

BTA/BTB08 and T8 Series

ELECTRICAL CHARACTERISTICS (T_j = 25°C, unless otherwise specified)

■ SNUBBERLESS™ and LOGIC LEVEL (3 Quadrants)

Symbol	Test Conditions	Quadrant		T8		BTA/BTB08				Unit
				T810	T835	TW	SW	CW	BW	
I _{GT} (1)	V _D = 12 V R _L = 30 Ω	I - II - III	MAX.	10	35	5	10	35	50	mA
V _{GT}		I - II - III	MAX.	1.3						V
V _{GD}	V _D = V _{DRM} R _L = 3.3 kΩ T _j = 125°C	I - II - III	MIN.	0.2						V
I _H (2)	I _T = 100 mA	I - III	MAX.	15	35	10	15	35	50	mA
I _L	I _G = 1.2 I _{GT}		MAX.	25	50	10	25	50	70	mA
		II		30	60	15	30	60	80	
dV/dt (2)	V _D = 67 %V _{DRM} gate open T _j = 125°C		MIN.	40	400	20	40	400	1000	V/μs
(dI/dt) _c (2)	(dV/dt) _c = 0.1 V/μs T _j = 125°C		MIN.	5.4	-	3.5	5.4	-	-	A/ms
	(dV/dt) _c = 10 V/μs T _j = 125°C			2.8	-	1.5	2.8	-	-	
	Without snubber T _j = 125°C			-	4.5	-	-	4.5	7	

■ STANDARD (4 Quadrants)

Symbol	Test Conditions	Quadrant		BTA/BTB08		Unit
				C	B	
I _{GT} (1)	V _D = 12 V R _L = 30 Ω	I - II - III IV	MAX.	25 50	50 100	mA
V _{GT}		ALL	MAX.	1.3		V
V _{GD}	V _D = V _{DRM} R _L = 3.3 kΩ T _j = 125°C	ALL	MIN.	0.2		V
I _H (2)	I _T = 500 mA		MAX.	25	50	mA
I _L	I _G = 1.2 I _{GT}	I - III - IV	MAX.	40	50	mA
		II		80	100	
dV/dt (2)	V _D = 67 %V _{DRM} gate open T _j = 125°C		MIN.	200	400	V/μs
(dV/dt) _c (2)	(dI/dt) _c = 3.5 A/ms T _j = 125°C		MIN.	5	10	V/μs

STATIC CHARACTERISTICS

Symbol	Test Conditions		Value	Unit	
V _{TM} (2)	I _{TM} = 11 A tp = 380 μs	T _j = 25°C	MAX.	1.55	V
V _{to} (2)	Threshold voltage	T _j = 125°C	MAX.	0.85	V
R _d (2)	Dynamic resistance	T _j = 125°C	MAX.	50	mΩ
I _{DRM}	V _{DRM} = V _{RDM}	T _j = 25°C	MAX.	5	μA
I _{RDM}		T _j = 125°C		1	mA

Note 1: minimum IGT is guaranteed at 5% of IGT max.

Note 2: for both polarities of A2 referenced to A1

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit	
R _{th(j-c)}	Junction to case (AC)		DPAK / D PAK IPAK / TO-220AB	1.6	°C/W
			TO-220AB Insulated	2.5	
R _{th(j-a)}	Junction to ambient	S = 1 cm	D PAK	45	°C/W
		S = 0.5 cm	DPAK	70	
			TO-220AB TO-220AB Insulated	60	
			IPAK	100	

S = Copper surface under tab

PRODUCT SELECTOR

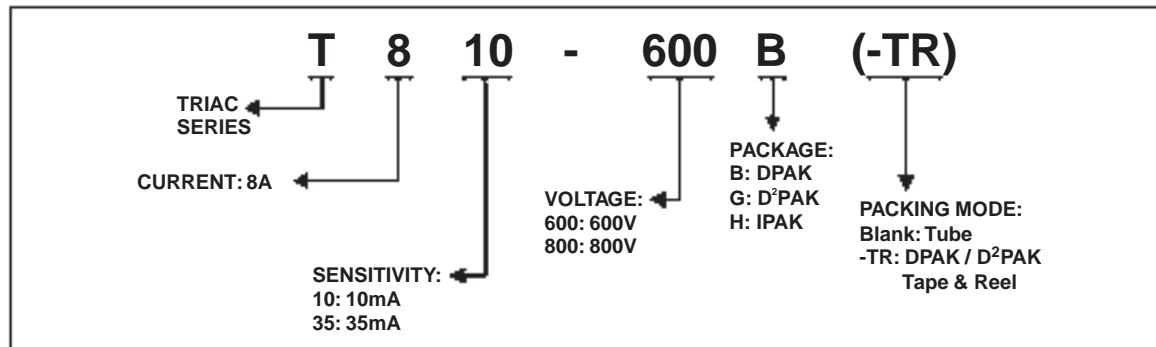
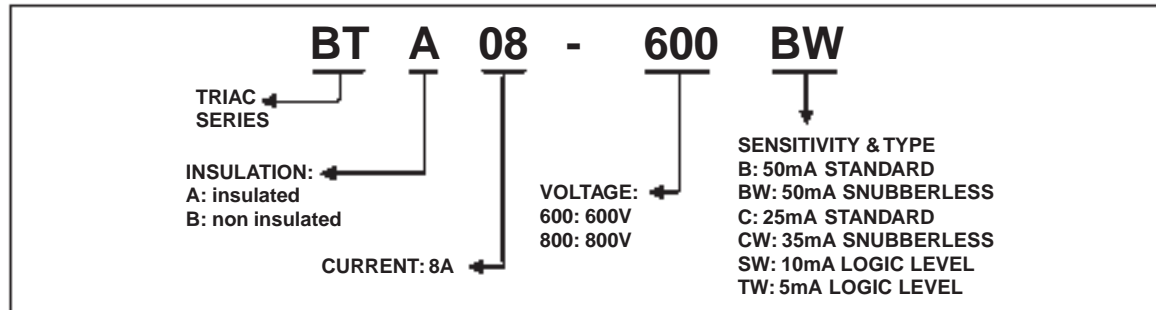
Part Number	Voltage (xxx)		Sensitivity	Type	Package
	600 V	800 V			
BTA/BTB08-xxxB	X	X	50 mA	Standard	TO-220AB
BTA/BTB108-xxxBW	X	X	50 mA	Snubberless	TO-220AB
BTA/BTB08-xxxC	X	X	25 mA	Standard	TO-220AB
BTA/BTB08-xxxCW	X	X	35 mA	Snubberless	TO-220AB
BTA/BTB08-xxxSW	X	X	10 mA	Logic level	TO-220AB
BTA/BTB08-xxxTW	X	X	5 mA	Logic level	TO-220AB
T810-xxxB	X	X	10 mA	Logic level	DPAK
T810-xxxH	X	X	10 mA	Logic level	IPAK
T835-xxxB	X	X	35mA	Snubberless	DPAK
T835-xxxG	X	X	35 mA	Snubberless	D PAK
T835-xxxH	X	X	35 mA	Snubberless	IPAK

BTB: non insulated TO-220AB package



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ORDERING INFORMATION



OTHER INFORMATION

Part Number	Marking	Weight	Base quantity	Packing mode
BTA/BTB08-xxxxyz	BTA/BTB08xxxxyz	2.3 g	250	Bulk
T8yy-xxxB	T8yyxxx	0.3 g	75	Tube
T8yy-xxxB-TR	T8yyxxx	0.3 g	2500	Tape & reel
T8yy-xxxH	T8yyxxx	0.4 g	75	Tube
T8yy-xxxG	T8yyxxx	1.5 g	50	Tube
T8yy-xxxG-TR	T8yyxxx	1.5 g	1000	Tape & reel

Note: xxx = voltage, yy = sensitivity, z = type

Fig. 1: Maximum power dissipation versus RMS on-state current (full cycle).

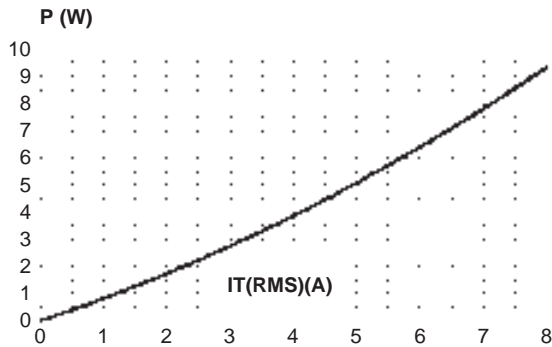


Fig. 2-1: RMS on-state current versus case temperature (full cycle).

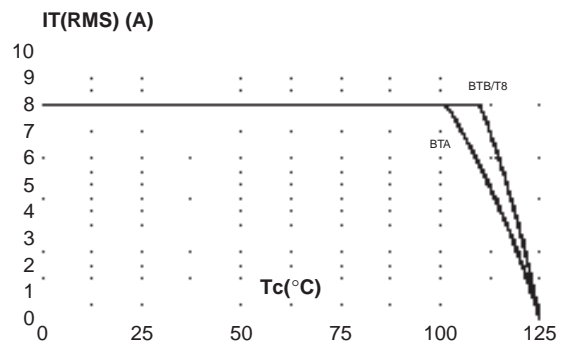


Fig. 2-2: RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness: 35µm), full cycle.

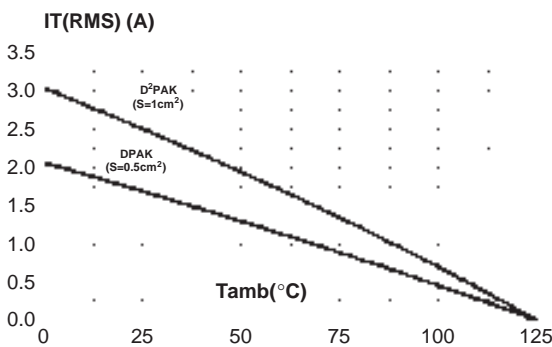


Fig. 3: Relative variation of thermal impedance versus pulse duration.

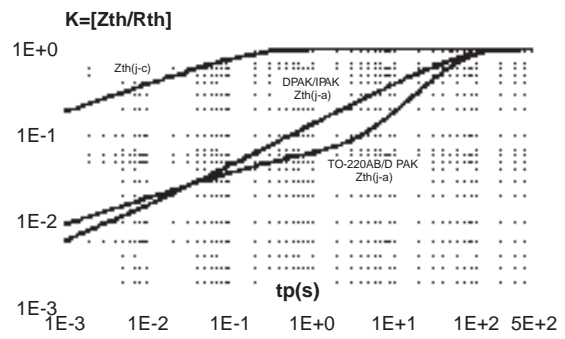


Fig. 4: On-state characteristics (maximum values).

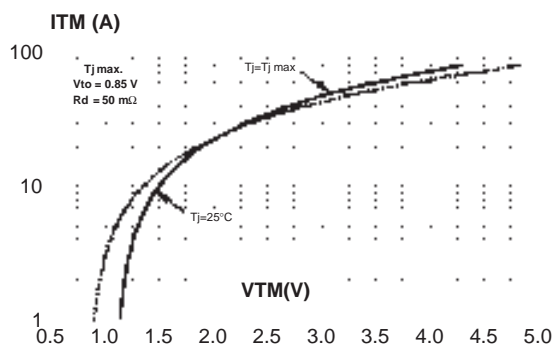


Fig. 5: Surge peak on-state current versus number of cycles.

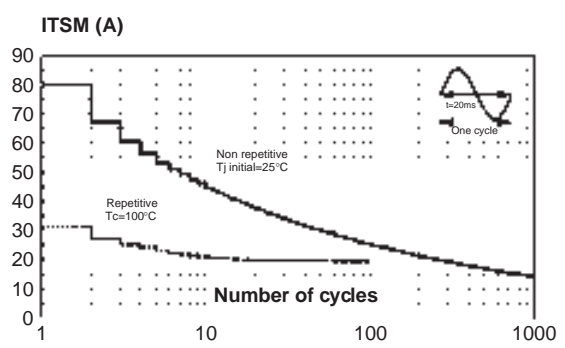


Fig. 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I_t .

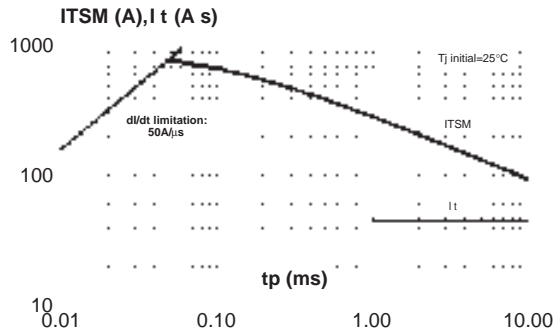


Fig. 7: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

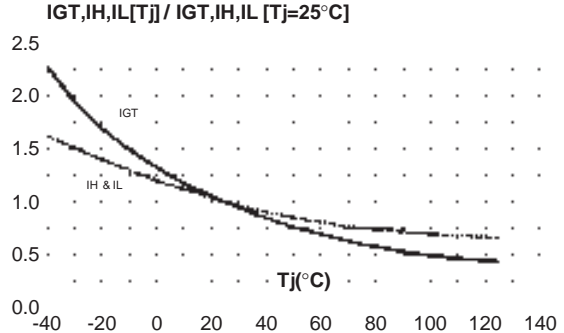


Fig. 8-1: Relative variation of critical rate of decrease of main current versus $(dV/dt)_c$ (typical values). Snubberless & Logic Level Types

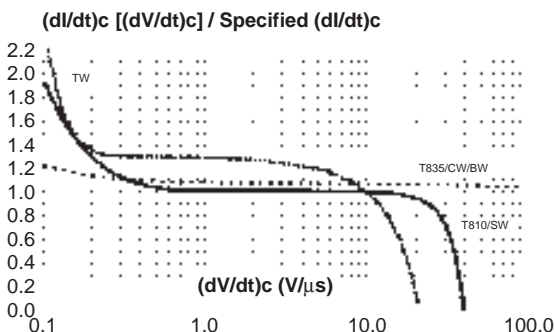


Fig. 8-2: Relative variation of critical rate of decrease of main current versus $(dV/dt)_c$ (typical values). Standard Types

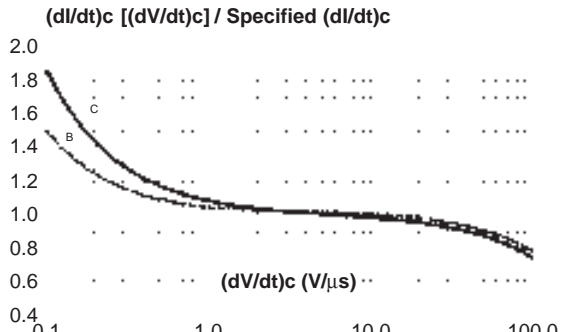


Fig. 9: Relative variation of critical rate of decrease of main current versus junction temperature.

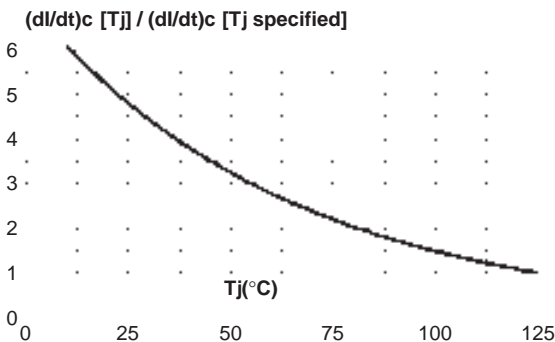
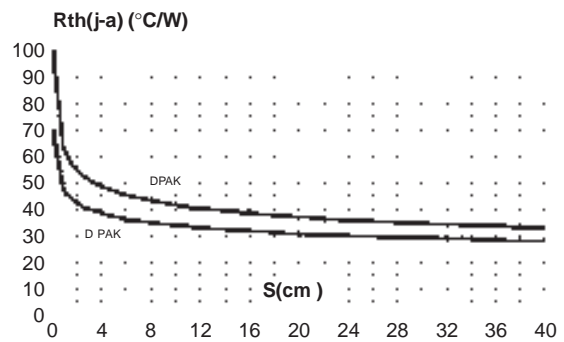
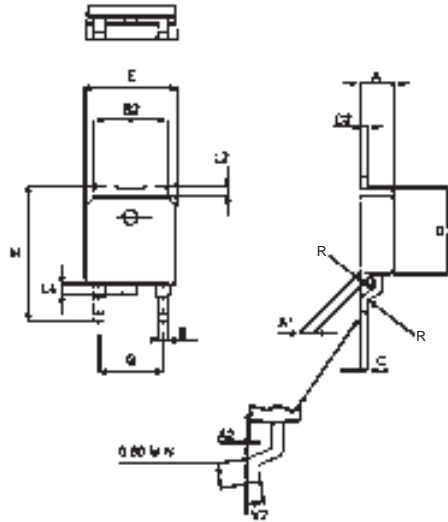


Fig. 10: DPAK and D²PAK Thermal resistance junction to ambient versus copper surface under tab (printed circuit board FR4, copper thickness: 35 μm).



PACKAGE MECHANICAL DATA

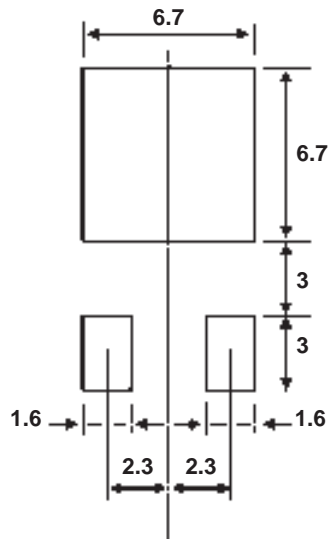
DPAK (Plastic)



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.40	0.086	0.094
A1	0.90	1.10	0.035	0.043
A2	0.03	0.23	0.001	0.009
B	0.64	0.90	0.025	0.035
B2	5.20	5.40	0.204	0.212
C	0.45	0.60	0.017	0.023
C2	0.48	0.60	0.018	0.023
D	6.00	6.20	0.236	0.244
E	6.40	6.60	0.251	0.259
G	4.40	4.60	0.173	0.181
H	9.35	10.10	0.368	0.397
L2	0.80 typ.		0.031 typ.	
L4	0.60	1.00	0.023	0.039
R	0.2 typ.		0.007 typ.	
V2	0°	8°	0°	8°

FOOTPRINT DIMENSIONS (in millimeters)

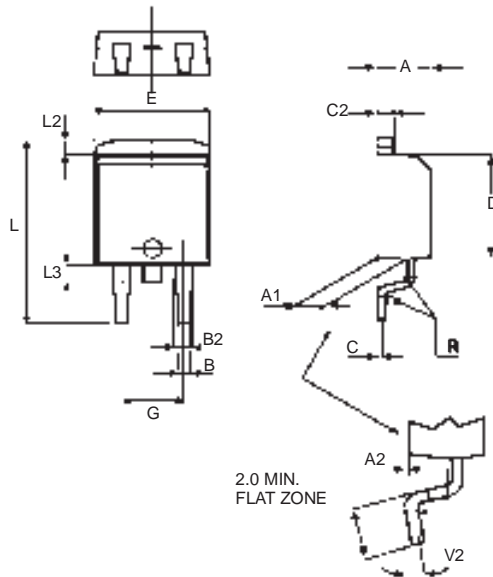
DPAK (Plastic)



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PACKAGE MECHANICAL DATA

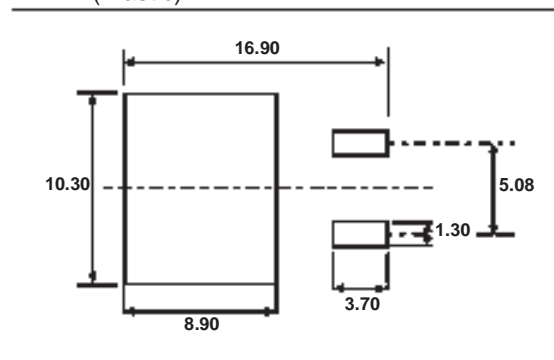
D PAK (Plastic)



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.30		4.60	0.169		0.181
A1	2.49		2.69	0.098		0.106
A2	0.03		0.23	0.001		0.009
B	0.70		0.93	0.027		0.037
B2	1.25	1.40		0.048	0.055	
C	0.45		0.60	0.017		0.024
C2	1.21		1.36	0.047		0.054
D	8.95		9.35	0.352		0.368
E	10.00		10.28	0.393		0.405
G	4.88		5.28	0.192		0.208
L	15.00		15.85	0.590		0.624
L2	1.27		1.40	0.050		0.055
L3	1.40		1.75	0.055		0.069
R		0.40			0.016	
V2	0°		8°	0°		8°

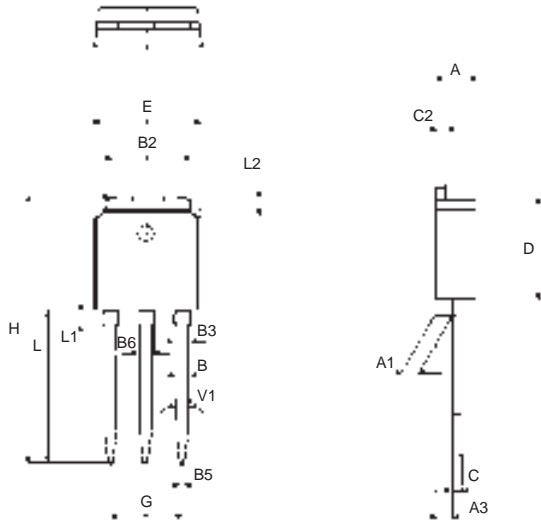
FOOTPRINT DIMENSIONS (in millimeters)

D PAK (Plastic)



PACKAGE MECHANICAL DATA

IPAK (Plastic)

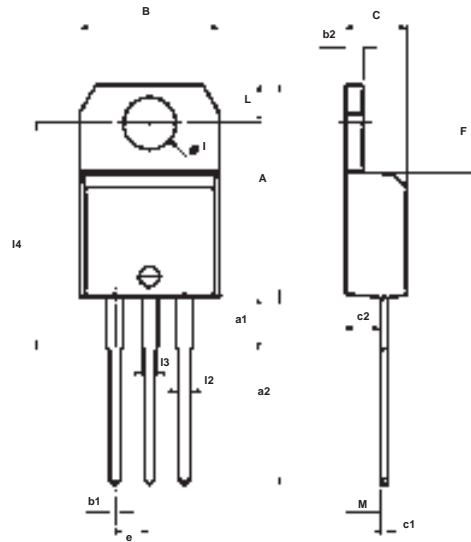


REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.2		2.4	0.086		0.094
A1	0.9		1.1	0.035		0.043
A3	0.7		1.3	0.027		0.051
B	0.64		0.9	0.025		0.035
B2	5.2		5.4	0.204		0.212
B3			0.85			0.033
B5		0.3			0.035	
B6			0.95			0.037
C	0.45		0.6	0.017		0.023
C2	0.48		0.6	0.019		0.023
D	6		6.2	0.236		0.244
E	6.4		6.6	0.252		0.260
G	4.4		4.6	0.173		0.181
H	15.9		16.3	0.626		0.641
L	9		9.4	0.354		0.370
L1	0.8		1.2	0.031		0.047
L2		0.8	1		0.031	0.039
V1		10°			10°	

BTA/BTB08 and T8 Series

PACKAGE MECHANICAL DATA

TO-220AB Ins.



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.20		15.90	0.598		0.625
a1		3.75			0.147	
a2	13.00		14.00	0.511		0.551
B	10.00		10.40	0.393		0.409
b1	0.61		0.88	0.024		0.034
b2	1.23		1.32	0.048		0.051
C	4.40		4.60	0.173		0.181
c1	0.49		0.70	0.019		0.027
c2	2.40		2.72	0.094		0.107
e	2.40		2.70	0.094		0.106
F	6.20		6.60	0.244		0.259
I	3.75		3.85	0.147		0.151
I4	15.80	16.40	16.80	0.622	0.646	0.661
L	2.65		2.95	0.104		0.116
I2	1.14		1.70	0.044		0.066
I3	1.14		1.70	0.044		0.066
M		2.60			0.102	

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