SE9435
P-Channel Enhancement Mode Power MOSFET

General Description

The MOSFETs from SINO-IC provide the best combination of fast switching, low on-resistance and cost-effectiveness.

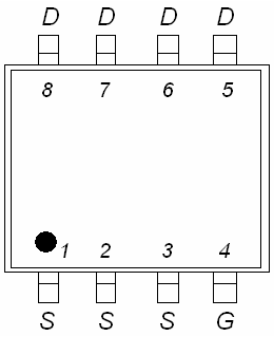
Applications

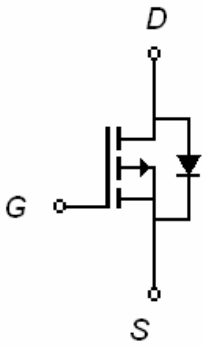
- Power management in nomadic equipment
- DC-DC converters
- Battery powered systems
- Motor drive

Features

- V_{DS} = -30 V
- I_D = -5.3 A
- $R_{DS(ON)}$ = 0.050 Ω @V_{GS} = -10V
- Low gate charge.
- Fast switching speed.
- Extremely low $R_{DS(ON)}$
- High power and current handling capability

SOP-8





Absolute Maximum Ratings

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current[3] @T_A=25°C	I_D	-5.3	A
Continuous Drain Current[3] @T_A=70°C	I_D	-4.7	A
Pulsed Drain Current[1]	I_{DM}	-20	A
Power Dissipation @T_A=25°C	P_D	2.5	W
Linear Dearating Factor		0.02	W/°C
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Max	Units
Thermal Resistance Junction-to-Ambient[3]	Rthj-amb	50	°C/W

Electrical Characteristics (T_J=25°C unless otherwise noted)						
Symbol	**Parameter**	**Test Conditions**	**Min**	**Typ**	**Max**	**Units**
STATIC PARAMETERS						
BV_{DSS}	Drain-Source Breakdown Voltage	I_D= -250μA, V_{GS}=0 V	-30			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= -30 V, V_{GS}=0 V			-1	μA
		V_{DS}= -24 V, V_{GS}=0 V (T_J=70°C)			-25	μA
I_{GSS}	Gate-Body leakage current	V_{DS}= 0 V, V_{GS}= ±20 V			±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS} I_D= -250μA	-1		-3	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS} = -10 V, I_D = -5.3 A			50	mΩ
		V_{GS} = -4.5 V, I_D = -4.2A			90	mΩ
g_{FS}	Forward Transconductance	V_{DS}= -10V, I_D= -5.3 A		10		S
V_{SD}	Diode Forward Voltage	I_S= -2.6 A,V_{GS}= 0 V			-1.2	V
I_S	Body-Diode Continuous Current	V_D=V_G=0V,V_S=-1.2 V			-2.08	A
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}= -15 V, f=1MHz		790		pF
C_{oss}	Output Capacitance			440		pF
C_{rss}	Reverse Transfer Capacitance			120		pF
SWITCHING PARAMETERS						
Q_g	Total Gate Charge[2]	V_{GS} = -10V, V_{DS} = -15V, I_D = -5.3A		20		nC
Q_{gs}	Gate Source Charge			3.5		nC
Q_{gd}	Gate Drain Charge			2		nC
$t_{d(on)}$	Turn-On DelayTime[2]	V_{GS}= -10V, V_{DS}= -15V, I_D= -1A R_D=15Ω, R_G=6Ω		12		ns
t_r	Turn-On Rise Time			20		ns
$t_{d(off)}$	Turn-Off DelayTime			45		ns
t_f	Turn-Off Fall Time			47		ns

Notes：

1. Pulse width limited by Max. junction temperature.
2. Pluse width≤300us，duty cycle≤2%.
3. Surface mouned on 1 in^2 copper pad of FR4 board；125°C/W when mounted on Min. copper pad

Typical Characteristics

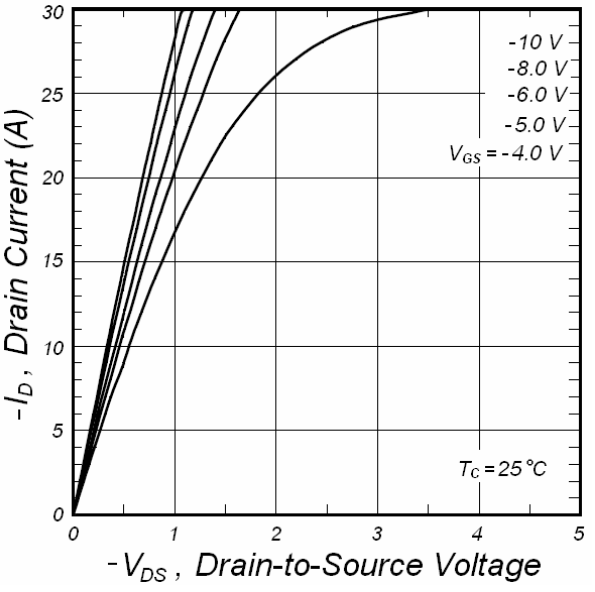


Fig1. Typical output characteristics

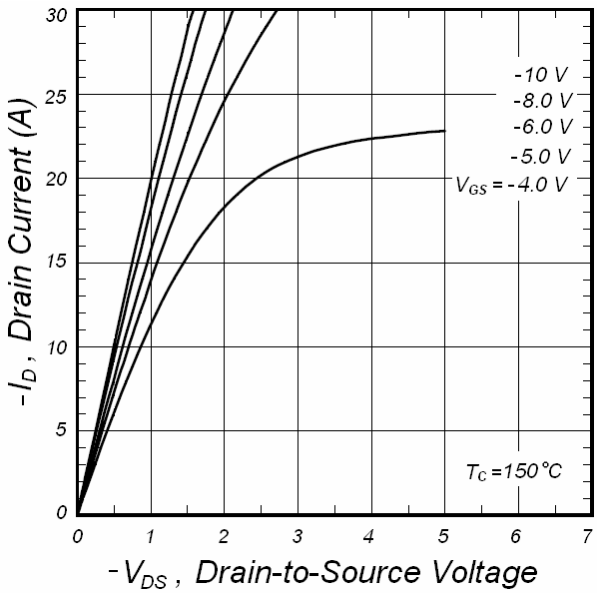


Fig2. Typical output characteristics

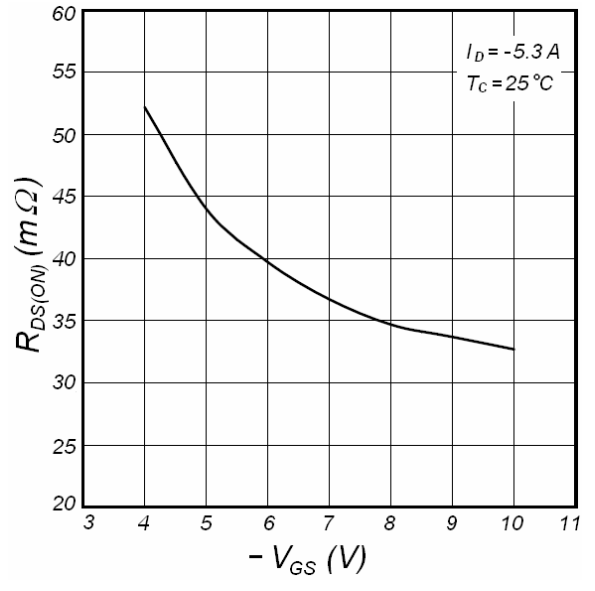


Fig3. On-Resistance v.s. Gate Voltage

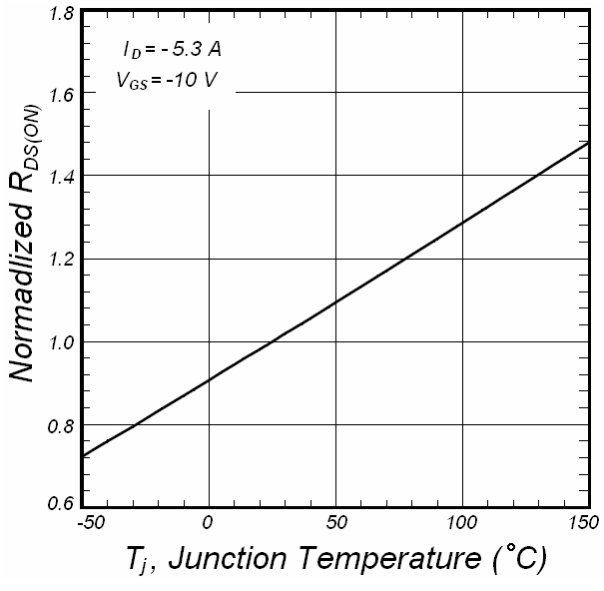


Fig4. Normalized On-Resistance v.s. Junction Temperature

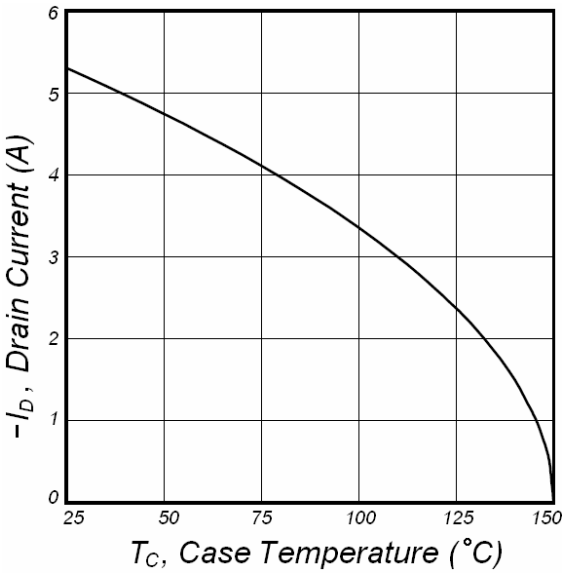


Fig5. Maximum Drain Current v.s. Case Temperature

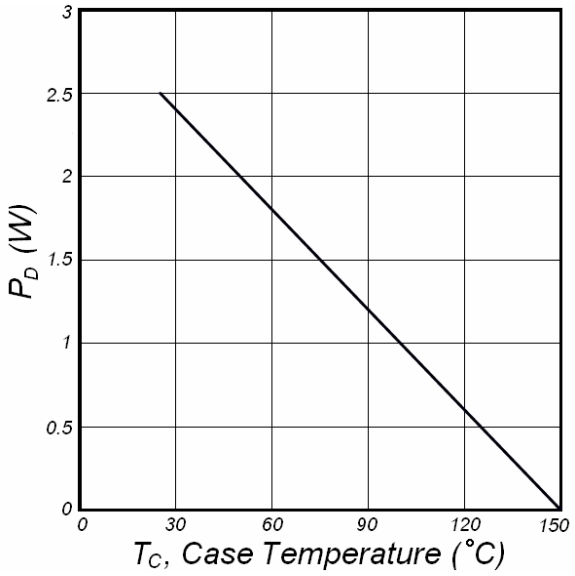


Fig6. Typical Power Dissipation

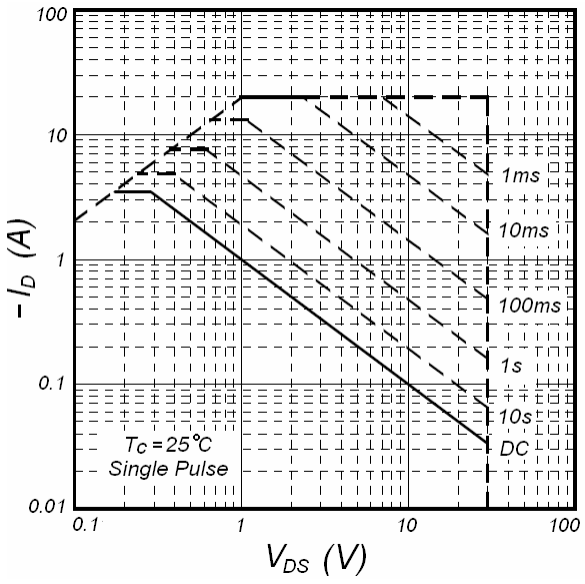


Fig7. Maximum Safe Operating Area

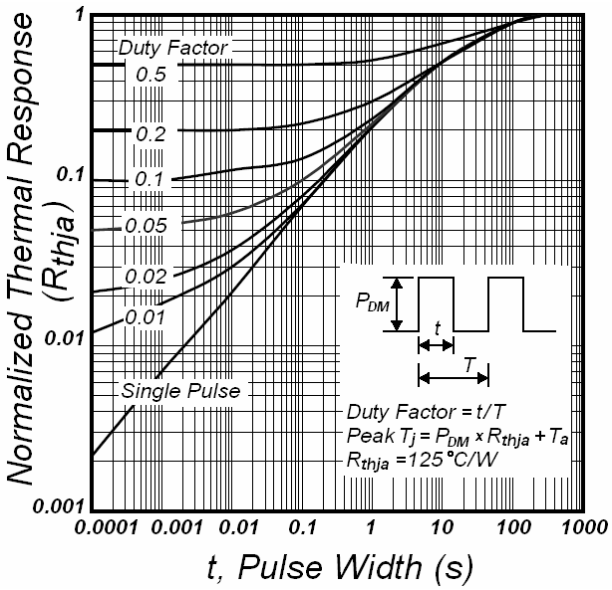


Fig8. Effective Transient Thermal Impedance

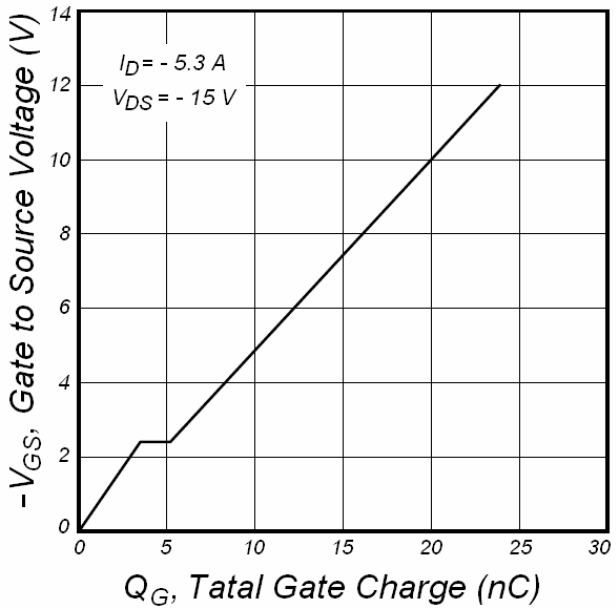


Fig9. Gate Charge Characteristics

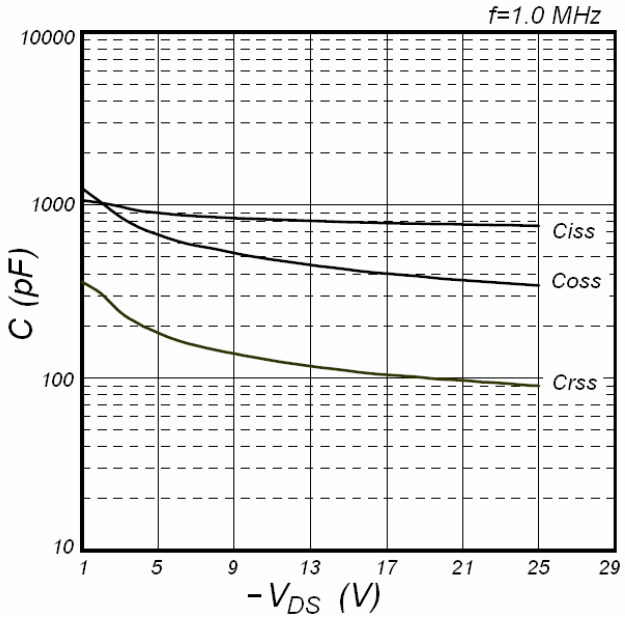


Fig10. Typical Capacitance Characteristics

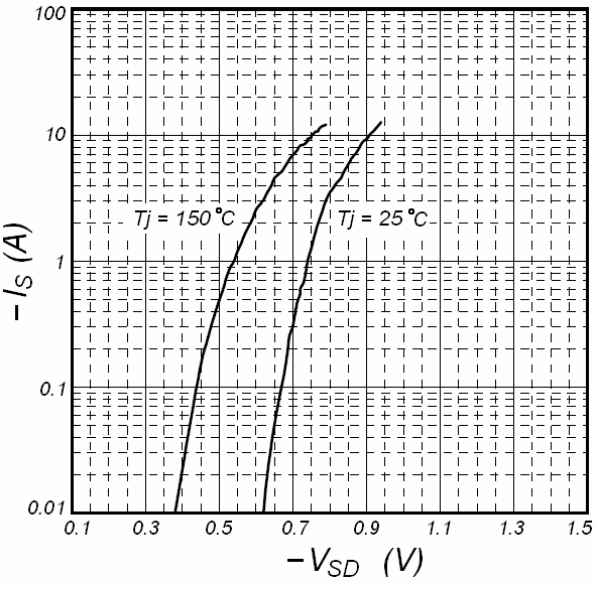


Fig11. Forward Characteristic of Reverse Diode

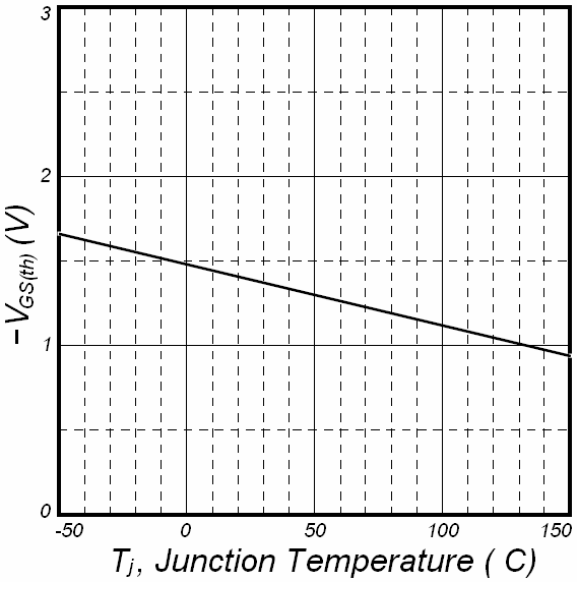


Fig12. Gate Threshold Voltage v.s. Junction Temperature

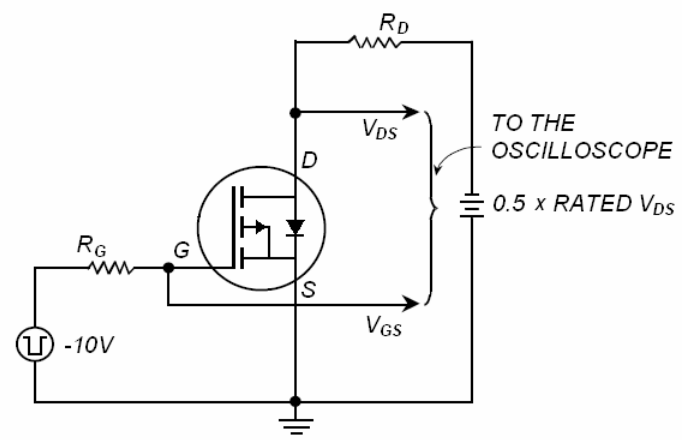


Fig13. Switching Time Circuit

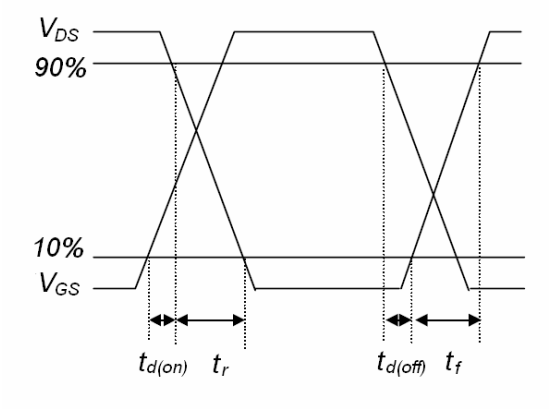


Fig14. Switching Time Waveform

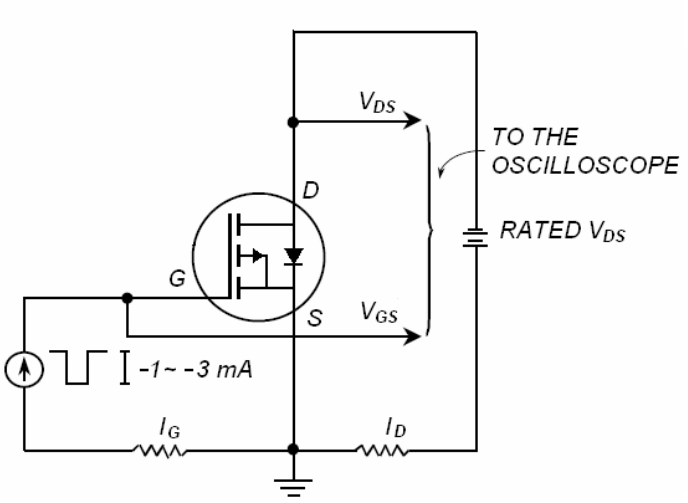


Fig15. Gate Charge Circuit

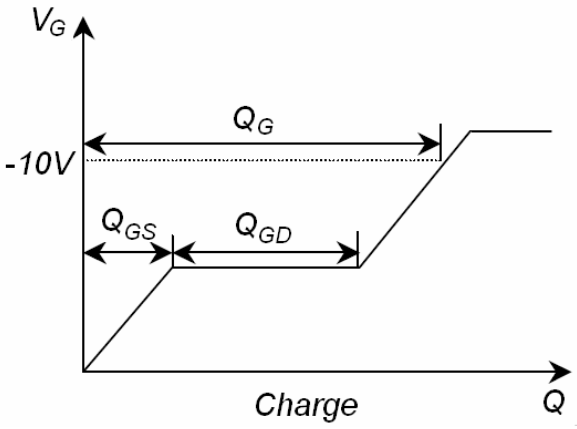
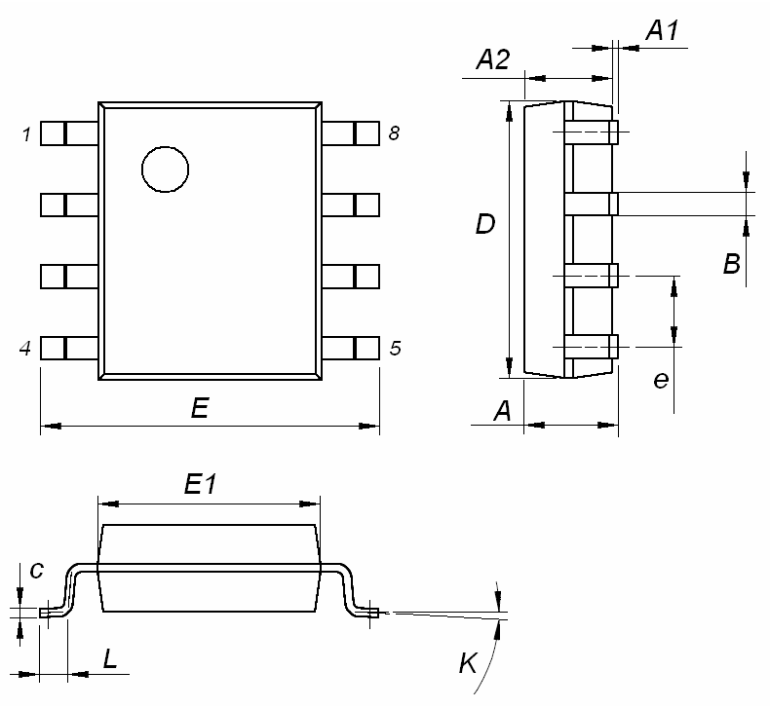


Fig16. Gate Charge Waveform

SOP-8 MECHANICAL DATA

DIM	Millimeters		
	MIN	TYP	MAX
A			1.75
A1	0.10		0.25
A2	1.35	1.55	1.75
B	0.35	0.42	0.49
C	0.19		0.25
D	4.80	4.90	5.00
E	5.80	6.00	6.20
E1	3.80	3.95	4.00
e		1.27	
L	0.40		0.90
K	0°		8°



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