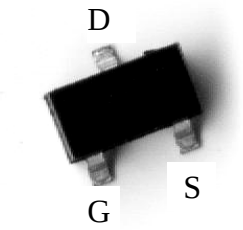
20V N-CHANNEL Enhancement Mode MOSFET

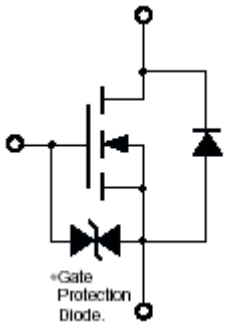
SOT-23



Features:

- Simple drive requirement
- Small package outline
- Pb-free package

KW303KN3



G：Gate
S：Source
D：Drain

BV_{DSS}	20V
I_D	850mA
R_{DSON}@V_{GS}=4.5V, I_D=600mA	300mΩ(typ)
R_{DSON}@V_{GS}=2.5V,I_D=400mA	450mΩ(typ)
R_{DSON}@V_{GS}=1.8V,I_D=350mA	870mΩ(typ)

Ordering Information

Device	Package	Shipping
KW303KN3	SOT-23 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±8	V
Continuous Drain Current @ T_A=25°C , V_{GS}=4.5V	I_D	850	mA
Continuous Drain Current @ T_A=70°C, V_{GS}=4.5V		680	mA
Pulsed Drain Current (Notes 1, 2)	I_{DM}	3.5	A
Maximum Power Dissipation@ T_A=25℃	P_D	0.35	W
Linear Derating Factor		0.003	W/°C
ESD susceptibility		2000 (Note 3)	V
Operating Junction and Storage Temperature	Tj, Tstg	-55~+150	°C

Note : 1. Pulse width limited by maximum junction temperature.
2. Pulse width≤ 300μs, duty cycle≤2%.
3. Human body model, 1.5kΩ in series with 100pF

Thermal Performance

Parameter	Symbol	Limit	Unit
Thermal Resistance, Junction-to-Ambient(PCB mounted)	Rth,ja	360	°C/W

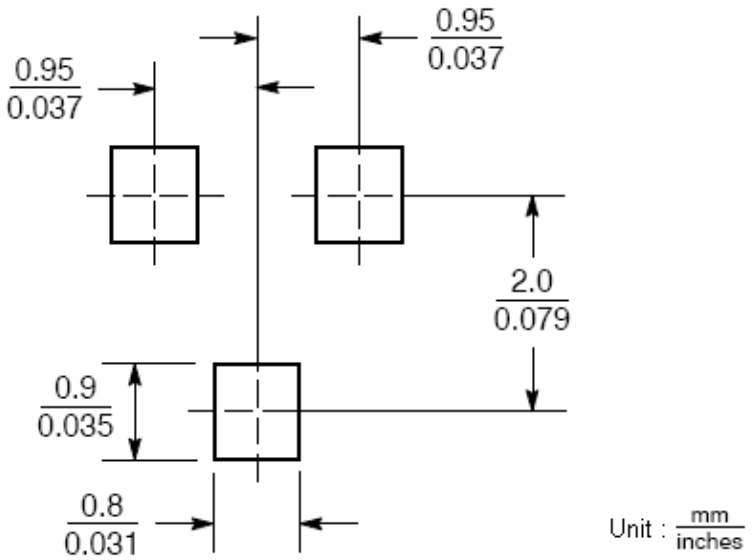
Electrical Characteristics (Tj=25°C, unless otherwise noted)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	20	-	-	V	V_{GS}=0, I_D=250μA
$\Delta BV_{DSS}/\Delta Tj$	-	0.02	-	V/°C	Reference to 25°C, I_D=1mA
$V_{GS(th)}$	0.5	0.92	1.0	V	V_{DS}=V_{GS}, I_D=250μA
I_{GSS}	-	-	±10	μA	V_{GS}=±8V, V_{DS}=0
I_{DSS}	-	-	1		V_{DS}=20V, V_{GS}=0
	-	-	10		V_{DS}=16V, V_{GS}=0 (Tj=70°C)
*$R_{DS(ON)}$	-	300	400	mΩ	V_{GS}=4.5V, I_D=600mA
	-	450	600		V_{GS}=2.5V, I_D=400mA
	-	870	1200		V_{GS}=1.8V, I_D=350mA
*G_{FS}	-	1.4	-	S	V_{DS}=5V, I_D=600mA
Dynamic					
Ciss	-	60	-	pF	V_{DS}=10V, V_{GS}=0, f=1MHz
Coss	-	14	-		
Crss	-	9	-		
$t_{d(ON)}$	-	4	-	ns	V_{DS}=10V, I_D=600mA, V_{GS}=10V R_G=3.3Ω, R_D=16.7Ω
t_r	-	10	-		
$t_{d(OFF)}$	-	15	-		
t_f	-	2	-		

Qg	-	1.3	-	nC	V_{DS}=16V, I_D=600mA, V_{GS}=4.5V
Qgs	-	0.3	-		
Qgd	-	0.5	-		
Source-Drain Diode					
*V_{SD}	-	0.81	1.2	V	V_{GS}=0V, I_S=600mA

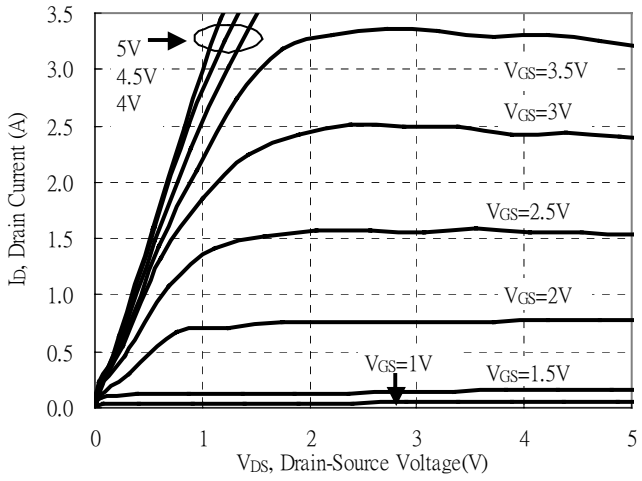
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Recommended Soldering Footprint

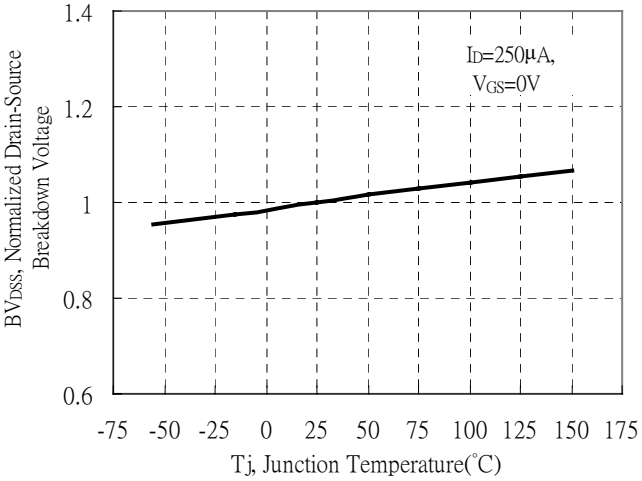


Typical Characteristics

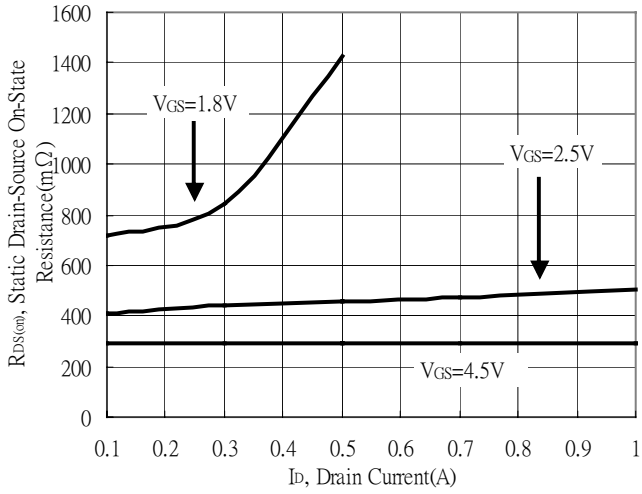
Typical Output Characteristics



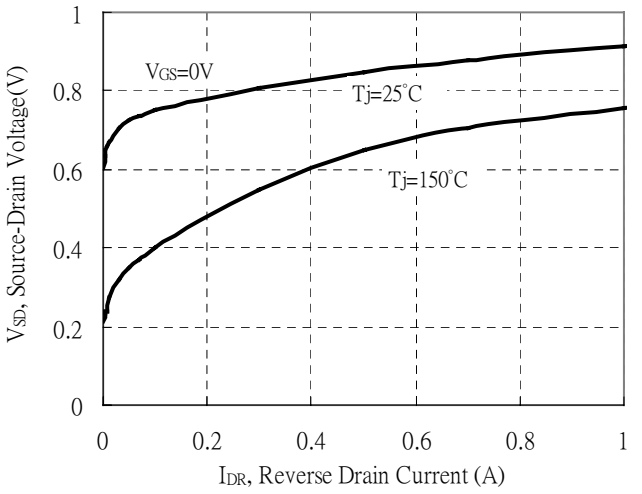
Brekdown Voltage vs Ambient Temperature



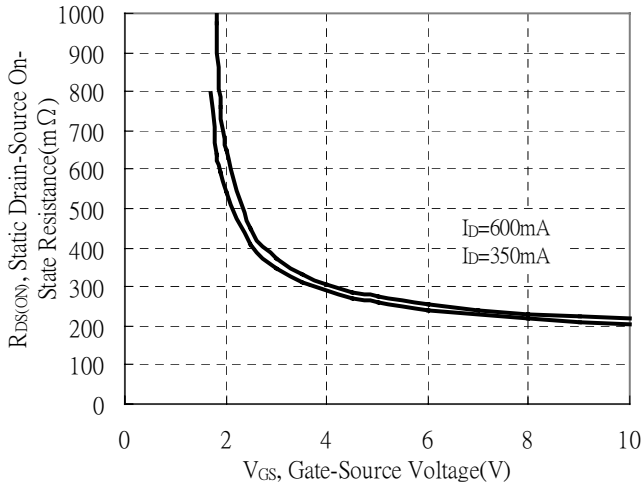
Static Drain-Source On-State resistance vs Drain Current



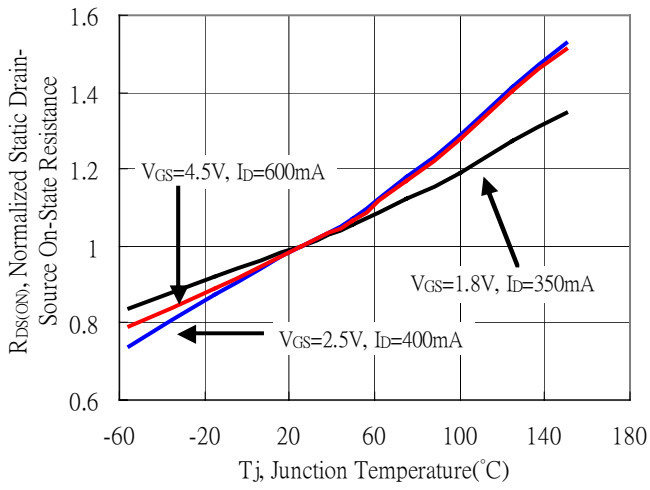
Reverse Drain Current vs Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

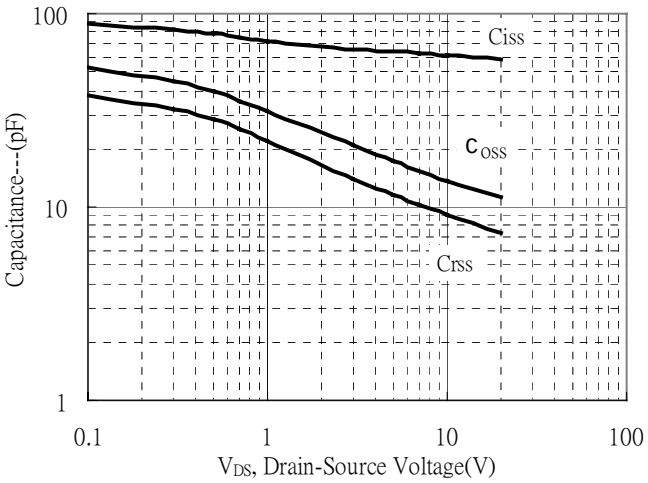


Drain-Source On-State Resistance vs Junction Tempearture

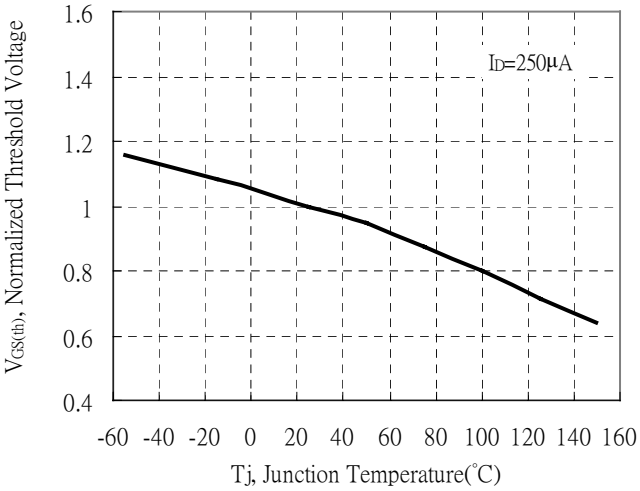


Typical Characteristics(Cont.)

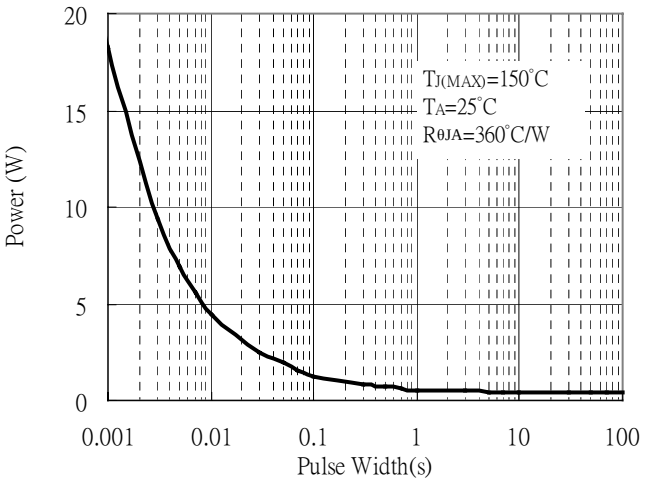
Capacitance vs Drain-to-Source Voltage



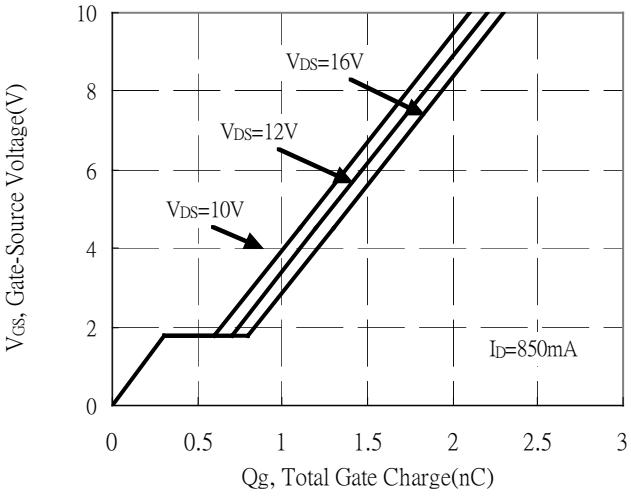
Threshold Voltage vs Junction Tempearture



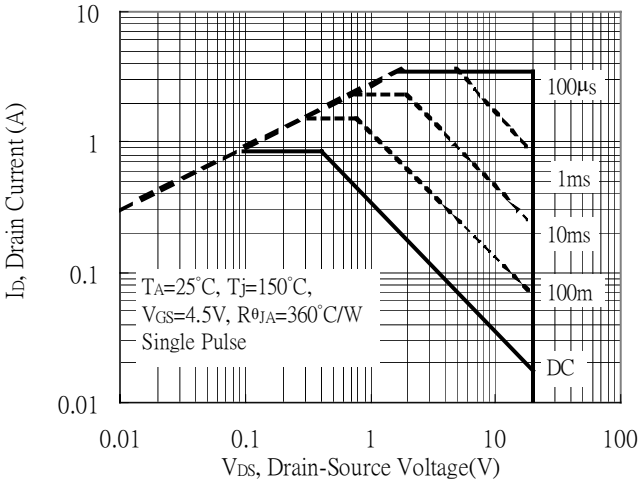
Single Pulse Power Rating, Junction to Ambient
(Note on page 2)



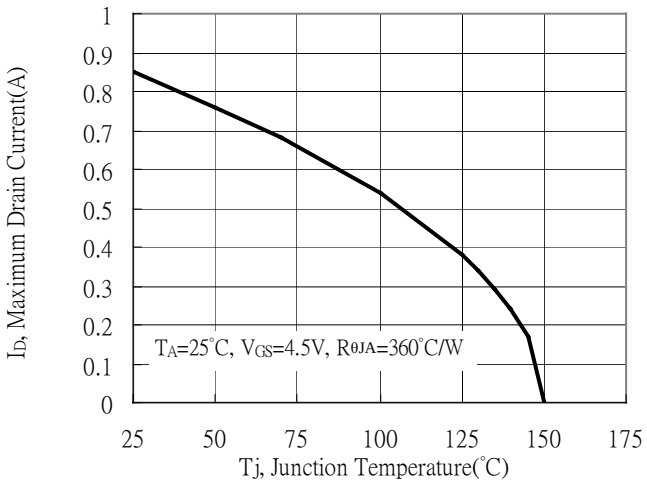
Gate Charge Characteristics



Maximum Safe Operating Area

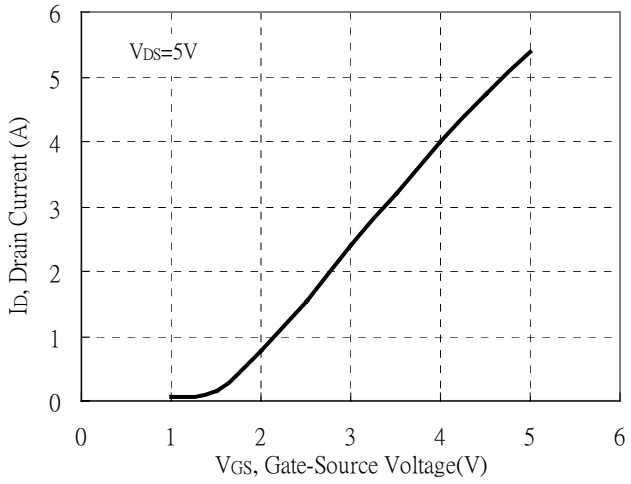


Maximum Drain Current vs JunctionTemperature

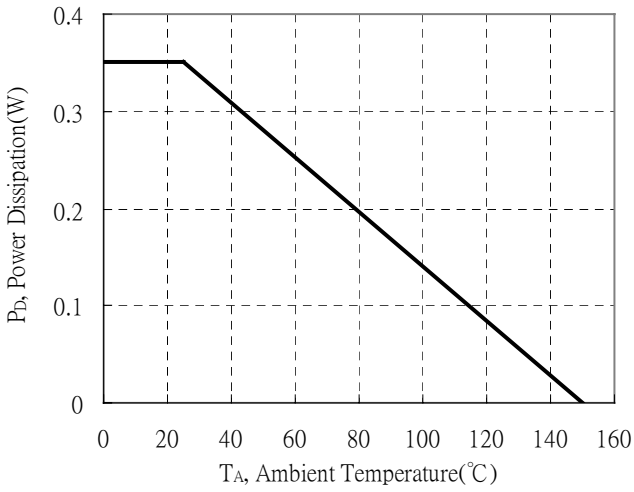


Typical Characteristics(Cont.)

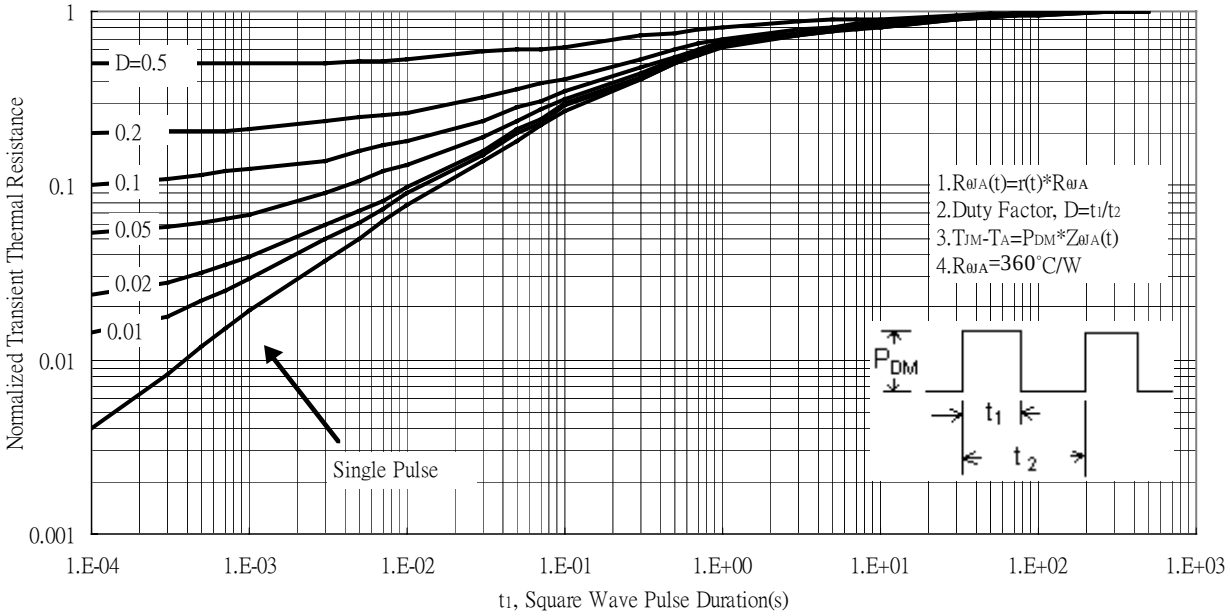
Typical Transfer Characteristics

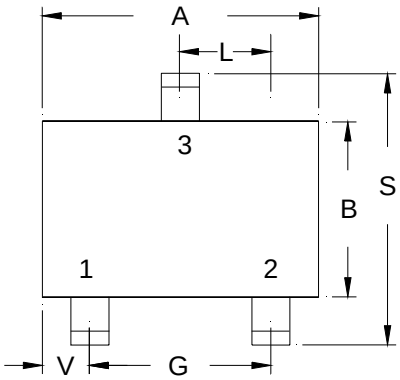


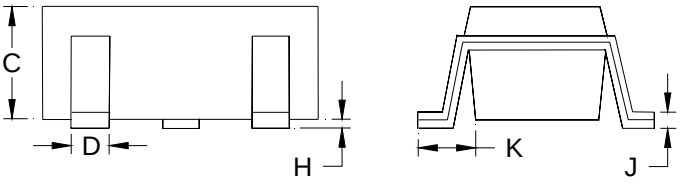
Power Derating Curve

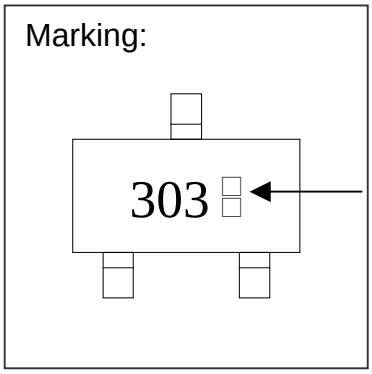


Transient Thermal Response Curves









3-Lead SOT-23 Plastic
Surface Mounted Package
Code: N3

Style: Pin 1.Gate 2.Source 3.Drain

*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1102	0.1204	2.80	3.04	J	0.0032	0.0079	0.08	0.20
B	0.0472	0.0669	1.20	1.70	K	0.0118	0.0266	0.30	0.67
C	0.0335	0.0512	0.89	1.30	L	0.0335	0.0453	0.85	1.15
D	0.0118	0.0197	0.30	0.50	S	0.0830	0.1161	2.10	2.95
G	0.0669	0.0910	1.70	2.30	V	0.0098	0.0256	0.25	0.65
H	0.0000	0.0040	0.00	0.10					