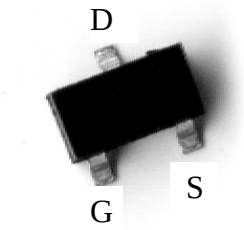
20V N-CHANNEL Enhancement Mode MOSFET

Outline

SOT-523

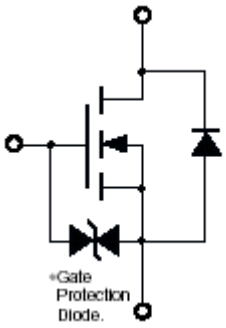


Features:

- Simple drive requirement
- Small package outline
- Pb-free lead plating and halogen-free package

Symbol

KWN1012C3



G：Gate
S：Source
D：Drain

BV_{DSS}	20V
I_D	560mA
R_{DSON}@V_{GS}=4.5V, I_D=600mA	320mΩ(typ)
R_{DSON}@V_{GS}=2.5V,I_D=400mA	510mΩ(typ)
R_{DSON}@V_{GS}=1.8V,I_D=350mA	980mΩ(typ)

Ordering Information

Device	Package	Shipping
KWN1012C3	SOT-523 (Pb-free lead plating 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	
Continuous Drain Current @ T_A=25°C, V_{GS}=4.5V (Note 3)		I_D	560	mA
Continuous Drain Current @ T_A=85°C, V_{GS}=4.5V (Note 3)			400	
Pulsed Drain Current (Notes 1, 2)		I_{DM}	2.5	A
Maximum Power Dissipation (Note 3)	T_A=25℃	P_D	150	mW
	T_A=85℃		80	
ESD susceptibility			2000 (Note 4)	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. Surface mounted on FR-4 board.
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	833	°C/W

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

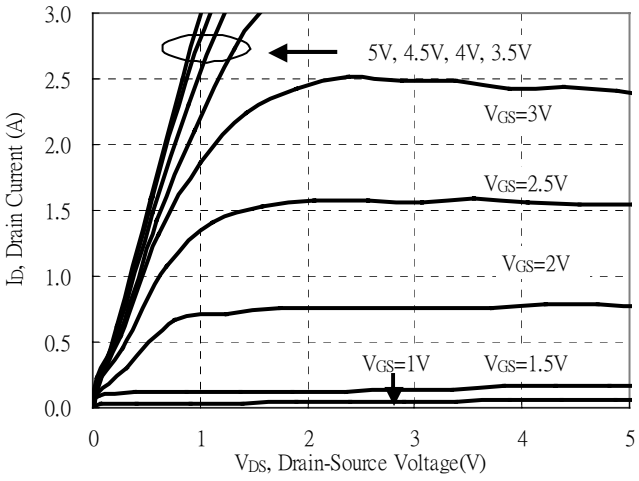
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	20	-	-	V	V_{GS}=0, I_D=250μA
$\Delta BV_{DSS}/\Delta Tj$	-	0.02	-	V/°C	Reference to 25°C, I_D=1mA
$V_{GS(th)}$	0.5	0.92	1.2	V	V_{DS}=V_{GS}, I_D=250μA
I_{GSS}	-	-	±10	μA	V_{GS}=±8V, V_{DS}=0
I_{DSS}	-	-	1		V_{DS}=20V, V_{GS}=0
	-	-	10		V_{DS}=16V, V_{GS}=0 (Tj=70°C)
*$R_{DS(ON)}$	-	320	450	mΩ	V_{GS}=4.5V, I_D=600mA
	-	510	700		V_{GS}=2.5V, I_D=500mA
	-	980	1200		V_{GS}=1.8V, I_D=350mA
*G_{FS}	-	1	-	S	V_{DS}=10V, I_D=400mA
Dynamic					
Ciss	-	60	-	pF	V_{DS}=10V, V_{GS}=0, f=1MHz
Coss	-	14	-		
Crss	-	9	-		

$t_{d(ON)}$	-	5	-	ns	V_{DS}=10V, I_D=200mA, V_{GS}=4.5V R_G=10Ω
t_r	-	5	-		
$t_{d(OFF)}$	-	24	-		
t_f	-	18	-		
Qg	-	0.76	-	nC	V_{DS}=10V, I_D=250mA, V_{GS}=4.5V
Qgs	-	0.074	-		
Qgd	-	0.27	-		
Source-Drain Diode					
*V_{SD}	-	0.8	1.2	V	V_{GS}=0V, I_S=150mA

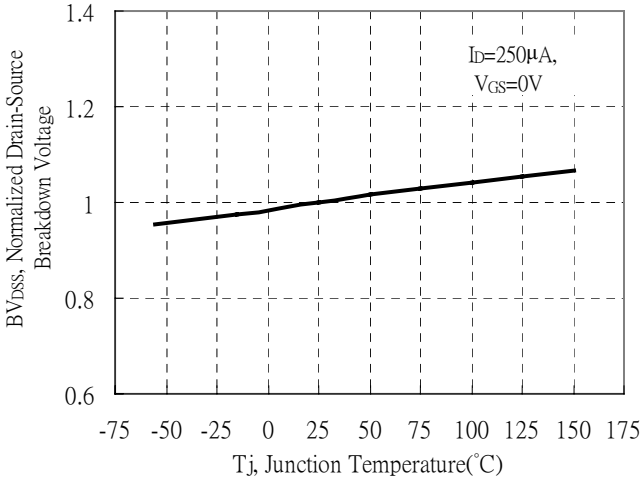
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Typical Characteristics

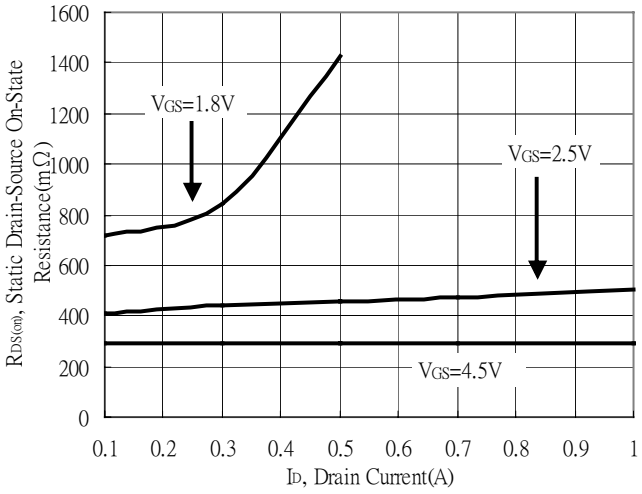
Typical Output Characteristics



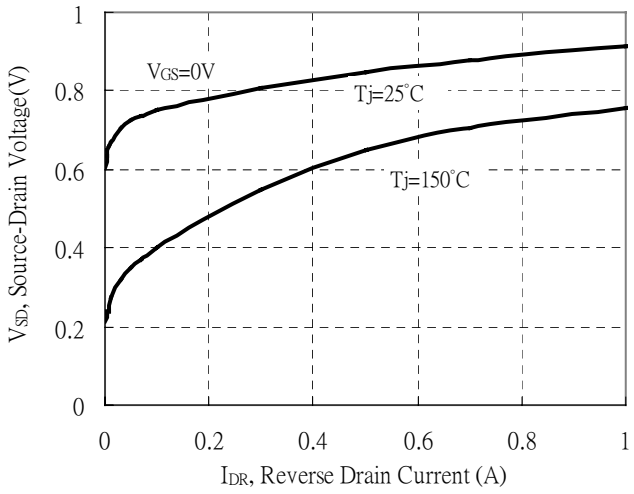
Brekdown Voltage vs Ambient Temperature



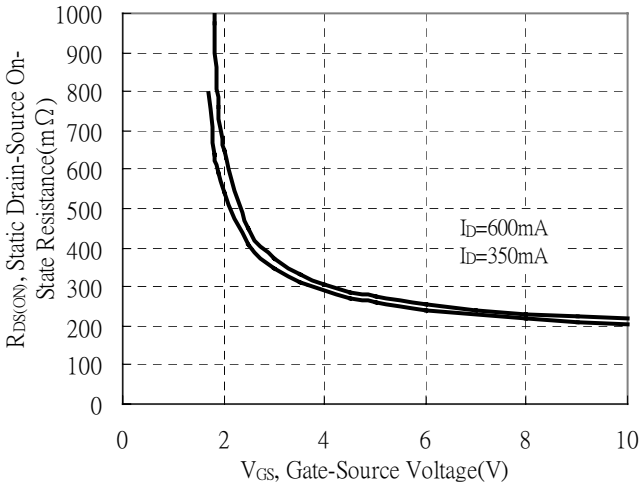
Static Drain-Source On-State resistance vs Drain Current



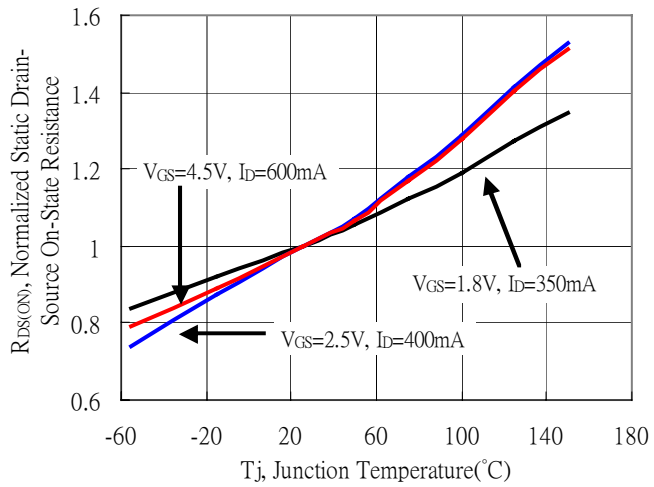
Reverse Drain Current vs Source-Drain Voltage



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

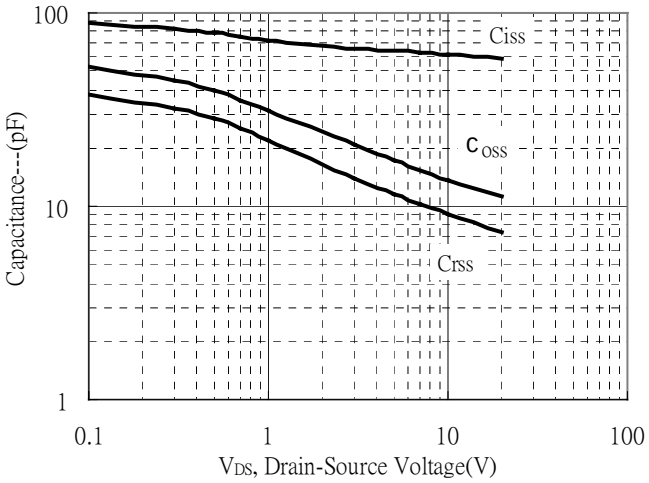


Drain-Source On-State Resistance vs Junction Tempearture

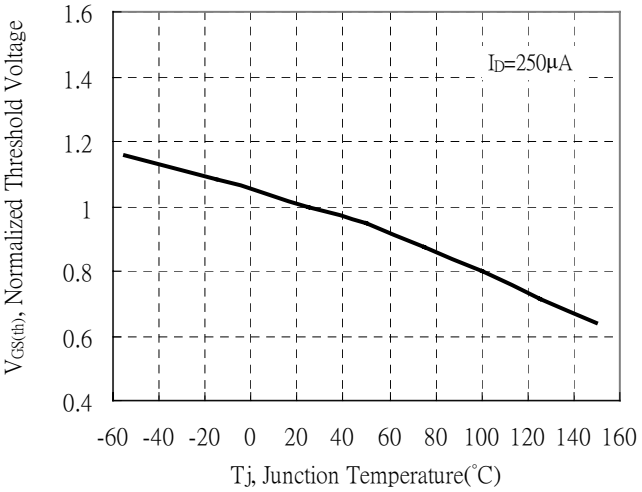


Typical Characteristics(Cont.)

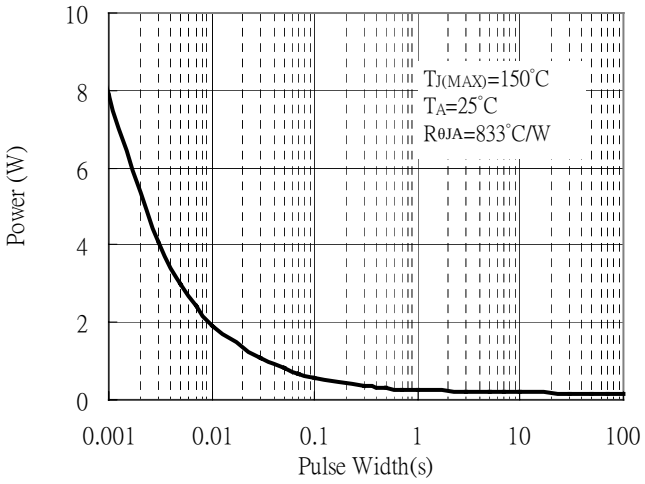
Capacitance vs Drain-to-Source Voltage



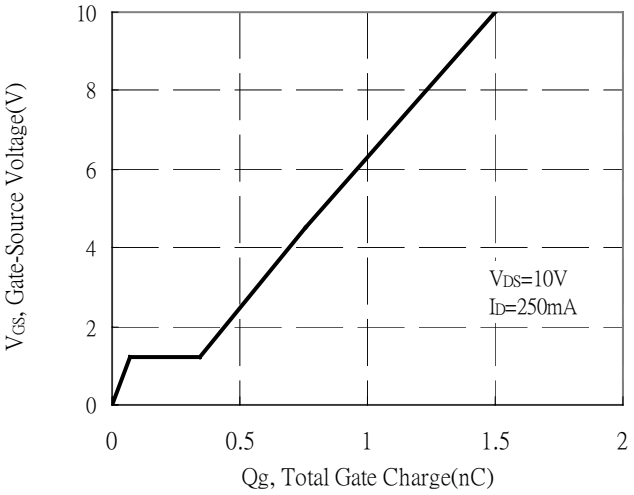
Threshold Voltage vs Junction Tempearture



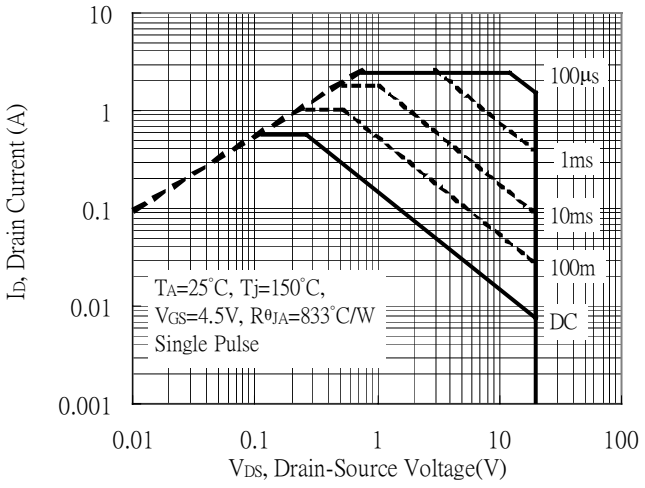
Single Pulse Power Rating, Junction to Ambient
(Note on page 2)



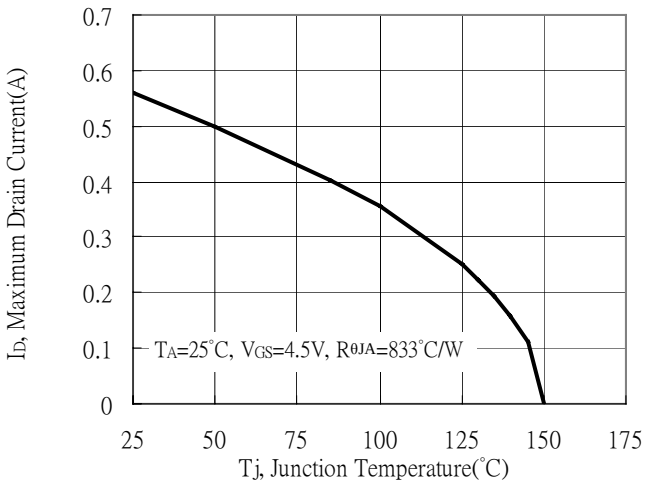
Gate Charge Characteristics



Maximum Safe Operating Area

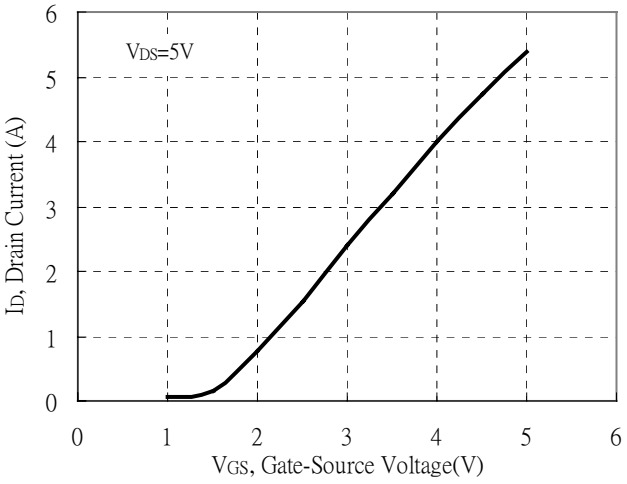


Maximum Drain Current vs JunctionTemperature

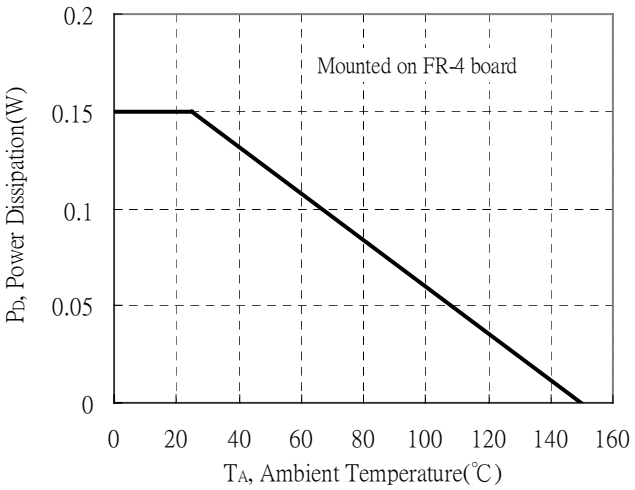


Typical Characteristics(Cont.)

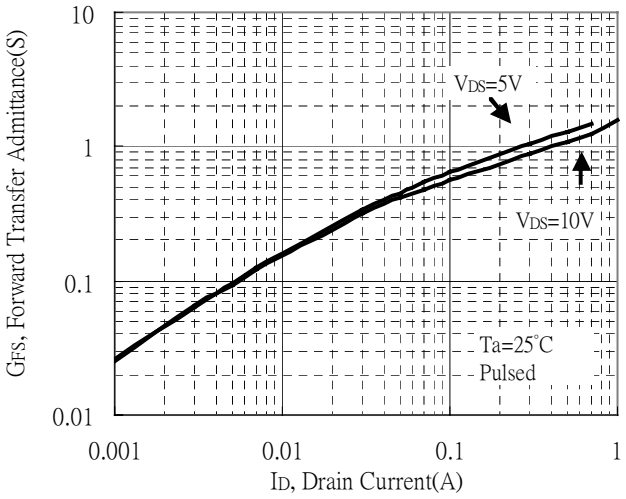
Typical Transfer Characteristics



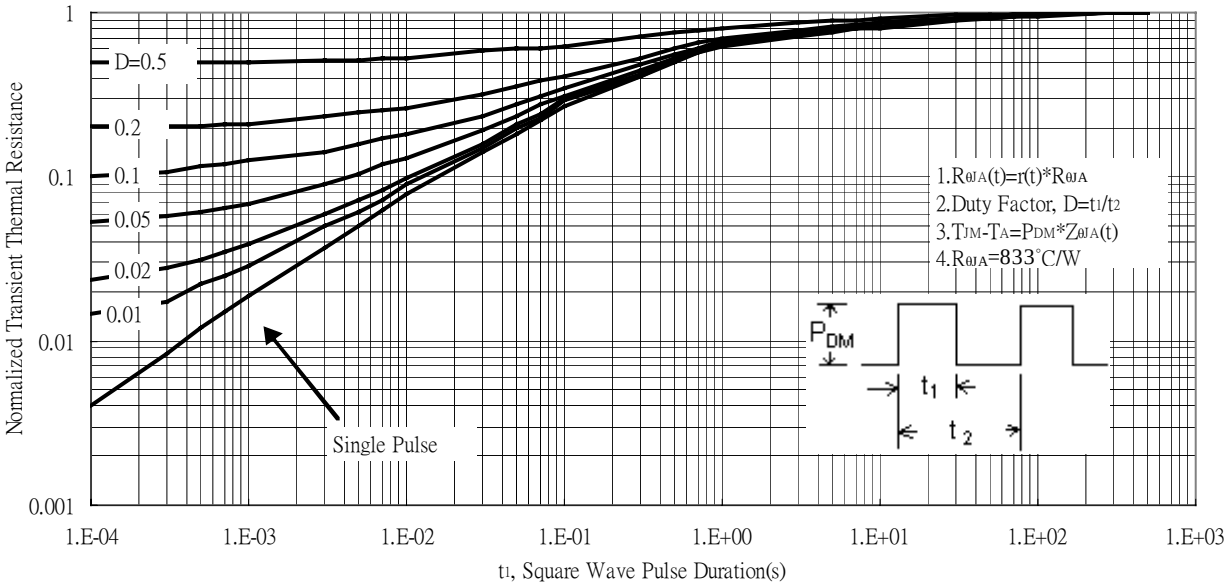
Power Derating Curve



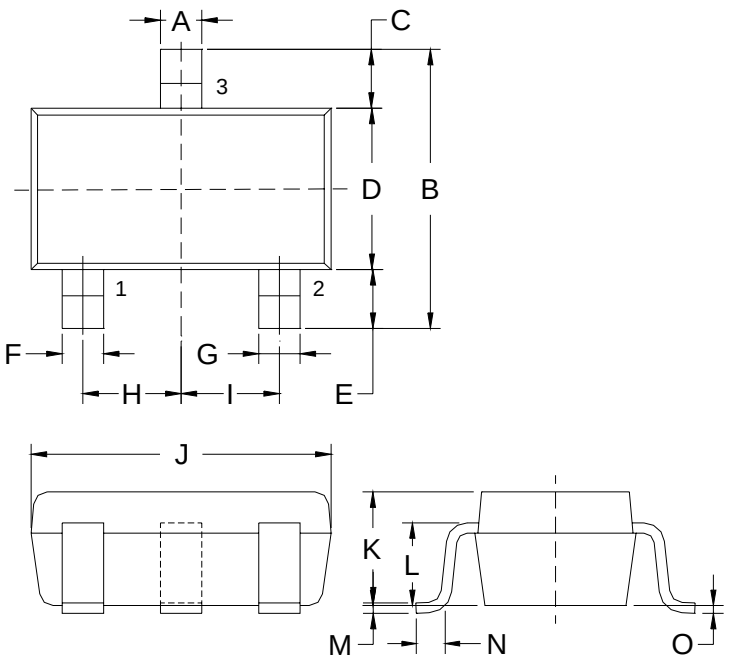
Forward Transfer Admittance vs Drain Current



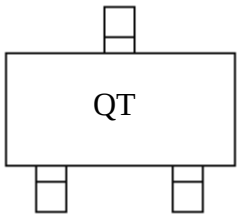
Transient Thermal Response Curves



SOT-523 Dimension



Marking:



3-Lead SOT-523 Plastic
Surface Mounted Package
CYStek Package Code: C3

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

*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.0079	0.0157	0.20	0.40	I	*0.0197	-	*0.50	-
B	0.0591	0.0669	1.50	1.70	J	0.0610	0.0650	1.55	1.65
C	0.0118	0.0197	0.30	0.50	K	0.0276	0.0315	0.70	0.80
D	0.0295	0.0335	0.75	0.85	L	0.0224	0.0248	0.57	0.63
E	0.0118	0.0197	0.30	0.50	M	0.0020	0.0059	0.05	0.15
F	0.0039	0.0118	0.10	0.30	N	0.0039	0.0118	0.10	0.30
G	0.0039	0.0118	0.10	0.30	O	0	0.0031	0	0.08
H	*0.0197	-	*0.50	-					