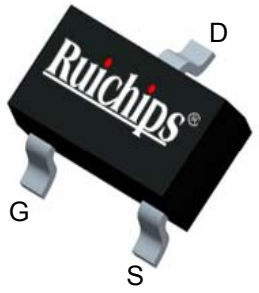
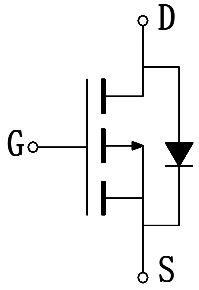
Features

- -18V/-6A,
  $R_{DS\ (ON)}$ =21mΩ(Typ.)@V_{GS}=-4.5V
  $R_{DS\ (ON)}$ =26mΩ(Typ.)@V_{GS}=-2.5V
- Uses Ruichips Proprietary New Trench™ Technology
- Low On-Resistance
- Exceptional dv/dt capability
- Low Gate Charge Minimize Switching Loss
- Lead Free and Green Devices (RoHS Compliant)

Pin Description



SOT23-3



P-Channel MOSFET

Applications

- Load Switch
- Power Management
- Battery Protection

Pb-Free RoHS Halogen-Free

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T_A=25°C Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage		-18	V
V_{GSS}	Gate-Source Voltage		±10	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	T_A=25°C	-6	A
Mounted on Large Heat Sink				
I_{DP} ①	300μs Pulse Drain Current Tested	T_A=25°C	-24	A
I_D ②	Continuous Drain Current(V_{GS}=-10V)	T_A=25°C	-6	A
		T_A=70°C	-4.8	
P_D	Maximum Power Dissipation	T_A=25°C	1.1	W
		T_A=70°C	0.7	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		-	°C/W
$R_{\theta JA}$ ③	Thermal Resistance-Junction to Ambient		114	°C/W
Drain-Source Avalanche Ratings				
E_{AS} ④	Avalanche Energy, Single Pulsed		-	mJ

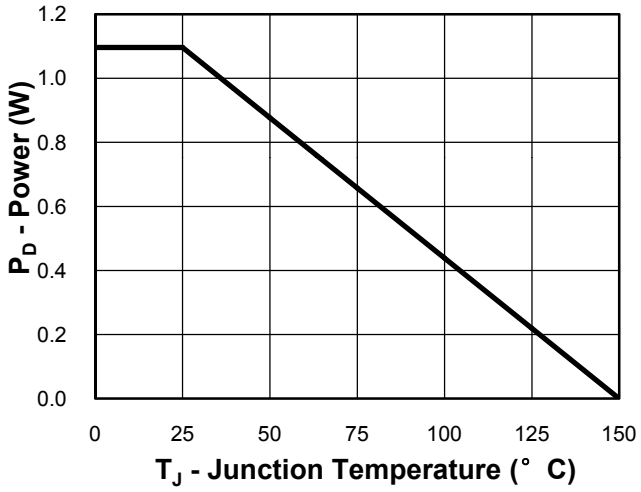
Electrical Characteristics (T_A=25°C Unless Otherwise Noted)

Symbol	Parameter	Test Condition	RU17P6C			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=-250μA	-18			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-18V, V_{GS}=0V			-1	μA
		T_J=125°C			-30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250μA	-0.4		-1.1	V
I_{GSS}	Gate Leakage Current	V_{GS}=±10V, V_{DS}=0V			±100	nA
$R_{DS(ON)}$ ⑤	Drain-Source On-state Resistance	V_{GS}=-4.5V, I_{DS}=-6A		21	25	mΩ
		V_{GS}=-2.5V, I_{DS}=-5A		26	35	mΩ
Diode Characteristics						
V_{SD} ⑤	Diode Forward Voltage	I_{SD}=-1A, V_{GS}=0V			-1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=-6A, dI_{SD}/dt=100A/μs		13		ns
Q_{rr}	Reverse Recovery Charge			6		nC
Dynamic Characteristics ⑥						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz		1.7		Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-10V, Frequency=1.0MHz		290		pF
C_{oss}	Output Capacitance			98		
C_{rss}	Reverse Transfer Capacitance			23		
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=-10V, R_L=1Ω, I_{DS}=-6A, V_{GEN}=-4.5V, R_G=1.7Ω		12		ns
t_r	Turn-on Rise Time			35		
$t_{d(OFF)}$	Turn-off Delay Time			30		
t_f	Turn-off Fall Time			11		
Gate Charge Characteristics ⑥						
Q_g	Total Gate Charge	V_{DS}=-12V, V_{GS}=-4.5V, I_{DS}=-6A		9.5		nC
Q_{gs}	Gate-Source Charge			1		
Q_{gd}	Gate-Drain Charge			2.5		

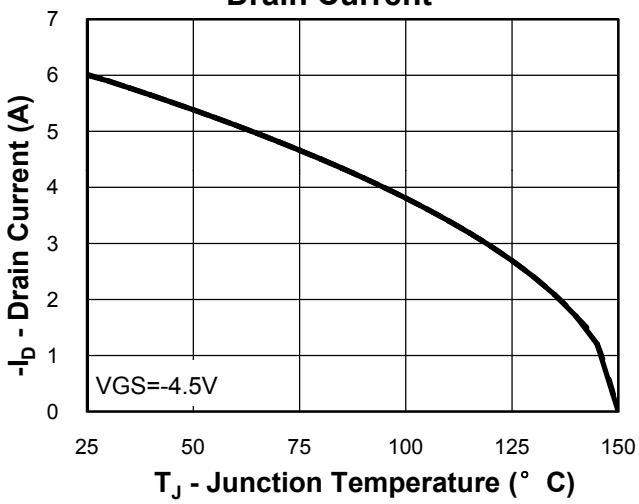
Notes:
①Pulse width limited by safe operating area.
②Calculated continuous current based on maximum allowable junction temperature.
③When mounted on 1 inch square copper board, t≤10sec. The value in any given application depends on the user's specific board design.
④Limited by $T_{Jmax.}$ Starting T_J = 25°C.
⑤Pulse test;Pulse width≤300μs, duty cycle≤2%.
⑥Guaranteed by design, not subject to production testing.

Typical Characteristics

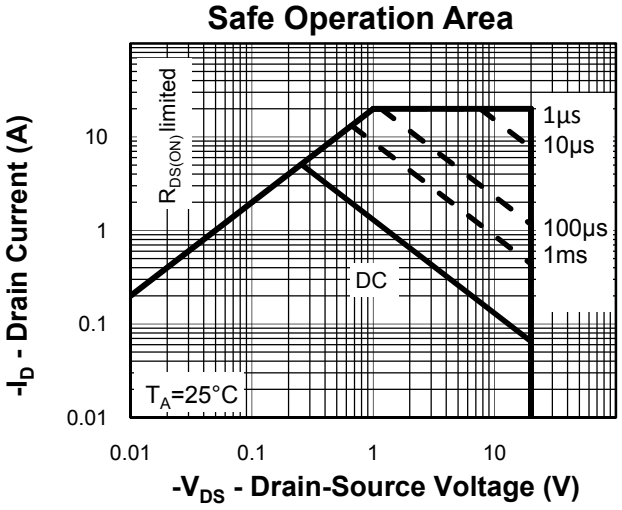
Power Dissipation



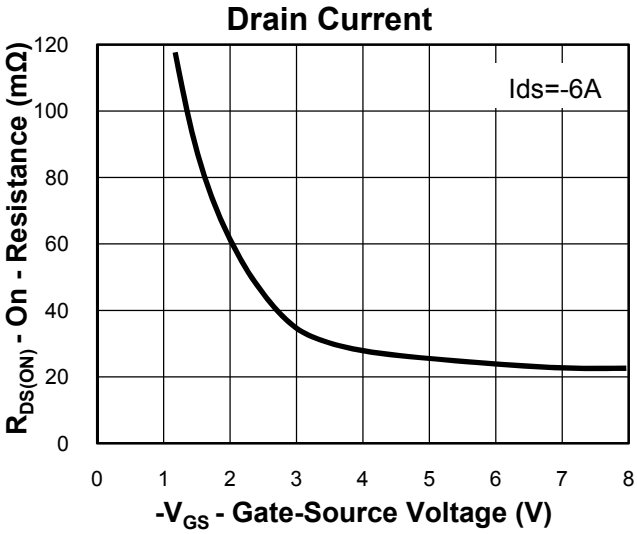
Drain Current



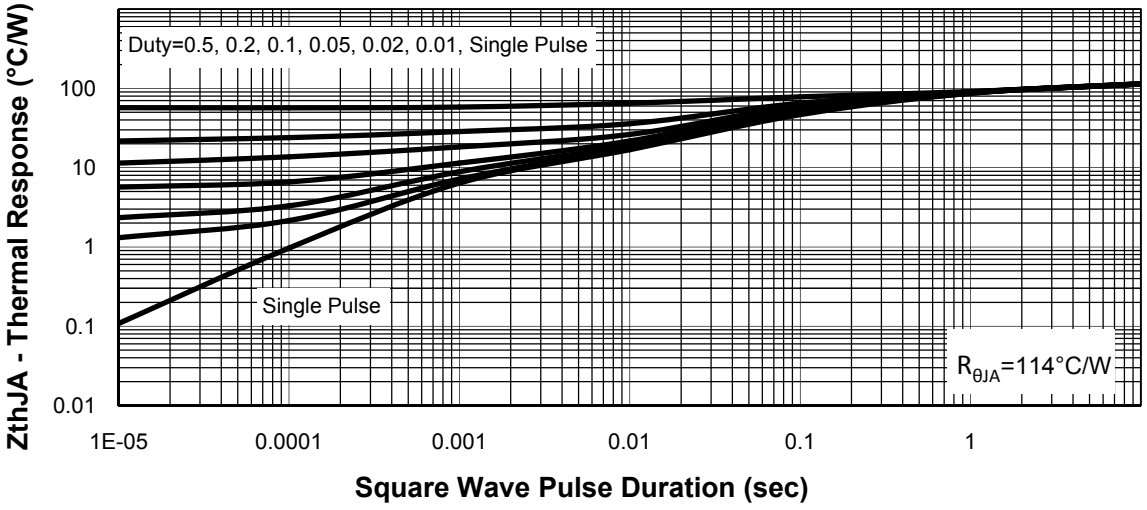
Safe Operation Area



Drain Current

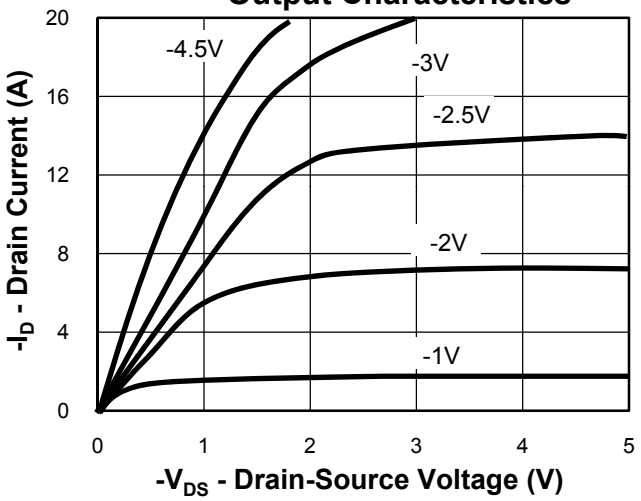


Thermal Transient Impedance

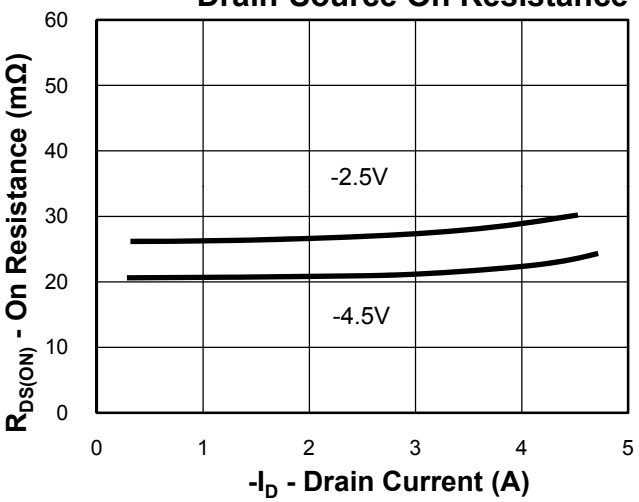


Typical Characteristics

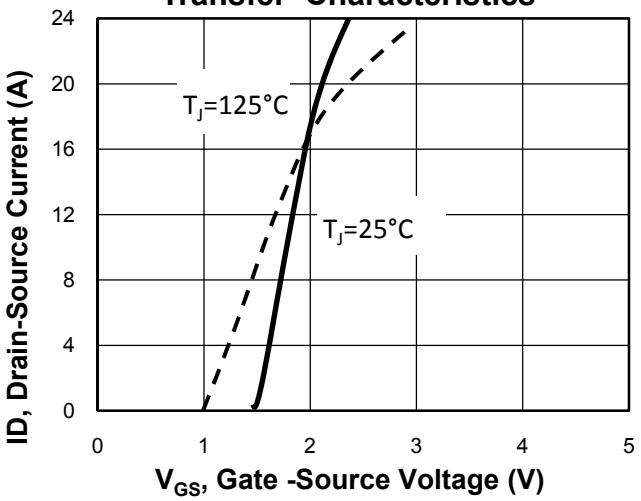
Output Characteristics



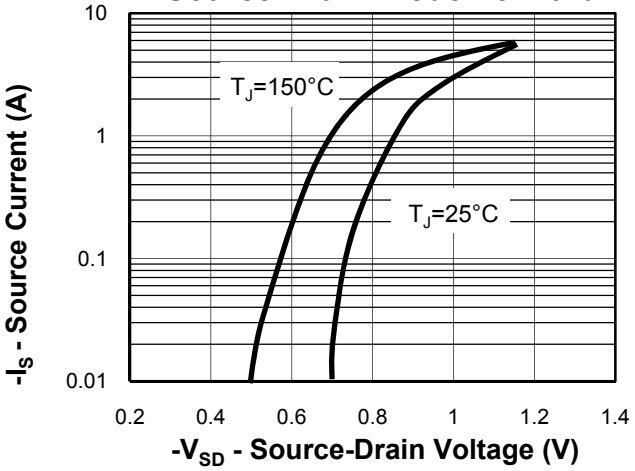
Drain-Source On Resistance



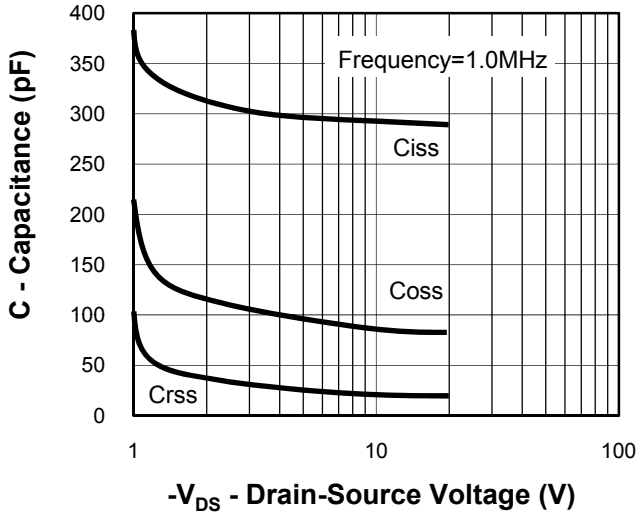
Transfer Characteristics



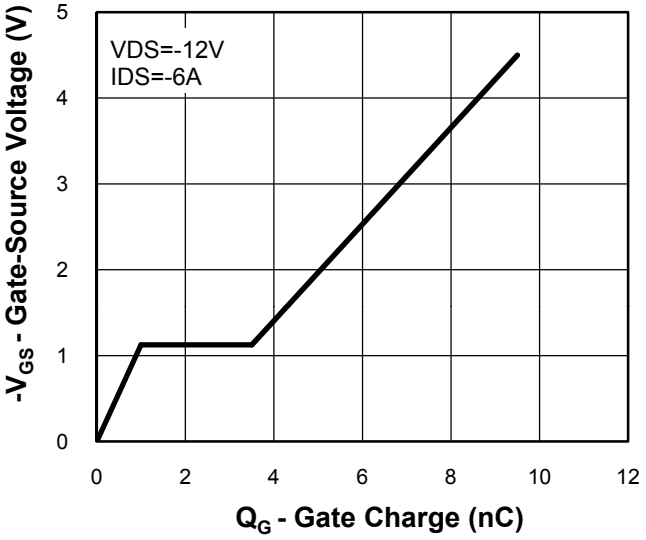
Source-Drain Diode Forward



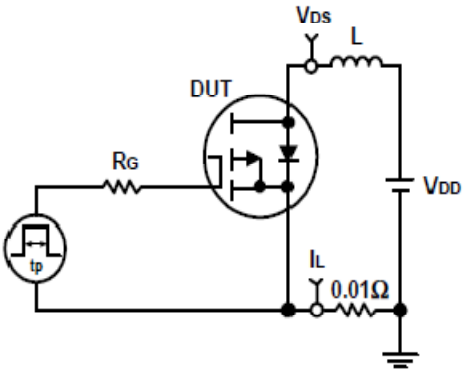
Capacitance

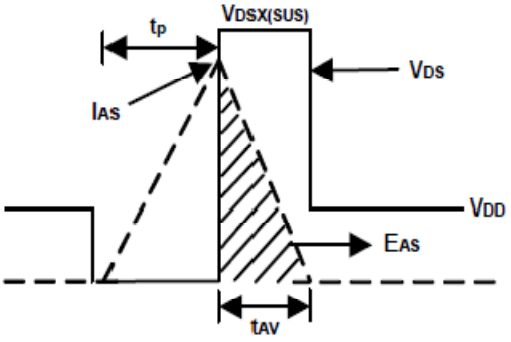


Gate Charge

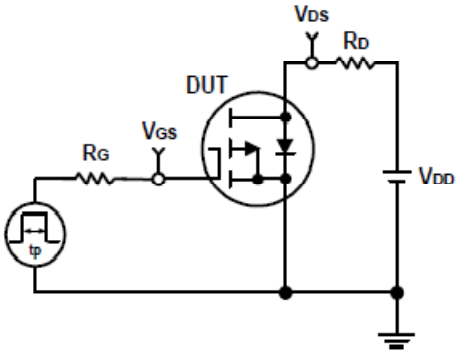


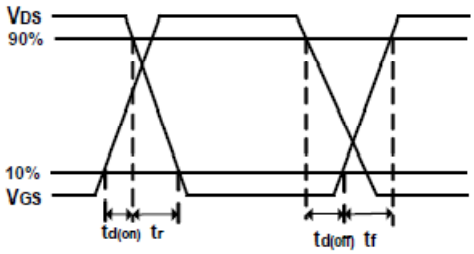
Avalanche Test Circuit and Waveforms





Switching Time Test Circuit and Waveforms



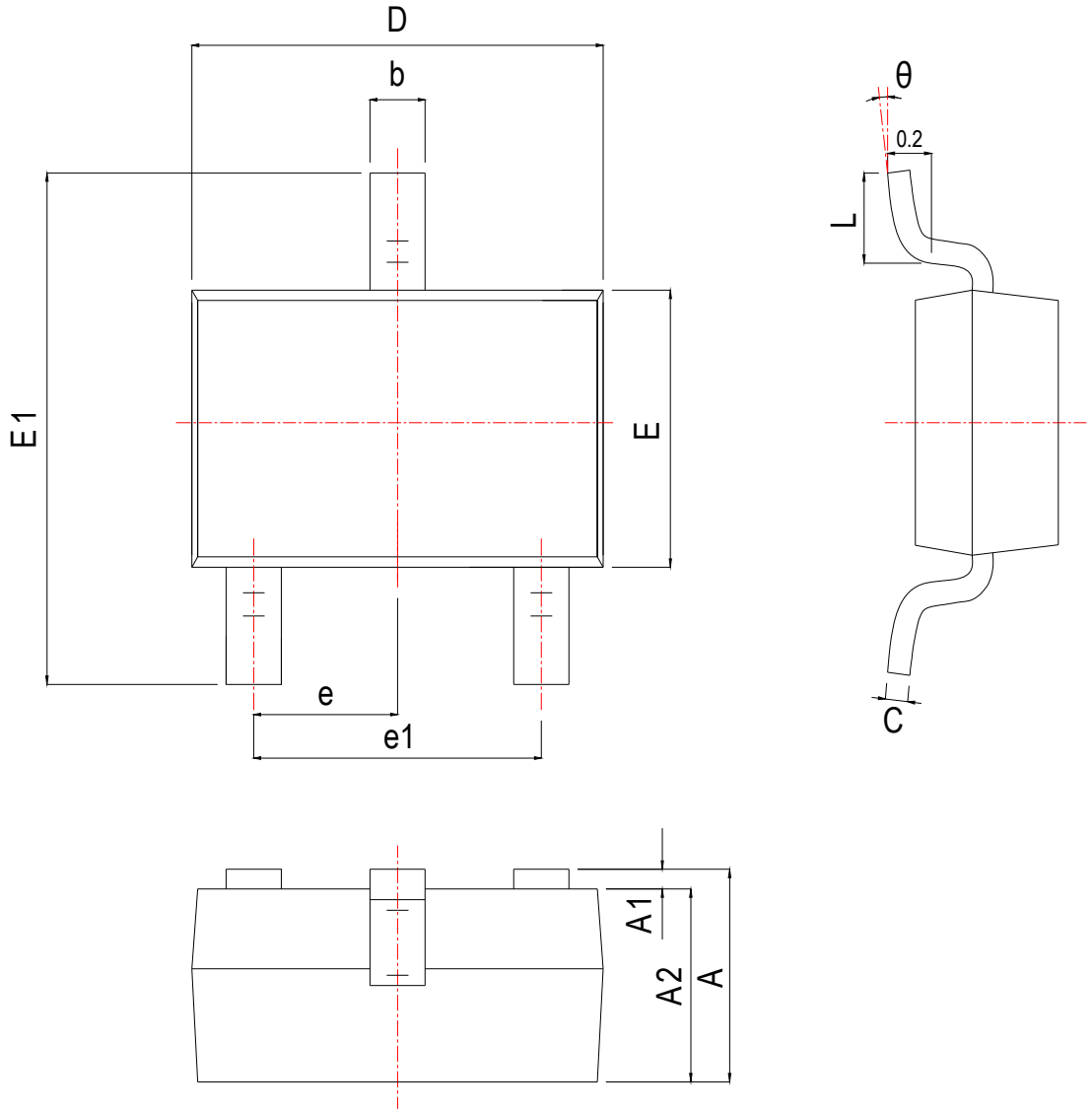


Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU17P6C	RU17P6	SOT23-3	Tape&Reel	3000	7''	8mm

Package Information

SOT23-3



SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.050	1.150	1.300	0.041	0.045	0.051
A1	0.000	0.050	0.110	0.000	0.002	0.004
A2	1.050	1.100	1.150	0.041	0.043	0.045
b	0.300	0.400	0.500	0.012	0.016	0.020
c	0.065	0.150	0.200	0.003	0.006	0.008
D	2.820	2.920	3.020	0.111	0.115	0.119
E	1.500	1.600	1.700	0.059	0.063	0.067
E1	2.650	2.800	2.950	0.104	0.110	0.116
e	0.950 BSC			0.037 BSC		
e1	1.800	1.900	2.000	0.071	0.075	0.079
L	0.300	0.450	0.600	0.012	0.018	0.024
θ	0°	4°	8°	0°	4°	8°