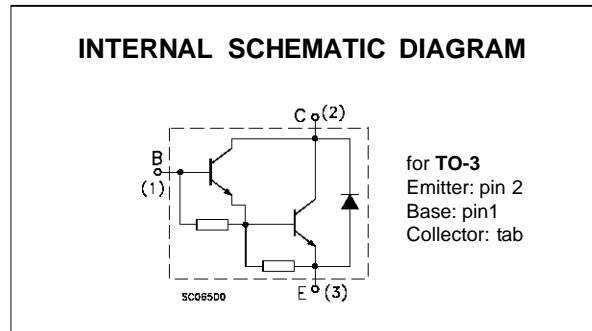
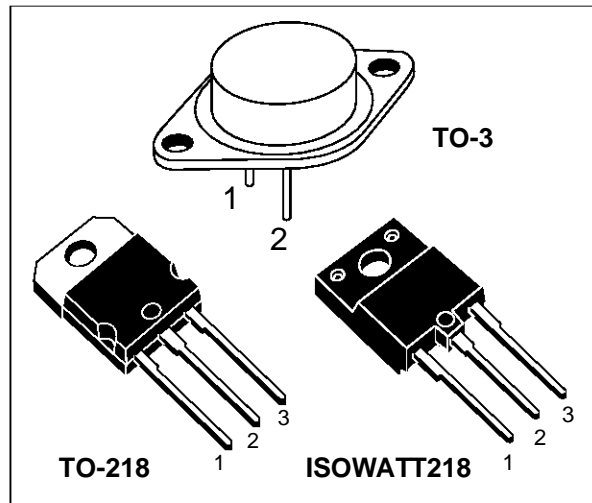


**HIGH VOLTAGE IGNITION COIL DRIVER**  
**NPN POWER DARLINGTON**

- SGS-THOMSON PREFERRED SALESTYPE
- NPN DARLINGTON
- INTEGRATED ANTIPARALLEL COLLECTOR-EMITTER DIODE
- VERY RUGGED BIPOLAR TECHNOLOGY
- HIGH OPERATING JUNCTION TEMPERATURE
- WIDE RANGE OF PACKAGES

**APPLICATIONS**

- HIGH RUGGEDNESS ELECTRONIC IGNITIONS



**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value			Unit
		BU941	BU941P	BUB941PFI	
$V_{CES}$	Collector-Emitter Voltage ( $V_{BE} = 0$ )	500			V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	400			V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	5			V
$I_C$	Collector Current	15			A
$I_{CM}$	Collector Peak Current	30			A
$I_B$	Base Current	1			A
$I_{BM}$	Base Peak Current	5			A
$P_{tot}$	Total Dissipation at $T_c = 25^\circ C$	180	155	65	W
$T_{stg}$	Storage Temperature	-65 to 200	-65 to 175	-65 to 175	$^\circ C$
$T_j$	Max. Operating Junction Temperature	200	175	175	$^\circ C$

**THERMAL DATA**

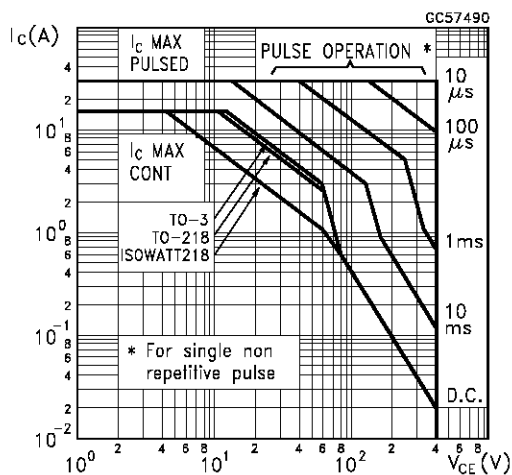
		<b>TO-3</b>	<b>TO-218</b>	<b>ISOWATT218</b>	
$R_{thj-case}$	Thermal Resistance Junction-case Max	0.97	0.97	2.3	$^{\circ}C/W$

**ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25^{\circ}C$  unless otherwise specified)

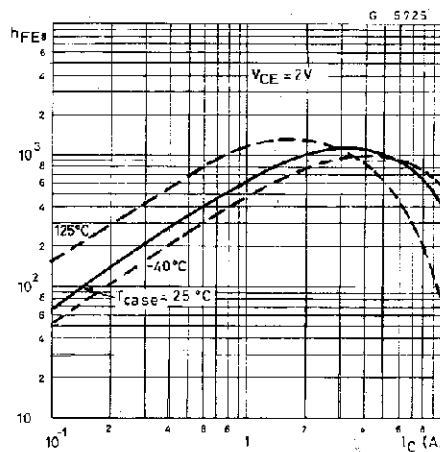
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CES}$	Collector Cut-off Current ( $V_{BE} = 0$ )	$V_{CE} = 500 V$ $V_{CE} = 500 V \quad T_j = 125^{\circ}C$			100 0.5	$\mu A$ mA
$I_{CEO}$	Collector Cut-off Current ( $I_B = 0$ )	$V_{CE} = 450 V$ $V_{CE} = 450 V \quad T_j = 125^{\circ}C$			100 0.5	$\mu A$ mA
$I_{EBO}$	Emitter Cut-off Current ( $I_C = 0$ )	$V_{EB} = 5 V$			20	mA
$V_{CEO(sus)}^*$	Collector-Emitter Sustaining Voltage	$I_C = 100 mA \quad L = 10 mH \quad I_B = 0$ $V_{CLAMP} = RATED V_{CEO}$ (See FIG.4)	400			V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 8 A \quad I_B = 100 mA$ $I_C = 10 A \quad I_B = 250 mA$ $I_C = 12 A \quad I_B = 300 mA$			1.6 1.8 2	V V V
$V_{BE(sat)}^*$	Base-Emitter Saturation Voltage	$I_C = 8 A \quad I_B = 100 mA$ $I_C = 10 A \quad I_B = 250 mA$ $I_C = 12 A \quad I_B = 300 mA$			2.2 2.5 2.7	V V V
$h_{FE}^*$	DC Current Gain	$I_C = 5 A \quad V_{CE} = 10 V$	300			
$V_F$	Diode Forward Voltage	$I_F = 10 A$			2.5	V
	Functional Test (see fig. 1)	$V_{CC} = 24 V \quad V_{clamp} = 400 V \quad L = 7 mH$	10			A
$t_s$	INDUCTIVE LOAD Storage Time	$V_{CC} = 12 V \quad V_{clamp} = 300 V \quad L = 7 mH$ $I_C = 7 A \quad I_B = 70 mA$		15		$\mu s$
$t_f$	Fall Time (see fig. 3)	$V_{BE} = 0 \quad R_{BE} = 47 \Omega$		0.5		$\mu s$

\* Pulsed: Pulse duration = 300  $\mu s$ , duty cycle 1.5 %

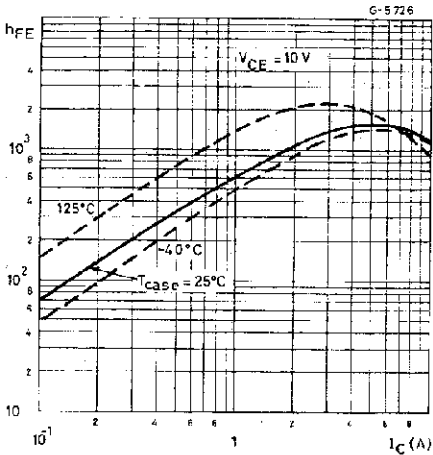
**Safe Operating Area**



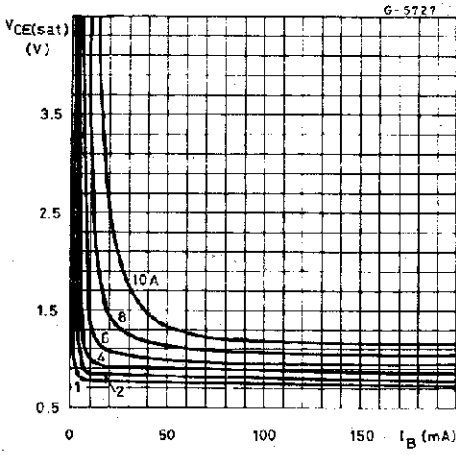
**DC Current Gain**



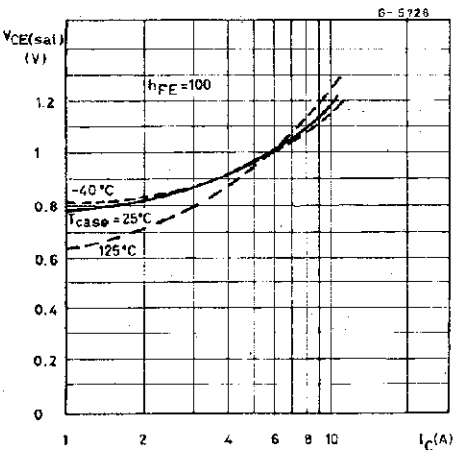
DC Current Gain



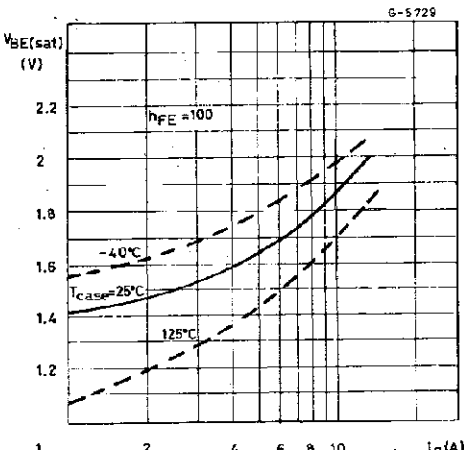
Collector-emitter Saturation Voltage



Collector-emitter Saturation Voltage



Base-emitter Saturation Voltage



Switching Time Inductive Load (see fig.3)

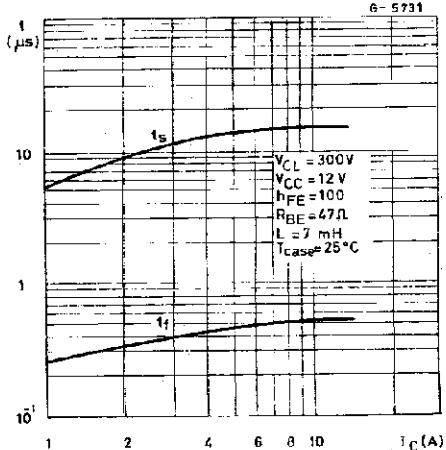


FIGURE 1: Functional Test Circuit

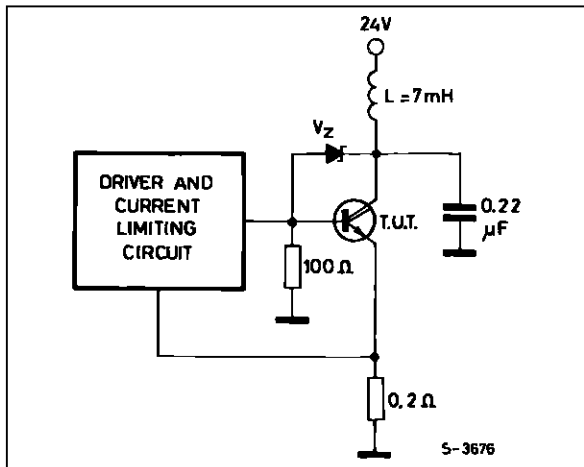


FIGURE 2: Functional Test Waveforms

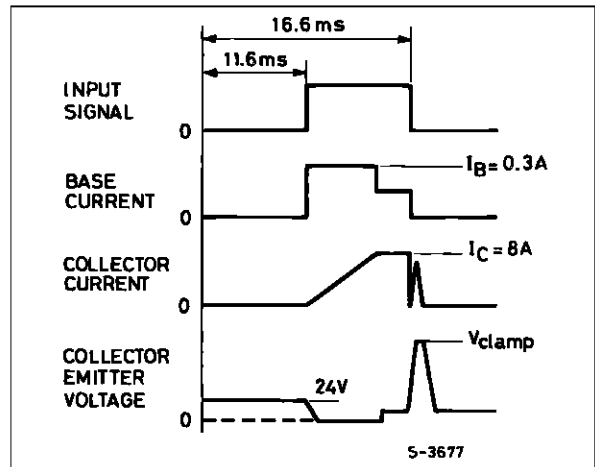


FIGURE 3: Switching Time Test Circuit

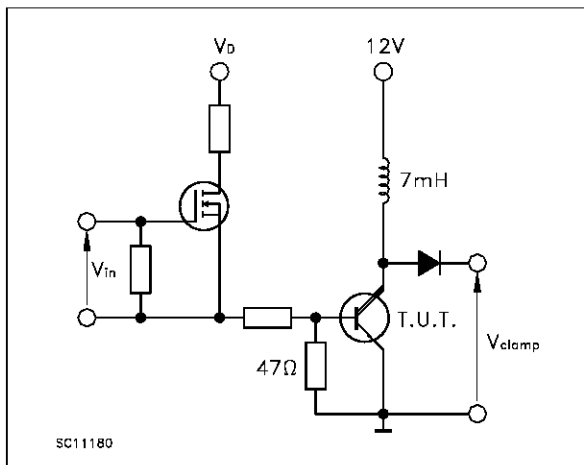
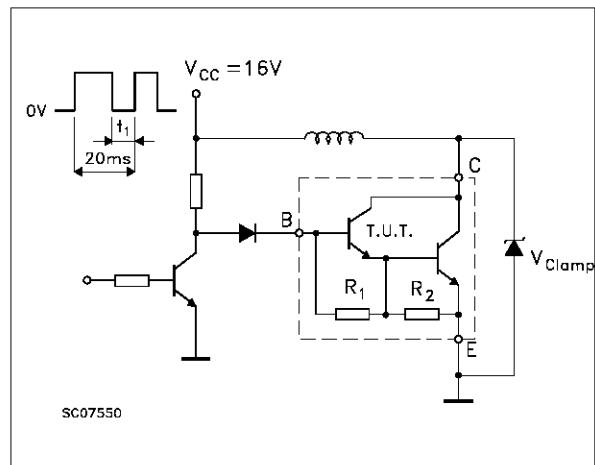
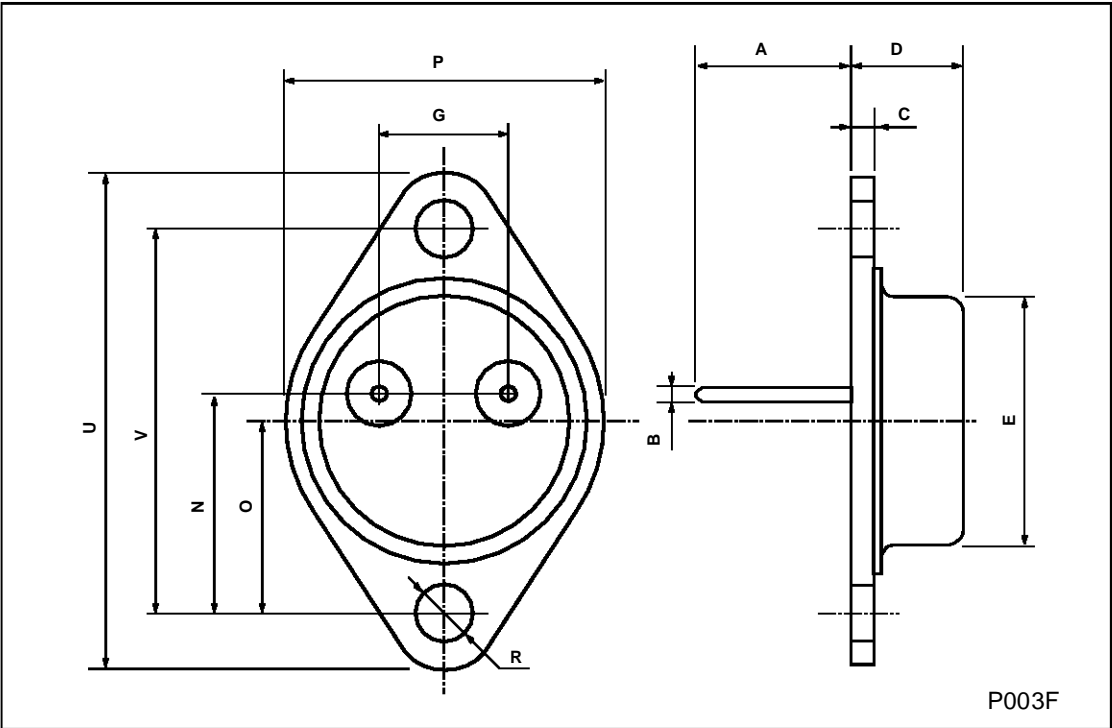


FIGURE 4: Sustaining Voltage Test Circuit



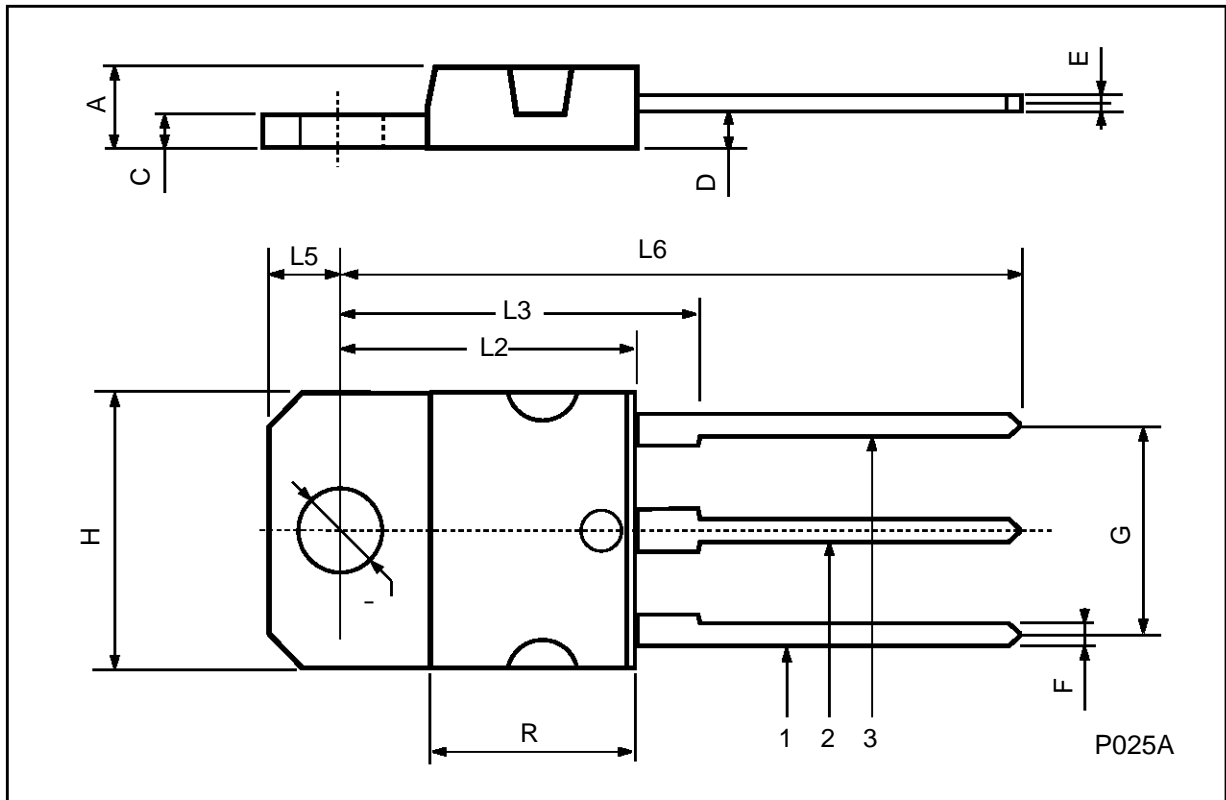
**TO-3 MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	11.00		13.10	0.433		0.516
B	0.97		1.15	0.038		0.045
C	1.50		1.65	0.059		0.065
D	8.32		8.92	0.327		0.351
E	19.00		20.00	0.748		0.787
G	10.70		11.10	0.421		0.437
N	16.50		17.20	0.649		0.677
P	25.00		26.00	0.984		1.023
R	4.00		4.09	0.157		0.161
U	38.50		39.30	1.515		1.547
V	30.00		30.30	1.187		1.193



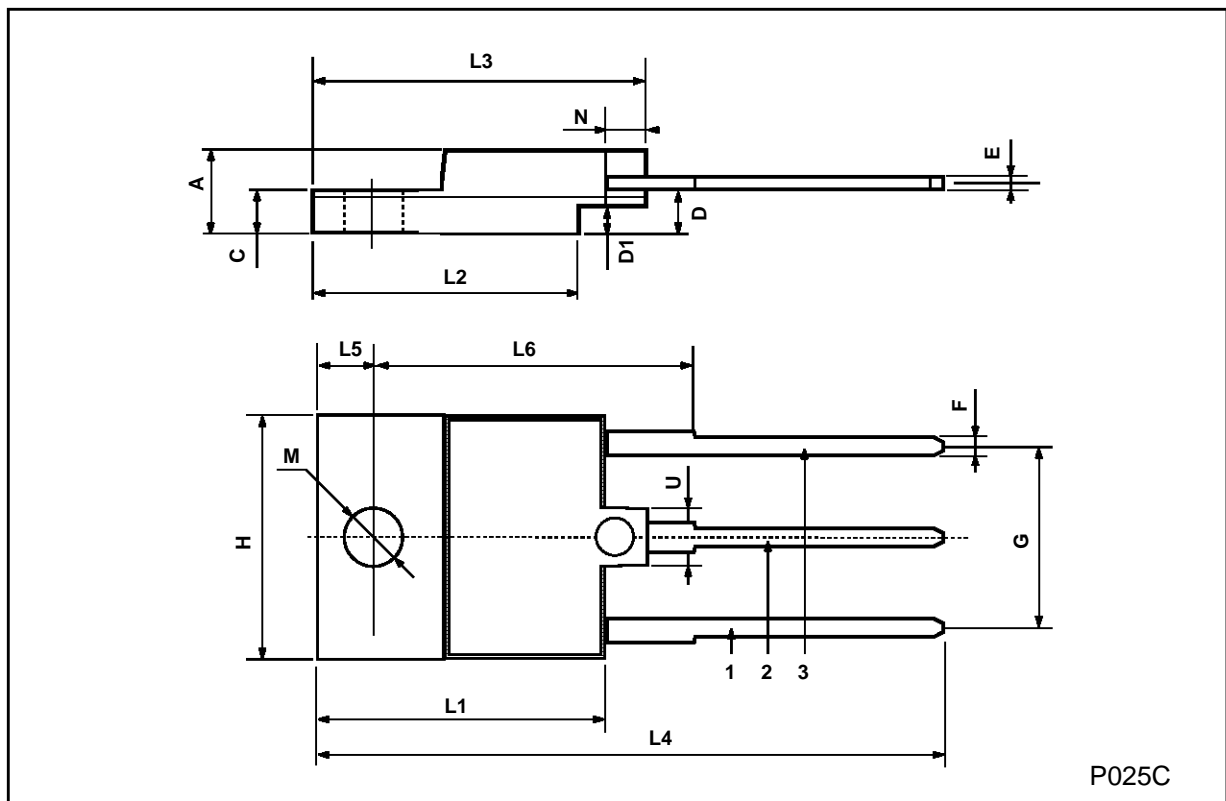
**TO-218 (SOT-93) MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.7		4.9	0.185		0.193
C	1.17		1.37	0.046		0.054
D		2.5			0.098	
E	0.5		0.78	0.019		0.030
F	1.1		1.3	0.043		0.051
G	10.8		11.1	0.425		0.437
H	14.7		15.2	0.578		0.598
L2	-		16.2	-		0.637
L3		18			0.708	
L5	3.95		4.15	0.155		0.163
L6		31			1.220	
R	-		12.2	-		0.480
Ø	4		4.1	0.157		0.161



**ISOWATT218 MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	5.35		5.65	0.210		0.222
C	3.3		3.8	0.130		0.149
D	2.9		3.1	0.114		0.122
D1	1.88		2.08	0.074		0.081
E	0.75		1	0.029		0.039
F	1.05		1.25	0.041		0.049
G	10.8		11.2	0.425		0.441
H	15.8		16.2	0.622		0.637
L1	20.8		21.2	0.818		0.834
L2	19.1		19.9	0.752		0.783
L3	22.8		23.6	0.897		0.929
L4	40.5		42.5	1.594		1.673
L5	4.85		5.25	0.190		0.206
L6	20.25		20.75	0.797		0.817
M	3.5		3.7	0.137		0.145
N	2.1		2.3	0.082		0.090
U		4.6			0.181	



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