TXN 612.

SGS-THOMSON MICROELECTRONICS

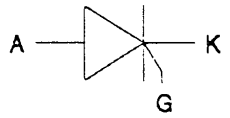
TXN/TYN 0512 ---> TXN/TYN 1012

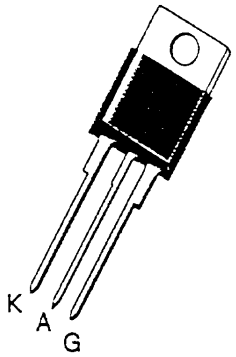
484-532

SCR

FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY
- TXN Serie :
  INSULATED VOLTAGE = 2500V(RMS)
  (UL RECOGNIZED : E81734)





TO 220 AB
(Plastic)

DESCRIPTION

The TYN/TXN 0512 ---> TYN/TXN 1012 Family of Silicon Controlled Rectifiers uses a high performance glass passivated technology.
This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up to 400Hz on resistive or inductive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	TXN TYN	Tc=80°C Tc=90°C	12	A
$I_{T(AV)}$	Average on-state current (180° conduction angle,single phase circuit)	TXN TYN	Tc=80°C Tc=90°C	8	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp=8.3 ms	125	A
			tp=10 ms	120	
I^2t	I^2t value		tp=10 ms	72	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 150 mA di_G/dt = 1 A/µs			100	A/µs
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	TYN/TXN							Unit
		0512	112	212	412	612	812	1012	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	50	100	200	400	600	800	1000	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	TXN	3.5	°C/W
		TYN	2.5	

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{FGM} = 4A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	15	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 125°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 90mA dI_G/dt = 0.8A/µs	Tj=25°C	TYP	2	µs
I_L	I_G= 1.2 I_{GT}	Tj=25°C	TYP	50	mA
I_H	I_T= 100mA gate open	Tj=25°C	MAX	30	mA
V_{TM}	ITM= 24A tp= 380µs	Tj=25°C	MAX	1.6	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.01	mA
		Tj= 125°C		3	
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	Tj= 125°C	MIN	200	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 24A V_R= 25V dI_{TM}/dt=30 A/µs dV_D/dt= 50V/µs	Tj= 125°C	TYP	70	µs

Fig.1 : Maximum average power dissipation versus average on-state current (TXN).

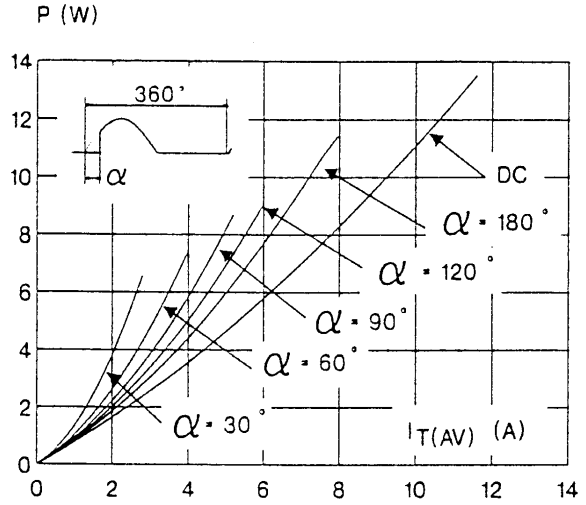


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (TXN).

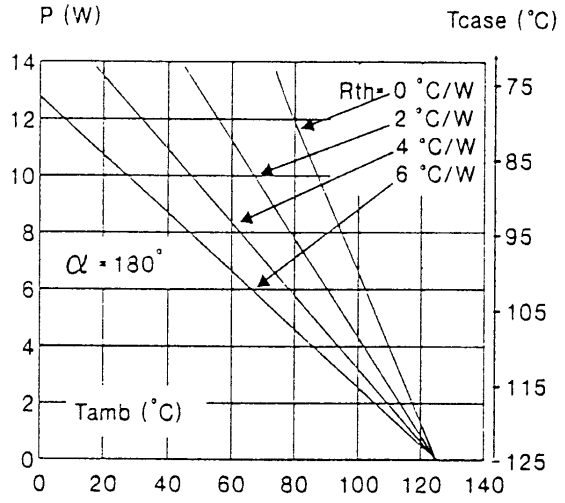


Fig.3 : Maximum average power dissipation versus average on-state current (TYN).

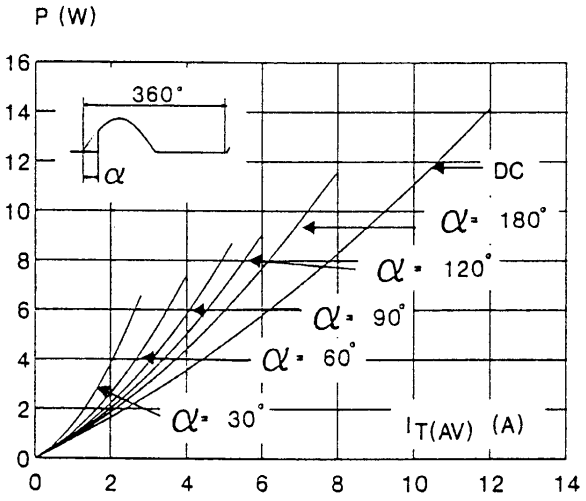


Fig.4 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (TYN).

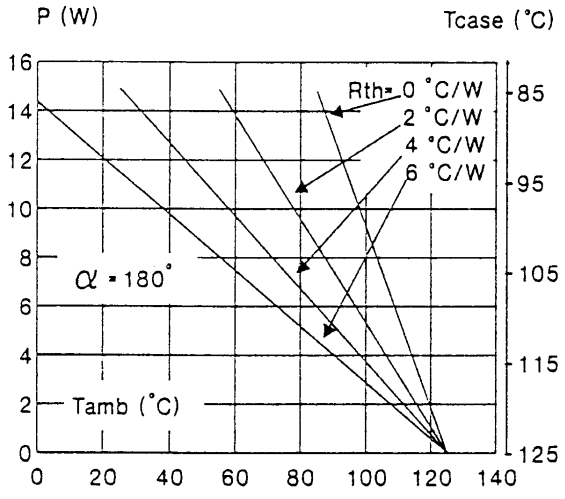


Fig.5 : Average on-state current versus case temperature (TXN).

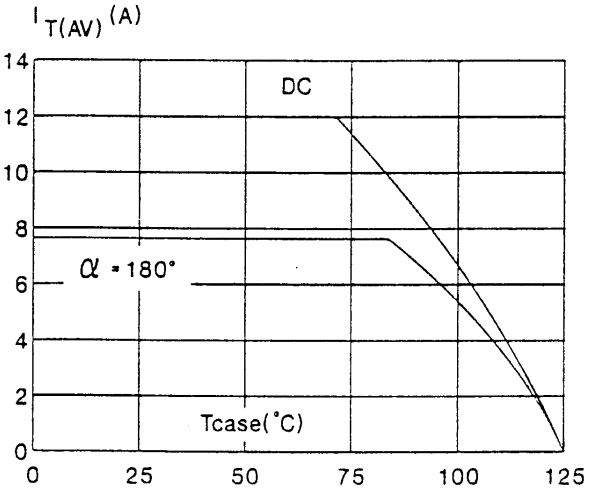


Fig.6 : Thermal transient impedance junction to ambient versus pulse duration (TXN).

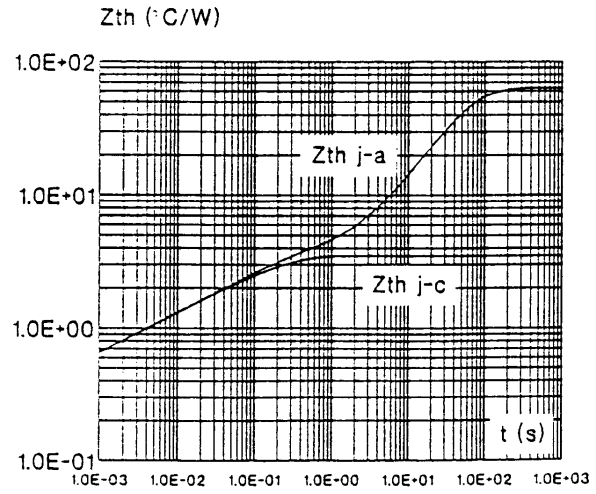


Fig.7 : Average on-state current versus case temperature (TYN).

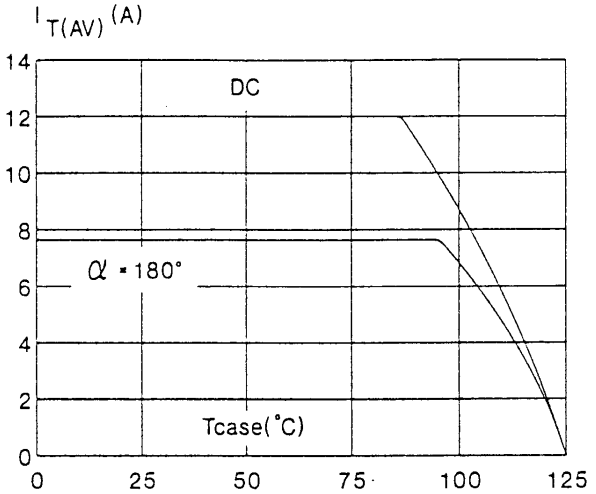


Fig.8 : Thermal transient impedance junction to ambient versus pulse duration (TYN).

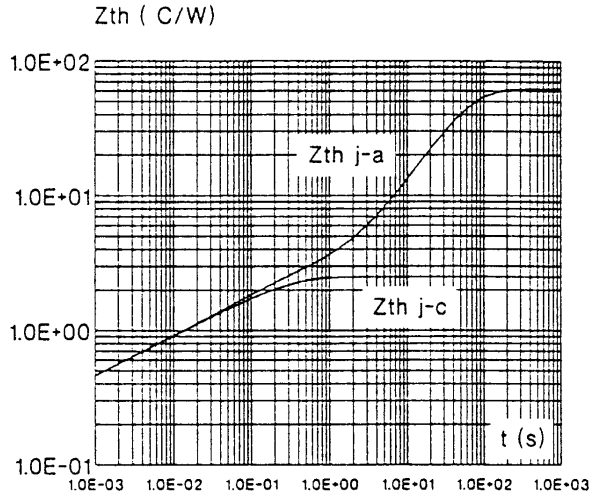


Fig.9 : Relative variation of gate trigger current versus junction temperature.

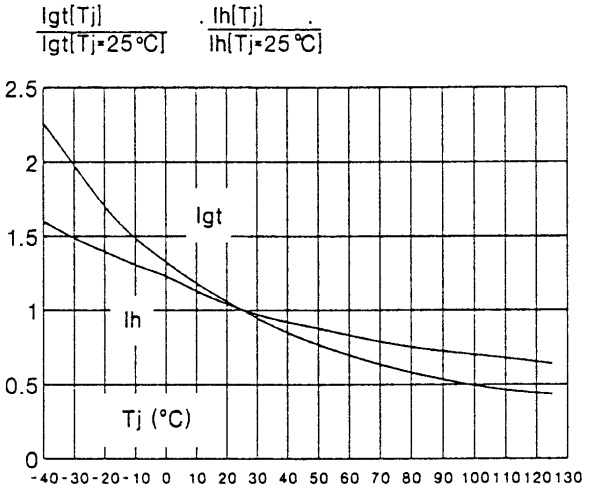


Fig.10 : Non repetitive surge peak on-state current versus number of cycles.

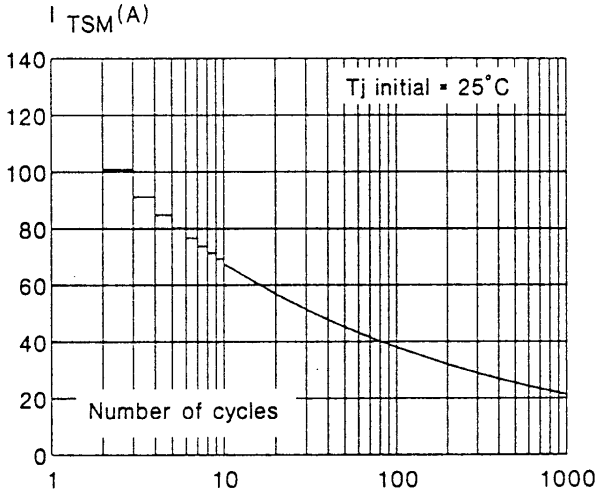


Fig.11 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

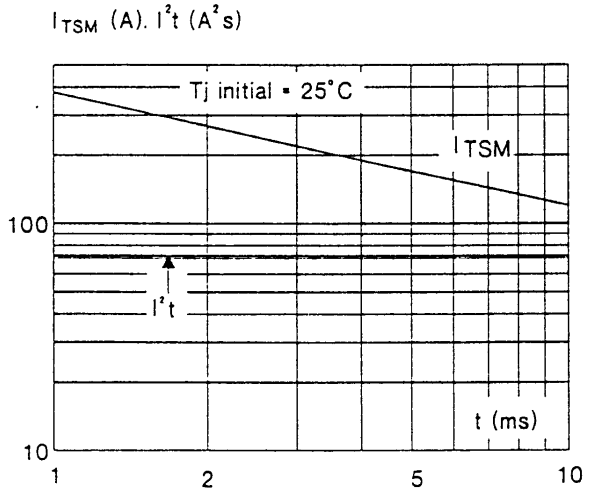
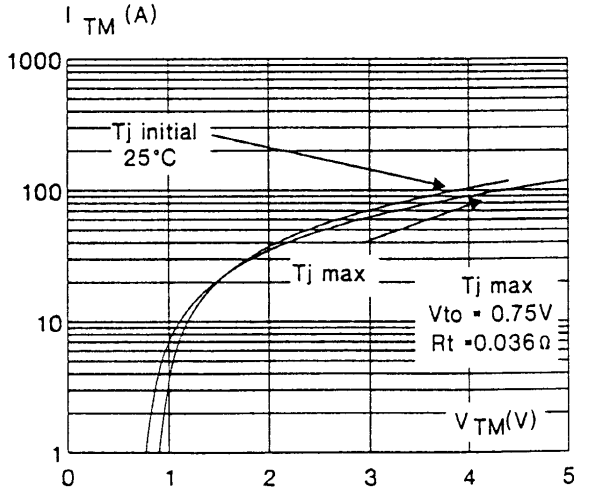
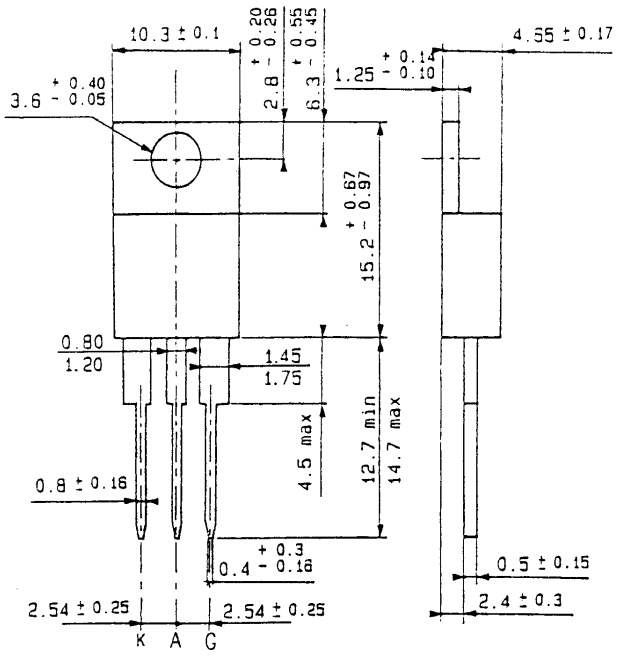


Fig12 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A
Stud torque : N A

SGS-THOMSON MICROELECTRONICS

PRODUCT CHANGE NOTIFICATION

PCN DSG/DA/9501

ASSEMBLY CAPACITY EXTENSION : Insulated Triacs (BTA & TXDV series)

WHY THIS CHANGE

The growing success of our TO220 SCR&Triacs leads us to increase our assembly capacity. All additionnal assembly modules will use a new TO220 package in order to rationalize with all TO220 from the company (Transistors ; Rectifiers ; V-Reg...)

The first step was to move all SCR on this new package (TYN, TYP and TXN devices). This transfer has been completed in October 1995.

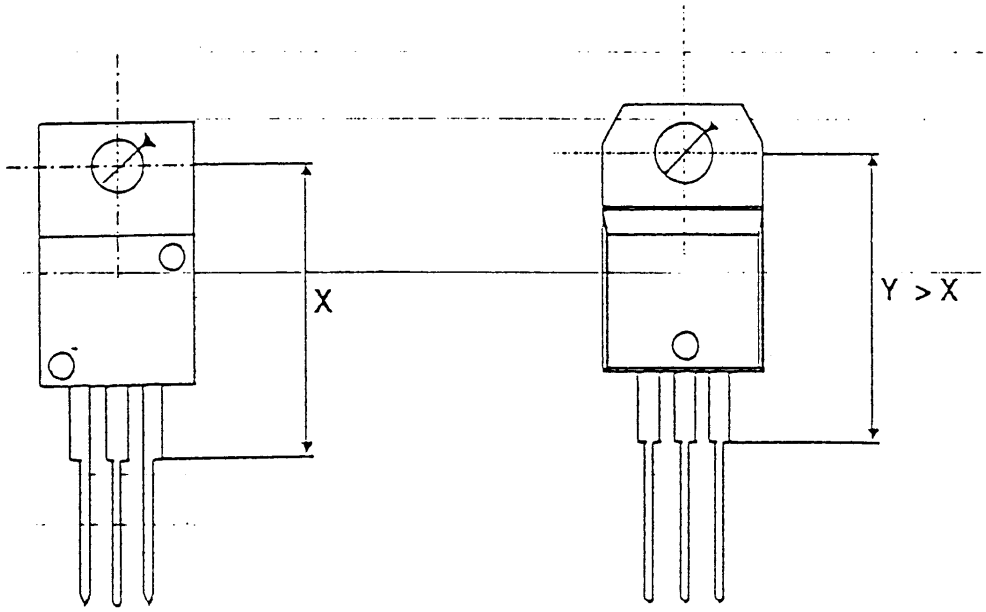
The second step will be to move insulated TO220 Triacs (i.e. BTA & TXDV series).

WHAT IS THE CHANGE

The change described in this PCN is only dealing with the package outlines. The main modification is the following :

Stand Off Dimension

Current *New*



The impact for the customer can be : Distance from the hole to the PC board is increased by 0.7mm typical measured value (0.027 Inch typ.).

Minor changes are : Packages outlines (see Drawing hereattached) and Marking (Laser instead of ink)

HOW

Qualification samples and qualification report are available on request.

WHEN

We will progressively switch BTA and TXDV series to this new package.

The schedule will be the following :

January 1st 1996	from 16Amps to 24Amps BTAs 12Amps TXDVs
August 1st 1996	12Amps BTAs & 10Amps Snubberless BTAs 8Amps TXDVs

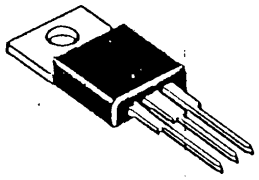
See Appendix 3 for the complete list of devices according to the above planning

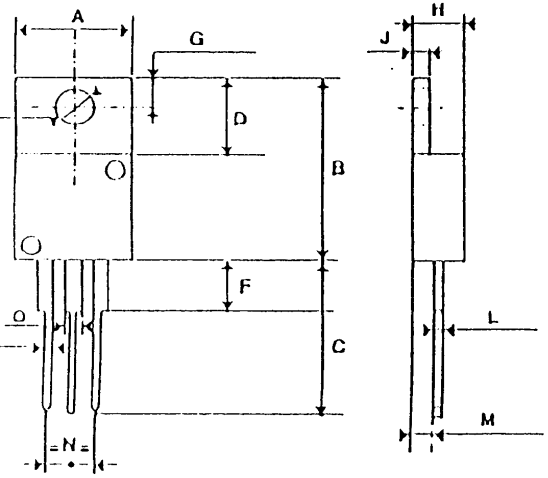
Remark :
The tracability will be done with a sticker mentionning "New Package" on each shipment box during the transition period (move from the current to the new package).

Appendix 2 : Package Outline Dimension

APPENDIX 2 : PACKAGE OUTLINE DIMENSION

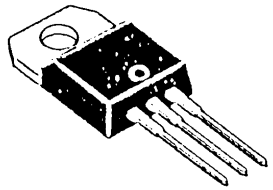
TO220AB OLD

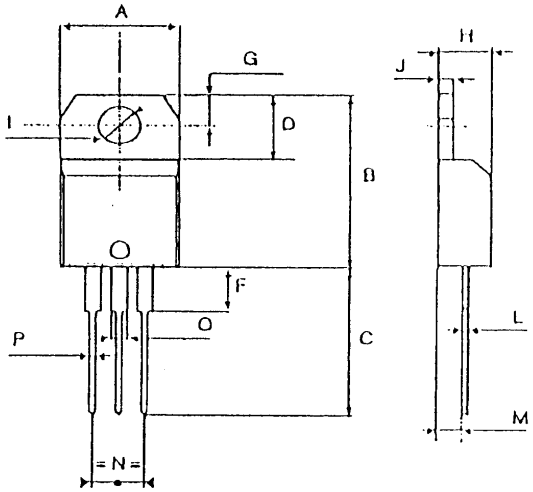




REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	10.20	10.50	0.401	0.413
B	14.23	15.87	0.560	0.625
C	12.70	14.70	0.500	0.579
D	5.85	6.85	0.230	0.270
F		4.50		0.178
G	2.54	3.00	0.100	0.119
H	4.48	4.82	0.176	0.190
I	3.55	4.00	0.140	0.158
J	1.15	1.39	0.045	0.055
L	0.35	0.65	0.013	0.026
M	2.10	2.70	0.082	0.107
N	4.58	5.58	0.18	0.22
O	0.80	1.20	0.031	0.048
P	0.64	0.96	0.025	0.038

TO220AB NEW





REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	10.00	10.40	0.393	0.409
B	15.20	15.90	0.598	0.625
C	13.00	14.00	0.511	0.551
D	6.20	6.60	0.244	0.259
F	3.50	4.20	0.137	0.165
G	2.65	2.95	0.104	0.116
H	4.40	4.60	0.173	0.181
I	3.75	3.85	0.147	0.151
J	1.23	1.32	0.048	0.051
L	0.49	0.70	0.019	0.027
M	2.40	2.72	0.094	0.107
N	4.80	5.40	0.188	0.212
O	1.14	1.70	0.044	0.066
P	0.61	0.88	0.024	0.034