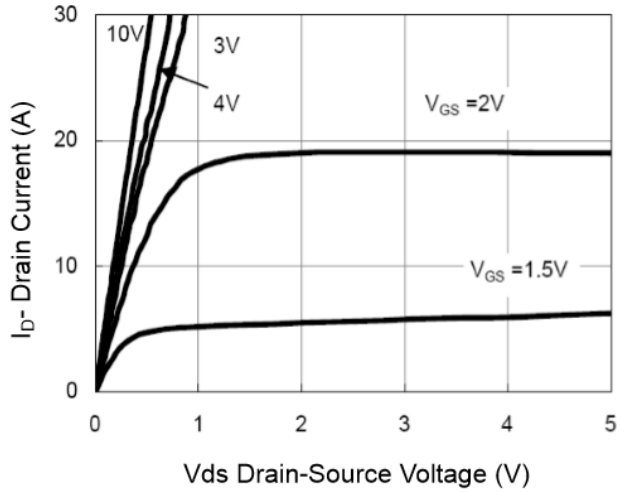


Figure 5 Output Characteristics

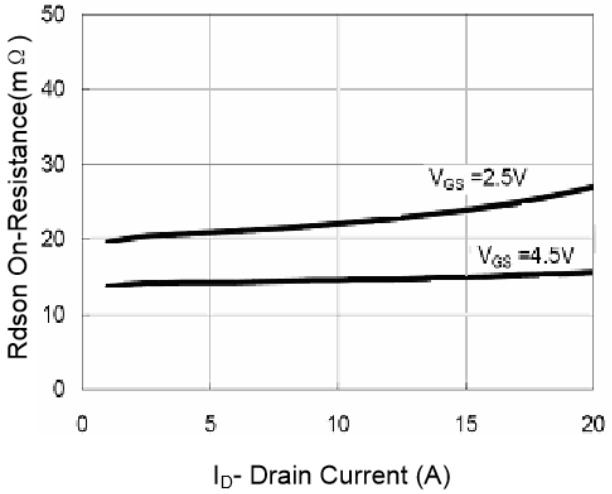


Figure 6 Drain-Source On-Resistance

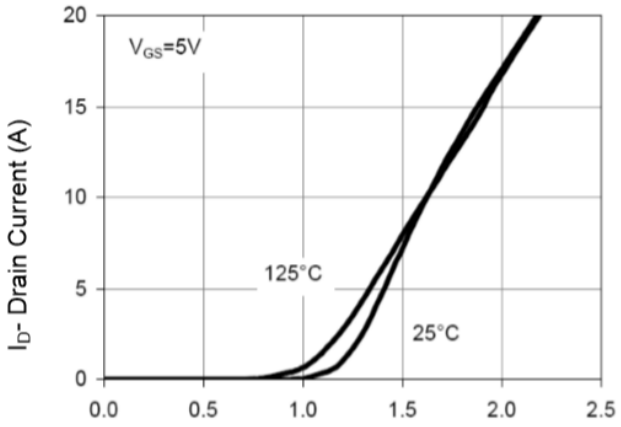


Figure 7 Transfer Characteristics

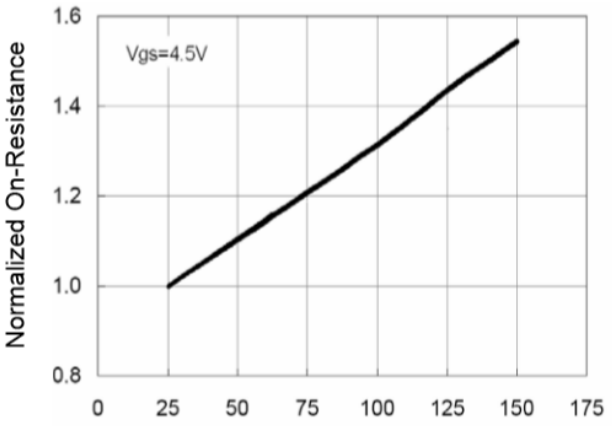


Figure 8 Drain-Source On-Resistance

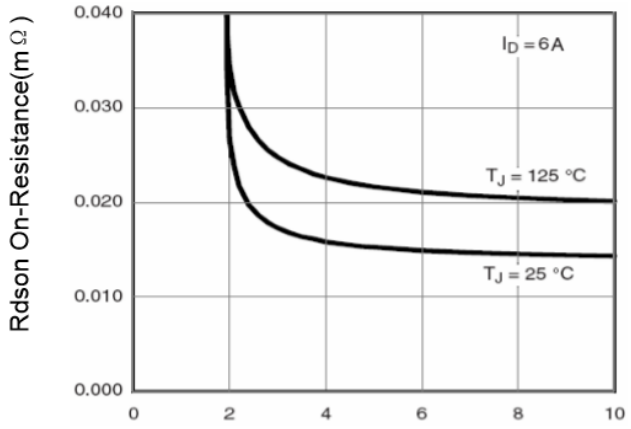


Figure 9 Rdson vs Vgs

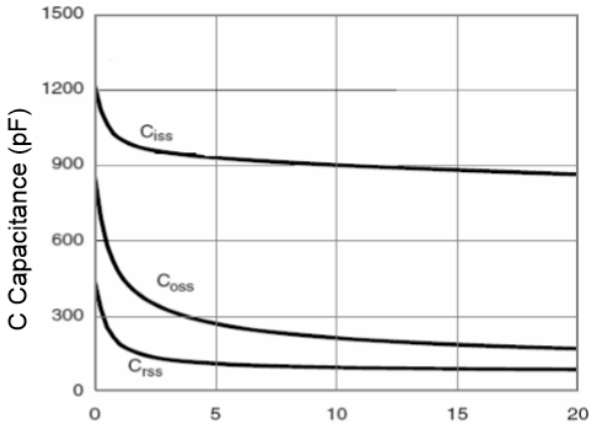


Figure 10 Capacitance vs Vds

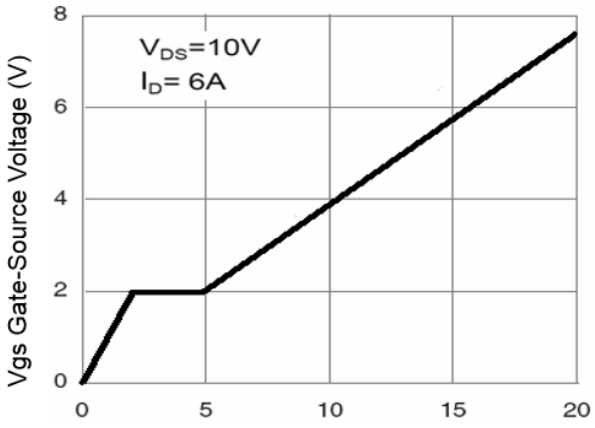


Figure 11 Gate Charge

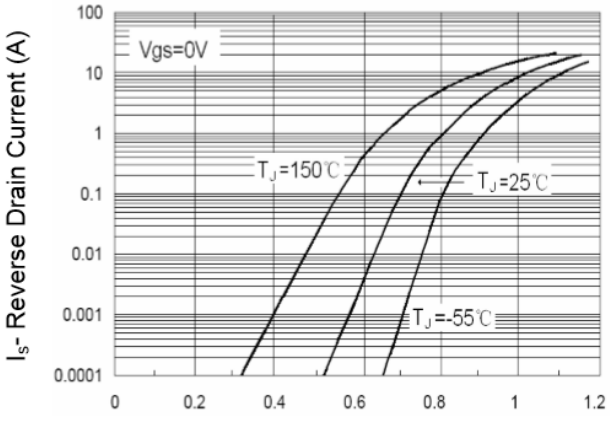


Figure 12 Source- Drain Diode Forward

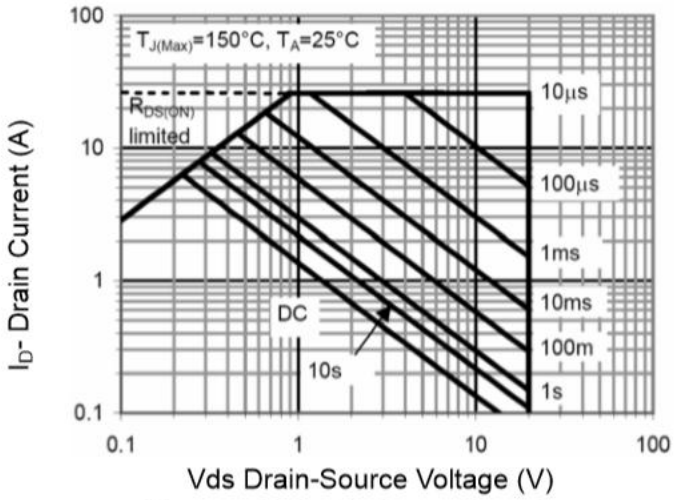


Figure 13 Safe Operation Area

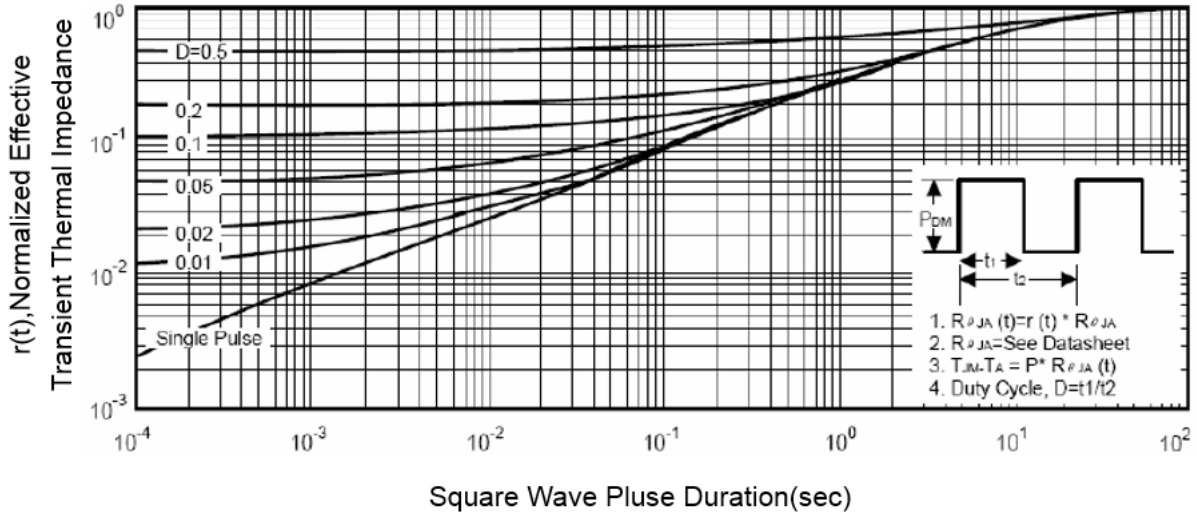
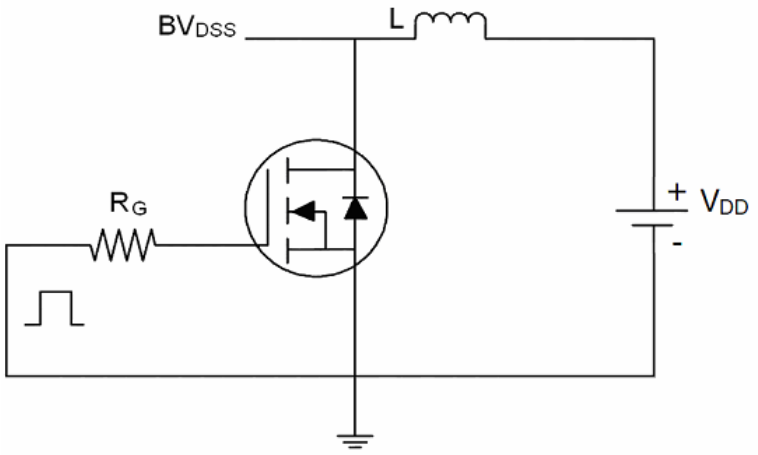


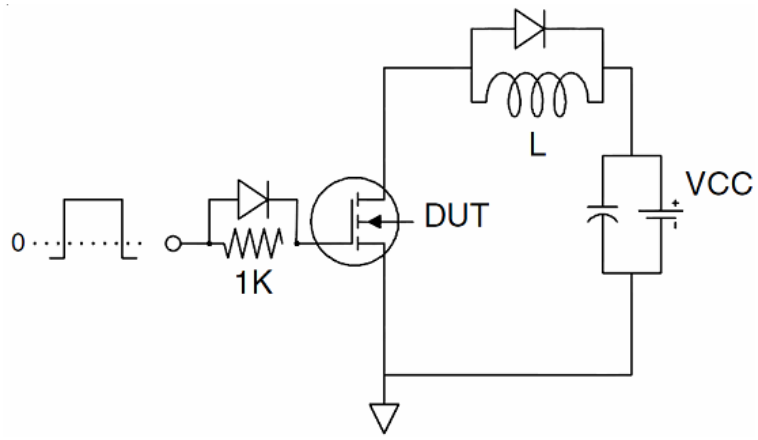
Figure 14 Normalized Maximum Transient Thermal Impedance

Test Circuit：

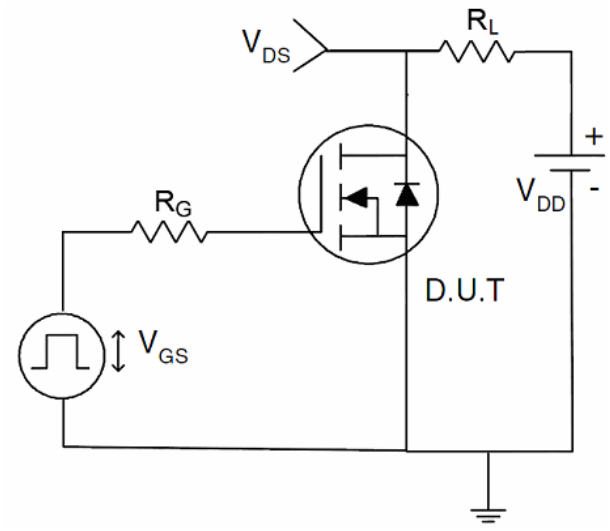
（1）、EAS Test Circuit



（2）、Gate Charge Test Circuit

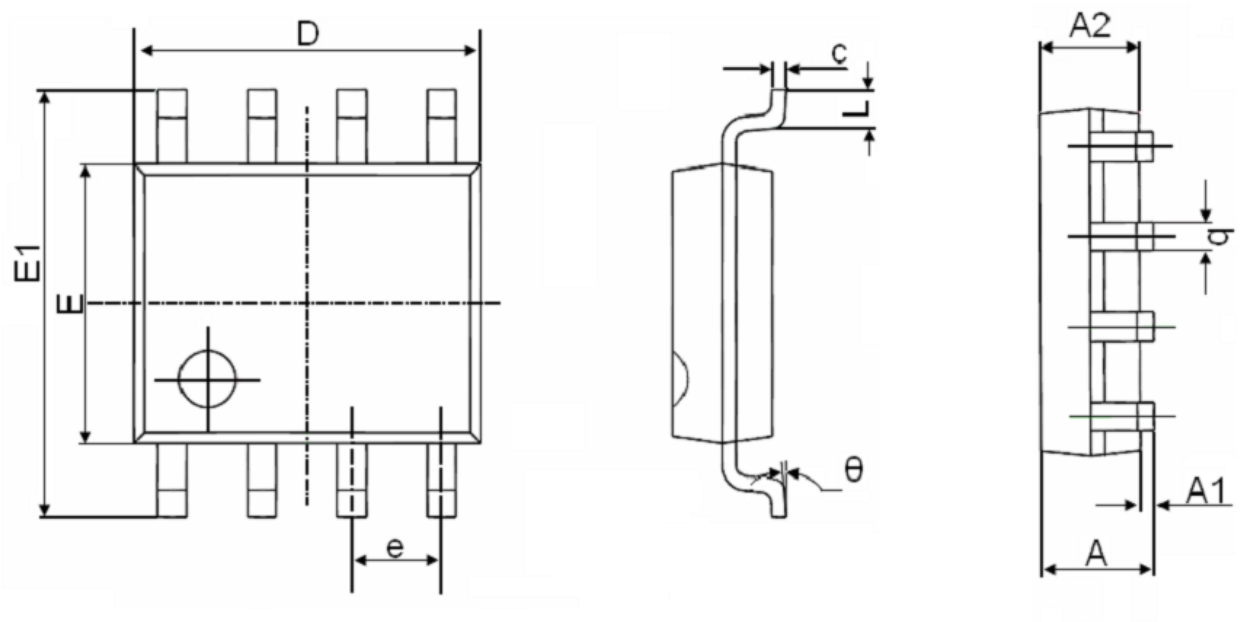


（3）、Switch Time Test Circuit



Package Information

- **SOP-8**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°