BSS84EASA

P-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-50V	2.6Ω@-10V	-0.44A
	3.6Ω@-4.5V	

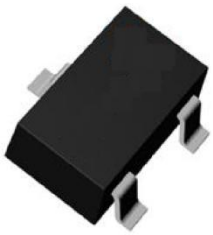
Feature

- Excellent $R_{DS(ON)}$
- Low gate charge

Application

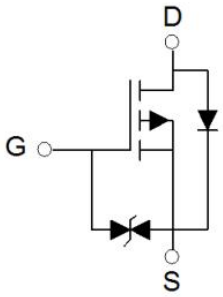
- Load switch
- PWM application
- Power management

Package

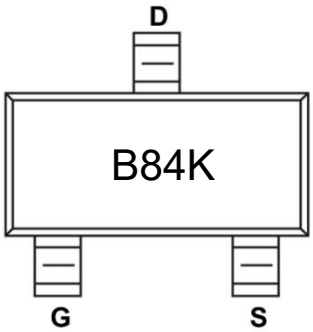


SOT-23

Circuit diagram



Marking



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Absolute maximum ratings (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-50	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	-0.44	A
Continuous Drain Current (T_A=100℃)	I_D(100℃)	-0.28	A
Power Dissipation	P_D	1	W
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	125	℃/W
Operating Junction Temperature	T_J	-55 ~ +150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_J=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	-50			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-50V, V_{GS} =0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±10	μA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1	-1.4	-1.9	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =-10V, I_D =-0.13A		2	2.6	Ω
		V_{GS} =-4.5V, I_D =-0.1A		2.1	3.6	
Dynamic characteristics[1)]						
Input Capacitance	C_{iss}	V_{DS} =-25V, V_{GS} =0V, f =1MHz		55		pF
Output Capacitance	C_{oss}			13		
Reverse Transfer Capacitance	C_{rss}			6.7		
Total Gate Charge	Q_g	V_{DS} =-25V, V_{GS} =-10V, I_D =-2A		1.7		nC
Gate-Source Charge	Q_{gs}			0.5		
Gate-Drain Charge	Q_{gd}			0.3		
Turn-on delay time	$t_{d(on)}$	V_{DS} =-25V, V_{GS} =-10V, I_D =-2A R_G =3Ω		2		nS
Turn-on rise time	t_r			2		
Turn-off delay time	$t_{d(off)}$			16		
Turn-off fall time	t_f			12		
Source-Drain Diode characteristics						
Diode Continuous Current	I_S				-0.44	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =-0.13A			-1.2	V
Reverse Recovery Time	T_{rr}	I_F =-2A, di/dt =-100A/us		22		nS
Reverse Recovery Charge	Q_{rr}			16		nC

Notes:

1) Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

2) $R_{\theta JA}$ is measured with the device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square pad layout.

3) Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

Typical Characteristics

Figure 1: Power De-rating

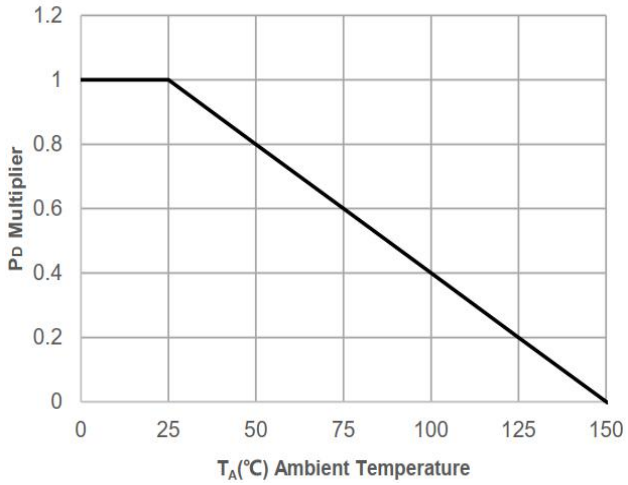


Figure 2: Current De-rating

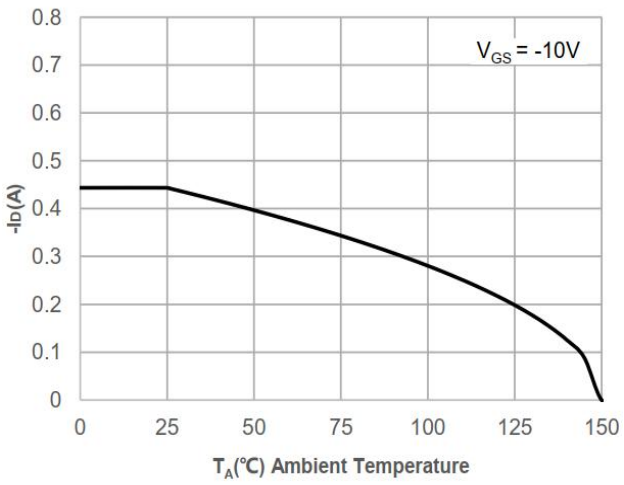


Figure 3: Normalized Maximum Transient Thermal Impedance

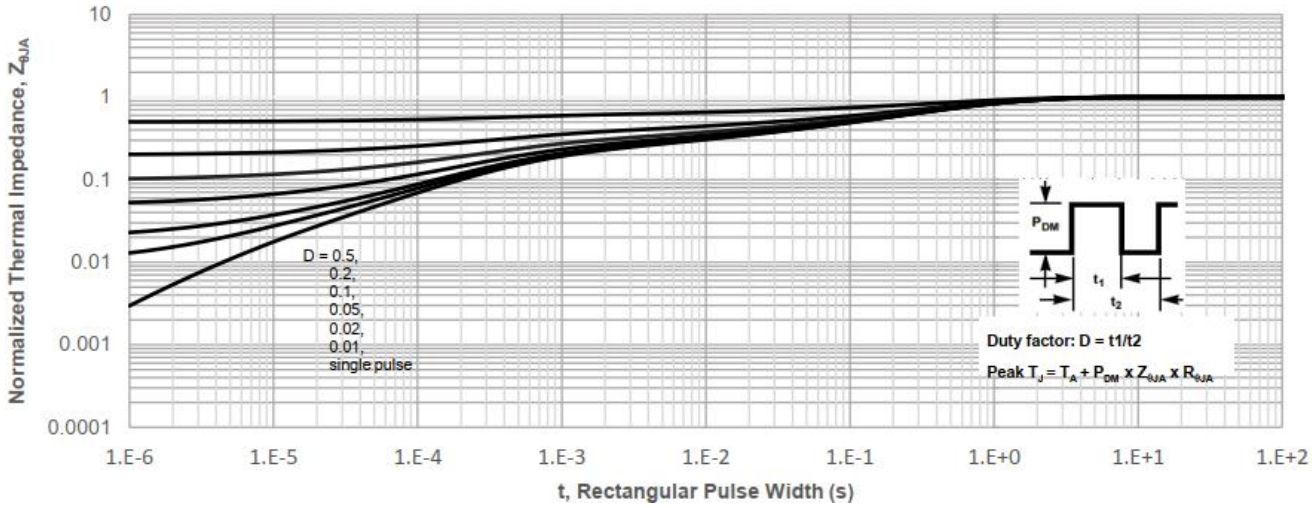
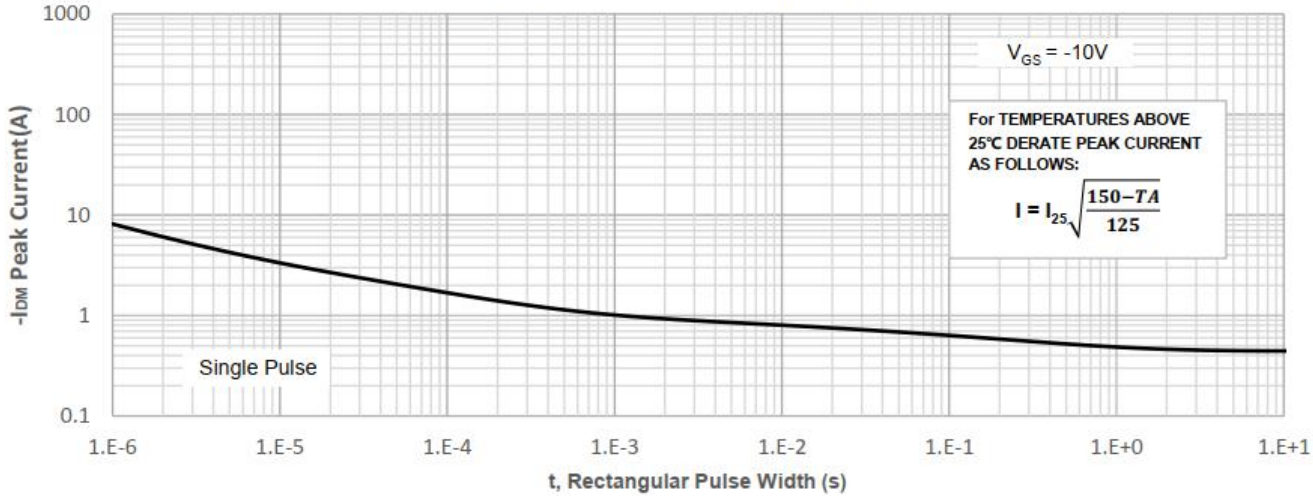


Figure 4: Peak Current Capacity



Typical Characteristics

Figure 5: Output Characteristics

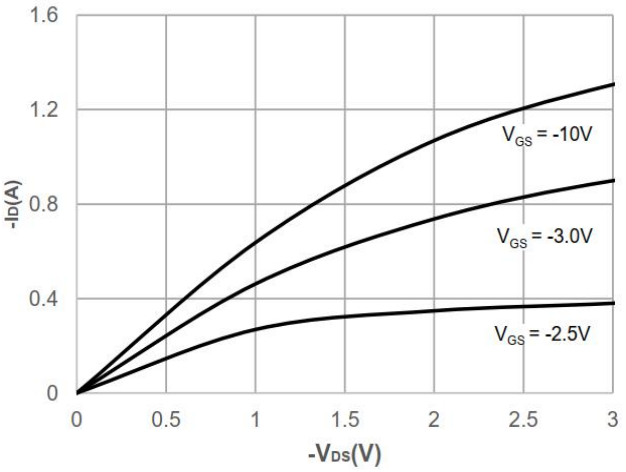


Figure 6: Typical Transfer Characteristics

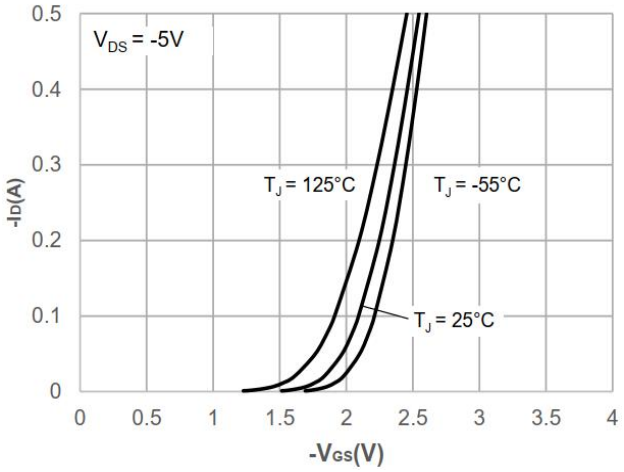


Figure 7: On-resistance vs. Drain Current

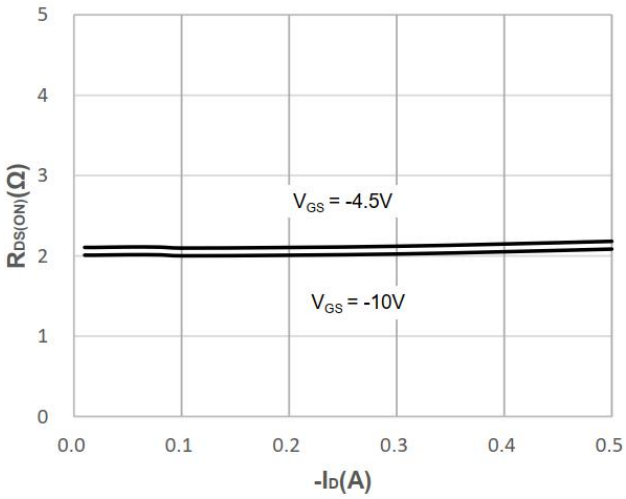


Figure 8: Body Diode Characteristics

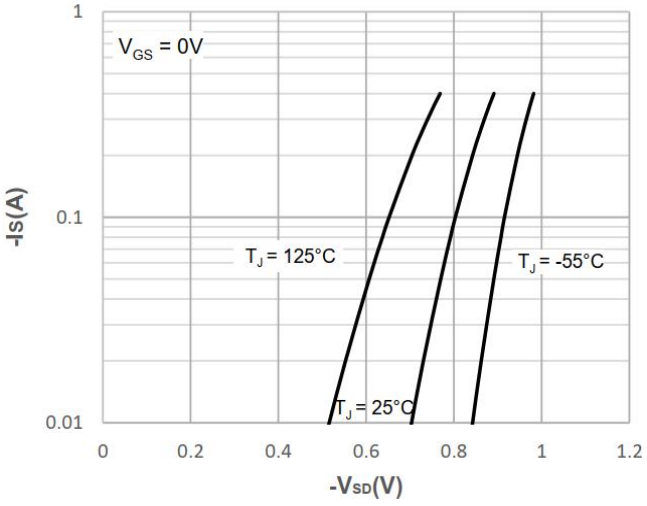


Figure 9: Gate Charge Characteristics

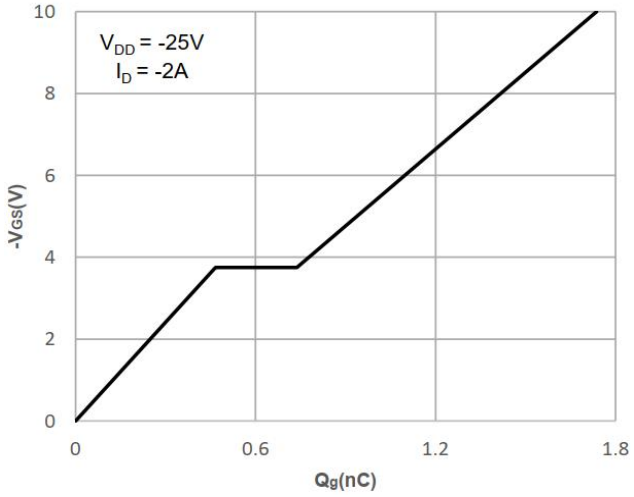
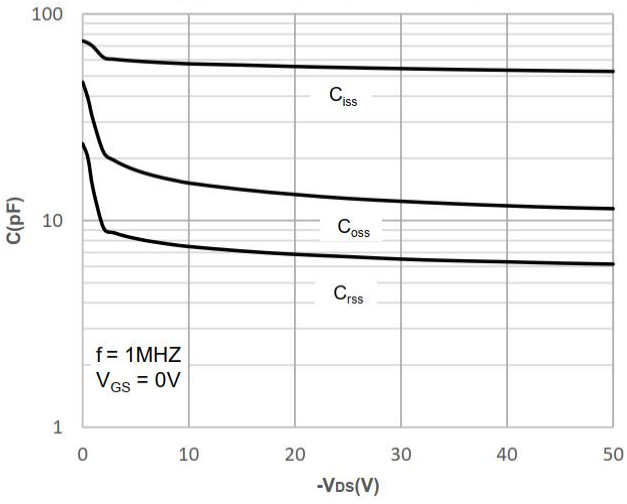


Figure 10: Capacitance Characteristics



Typical Characteristics

Figure 11: Normalized Breakdown voltage vs. Junction Temperature

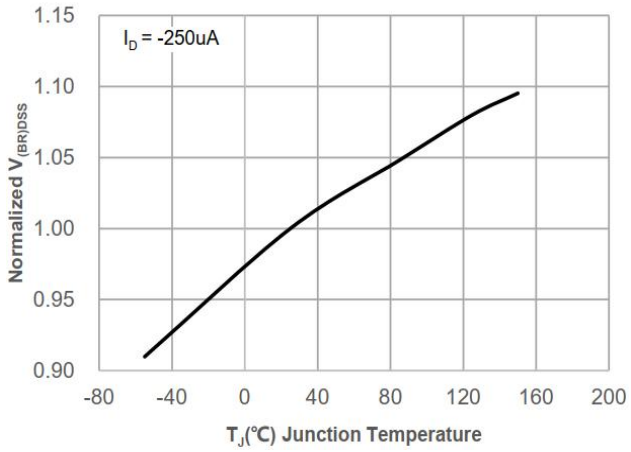


Figure 12: Normalized on Resistance vs. Junction Temperature

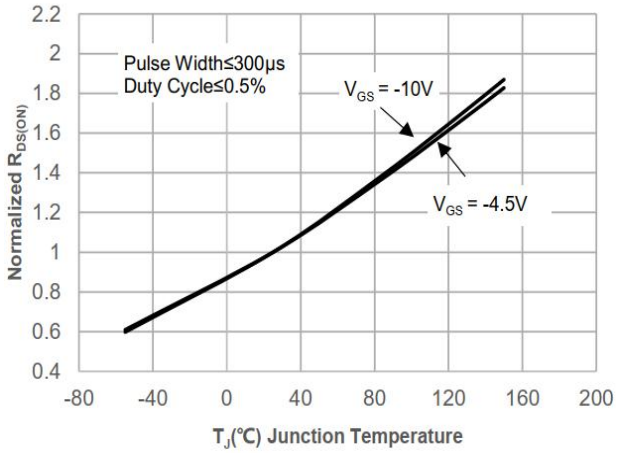


Figure 13: Normalized Threshold Voltage vs. Junction Temperature

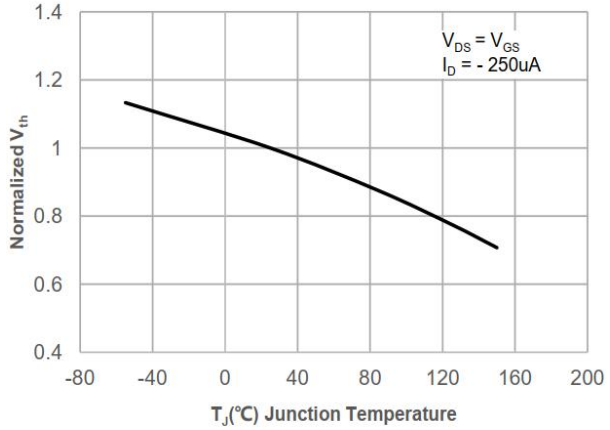


Figure 14: $R_{DS(ON)}$ vs. V_{GS}

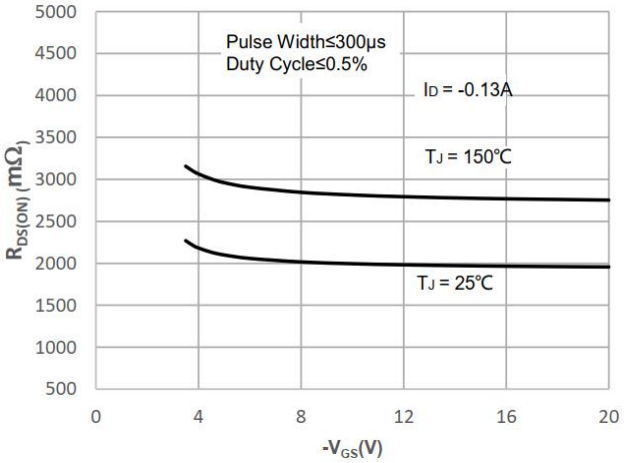
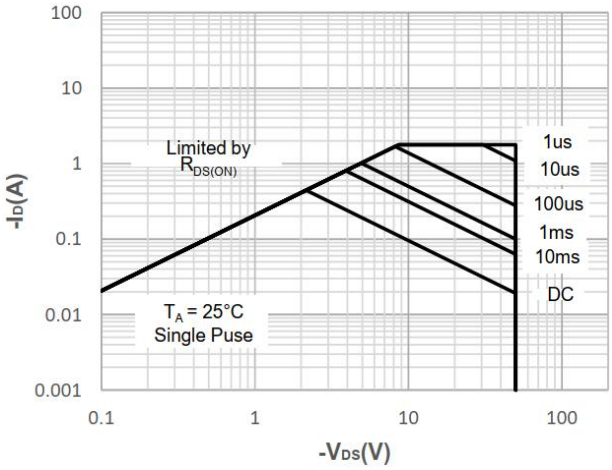
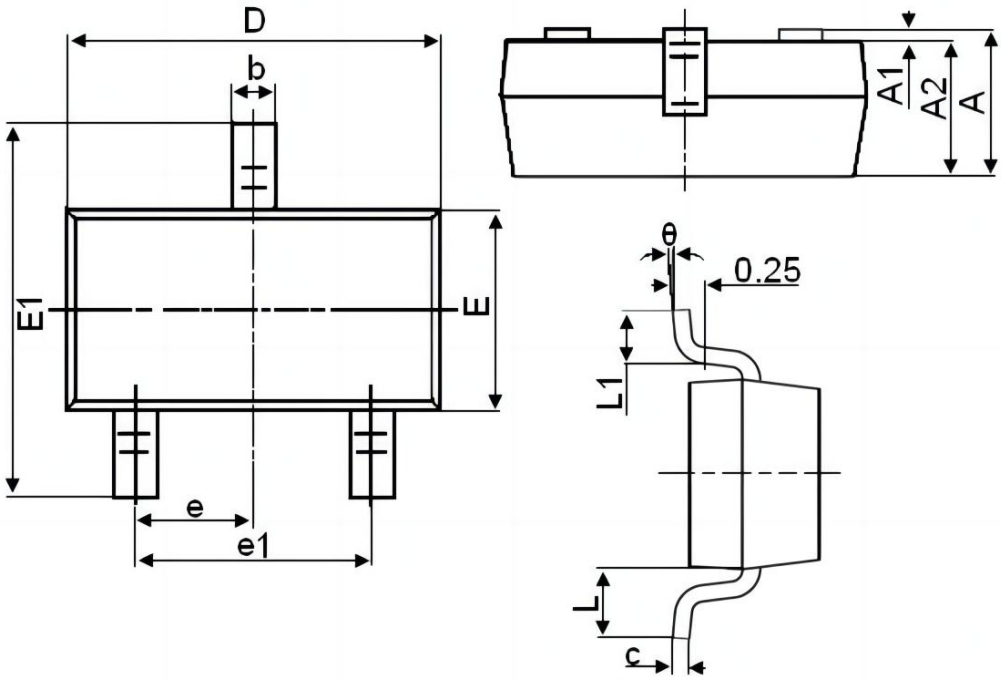


Figure 15: Maximum Safe Operating Area



SOT-23 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.200	0.035	0.047
A1	0.000	0.100	0.000	0.004
A2	0.900	1.100	0.035	0.043
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.300	2.500	0.091	0.098
e	0.950 BSC.		0.037 BSC.	
e1	1.900 REF.		0.075 REF.	
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	10°	0°	10°