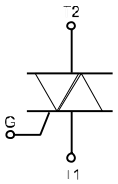
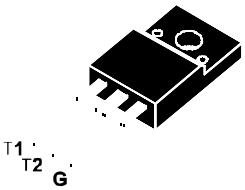




ITO- 220AB

MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	4	A
V_{DRM}/V_{RRM}	600 & 800	V
$I_{GT(Q1)}$	10 to 50	mA

Description **16A TRIACs**

Passivated, new generation, high Commutation triacs in a ITO-220AB isolated full pack plastic package

- Very high commutation performance Maximized at each gate sensitivity
- High isolation voltage
- High immunity to dV/dt
- Wide range of gate sensitivities

I_{GT} ≦50mA (BTA316X series B)

I_{GT} ≦35mA (BTA316X series C)

I_{GT} ≦10mA (BTA316X series E)

Absolute Maximum Rating

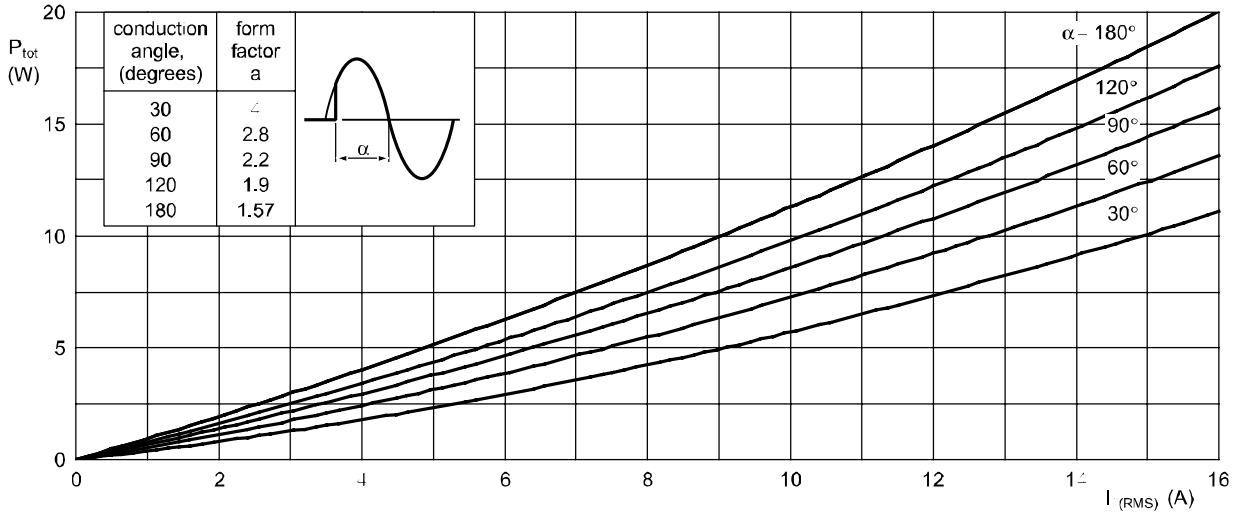
Symbol	Parameter	Conditions	Value	Unit
V_{DRM}	repetitive peak off-state voltage	BTA316X-600	600	V
		BTA316X-800	800	
I_{TSM}	non-repetitive peak on-state current	full sine wave; Tj(init) = 25 °C; tp = 20 ms; (see Fig.2,Fig.3)	140	A
		full sine wave; $T_{j(init)}$ = 25 °C; t_p = 16.7 ms; (see Fig.2,Fig.3)	150	
$I_{T(RMS)}$	RMS on-state current	full sine wave; Tmb ≤ 45 °C (see Fig.4, Fig.5)	16	A
I^2t	I^2t for fusing	t_p = 10 ms; sine-wave pulse	98	A^2s
dI_T/dt	rate of rise of on-state current	I_{TM} = 20 A; I_G = 0.2 A;dI_G/dt = 0.2 A/µs	100	A/µs
I_{GM}	peak gate current		2	A
P_{GM}	peak gate power		5	W
$P_{G(AV)}$	average gate power	over any 20 ms period	0.5	W
T_{stg}	storage temperature		-40~+150	°C
T_j	junction temperature		125	°C

Static Characteristics (Tj = 25°C, unless otherwise specified)						
Symbol	**Parameter**	**Conditions**	**Min**	**Typ**	**Max**	**Unit**
I_{GT}	Gate trigger current **BTA316X-600B BTA316X-800B**	V_D = 12 V; I_T = 0.1 A; T2+ G+;(see Fig.8)	2	-	50	mA
		V_D = 12 V; I_T = 0.1 A; T2+ G-;(see Fig.8)	2	-	50	mA
		V_D = 12 V; I_T = 0.1 A; T2- G-;(see Fig.8)	2	-	50	mA
	Gate trigger current **BTA316X-600C BTA316X-800C**	V_D = 12 V; I_T = 0.1 A; T2+ G+;(see Fig.8)	2	-	35	mA
		V_D = 12 V; I_T = 0.1 A; T2+ G-;(see Fig.8)	2	-	35	mA
		V_D = 12 V; I_T = 0.1 A; T2- G-;(see Fig.8)	2	-	35	mA
	Gate trigger current **BTA316X-600E BTA316X-800E**	V_D = 12 V; I_T = 0.1 A; T2+ G+;(see Fig.8)	-	-	10	mA
		V_D = 12 V; I_T = 0.1 A; T2+ G-;(see Fig.8)	-	-	10	mA
		V_D = 12 V; I_T = 0.1 A; T2- G-;(see Fig.8)	-	-	10	mA
I_L	latching current **BTA316X-600B BTA316X-800B**	V_D = 12 V; I_{GT} = 0.1 A; T2+ G+;(see Fig.10)	-	-	60	mA
		V_D = 12 V; I_{GT} = 0.1 A; T2+ G-;(see Fig.10)	-	-	90	mA
		V_D = 12 V; I_{GT} = 0.1 A; T2- G-;(see Fig.10)	-	-	60	mA
	latching current **BTA316X-600C BTA316X-800C**	V_D = 12 V; I_{GT} = 0.1 A; T2+ G+;(see Fig.10)	-	-	50	mA
		V_D = 12 V; I_{GT} = 0.1 A; T2+ G-;(see Fig.10)	-	-	60	mA
		V_D = 12 V; I_{GT} = 0.1 A; T2- G-;(see Fig.10)	-	-	50	mA
	latching current **BTA316X-600E BTA316X-800E**	V_D = 12 V; I_{GT} = 0.1 A; T2+ G+;(see Fig.10)	-	-	25	mA
		V_D = 12 V; I_{GT} = 0.1 A; T2+ G-;(see Fig.10)	-	-	30	mA
		V_D = 12 V; I_{GT} = 0.1 A; T2- G-;(see Fig.10)	-	-	30	mA
I_H	holding current **BTA316X-600B BTA316X-800B**	V_D = 12 V; I_{GT} = 0.1 A; (see Fig.11)	-	-	60	mA
	holding current **BTA316X-600C BTA316X-800C**		-	-	35	mA
	holding current **BTA316X-600E BTA316X-800E**		-	-	15	mA
V_T	on-state voltage	IT =18 A; (see Fig.9)	-	1.3	1.5	V
V_{GT}	gate trigger voltage	V_D = 12 V; I_T = 0.1 A; (See Fig.7)	-	0.8	1.5	V
		V_D = 400 V; I_T = 0.1 A; Tj = 125°C (See Fig.7)	0.25	0.4	-	V
I_D	off-state current	V_D = $V_{DRM(max)}$; Tj = 125 °C	-	0.1	0.5	mA

Dynamic Characteristics (Tj = 25°C, unless otherwise specified)						
Symbol	**Parameter**	**Conditions**	**Min**	**Typ**	**Max**	**Unit**
dV_D/dt	rate of rise of off-state voltage **BTA316X-600B BTA316X-800B**	V_{DM}=0.67 x $V_{DRM(max)}$; Tj = 125 °C Exponential waveform; gate open circuit	1000	-	-	V/µs
	BTA316X-600C BTA316X-800C		500	-	-	V/µs
	BTA316X-600E BTA316X-800E		60	-	-	V/µs
t_{gt}	gate-controlled turn-on time	I_{TM} = 20 A; V_D = $V_{DRM(max)}$; I_G = 0.1 A; dI_G/dt = 5 A/µs	-	2	-	µs

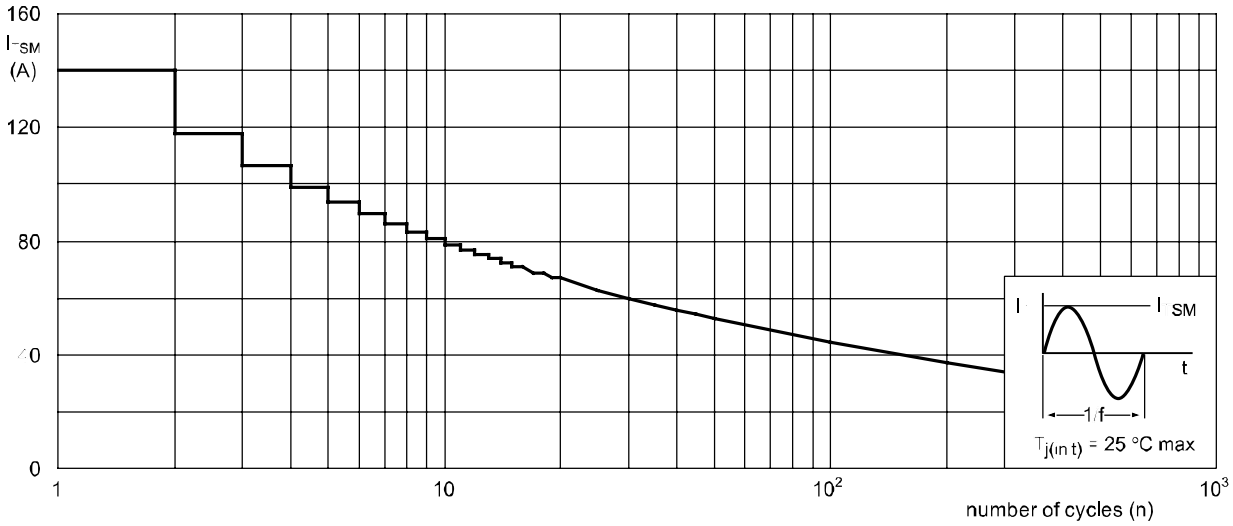
Dynamic Characteristics (Tj = 25°C, unless otherwise specified)						
Symbol	**Parameter**	**Conditions**	**Min**	**Typ**	**Max**	**Unit**
dI_{com}/dt	rate of change of commutating current **BTA316X-600B BTA316X-800B**	V_{DM} = 400 V; T_j = 125 °C; $I_{T(RMS)}$ = 16 A; without snubber ; gate open circuit	20	-	-	A/ms
	BTA316X-600C BTA316X-800C		15	-	-	A/ms
	BTA316X-600E BTA316X-800E		5	-	-	A/ms
	BTA316X-600B BTA316X-800B	V_{DM} = 400 V; T_j = 125 °C; $I_{T(RMS)}$ = 16 A; dV/dt = 10 V/µs; gate open circuit	-	-	-	A/ms
	BTA316X-600C BTA316X-800C		-	-	-	A/ms
	BTA316X-600E BTA316X-800E		-	-	8	A/ms
	BTA316X-600B BTA316X-800B	V_{DM} = 400 V; T_j = 125 °C; $I_{T(RMS)}$ = 16 A; dV/dt = 1 V/µs; gate open circuit	-	-	-	A/ms
	BTA316X-600C BTA316X-800C		-	-	-	A/ms
	BTA316X-600E BTA316X-800E		-	-	12	A/ms

Thermal Resistances						
Symbol	**Parameter**	**Conditions**	**Min**	**Typ**	**Max**	**Unit**
Rth(j-L)	thermal resistance from junction to mounting base	full or half cycle without heatsink compound (see Fig.6)			5.5	K/W
		full or half cycle with heatsink compound (see Fig.6)			4.0	K/W
Rth(j-a)	thermal resistance from junction to ambient	in free air		55		K/W



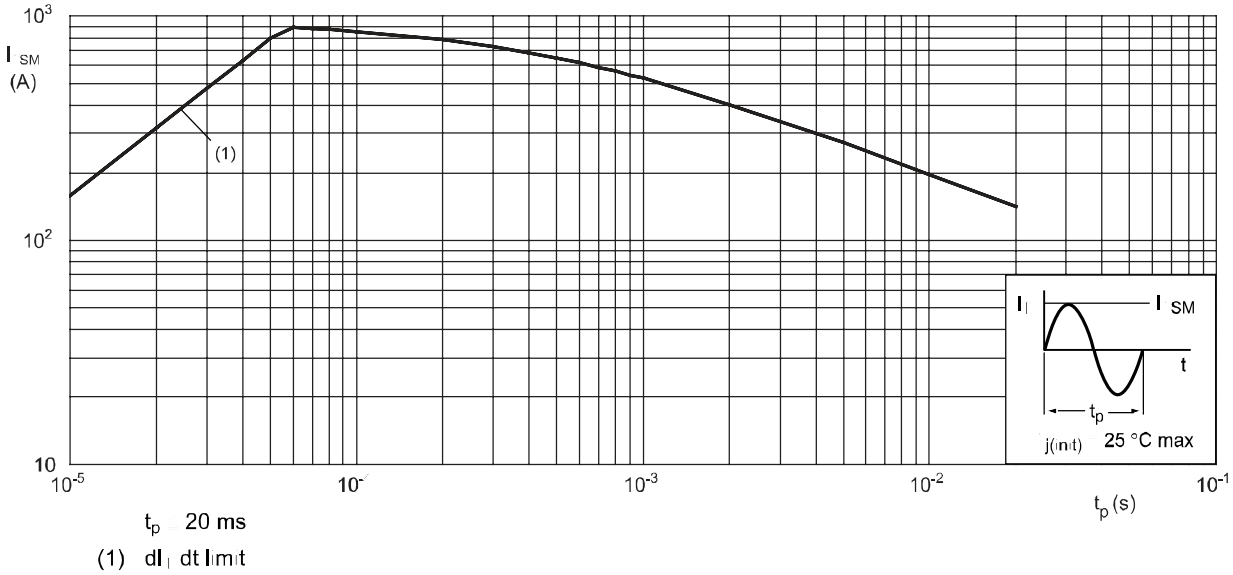
α = conduction angle

Fig 1. Total power dissipation as a function of RMS on-state current; maximum values



f = 50 Hz

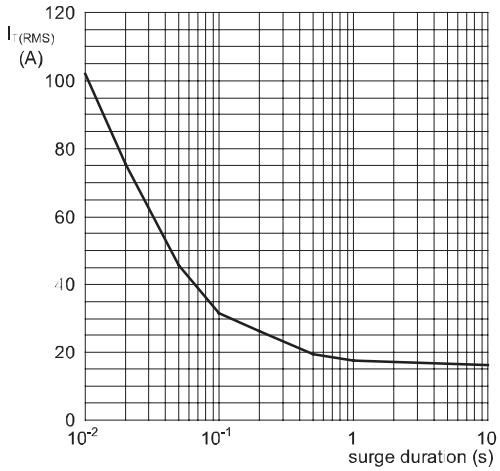
Fig 2. Non-repetitive peak on-state current as a function of the number of sinusoidal current cycles; maximum values



t_p 20 ms

(1) dI_T/dt limit

Fig 3. Non-repetitive peak on-state current as a function of pulse duration; maximum values



f = 50 Hz;
T_h = 45 °C

Fig 4. RMS on-state current as a function of surge duration; maximum values

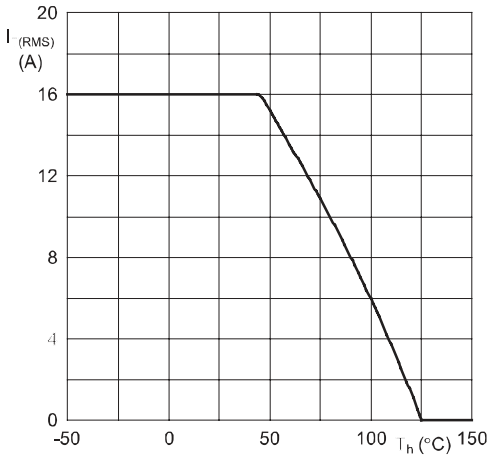
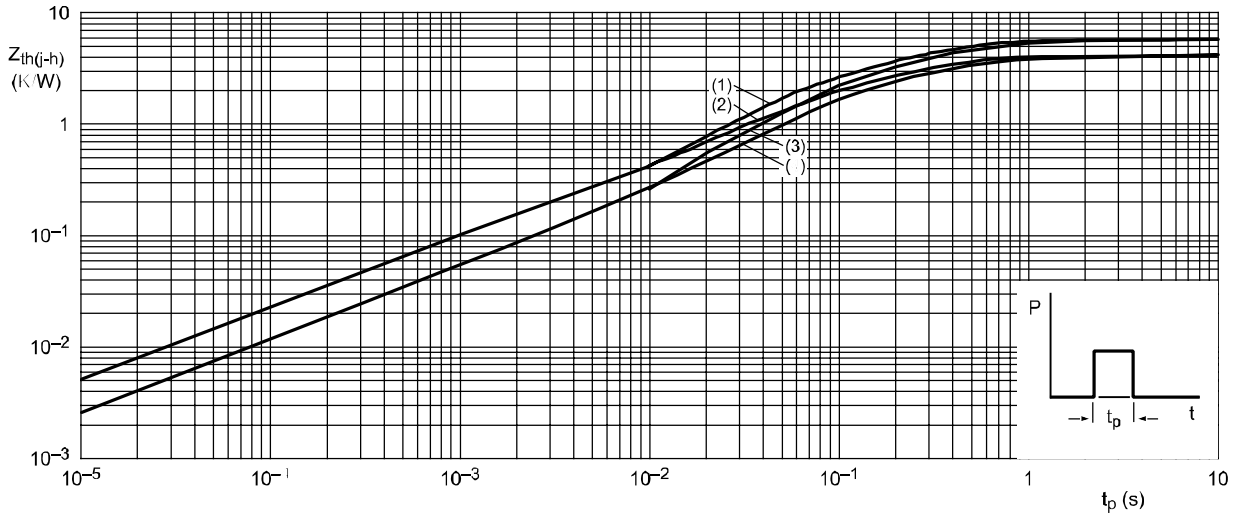


Fig 5. RMS on-state current as a function of heatsink temperature; maximum values



(1) Unidirectional (half cycle) without heatsink compound
(2) Unidirectional (half cycle) with heatsink compound
(3) Bidirectional (full cycle) without heatsink compound
(4) Bidirectional (full cycle) with heatsink compound

Fig 6. Transient thermal impedance from junction to heatsink as a function of pulse duration

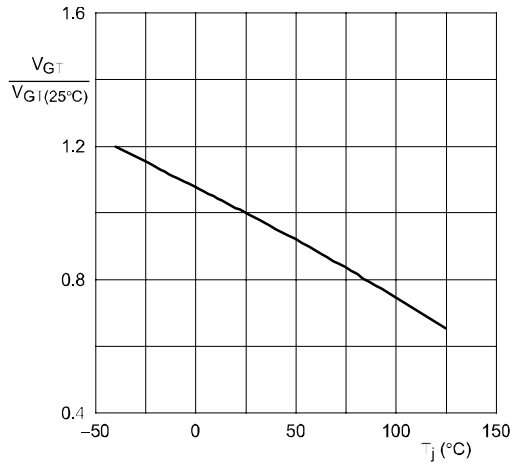
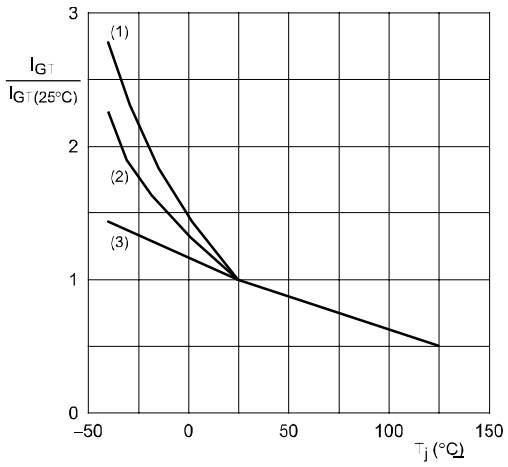


Fig 7. Normalized gate trigger voltage as a function of junction temperature



(1) T2– G– (2) T2+ G (3) T2+ G+

Fig 8. Normalized gate trigger current as a function of junction temperature

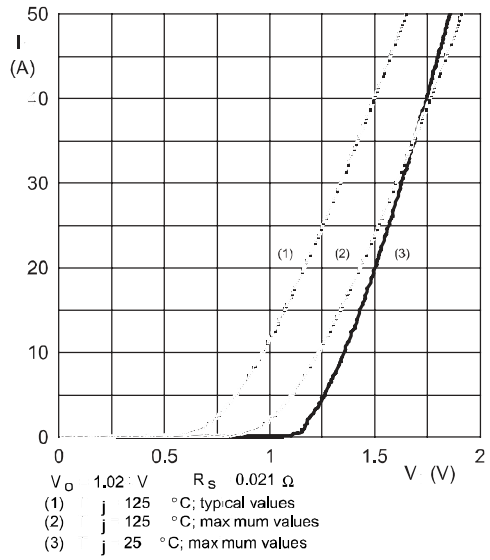


Fig 9. On-state current as a function of on-state voltage

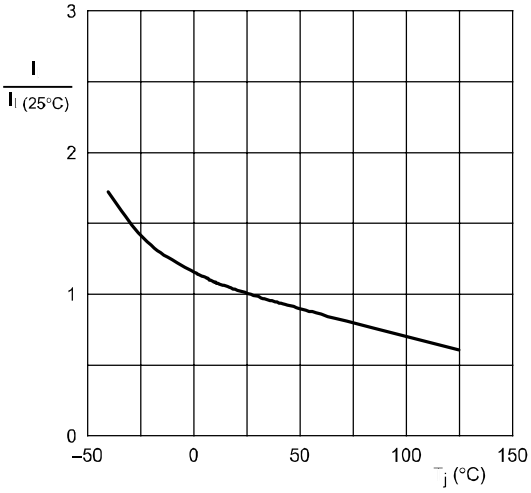


Fig 10. Normalized latching current as a function of junction temperature

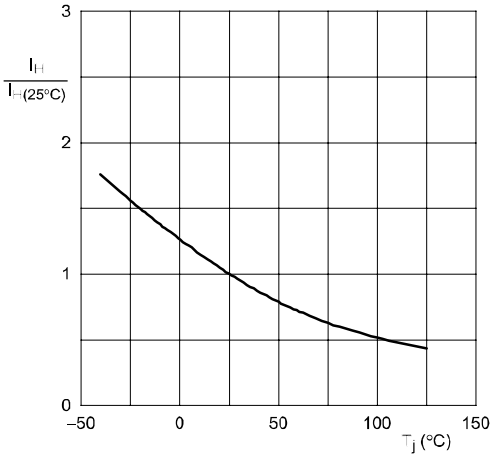
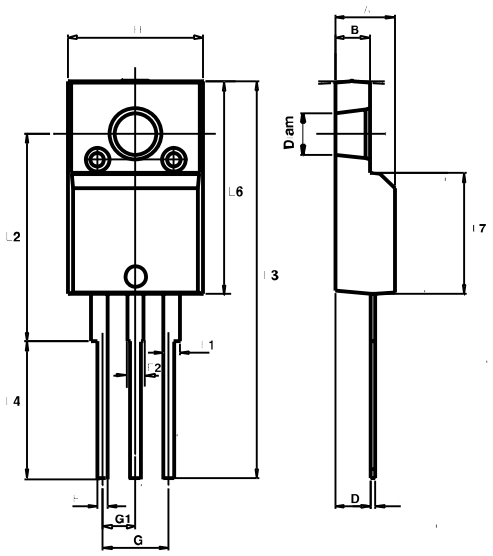


Fig 11. Normalized holding current as a function of junction temperature

PACKAGE MECHANICAL DATA

ITO-220AB (Plastic)



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
B	2.50	2.70	0.098	0.106
D	2.50	2.75	0.098	0.108
E	0.40	0.70	0.016	0.028
F	0.75	1.00	0.030	0.039
F1	1.15	1.70	0.045	0.067
F2	1.15	1.70	0.045	0.067
G	4.95	5.20	0.195	0.205
G1	2.40	2.70	0.094	0.106
H	10.00	10.40	0.394	0.409
L2	16.00 typ.		0.630 typ.	
L3	28.60	30.60	1.125	1.205
L4	9.80	10.60	0.386	0.417
L6	15.90	16.40	0.626	0.646
L7	9.00	9.30	0.354	0.366
Diam	3.00	3.20	0.118	0.126

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