

### Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
100V	6.2mΩ@10V	105A
	8mΩ@4.5V	

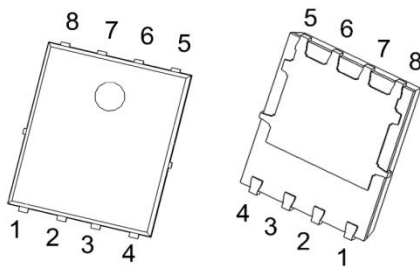
### Feature

- Low RDS(on) & FOM
- Extremely low switching loss
- Excellent stability and uniformity
- Fast switching and soft recovery

### Applications

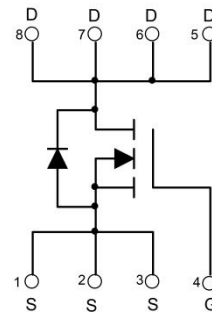
- Consumer electronic power supply
- Motor control Synchronous rectification
- Isolated DC/DC convertor
- Invertors

### Package

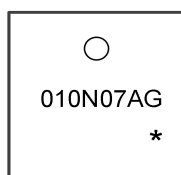


PDFN5X6-8L

### Circuit diagram



### Marking



010N07AG : Product code  
\* : Month code.

**Absolute maximum ratings (Ta=25°C unless otherwise noted)**

Parameter	Symbol	Value	Unit
Drain source voltage	$V_{DS}$	100	V
Gate source voltage	$V_{GS}$	$\pm 20$	V
Continuous drain current <sup>1)</sup> , TC=25 °C	$I_D$	105	A
Pulsed drain current <sup>2)</sup> , TC=25 °C	$I_{DM}$	420	A
Power dissipation <sup>3)</sup> , TC=25 °C	$P_D$	178	W
Single pulsed avalanche energy <sup>4)</sup>	$E_{AS}$	130	mJ
Thermal resistance, junction-case	$R_{\theta JC}$	0.70	°C/W
Thermal resistance, junction-ambient	$R_{\theta JA}$	62	°C/W
Operation and storage temperature	$T_{stg}, T_j$	-55 to 150	°C

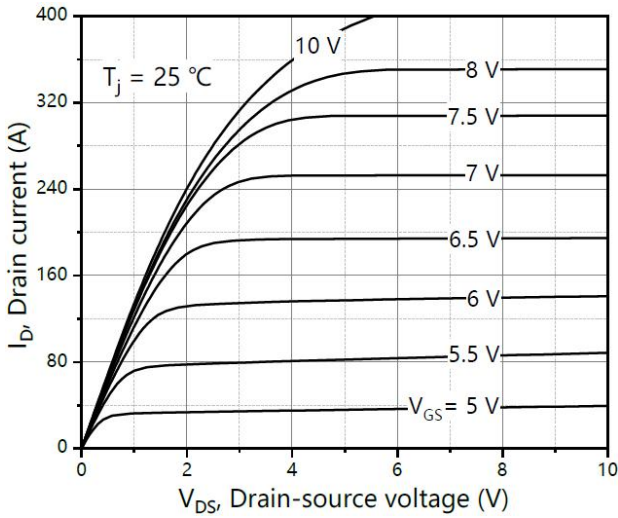
**Electrical characteristics (Ta=25°C, unless otherwise noted)**

Parameter	Symbol	Test condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	$BV_{DSS}$	$V_{GS}=0\text{ V}, I_D=250\ \mu\text{A}$	100	-	-	V
Drain-source leakage current	$I_{DSS}$	$V_{DS}=100\text{ V}, V_{GS}=0\text{ V}$	-	-	1	$\mu\text{A}$
Gate-source leakage current	$I_{GSS}$	$V_{GS}=\pm 20\text{ V}$	-	-	$\pm 100$	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\ \mu\text{A}$	1.0	1.7	2.5	V
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS}=10\text{ V}, I_D=12\text{ A}$	-	6.2	7.8	$\text{m}\Omega$
		$V_{GS}=4.5\text{ V}, I_D=8\text{ A}$	-	8	10.5	
<b>Dynamic Characteristics</b>						
Input capacitance	$C_{iss}$	$V_{GS}=0\text{ V}, V_{DS}=50\text{ V},$ $f=1\text{ MHz}$		3530		pF
Output capacitance	$C_{oss}$			560		pF
Reverse transfer capacitance	$C_{rss}$			9		pF
<b>Switching Characteristics</b>						
Turn-on delay time	$t_{d(on)}$	$V_{GS}=10\text{ V}, V_{DS}=50\text{ V}, R_G=2\ \Omega, I_D=10\text{ A}$		22.5		ns
Rise time	$t_r$			8.6		ns
Turn-off delay time	$t_{d(off)}$			66.6		ns
Fall time	$t_f$			42.1		ns
Total gate charge	$Q_g$	$V_{GS}=10\text{ V}, V_{DS}=50\text{ V}, I_D=10\text{ A}$		55.6		nC
Gate-source charge	$Q_{gs}$			14.9		nC
Gate-drain charge	$Q_{gd}$			11.2		nC
<b>Drain-Source Diode Characteristics</b>						
Diode forward voltage	$V_{SD}$	$I_S=30\text{ A}, V_{GS}=0\text{ V}$			1.3	V
Reverse recovery time	$t_{rr}$	$V_R=50\text{ V}, I_S=10\text{ A},$ $di/dt=100\text{ A}/\mu\text{s}$		67		ns
Reverse recovery charge	$Q_{rr}$			160		nC
Peak reverse recovery current	$I_{rrm}$			3.9		A

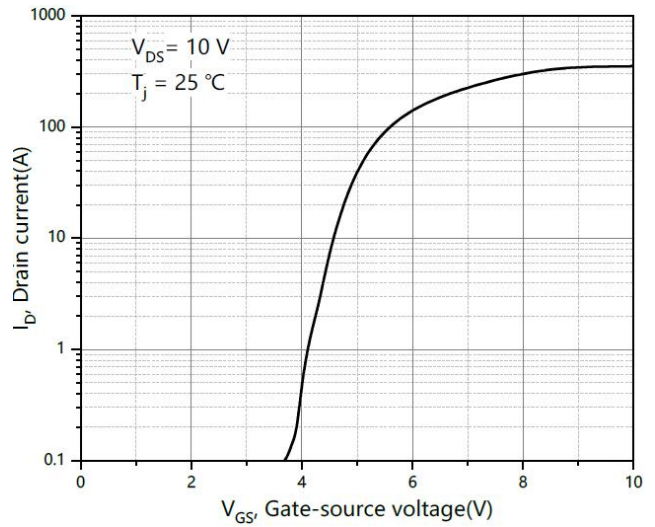
**Notes:**

- 1) Calculated continuous current based on maximum allowable junction temperature.
- 2) Repetitive rating; pulse width limited by max. junction temperature.
- 3)  $P_d$  is based on max. junction temperature, using junction-case thermal resistance.
- 4)  $V_{DD}=50\text{ V}, V_{GS}=10\text{ V}, L=0.3\text{ mH},$  , starting  $T_j=25\text{ }^\circ\text{C}$ .

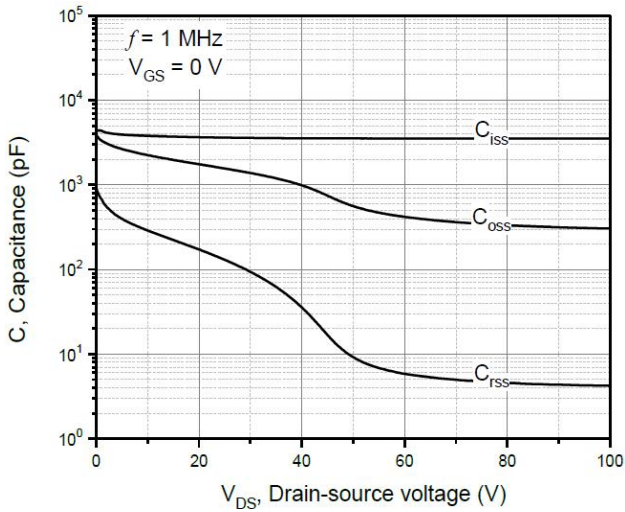
**Typical Characteristics**



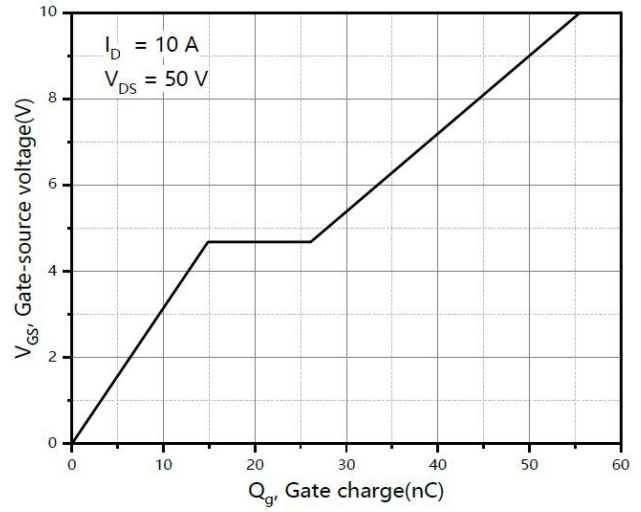
Output characteristics



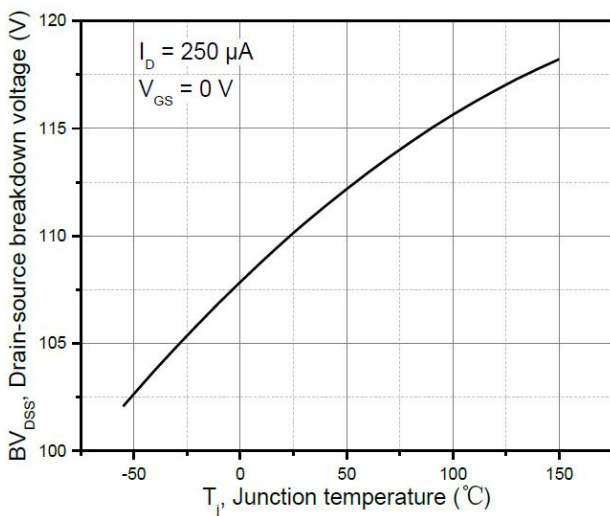
Transfer characteristics



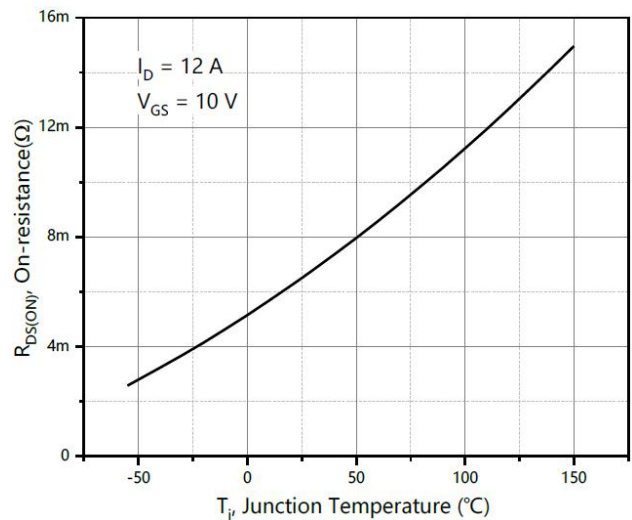
Capacitances



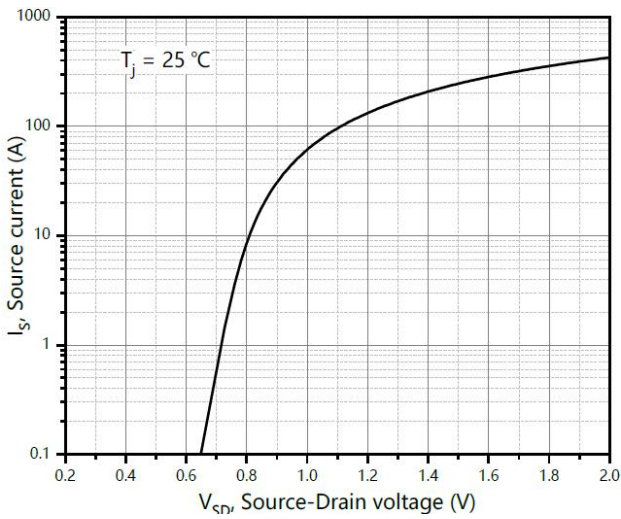
Gate charge



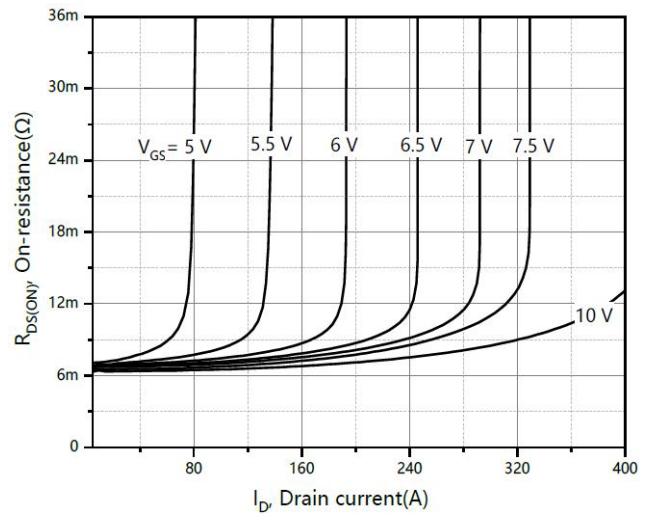
Drain-source breakdown voltage



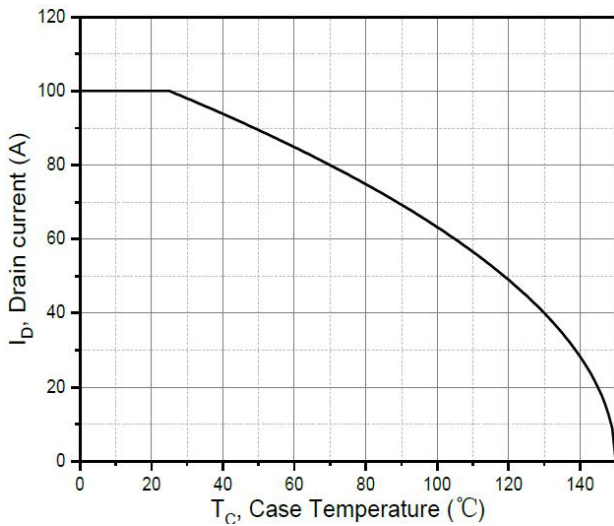
Drain-source on-state resistance



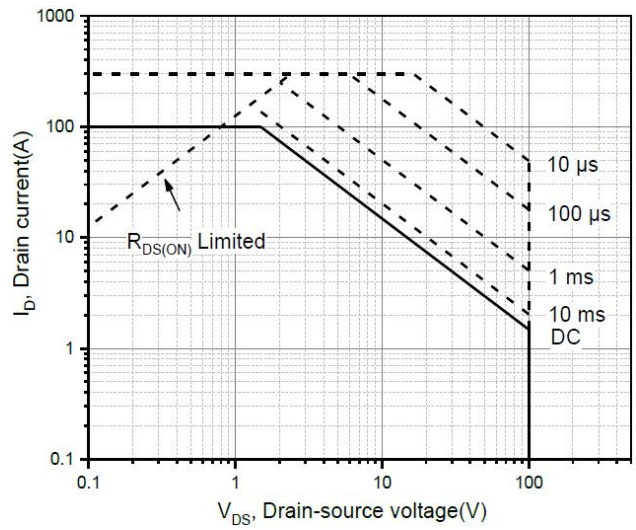
Forward characteristic of body diode



Drain-source on-state resistance



Drain current



Safe operation area  $T_C = 25^\circ\text{C}$

Test circuits and waveforms

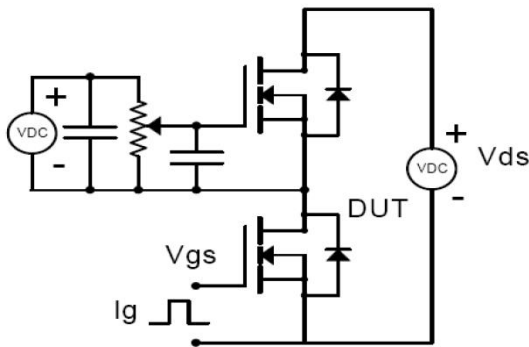


Figure 1, Gate charge test circuit & waveform

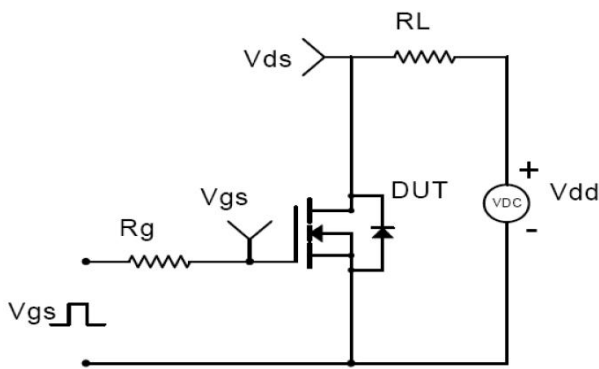
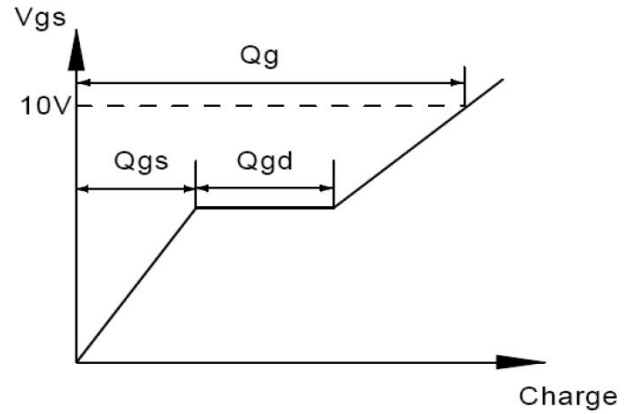


Figure 2, Switching time test circuit & waveforms

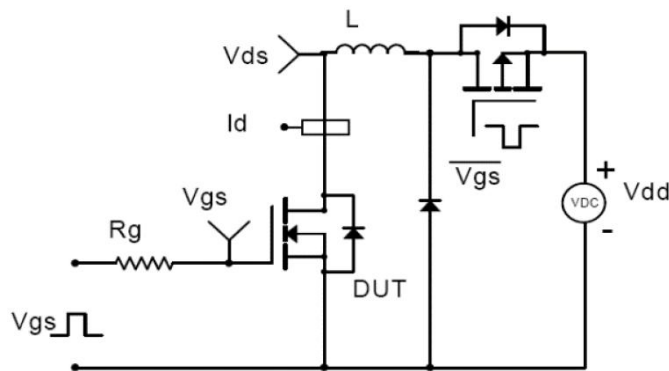
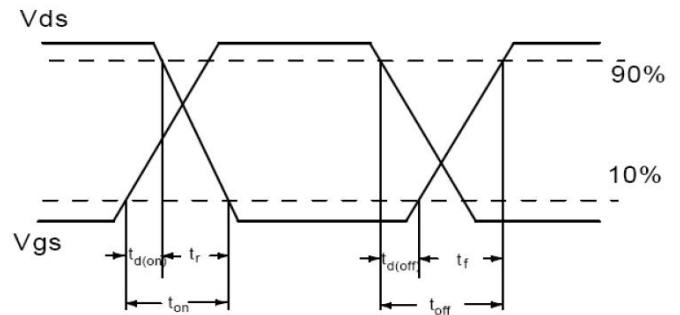


Figure 3, Unclamped inductive switching (UIS) test circuit & waveforms

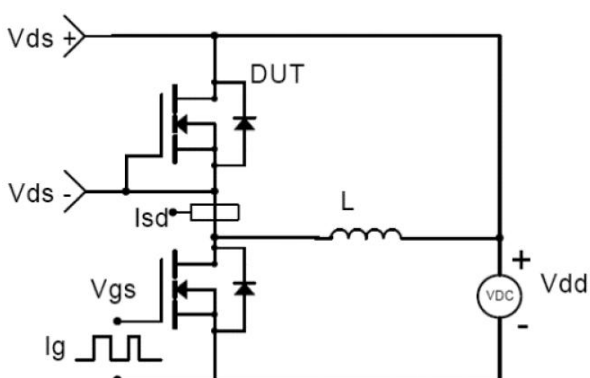
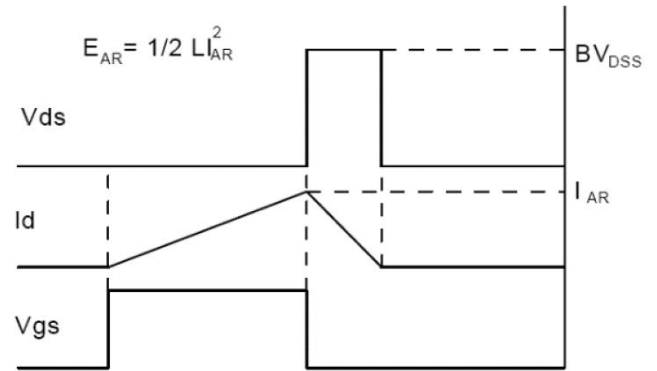
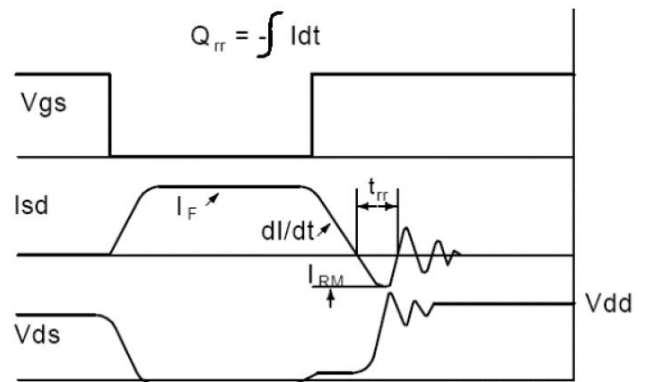
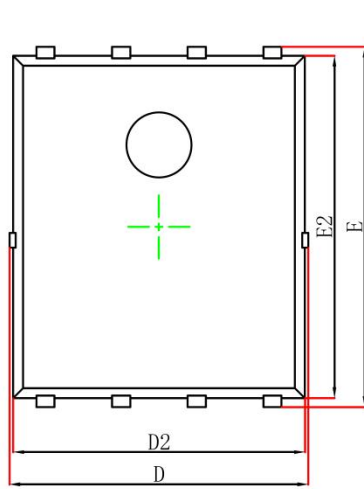


Figure 4, Diode reverse recovery test circuit & waveforms

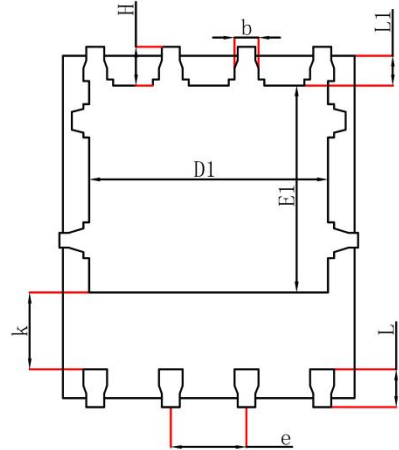




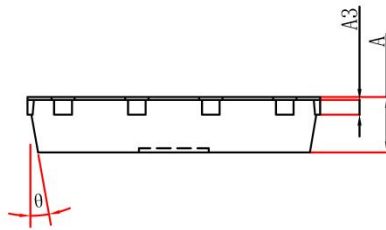
PDFN5X6-8L Package Information



Top View  
[顶视图]



Bottom View  
[背视图]



Side View  
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°