Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
20V	22mΩ@4.5V	6A
	30mΩ@2.5V	
-20V	50mΩ@4.5V	-5A
	70mΩ@2.5V	

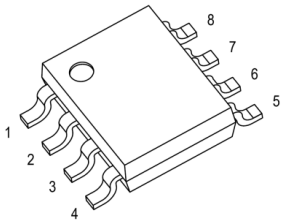
Feature

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Fast Switching Speed

Application

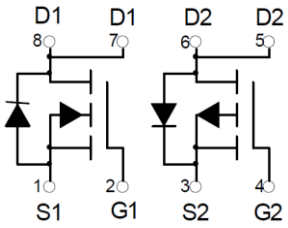
- Motor Control
- Power Management Functions
- DC-DC Converters
- Back lighting

Package

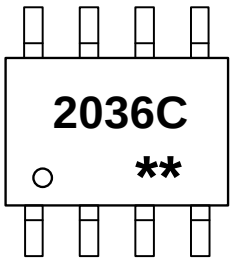


SOP-8L

Circuit diagram



Marking



2036C: Product code
** : Week code.

Maximum Ratings-Total Device(Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage Temperature	T_{STG}	-55~ +150	℃

Maximum Ratings - N-Channel Q1(Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	I_D	6	A

Maximum Ratings - P-Channel Q1(Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	I_D	-5	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	277	℃/W

Electrical characteristics - N-Channel Q1 (T_A=25 ºC, unless otherwise noted)

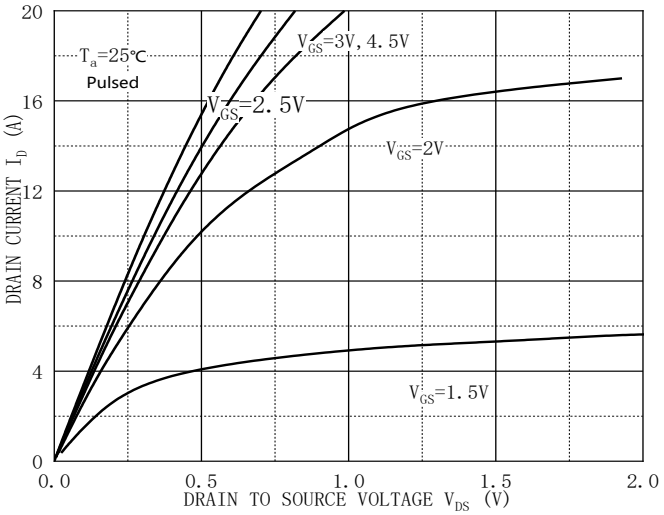
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	20			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =20V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±12V, V_{DS} = 0V			±0.1	μA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	0.5	0.7	1	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =4.5V, I_D =4A		22	30	mΩ
		V_{GS} =2.5V, I_D =3A		30	40	
Dynamic characteristics						
Total gate charge	Q_g	V_{DS} =10V,V_{GS} =4.5V,I_D =4A		11		nC
Gate-source charge	Q_{gs}			2.3		
Gate-drain charge	Q_{gd}			2.5		
Input Capacitance	C_{iss}	V_{DS}=8V,V_{GS}=0V,f=1MHz		800		pF
Output Capacitance	C_{oss}			155		
Reverse Transfer Capacitance	C_{rss}			125		
Switching Characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=10V , V_{GS}=4V , I_D=1A R_G=10Ω		18		ns
Turn-on rise time	t_r			5		
Turn-off delay time	$t_{d(off)}$			43		
Turn-off fall time	t_f			20		

Source-Drain Diode characteristics						
Diode forward voltage	V_{SD}	I_S=1A,V_{GS}=0V			1.3	V

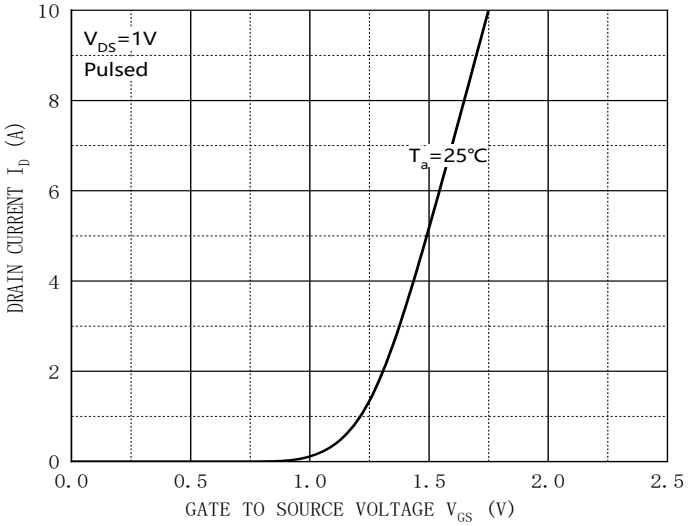
Electrical characteristics - P-Channel Q2 (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	-20			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-16V,V_{GS} = 0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±12V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D = -250μA	-0.5	-0.7	-1	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} = -4.5V, I_D = -3A		50	60	mΩ
		V_{GS} = -2.5V, I_D = -1A		70	90	
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS}=-10V,V_{GS}=0V,f=1MHz		405		pF
Output Capacitance	C_{oss}			75		
Reverse Transfer Capacitance	C_{rss}			55		
Gate resistance	R_g	f =1MHz		6		Ω
Total Gate Charge	Q_g	V_{DS} =-10V,V_{GS} =-2.5V,ID=-3A		3.3	12	nC
Gate-Source Charge	Q_{gs}			0.7		
Gate-Drain Charge	Q_{gd}			1.3		
Turn-on delay time	$t_{d(on)}$	V_{DD}=-10V,V_{GEN}=-4.5V,I_D=-1A R_L=10Ω,R_{GEN}=1Ω		11		ns
Turn-on rise time	t_r			35		
Turn-off delay time	$t_{d(off)}$			30		
Turn-off fall time	t_f			10		
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S=-1A			-1.3	V

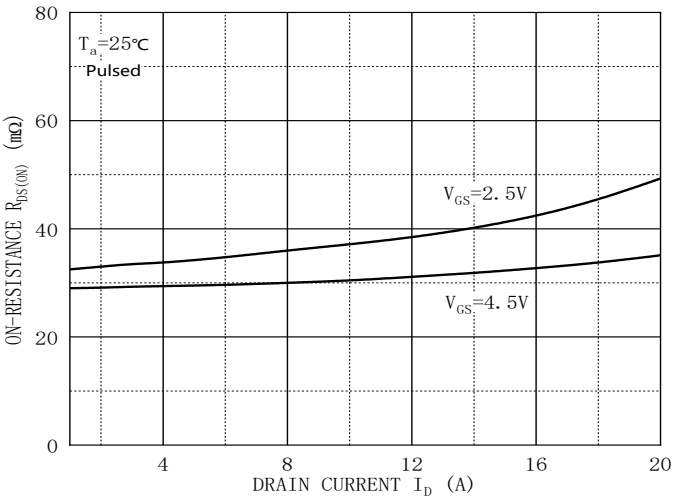
Typical Characteristics - N-Channel Q1



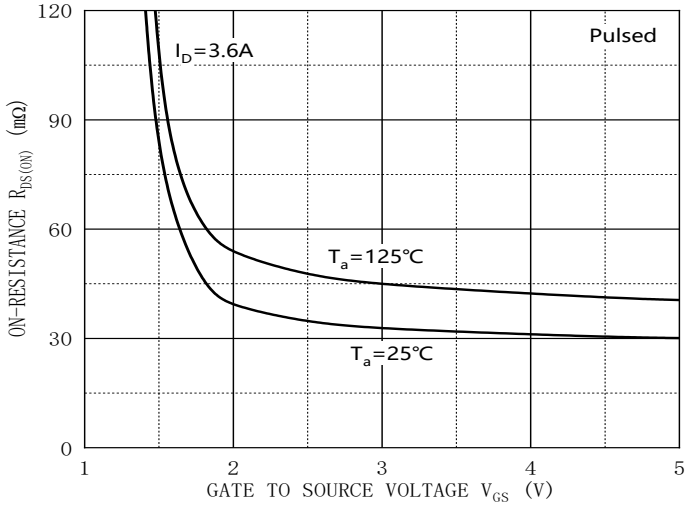
Output Characteristics



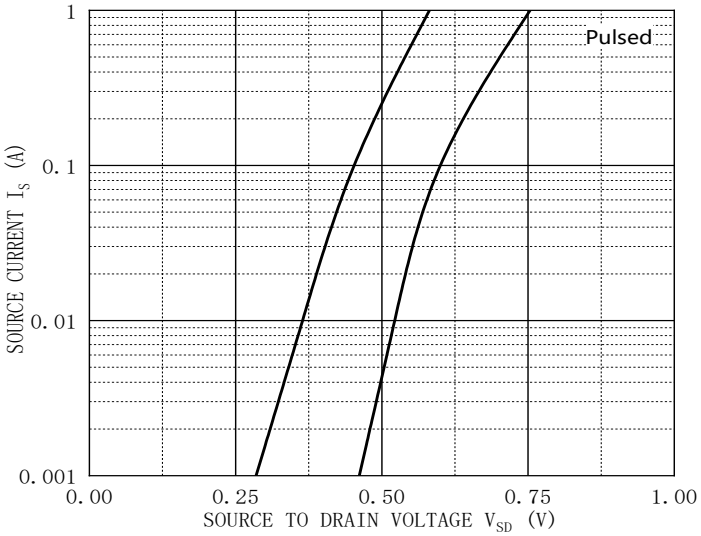
Transfer Characteristics



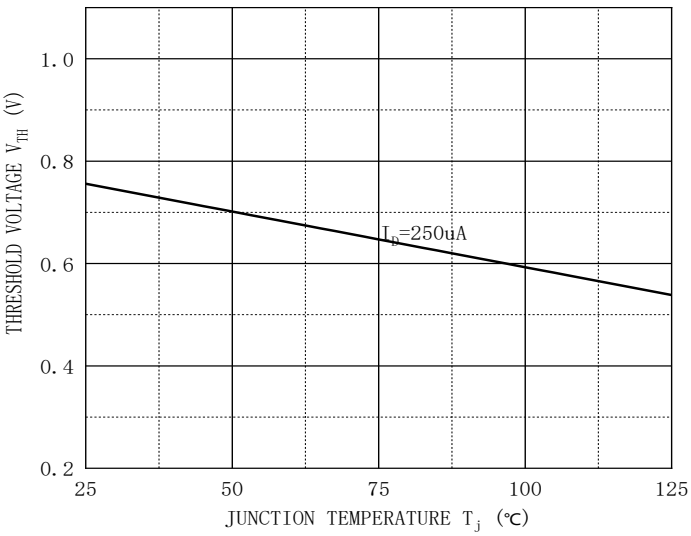
$R_{DS(ON)}$ – I_D



$R_{DS(ON)}$ – V_{GS}

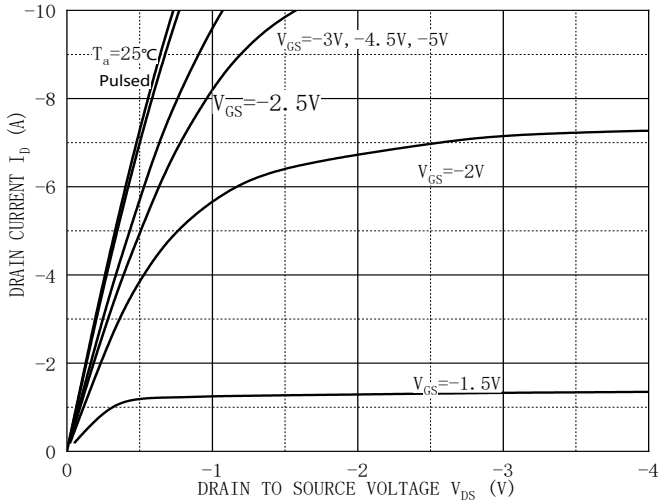


I_S – V_{SD}

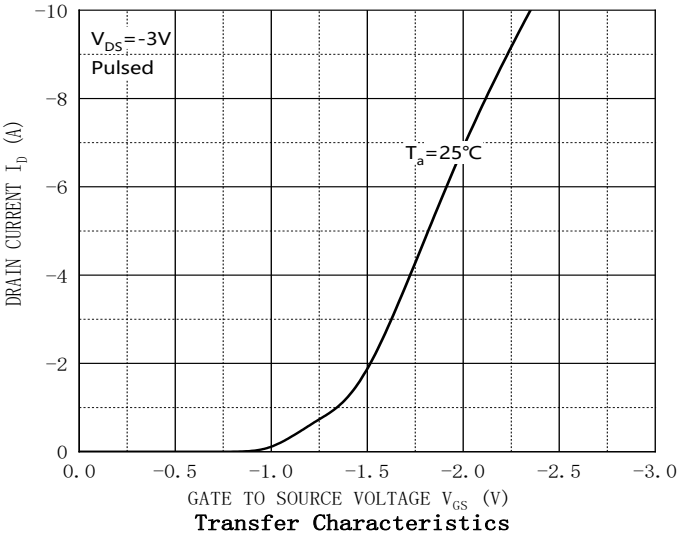


Threshold Voltage

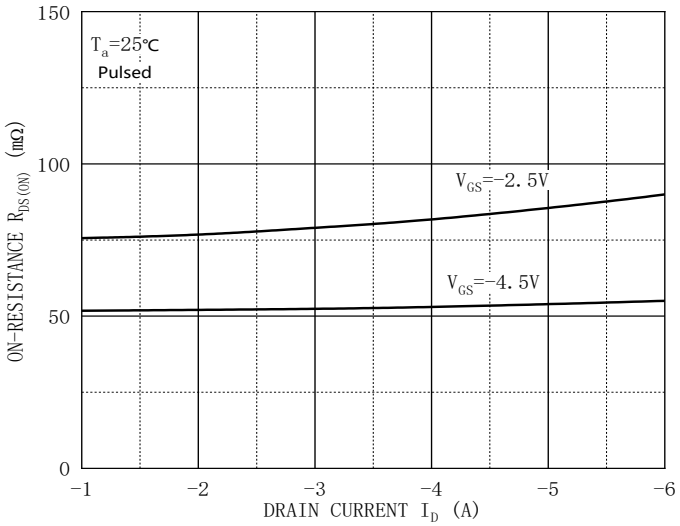
Typical Characteristics - P-Channel Q2



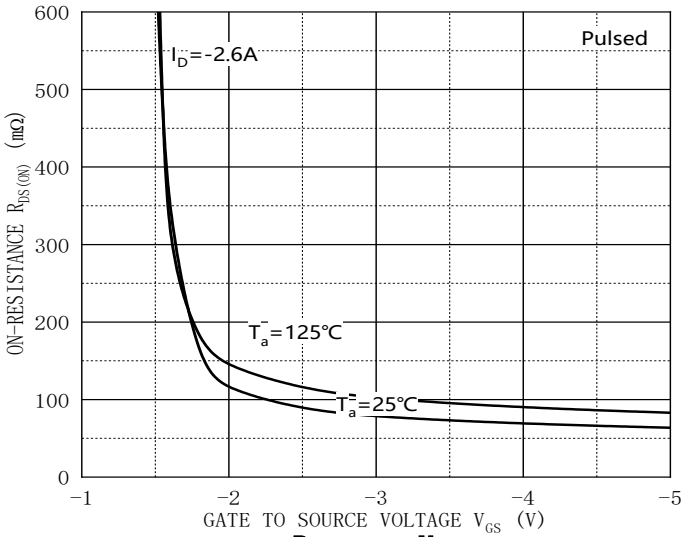
Output Characteristics



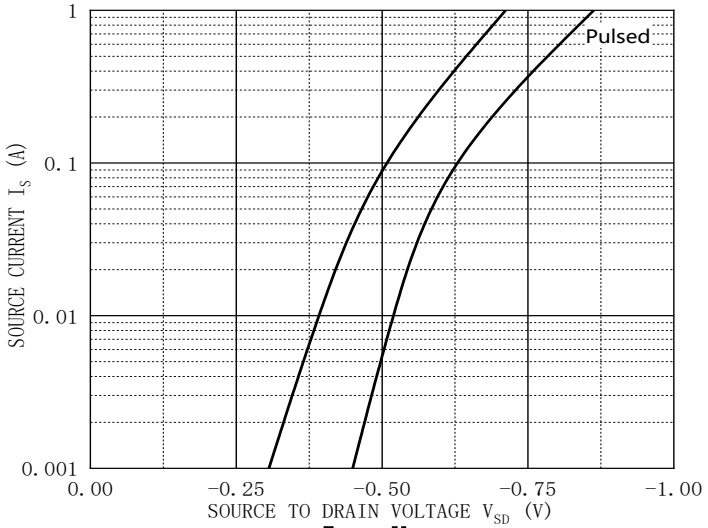
Transfer Characteristics



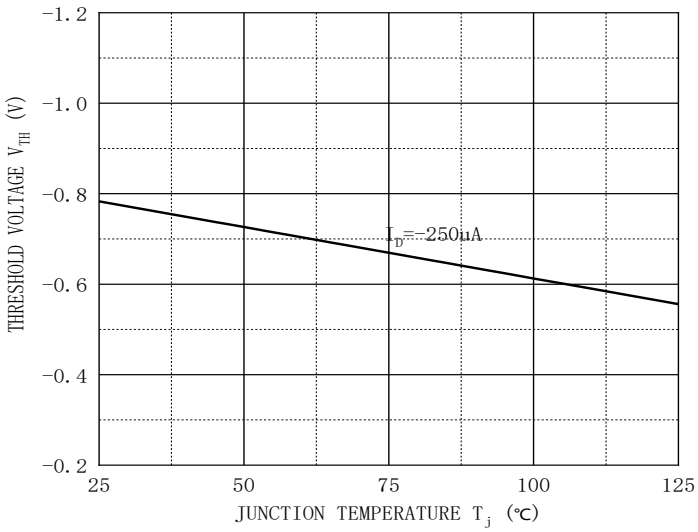
$R_{DS(ON)}$ - I_D



$R_{DS(ON)}$ - V_{GS}

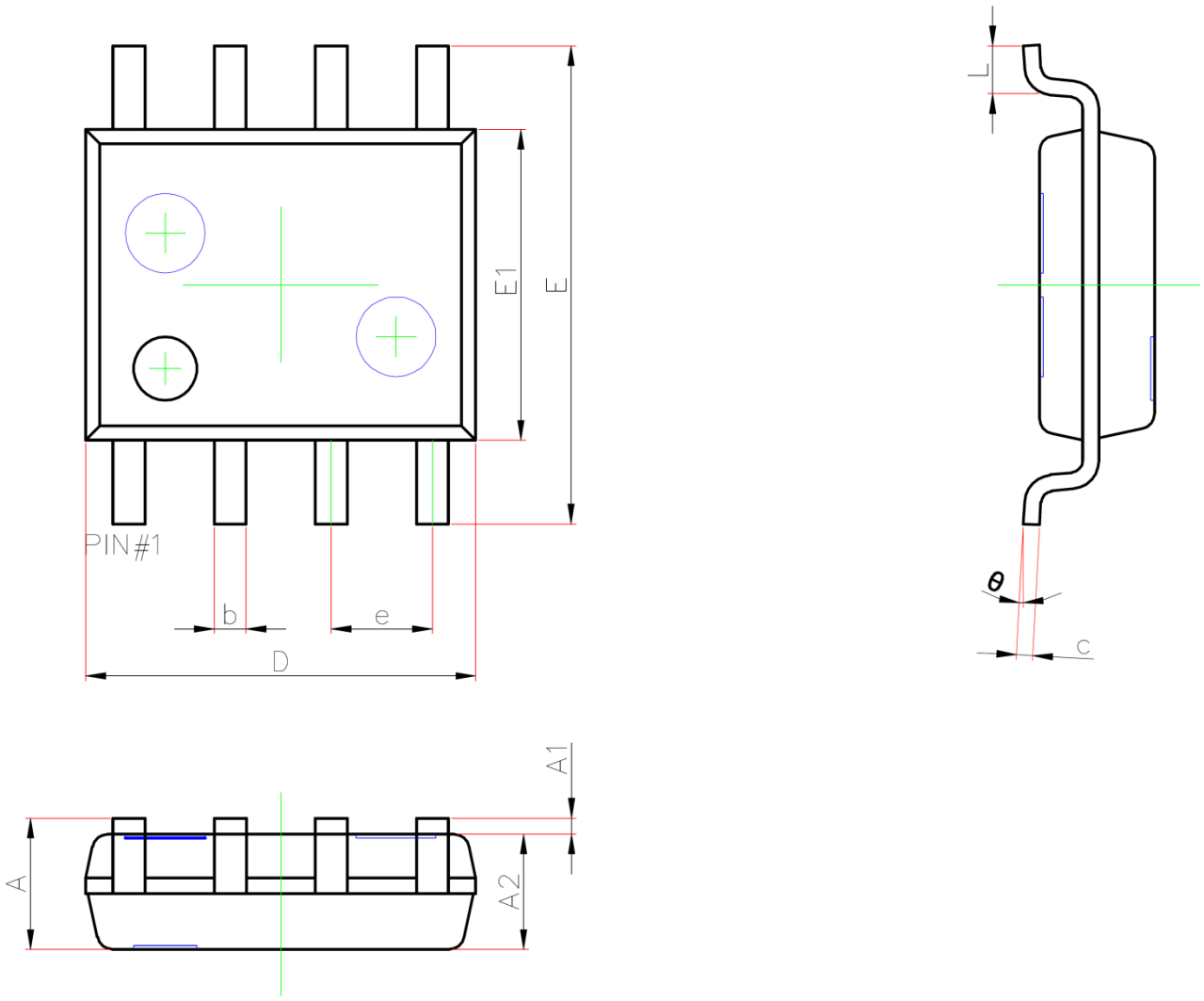


I_S - V_{SD}



Threshold Voltage

SOP-8L Package Information



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	1.35	1.75
A1	0.10	0.25
A2	1.35	1.55
b	0.33	0.51
c	0.17	0.25
D	4.80	5.00
e	1.27 REF.	
E	5.80	6.20
E1	3.80	4.00
L	0.40	1.27
θ	0°	8°

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