

N-Channel 100V MOSFET

E100N1P5OH1

V_{DS} (V)	$R_{DS(on),max}$ (m Ω)	I_D (A)
100V	1.5 @ $V_{GS} = 10V$	330

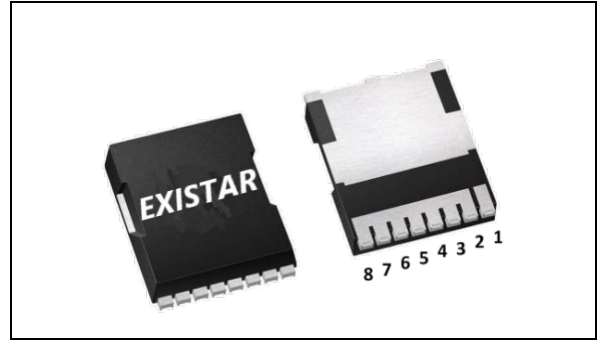
Features

- Low $R_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed
- 100% avalanche tested

Applications

- DC/DC conversion
- Power switch
- Moto driver

TOLL-8



RoHS
COMPLIANT
HALOGEN
FREE

Package And Ordering Information

Ordering code	Package	Marking
E100N1P5OH1	TOLL-8	E100N1P5OH1

Package	Units/ Reel	Reels/ Inner Box	Units/ Inner Box
TOLL-8	2000	1	2000

Key Performance Parameters

Parameter	Value	Unit
$V_{DS, min}$ @ $T_j(max)$	100	V
$I_D, pulse$	1300	A
$R_{DS(ON)}, max$ @ $V_{GS}=10V$	1.5	m Ω
Q_g	258	nC

Absolute Maximum Ratings at $T_j=25^\circ C$ Unless Otherwise Noted

Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{DS}	100	V
Gate-source voltage	V_{GS}	± 20	
Continuous drain current	I_D	$T_C=25^\circ C$	330
		$T_C=100^\circ C$	252
Pulsed drain current	$I_{D,pulse}$	1300	A
Avalanche energy, single pulse	E_{AS}	1750	mJ
Power dissipation	P_D	430	W
Operating junction and storage temperature range	T_J, T_{stg}	-55 to 150	$^\circ C$

Thermal Characteristics

Parameter		Symbol	Max.	Unit
Thermal resistance, junction-to-case	Steady state	$R_{\theta JC}$	0.3	°C/W
Thermal resistance, junction-to-ambient	Steady state	$R_{\theta JA}$	40	

Electrical Characteristics at Tj=25°C unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Static						
Drain to source breakdown voltage	$V_{(BR)DSS}$	100			V	$V_{GS} = 0, I_D = 250 \mu A$
Gate-source threshold voltage	$V_{GS(th)}$	2.2	3	3.8	V	$V_{DS} = V_{GS}, I_D = 250 \mu A$
Gate-body leakage	I_{GSS}			±100	nA	$V_{DS} = 0 V, V_{GS} = \pm 20 V$
Zero gate voltage drain current	I_{DSS}			1	μA	$V_{DS} = 80 V, V_{GS} = 0 V$
Drain-source on-resistance	$R_{DS(on)}$		1.1	1.5	mΩ	$V_{GS} = 10 V, I_D = 10 A$
Drain-source on-resistance	$R_{DS(on)}$		-	-	mΩ	$V_{GS} = 4.5 V, I_D = 30 A$
Forward transconductance	gfs		49		S	$V_{DS} = 5 V, I_D = 30 A$
Gate resistance	R_g		0.9		Ω	f=1MHz
Gate Charge						
Total gate charge	Qg		258	362	nC	$V_{DS} = 50 V, I_D = 33 A, V_{GS} = 10 V$
Gate-source charge	Qgs		59	83		
Gate-drain charge	Qgd		69	97		
Dynamic						
Turn-on delay time	$t_{d(on)}$		64	128	ns	$V_{DS} = 50 V, I_D = 33 A, V_{GS} = 10 V, R_{GEN} = 6 \Omega$
Rise time	t_r		61	122		
Turn-off delay time	$t_{d(off)}$		221	442		
Fall time	t_f		104	208		
Input capacitance	C_{iss}		15650	21910	pF	$V_{DS} = 25 V, V_{GS} = 0 V, f = 1 MHz$
Output capacitance	C_{oss}		2100	2940		
Reverse transfer capacitance	C_{rss}		45	90		
Body Diode						
Diode forward voltage	V_{SD}		0.8	1.1	V	$V_{GS} = 0 V, I_F = 33 A$
Reverse recovery time	t_{rr}		116	209	ns	$V_R = 50 V, I_S = 33 A, di/dt = 100$
Reverse recovery charge	Q_{rr}		405	729	nC	A/μs

Electrical Characteristics Diagrams

Fig.1 Typ. transfer characteristics

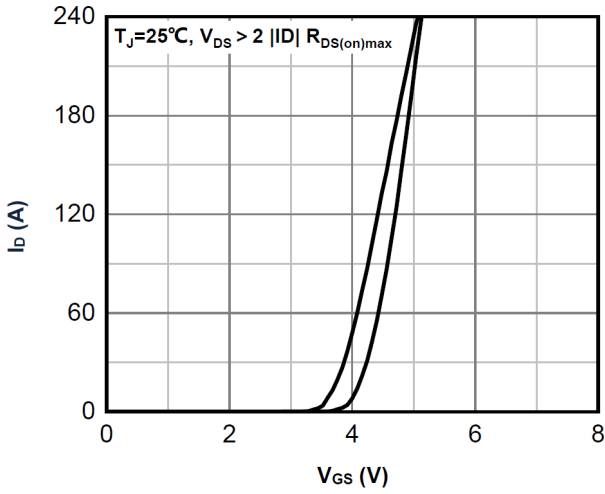


Fig.2 Typ. output characteristics

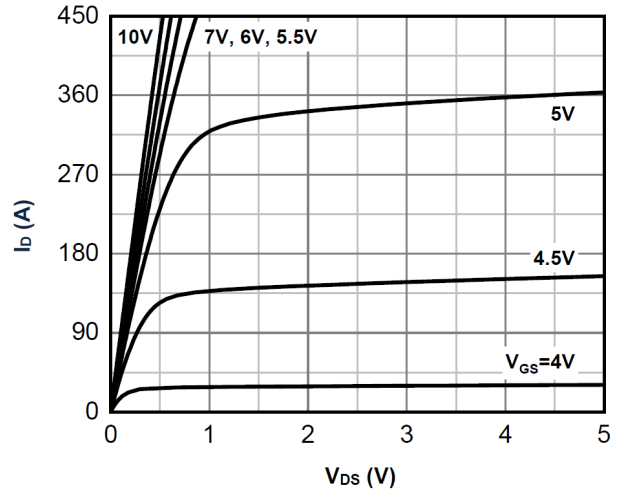


Fig.3 Normalized on-resistance vs drain current

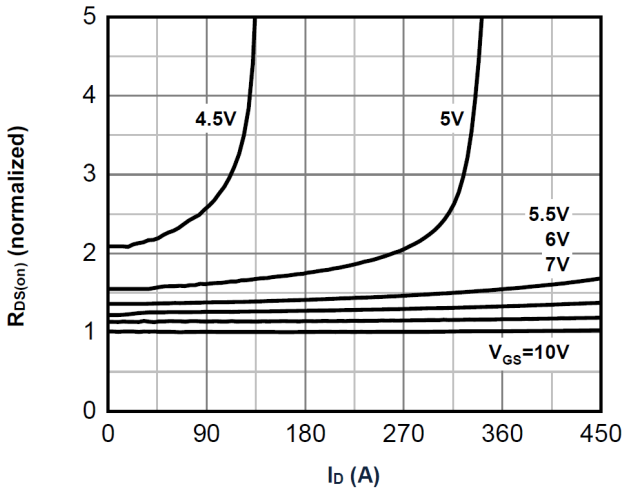


Fig.4 Typ. on-resistance vs gate-source voltage

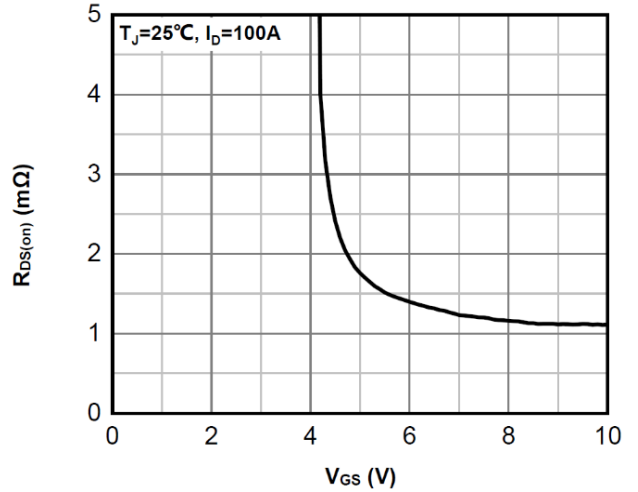


Fig.5 Normalized on-resistance vs junction temperature

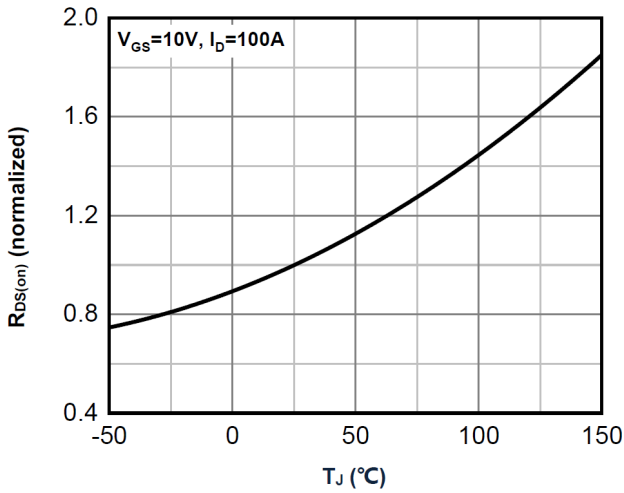


Fig.6 Typ. gate charge

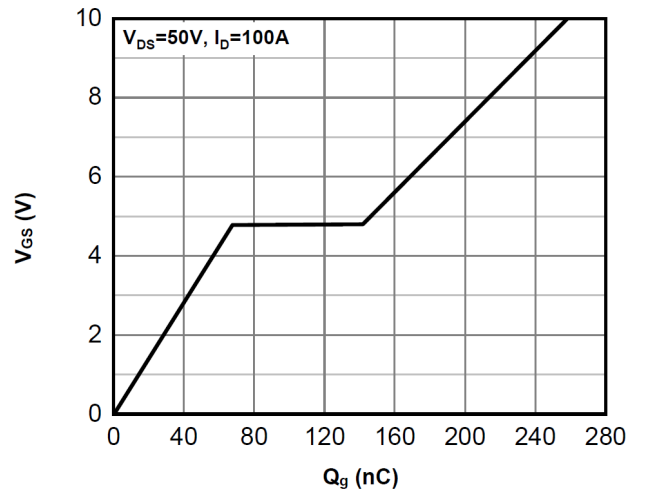


Fig.7 Typ. forward characteristics of body diode

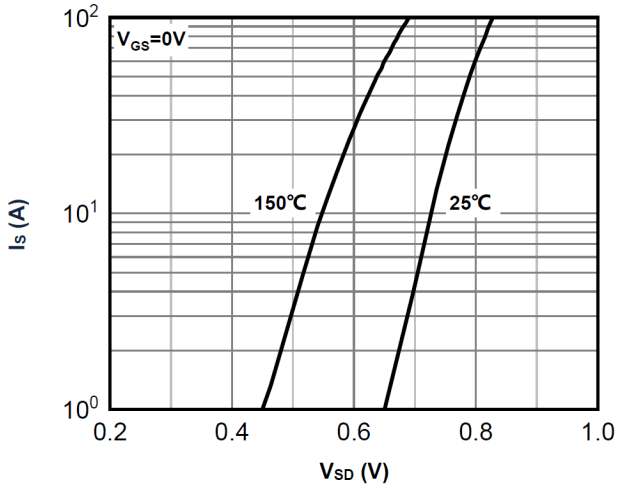


Fig.8 Safe operating area

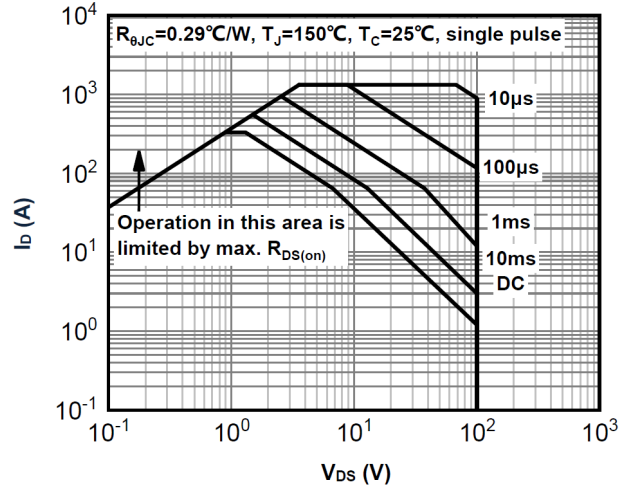


Fig.9 Typ. Capacitance

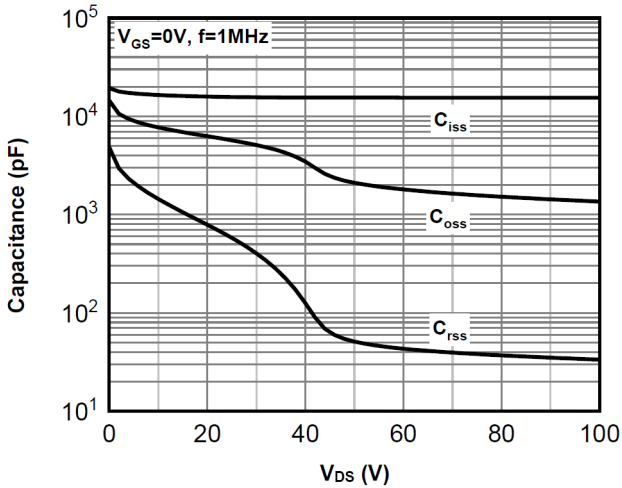


Fig.10 Single pulse maximum power dissipation

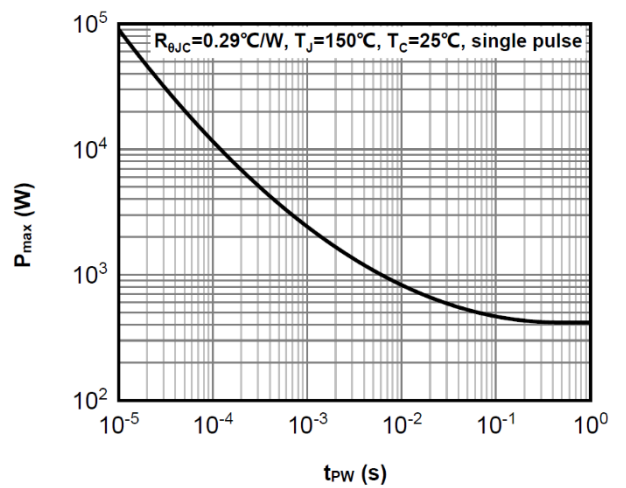


Fig.11 Max. power dissipation vs case temperature

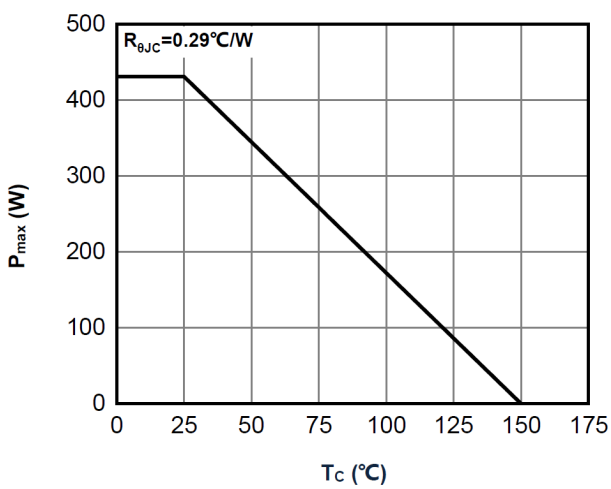


Fig.12 Max. continuous drain current vs case temperature

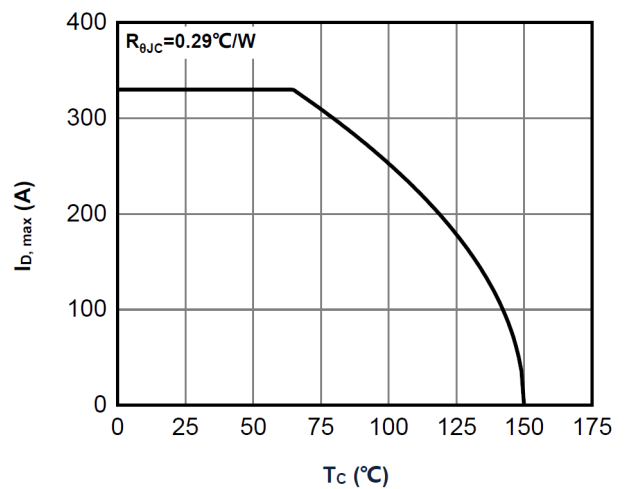
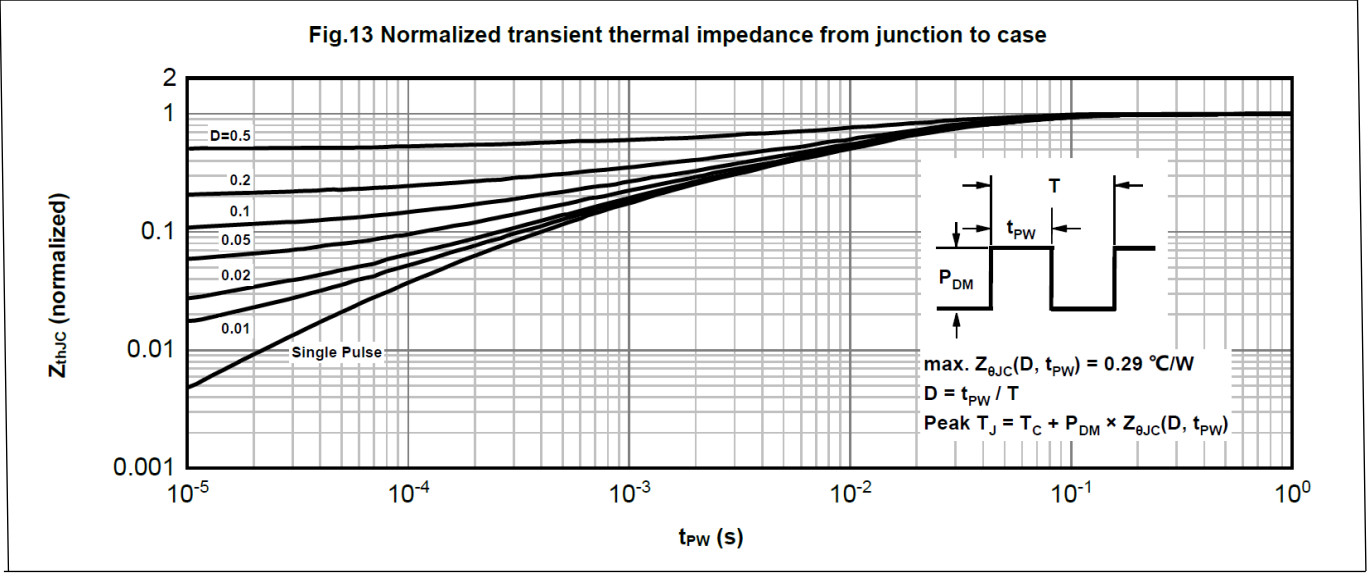
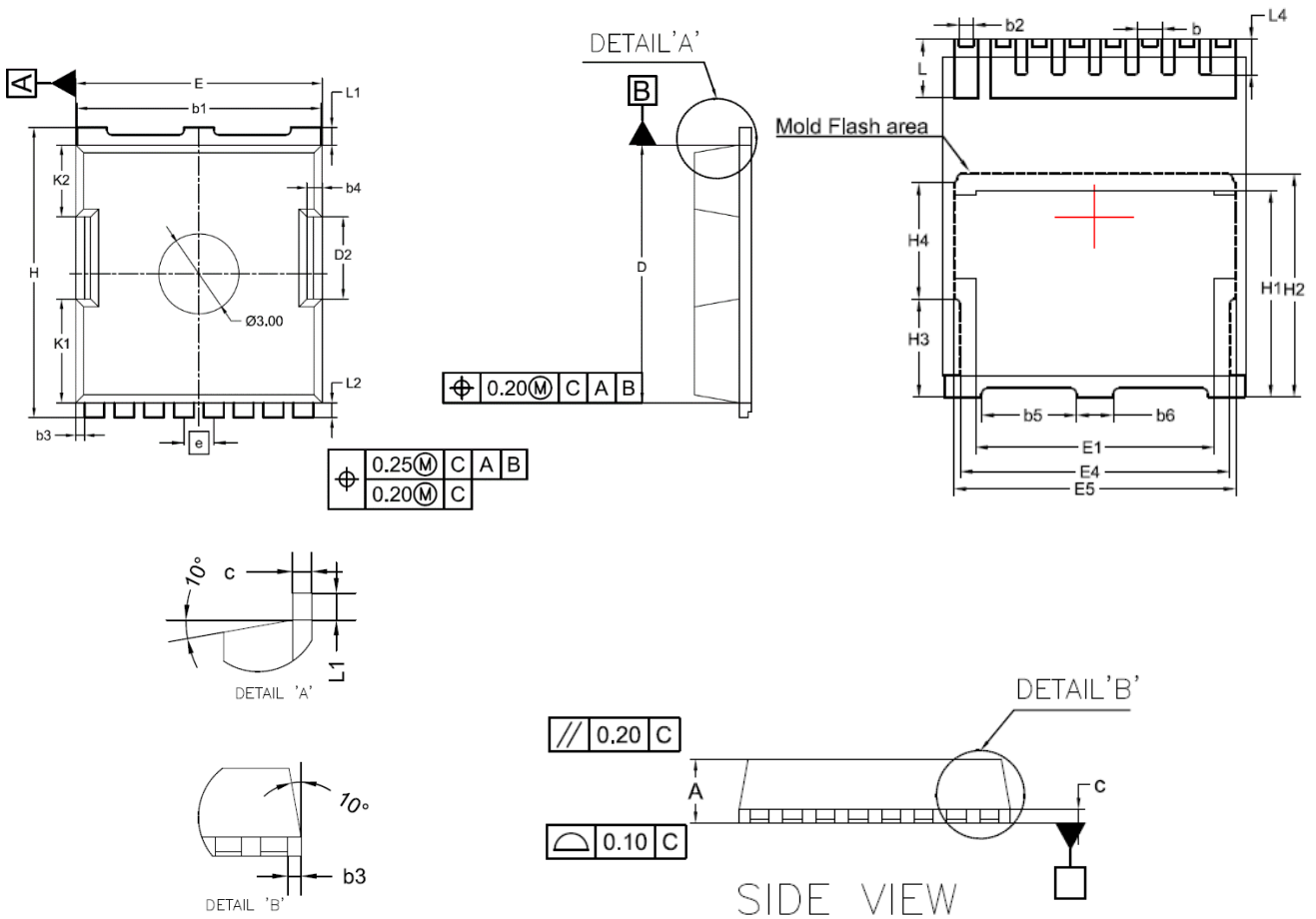


Fig.13 Normalized transient thermal impedance from junction to case



Package Outline Dimensions


SYMBOLS	DIMENSION IN MM			DIMENSION IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
* A	2.200	2.300	2.400	0.087	0.091	0.094
c	0.492	0.500	0.508	0.019	0.020	0.020
* D	10.280	10.380	10.480	0.405	0.409	0.413
* E	9.800	9.900	10.000	0.386	0.390	0.394
e	1.20 BSC			0.047 BSC		
* H	11.580	11.680	11.780	0.456	0.460	0.464
H1	6.650	6.750	6.850	0.262	0.266	0.270
H2	7.300			0.287		
H3	3.200			0.126		
H4	3.800			0.150		
K1	4.180			0.165		
K2	2.900			0.114		
* D2	3.300			0.130		
b	0.700	0.800	0.900	0.028	0.031	0.035
b1	9.700	9.800	9.900	0.382	0.386	0.390
b2	0.420	0.460	0.500	0.017	0.018	0.020
b3	0.350			0.014		
b4	0.600			0.024		
b5	3.100			0.122		
b6	1.200			0.047		
L	1.700	1.900	2.100	0.067	0.075	0.083
L1	0.700			0.028		
L2	0.600			0.024		
L4	1.050	1.150	1.250	0.041	0.045	0.049
L5	0.500	0.600	0.700	0.020	0.024	0.028
E1	7.800			0.31		
E4	8.800			0.35		
E5	9.200			0.36		

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