FXN30S60T Series

ReV.A

General Description

The FXN30S60T uses adVanced Silicon's MOSFET Technology, which proVides high performance in on-state resistance, fast switching performance, and excellent quality.

These deVices can also be utilized in industrial applications such as Low Power DriVes SMPS, DC/DC conVerter, and general purpose applications.

Features

V_{DS} = 600V

ID =30A @V_{GS} = 10V

Very low on-resistance

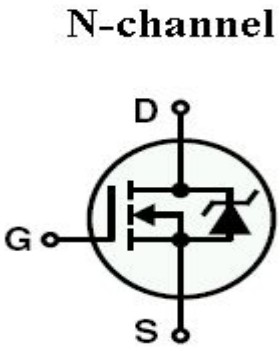
$R_{DS(ON)}$ < 0.15Ω @V_{GS} = 10V

100% UIL Tested

100% Rg Tested

150 ^{O}C operating temperature

TO-247 Top View



Schematic Diagram

Absolute Maximum Ratings (TJ =25C)

Characteristics		Symbol	Rating	Unit
Drain-Source Voltage		VDSS	600	V
Gate-Source Voltage		VGSS	±30	V
Continuous Drain Current (1)	Tc=25$_{o}$c(silicon limited)	ID	30	A
	Tc=25$_{o}$C(package limited)		24	
	Tc=100$_{o}$C(silicon limited)		17	
Pulsed Drain Current (2)		IDM	92	
Power Dissipation	Tc=25$_{o}$C	PD	49	W
	Tc=100$_{o}$C		47	
Single Pulse AValanche Energy (3)		EAS	510	mJ
Junction and Storage Temperature Range		TJ, Tstg	-55~175	$_{o}$C

Thermal Characteristics

Characteristics	Symbol	Rating	Unit
Thermal Resistance, Junction-to-Ambient (1)	$R_{\theta JA}$	100	^{O}C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3.57	

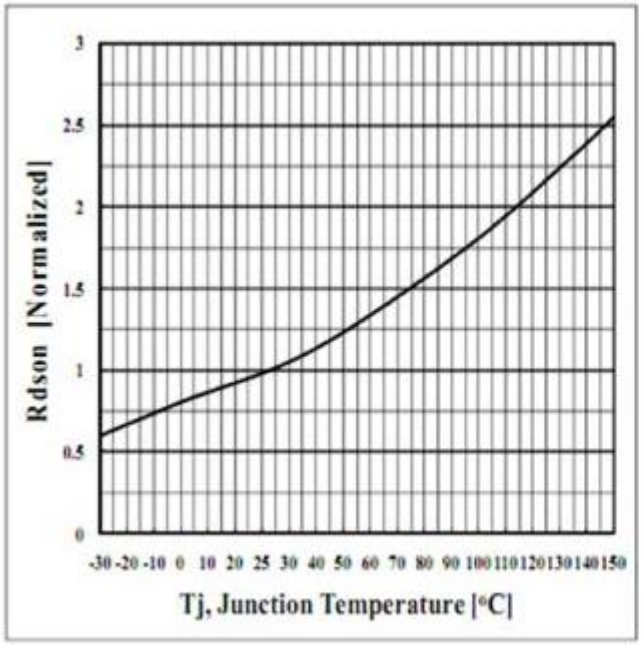
Electrical Characteristics (T_J =25C)

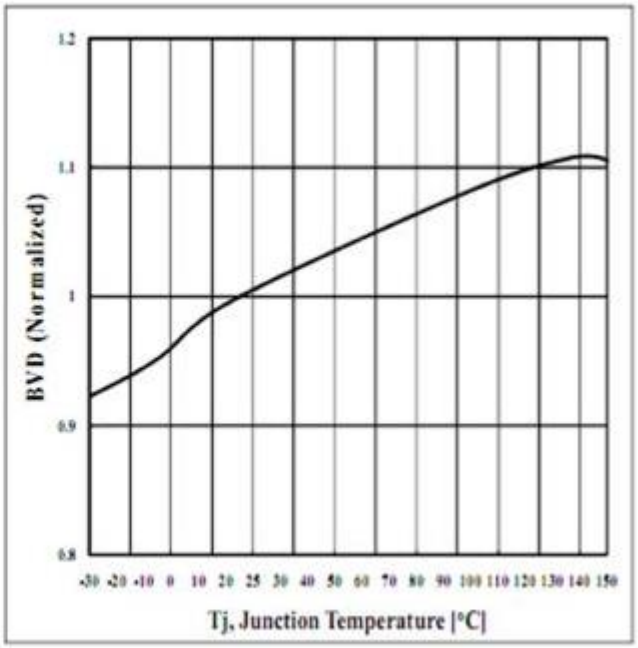
Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D = 250μA, V_{GS} = 0V	600	650	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2	3	4	
Drain Cut-Off Current	I_{DSS}	V_{DS} = 600V, V_{GS} = 0V	-	-	1	μA
Gate Leakage Current	I_{GSS}	V_{GS} = ±30V, V_{DS} = 0V	-	-	±0.1	
Drain-Source ON Resistance	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 12A	-	0.1	0.15	Ω
Forward Transconductance	g_{fs}	V_{DS} = 10V, I_D = 30A	-	10.5	-	S
Dynamic Characteristics						
Total Gate Charge	Q_g	V_{DS} = 520V, I_D = 15A, V_{GS} = 10V	-	49		nC
Gate-Source Charge	Q_{gs}		-	8.1	-	
Gate-Drain Charge	Q_{gd}		-	8.3	-	
Input Capacitance	C_{iss}	VDS = 300V, VGS = 0V, f = 1.0MHz	-	1966	-	pF
ReVerse Transfer Capacitance	C_{rss}		-	34	-	
Output Capacitance	C_{oss}		-	208	-	
Turn-On Delay Time	$t_{d(on)}$	VGS = 10V, VDS = 300V, ID = 30A , RG = 25Ω	-	16	-	ns
Rise Time	t_r		-	78	-	
Turn-Off Delay Time	$t_{d(off)}$		-	59	-	
Fall Time	t_f		-	57.6	-	
Gate Resistance	Rg	f=1 MHz	-	2.5	-	Ω
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	I_S = 30A, V_{GS} = 0V	-	0.9	1.2	V
Body Diode ReVerse RecoVery Time	t_{rr}	I_F = 30A, dI/dt = 100A/μs	-	152		ns
Body Diode ReVerse RecoVery Charge	Q_{rr}		-	3.8		μC

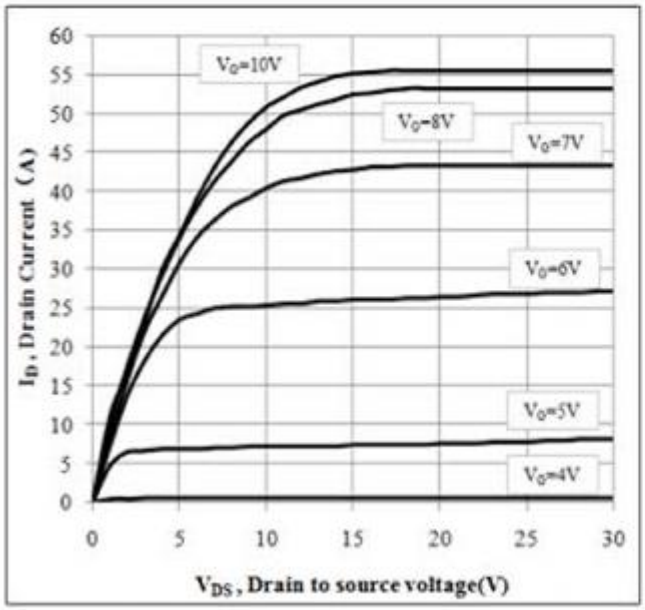
Note

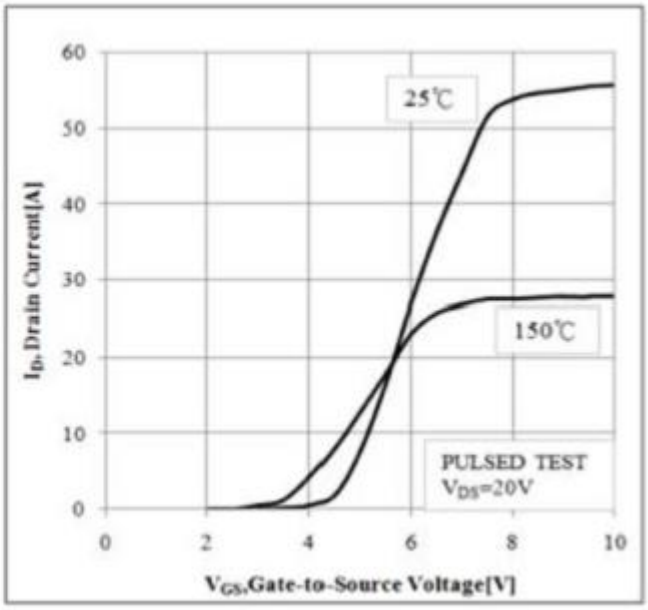
1. Surface mounted FR-4 board by JEDEC (jesd51-7)
2. Pulse width limited by T_{Jmax}
3. E_{AS} is tested at starting Tj = 25℃, L = 1.0mH, I_{AS} = 30A, V_{GS} = 10V VDD=50V

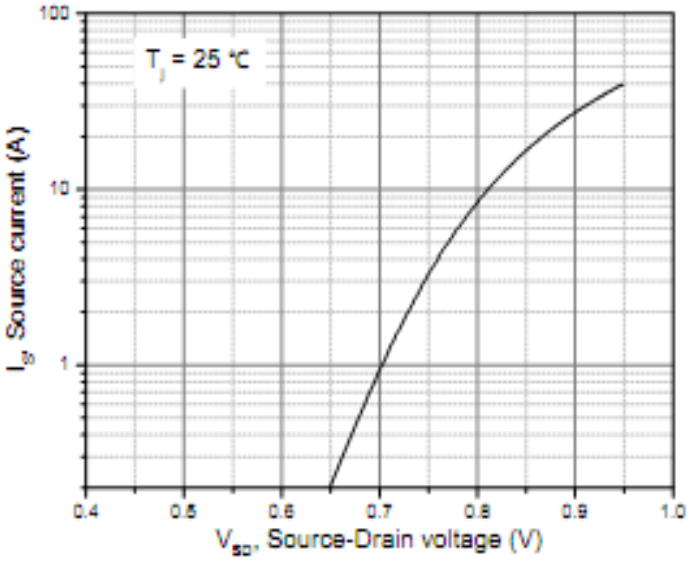
Typical Characteristics （Tj=25C Noted）

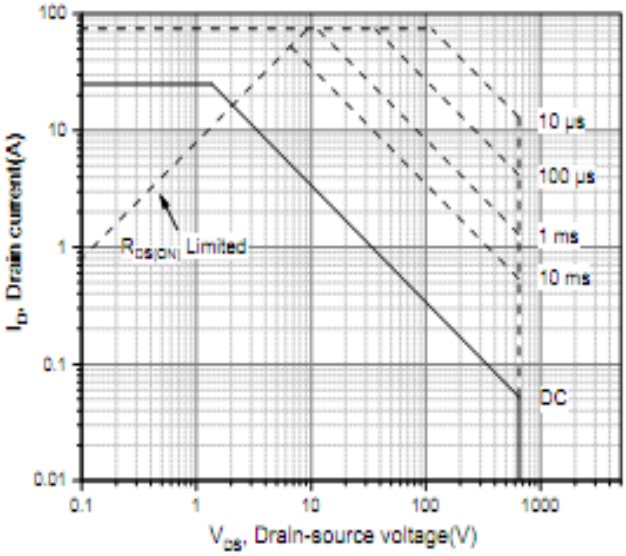


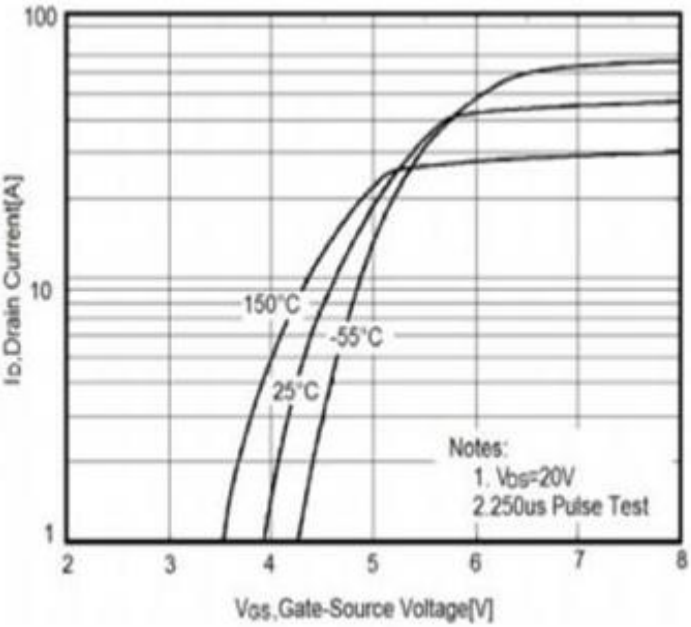


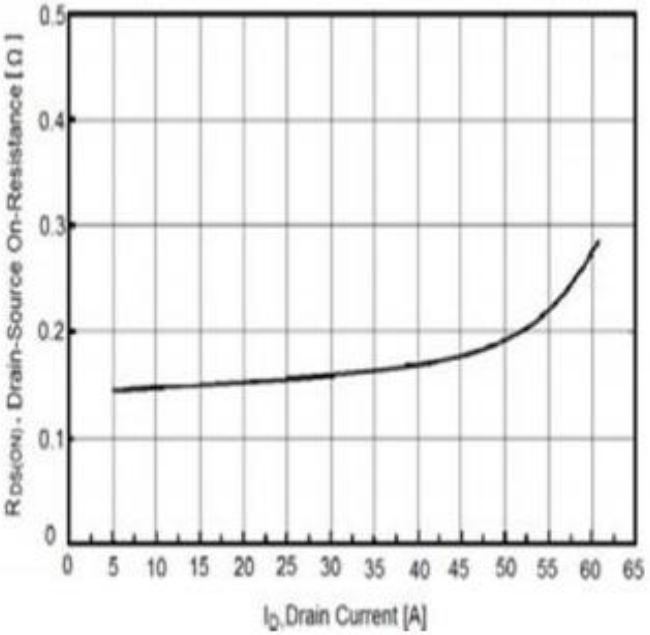


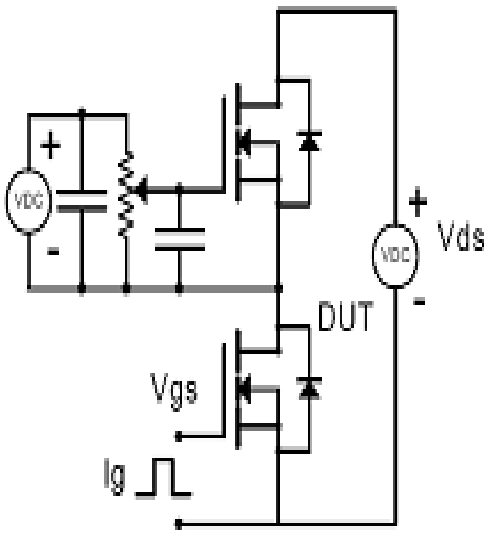


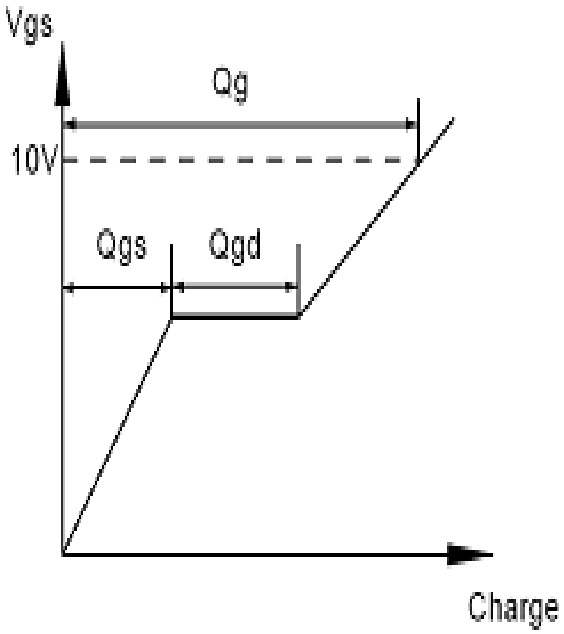

T_j = 25 ℃
I_SD Source current (A)
V_SD, Source-Drain voltage (V)

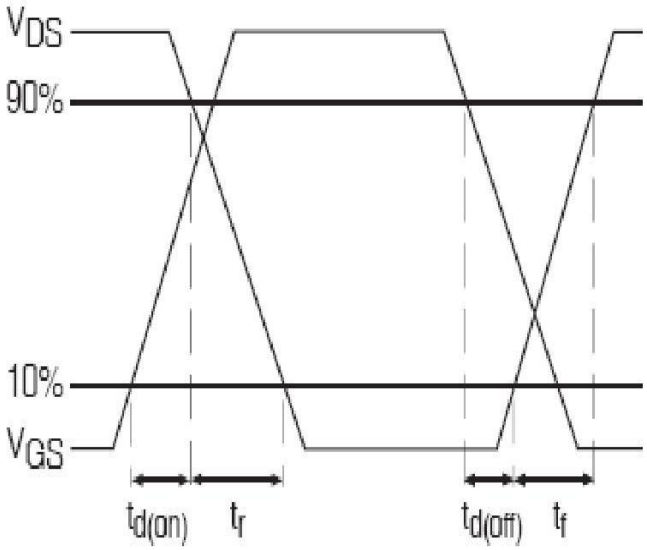

10 μs
100 μs
1 ms
10 ms
DC
R_DS(ON) Limited
I_D, Drain current(A)
V_DS, Drain-source voltage(V)

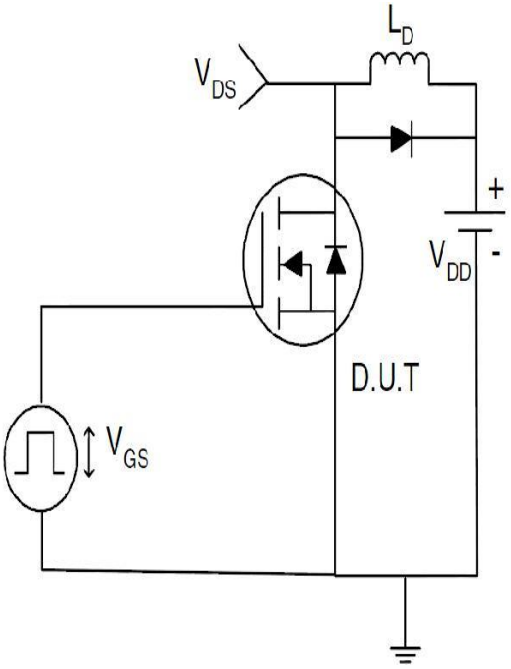

150°C
-55°C
25°C
Notes:
1. Vds=20V
2.250us Pulse Test
ID,Drain Current[A]
Vgs,Gate-Source Voltage[V]


RDS(ON), Drain-Source On-Resistance [Ω]
ID,Drain Current [A]

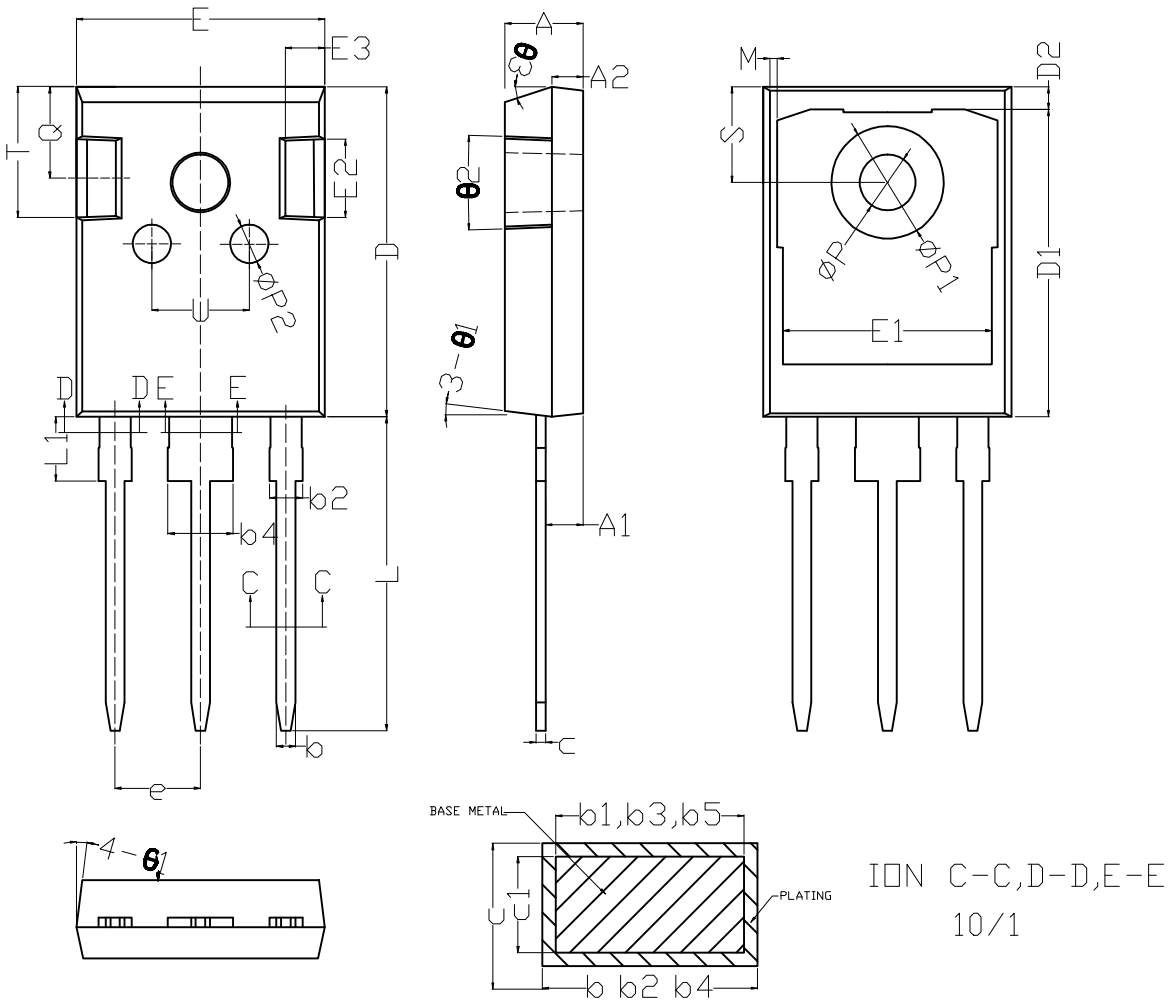

VDC
+
-
Vds
DUT
Vgs
Ig


Vgs
Qg
10V
Qgs
Qgd
Charge


VDS
90%
10%
VGS
td(on)
tr
td(off)
tf


LD
VDS
+
VDD
-
D.U.T
VGS

TO-247 Package Information



ION C-C,D-D,E-E
10/1

COMMON DIMENSIONS

SYMBOL	MIN	NOM	MAX
A	4.90	5.00	5.10
A1	2.31	2.41	2.51
A2	1.90	2.00	2.10
b	1.16	1.21	1.26
b1	1.15	1.20	1.25
b2	1.95	2.10	2.15
b3	1.94	2.09	2.14
b4	3.10	3.15	3.20
b5	3.09	3.14	3.19
c	0.59	0.61	0.66
c1	0.58	0.60	0.65
D	20.90	21.00	21.10
D1	16.25	16.55	16.85
D2	1.05	1.20	1.35
E	15.70	15.80	15.90
E1	13.10	13.30	13.50
E2	4.90	5.00	5.10
E3	2.40	2.50	2.60
e	5.44BSC		
L	19.80	19.92	20.10
L1	—	—	4.30
M	0.35	0.50	0.75
øP	3.50	3.60	3.70
øP1	7.00	7.20	7.40
øP2	2.40	2.50	2.60
Q	5.60	5.80	6.00
S	6.05	6.15	6.25
T	9.80	10.00	10.20
U	6.00	—	6.40
θ1	5°	7°	9°
θ2	3°	5°	8°
θ3	13°	16°	19°