General Description

The MY180N10NE5 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

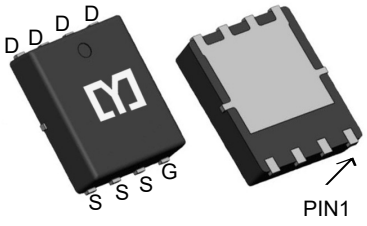
RoHS Compliant

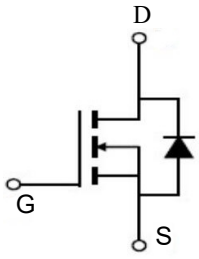
Features

V_{DSS}	100	V
I_D	180	A
$P_D(T_C=25℃)$	152	W
$R_{DS(ON)}$(atV_{GS} =10V)	< 4.5	mÝ

Application

- Low RDS(on) & FOM
- Extremely low switching loss
- Excellent stability and uniformity or Invertors





Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY180N10NE5	PDFN5*6-8L	NULL	5000

Absolute Maximum Ratings (T_J=25℃unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain source voltage	VDS	100	V
Gate source voltage	VGS	±20	V
Continuous drain current[1], T_C=25 ℃	ID	180	A
Pulsed drain current[2], T_C=25 ℃	ID, pulse	360	A
Power dissipation3 TC=25 ℃	P_D	152	W
Single pulsed avalanche energy[5]	EAS	400	mJ
Operation and storage temperature	Tstg，Tj	-55 to 175	℃
Thermal resistance, junction-case	RθJC	0.65	℃/W
Thermal resistance, junction-ambient[4]	RθJA	62	℃/W

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Drain-source breakdown voltage	BV_{DSS}	100			V	V_{GS}=0 V, I_D=250 μA
Gate threshold voltage	$V_{GS(th)}$	2.0		4.0	V	V_{DS}=V_{GS}, I_D=250 μA
Drain-source on-state resistance	$R_{DS(ON)}$		3.6	4.5	mΩ	V_{GS}=10 V, I_D=60 A
Gate-source leakage current	I_{GSS}			100	nA	V_{GS}=20 V
				-100		V_{GS}=-20 V
Drain-source leakage current	I_{DSS}			1	μA	V_{DS}=100 V, V_{GS}=0 V
Input capacitance	C_{iss}		6920		pF	V_{GS}=0 V, V_{DS}=50 V, f=1 MHz
Output capacitance	C_{oss}		1026		pF	
Reverse transfer capacitance	C_{rss}		33		pF	
Turn-on delay time	$t_{d(on)}$		48		ns	V_{GS}=10 V, V_{DS}=50 V, R_G=2.2 Ω, I_D=22 A
Rise time	t_r		56		ns	
Turn-off delay time	$t_{d(off)}$		75		ns	
Fall time	t_f		33		ns	
Total gate charge	Q_g		117		nC	I_D=22 A, V_{DS}=50 V, V_{GS}=10 V
Gate-source charge	Q_{gs}		40		nC	
Gate-drain charge	Q_{gd}		37		nC	
Gate plateau voltage	$V_{plateau}$		4.2		V	
Diode forward current	I_S			130	A	V_{GS}<V_{th}
Pulsed source current	I_{SP}			390		
Diode forward voltage	V_{SD}			1.3	V	I_S=20 A, V_{GS}=0 V
Reverse recovery time	t_{rr}		82.1		ns	I_S=10 A, di/dt=100 A/μs
Reverse recovery charge	Q_{rr}		248.4		nC	
Peak reverse recovery current	I_{rrm}		4.9		A	

Note

1、Calculated continuous current based on maximum allowable junction temperature.

2、Repetitive rating; pulse width limited by max. junction temperature.

3、Pd is based on max. junction temperature, using junction-case thermal resistance.

4、The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T_a=25 ℃.

5、V_{DD}=50 V, R_G=25 Ω, L=0.5 mH, starting T_j=25 ℃.

Typical Characteristics

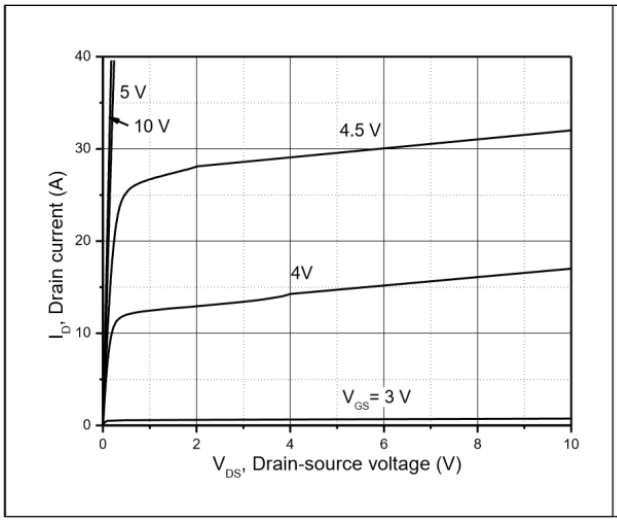


Figure 1, Typ. output characteristics

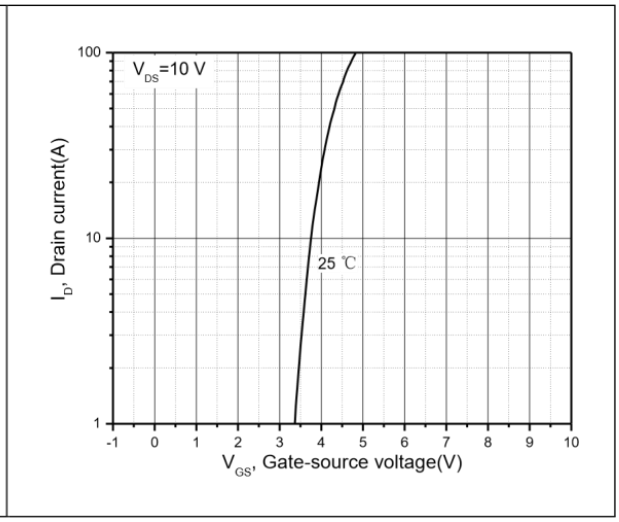


Figure 2, Typ. transfer characteristics

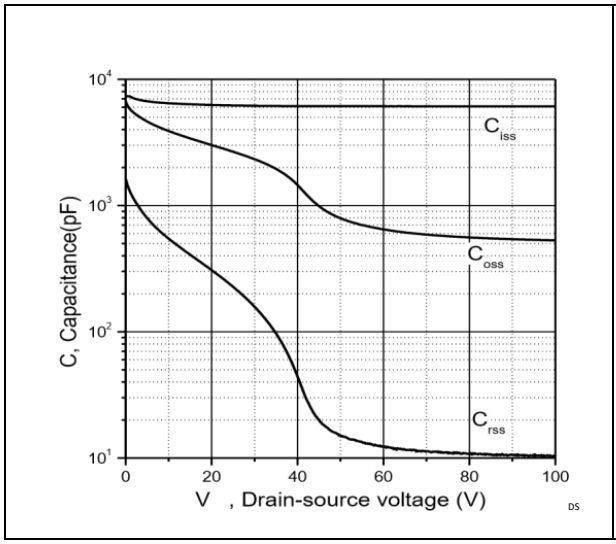


Figure 3, Typ. capacitances

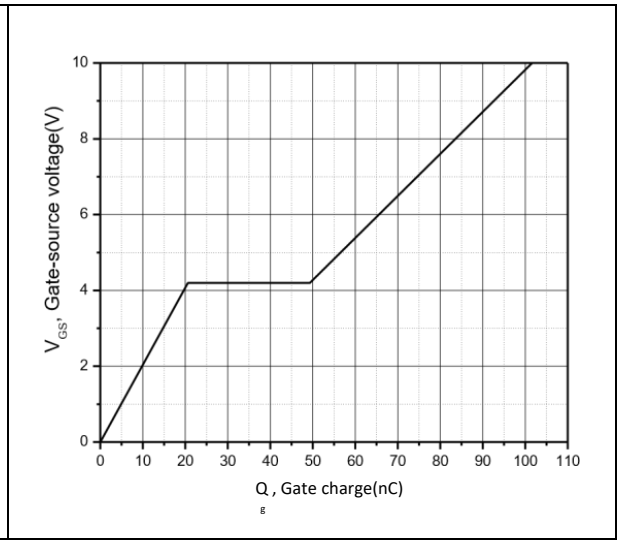


Figure 4, Typ. gate charge

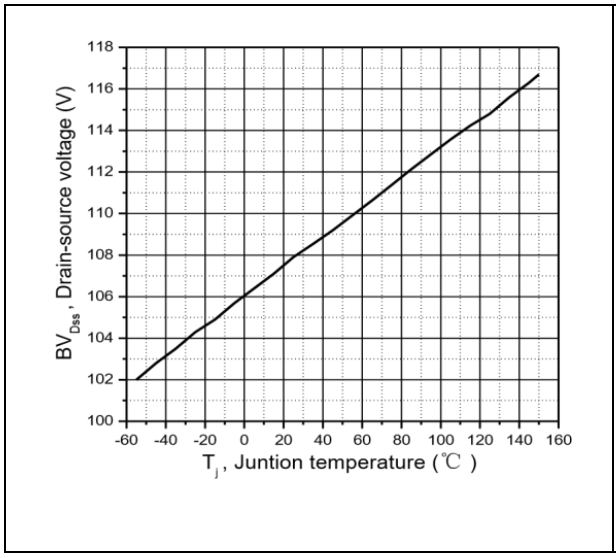


Figure 5, Drain-source breakdown voltage

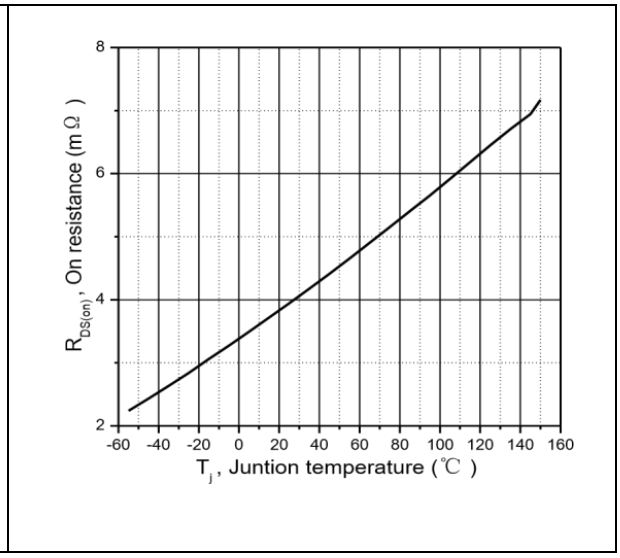


Figure 6, Drain-source on-state resistance

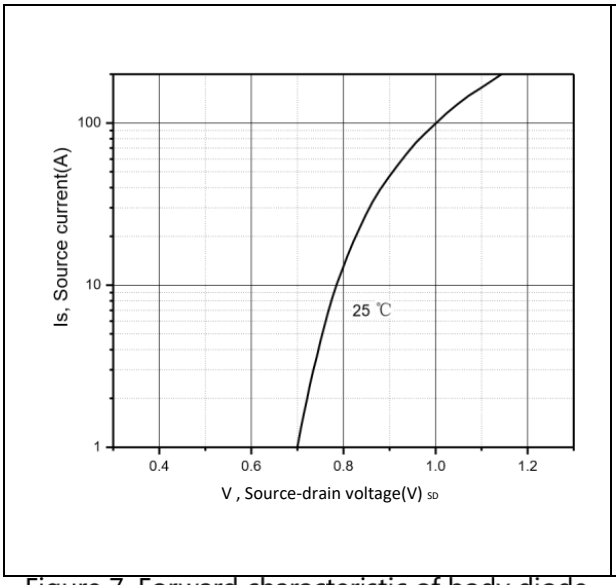


Figure 7, Forward characteristic of body diode

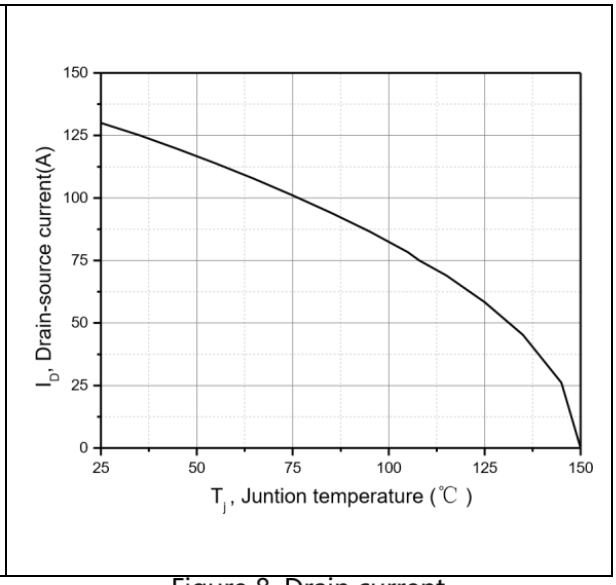


Figure 8, Drain current

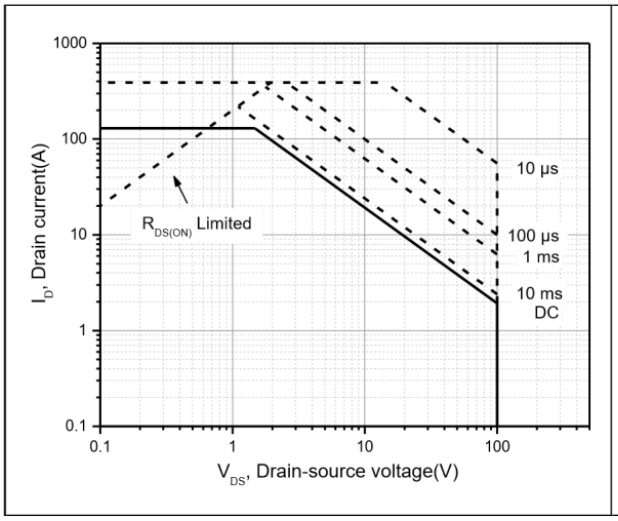


Figure 9, Safe operation area for TO220/TO263

T_C=25 ℃

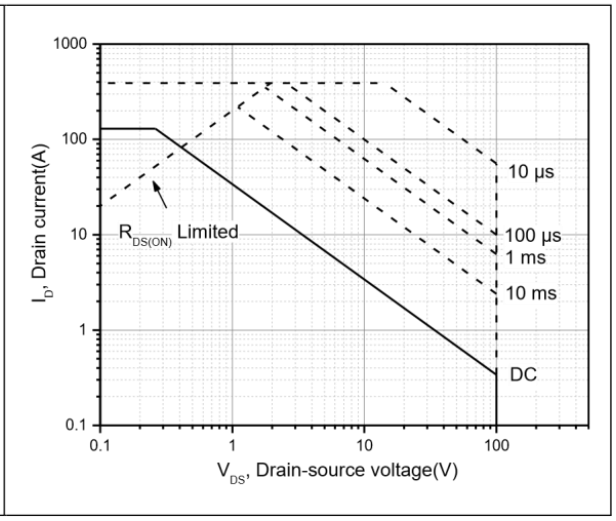


Figure 10, Safe operation area for TO220F

T_C=25 ℃

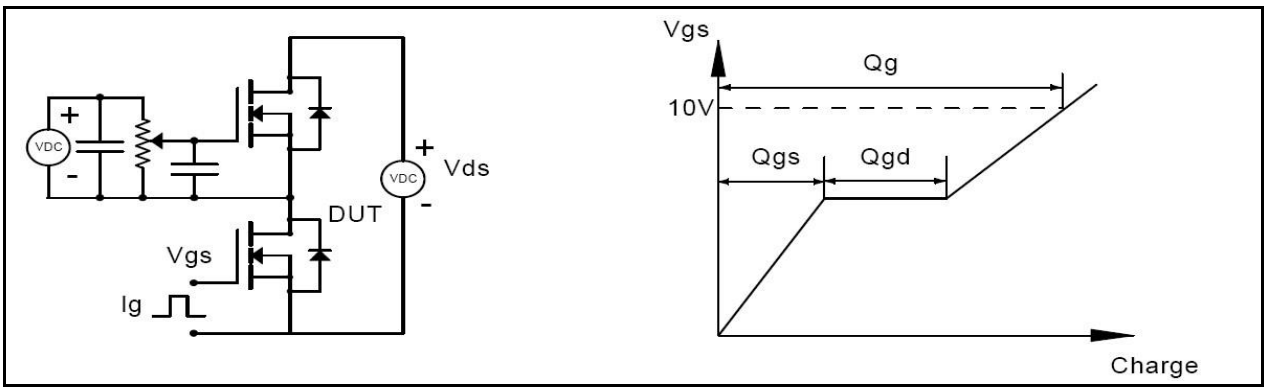


Figure 1, Gate charge test circuit & waveform

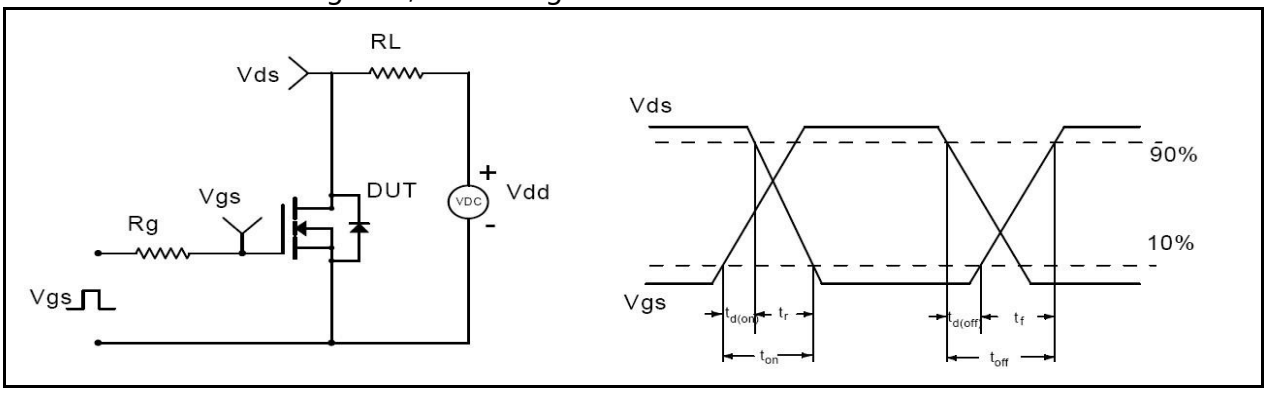


Figure 2, Switching time test circuit & waveforms

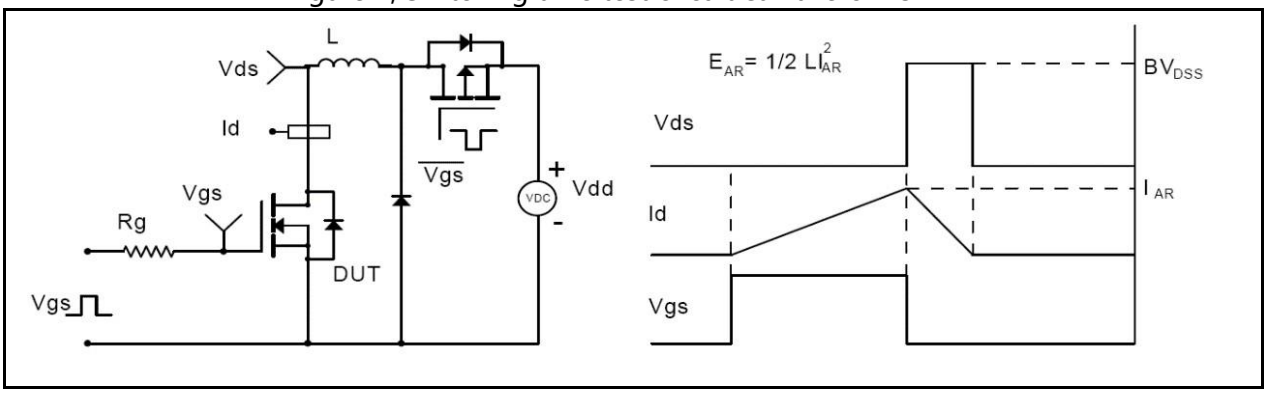


Figure 3, Unclamped inductive switching (UIS) test circuit & waveforms

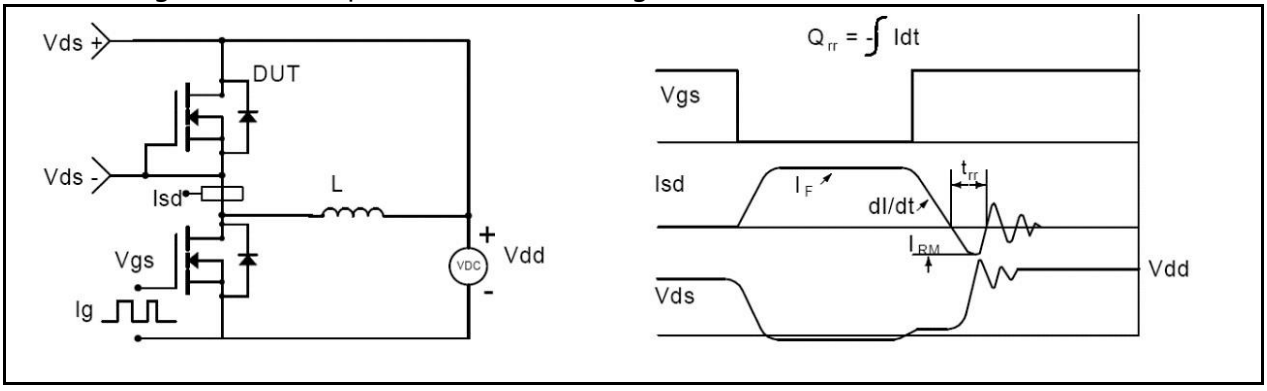
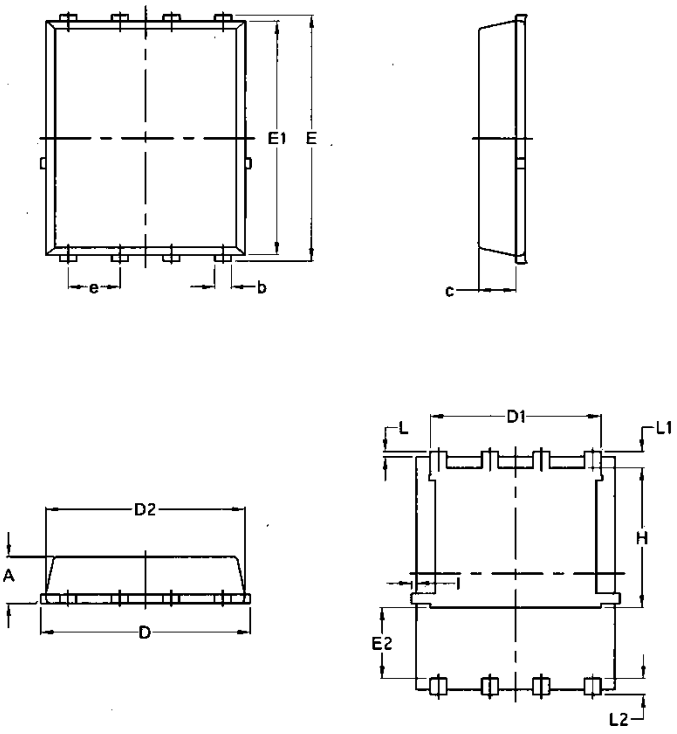


Figure 4, Diode reverse recovery test circuit & waveforms

Package Mechanical Data-DFN5*6-8L-JQ Single



Symbol	Common			
	mm		Inch	
	Mim	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070