

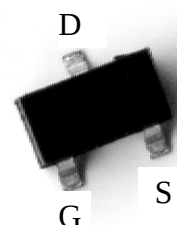
20V N-CHANNEL Enhancement Mode MOSFET

Outline

Features:

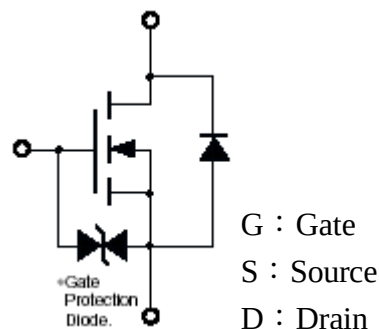
- Simple drive requirement
- Small package outline
- Pb-free lead plating and halogen-free package

SOT-523



Symbol

KW2120EUY



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

Ordering Information

Device	Package	Shipping
KW2120EUY	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)	P _D	150	mW
		80	
ESD susceptibility		2000 (Note 4)	V
Operating Junction and Storage Temperature	T _j , T _{stg}	-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)	R _{th,ja}	833	°C/W

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

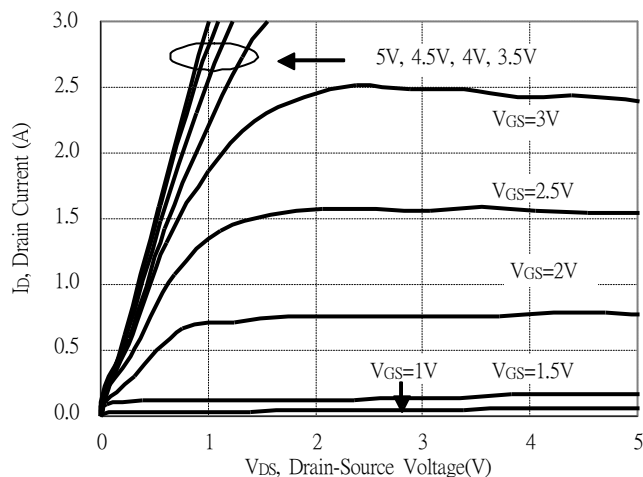
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	20	-	-	V	V _{GS} =0, I _D =250μA
ΔBV _{DSS} /ΔT _j	-	0.02	-	V/°C	Reference to 25°C, I _D =1mA
V _{GS(th)}	0.5	0.92	1.2	V	V _{DS} =V _{GS} , I _D =250μA
I _{GSS}	-	-	±10	μA	V _{GS} =±8V, V _{DS} =0
I _{DSS}	-	-	1		V _{DS} =20V, V _{GS} =0
	-	-	10		V _{DS} =16V, V _{GS} =0 (T _j =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					
C _{iss}	-	60	-	pF	V _{DS} =10V, V _{GS} =0, f=1MHz
C _{oss}	-	14	-		
C _{rss}	-	9	-		

td(ON)	-	5	-	ns	VDS=10V, ID=200mA, VGS=4.5V RG=10Ω
tr	-	5	-		
td(OFF)	-	24	-		
tf	-	18	-		
Qg	-	0.76	-	nC	VDS=10V, ID=250mA, VGS=4.5V
Qgs	-	0.074	-		
Qgd	-	0.27	-		
Source-Drain Diode					
*VSD	-	0.8	1.2	V	VGS=0V, IS=150mA

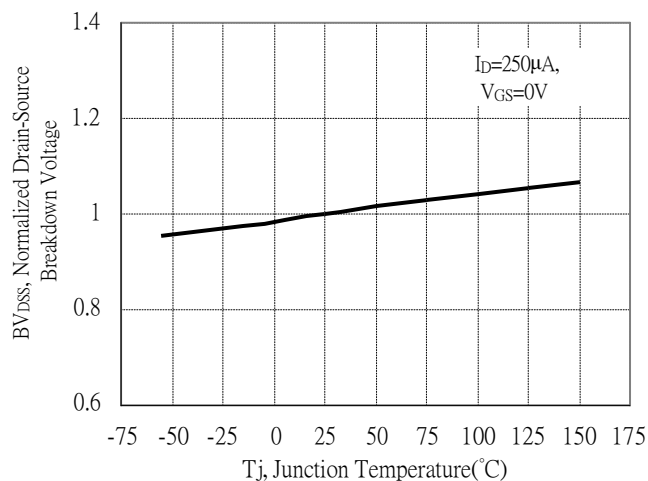
*Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

Typical Characteristics

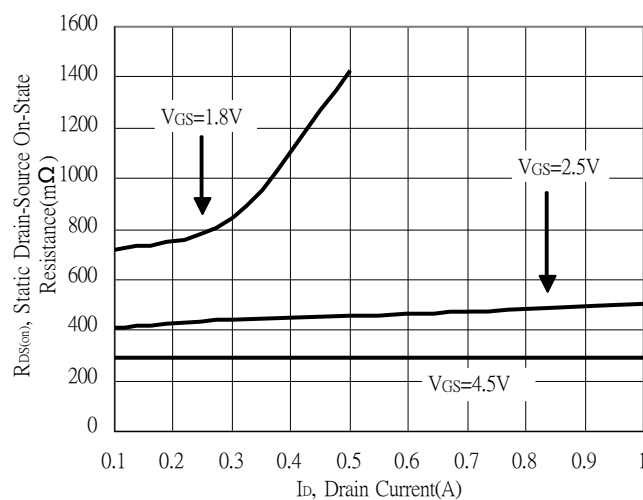
Typical Output Characteristics



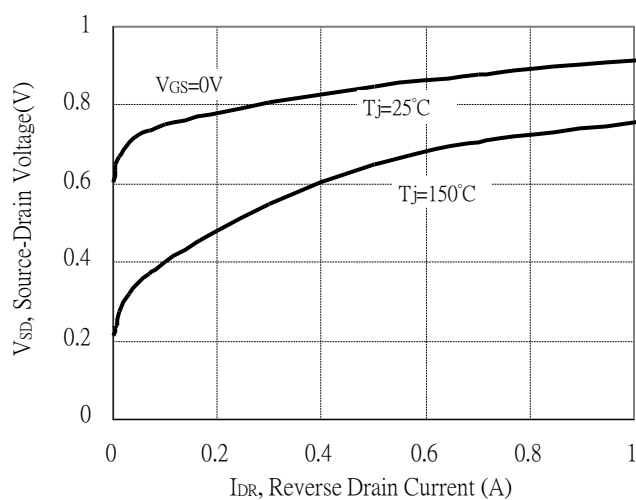
Breakdown Voltage vs Ambient Temperature



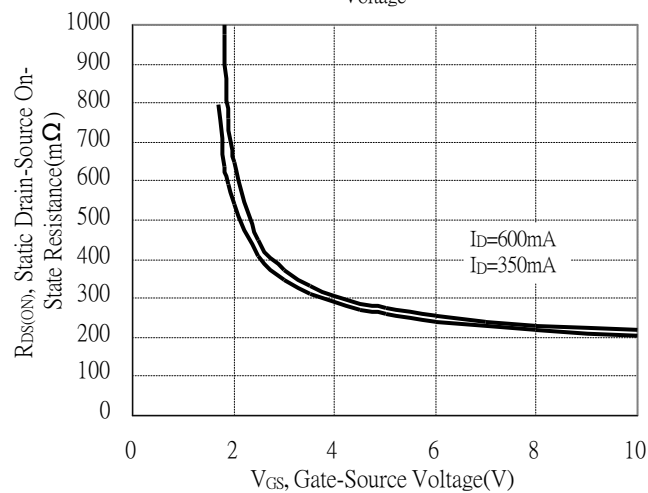
Static Drain-Source On-State resistance vs Drain Current



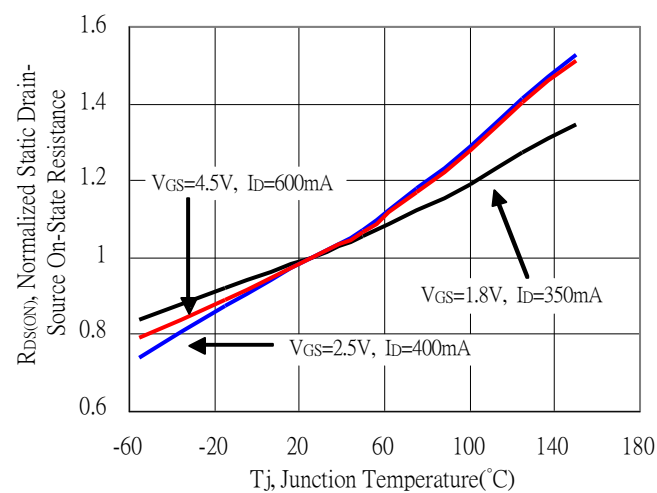
Reverse Drain Current vs Source-Drain Voltage



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

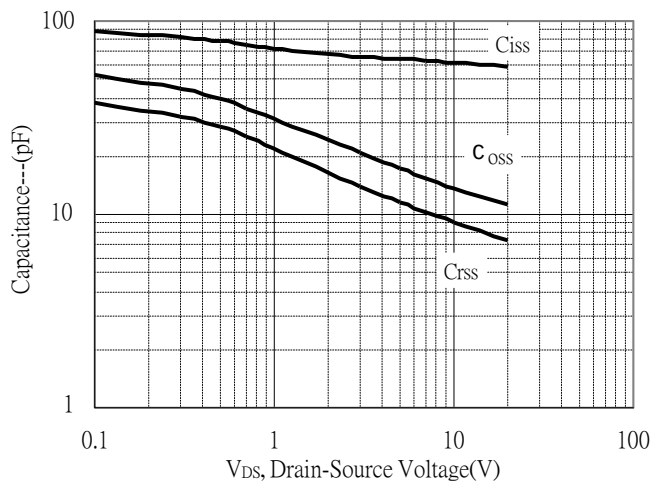


Drain-Source On-State Resistance vs Junction Temperature

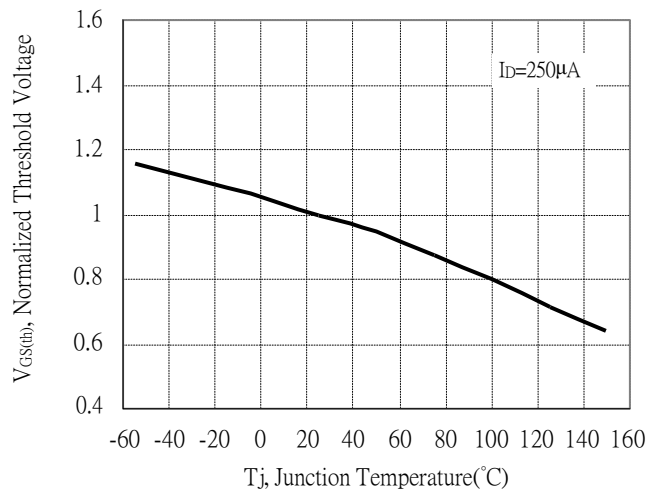


Typical Characteristics(Cont.)

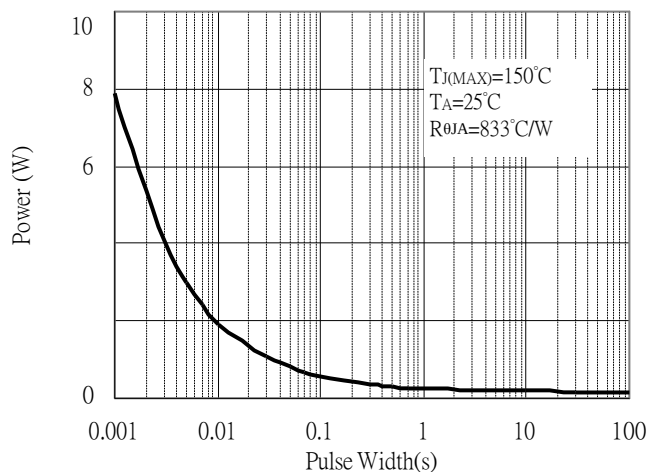
Capacitance vs Drain-to-Source Voltage



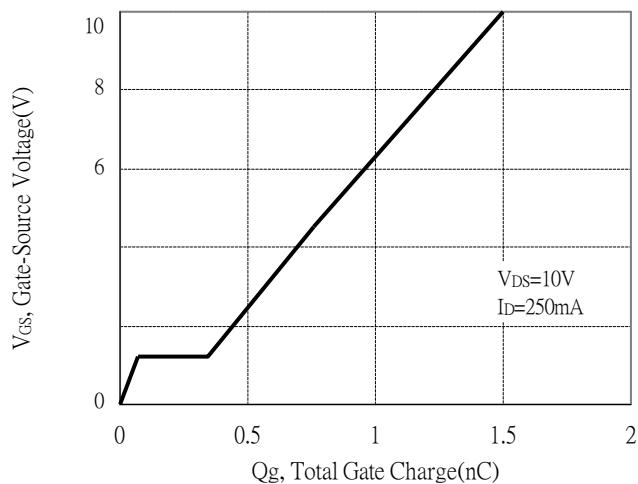
Threshold Voltage vs Junction Temperature



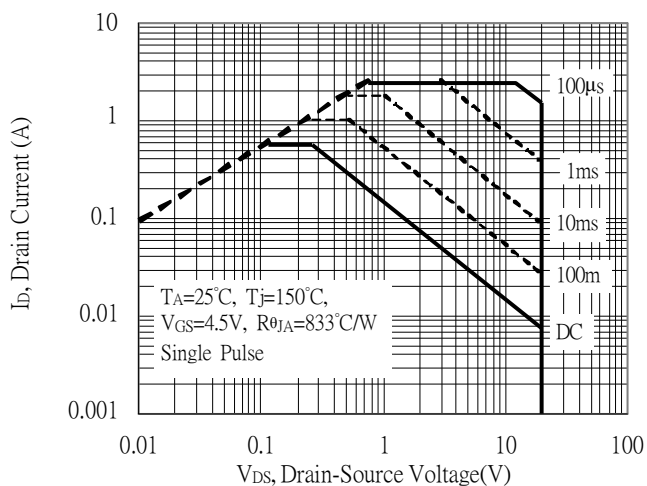
Single Pulse Power Rating, Junction to Ambient
(Note on page 2)



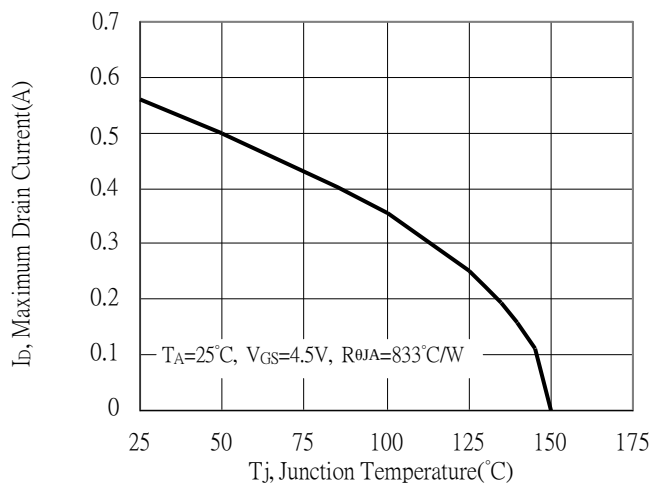
Gate Charge Characteristics



Maximum Safe Operating Area

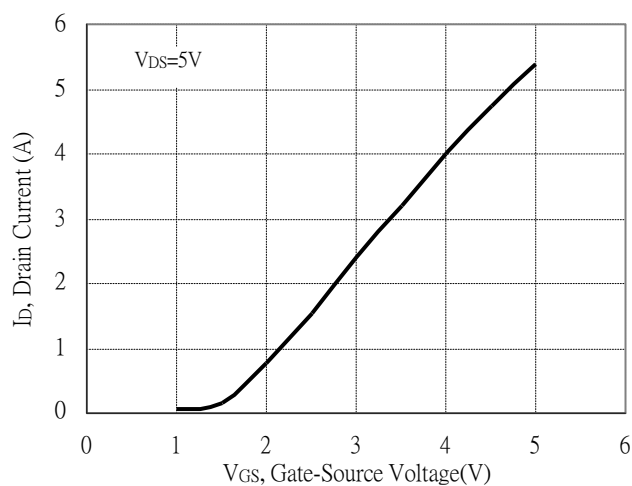


Maximum Drain Current vs Junction Temperature

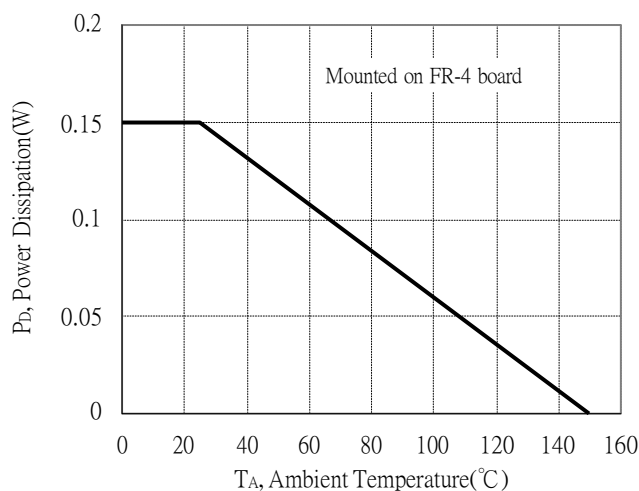


Typical Characteristics(Cont.)

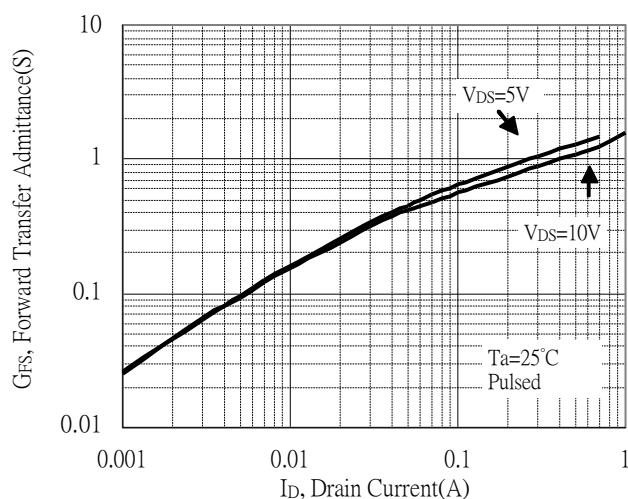
Typical Transfer Characteristics



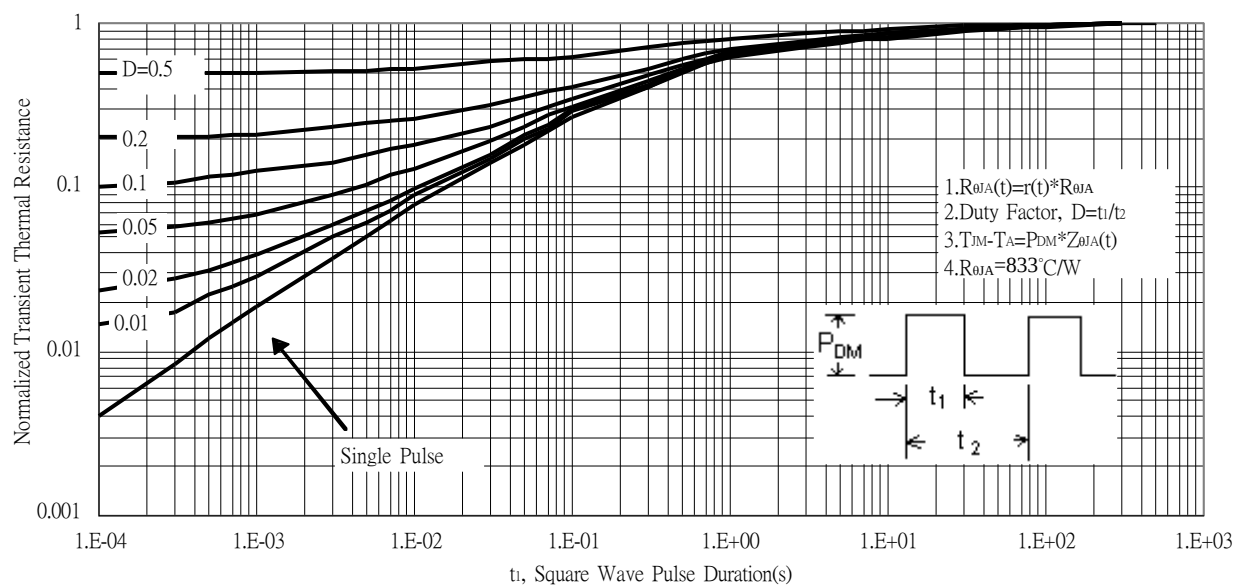
Power Derating Curve



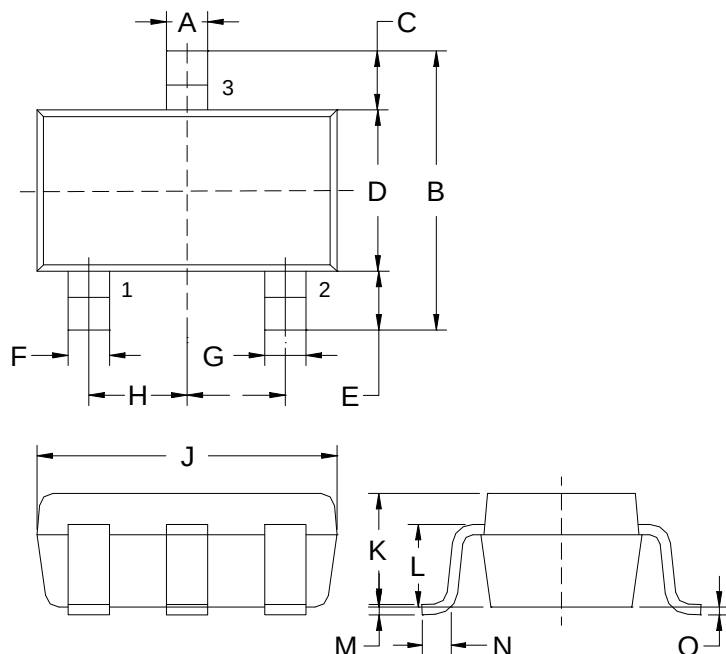
Forward Transfer Admittance vs Drain Current



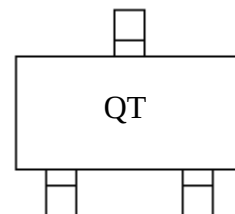
Transient Thermal Response Curves



SOT-523 Dimension



Marking:



3-Lead SOT-523 Plastic
 Surface Mounted Package
 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	-					