

40V N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ◇ Surface-mounted package
- ◇ Advanced SGT cell design

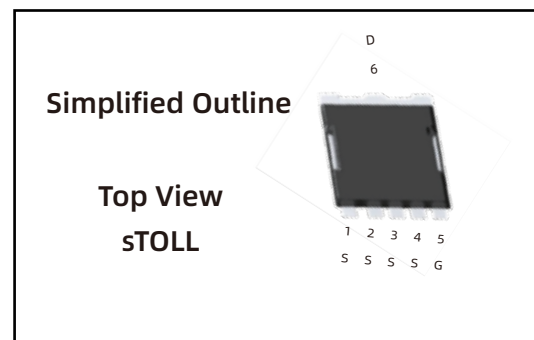
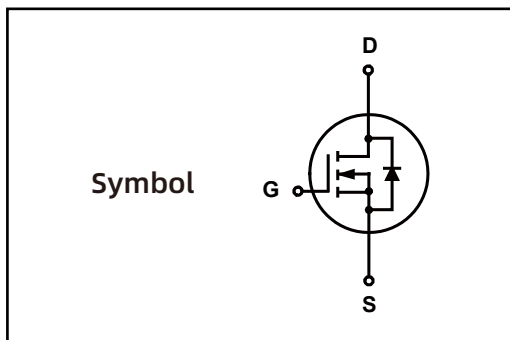
1.2 Applications

- ◇ BLDC appliances
- ◇ BMS appliances
- ◇ High power inverter system

1.3 Quick reference

- ◇ $BV \cong 40\text{ V}$
- ◇ $P_{\text{tot}} \cong 166\text{ W}$
- ◇ $I_D \cong 350\text{ A}$
- ◇ $R_{\text{DS(ON)}} \cong 0.66\text{ m}\Omega @ V_{\text{GS}} = 10\text{ V}$
- ◇ $R_{\text{DS(ON)}} \cong 2.10\text{ m}\Omega @ V_{\text{GS}} = 6\text{ V}$

2. Pin Description



3. Marking Information

Product Name	Marking
LN006N040ST-H	LN006N040ST-H CYWWZZ XXXXXX

4.Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_C = 25\text{ }^\circ\text{C}$	-	40	V
V_{GS}	Gate-Source Voltage	$T_C = 25\text{ }^\circ\text{C}$	-	± 20	V
$I_D^{*,***}$	Drain Current (DC)	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	350	A
		$T_C = 100\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	267	A
$I_{DM}^{*,**}$	Drain Current (Pulsed)	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	1400	A
P_{tot}	Drain power dissipation	$T_C = 25\text{ }^\circ\text{C}$	-	166	W
T_{stg}	Storage Temperature		- 55	175	$^\circ\text{C}$
T_J	Junction Temperature		-	175	$^\circ\text{C}$
I_S	Continuous-Source Current	$T_C = 25\text{ }^\circ\text{C}$	-	350	A
E_{AS}^*	Single Pulsed Avalanche Energy	$V_{DD} = 40\text{ V}, L = 1.0\text{mH}$	-	1959	mJ
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient		-	50	$^\circ\text{C/W}$
$R_{\theta JC}^*$	Thermal Resistance- Junction to Case		-	0.9	

Notes :

- * Surface Mounted on 1 in² pad area, t ≤ 10 sec
- ** Pulse width ≤ 300 μs, duty cycle ≤ 2%
- *** limited by bonding wire

5.Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
LN006N040ST-H	sTOLL			2000	

Note: COMTECH defines " Green " as lead-free (RoHS compliant) and halogen free (Br or Cl does not exceed 900 ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500 ppm by weight; Follow IEC 61249-2-21 and IPC / JEDEC J-STD-020C)

6. Electrical Characteristics ($T_A=25^\circ$ Unless Otherwise Noted)

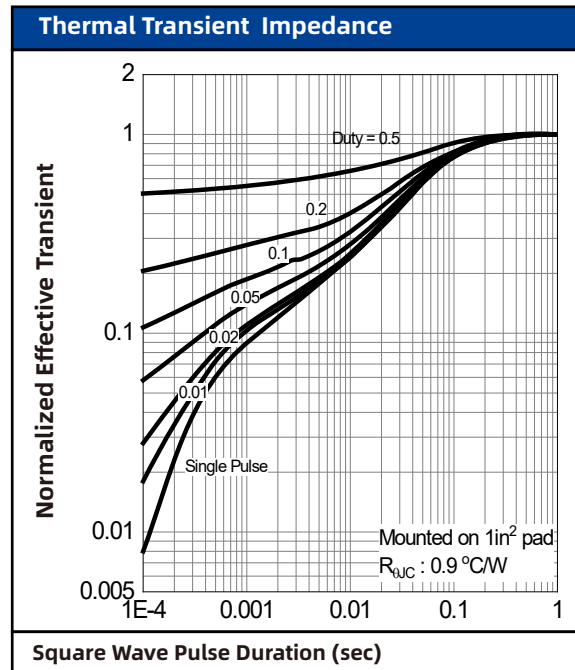
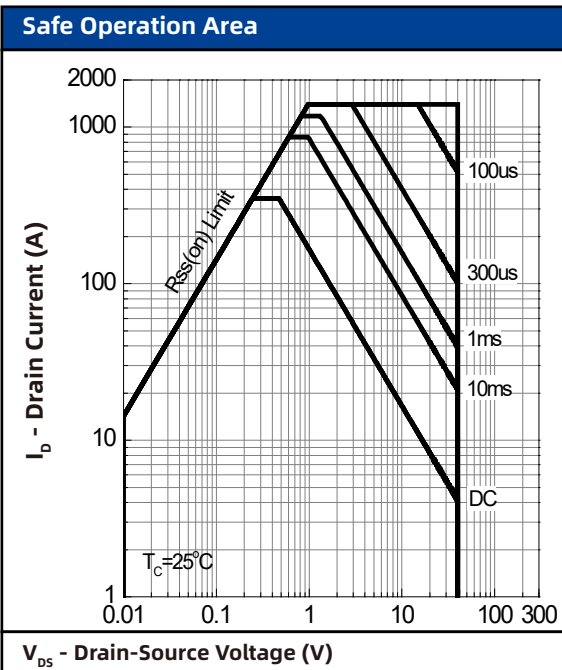
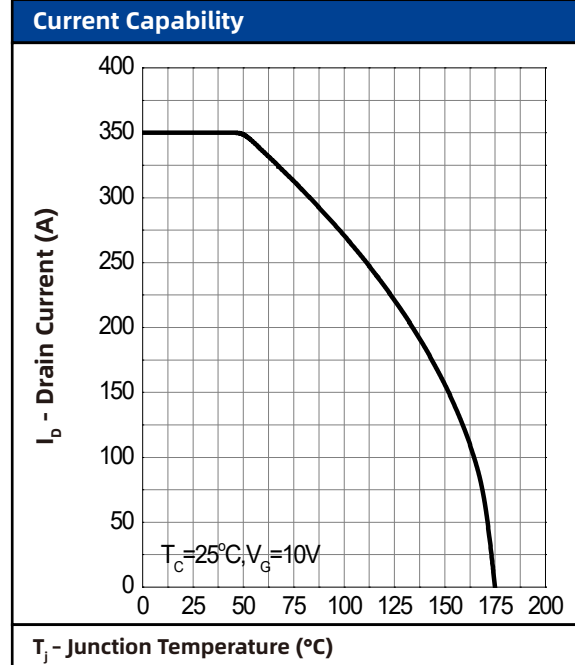
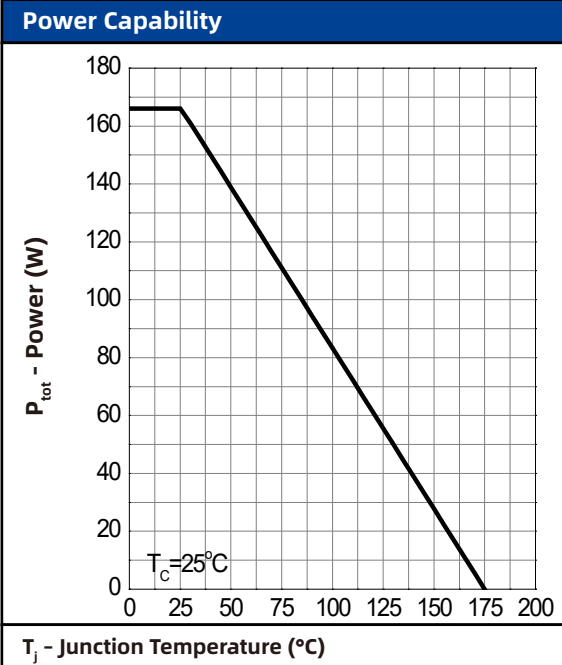
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = 250\ \mu\text{A}$	40	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = 250\ \mu\text{A}$	2	-	4	V
I_{DSS}	Drain Leakage Current	$V_{DS} = 32\text{ V}, V_{GS} = 0\text{ V}$	-	-	1	μA
I_{GSS}	Gate Leakage Current	$V_{GS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$	-	-	± 100	nA
$R_{DS(on)}^a$	On-State Resistance	$V_{GS} = 10\text{ V}, I_{DS} = 50\text{ A}$	-	0.6	0.66	m Ω
		$V_{GS} = 6\text{ V}, I_{DS} = 30\text{ A}$	-	1.8	2.10	
Diode Characteristics						
V_{SD}^a	Diode Forward Voltage	$I_{SD} = 50\text{ A}, V_{GS} = 0\text{ V}$	-	-	1.3	V
t_{rr}	Reverse Recovery Time	$I_{DS} = 50\text{ A}$	-	50	-	nS
Q_{rr}	Reverse Recovery Charge	$di_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	45	-	nC
Dynamic Characteristics^b						
C_{ISS}	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 20\text{ V}$ Frequency = 1 MHz	-	8657	-	pF
C_{OSS}	Output Capacitance		-	3411	-	
C_{rSS}	Reverse Transfer Capacitance		-	113	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = 20\text{ V}, V_{GEN} = 10\text{ V},$ $R_G = 3.9\ \Omega, R_L = 0.4\ \Omega,$ $I_{DS} = 50\text{ A}$	-	30	-	nS
t_r	Turn-on Rise Time		-	104	-	
$t_d(off)$	Turn-off Delay Time		-	87	-	
t_f	Turn-off Fall Time		-	73	-	
Gate Charge Characteristics^b						
Q_g	Total Gate Charge	$V_{DS} = 20\text{ V}, V_{GS} = 10\text{ V},$ $I_{DS} = 50\text{ A}$	-	142		nC
Q_{gs}	Gate-Source Charge		-	48		
Q_{gd}	Gate-Drain Charge		-	41		

Notes :

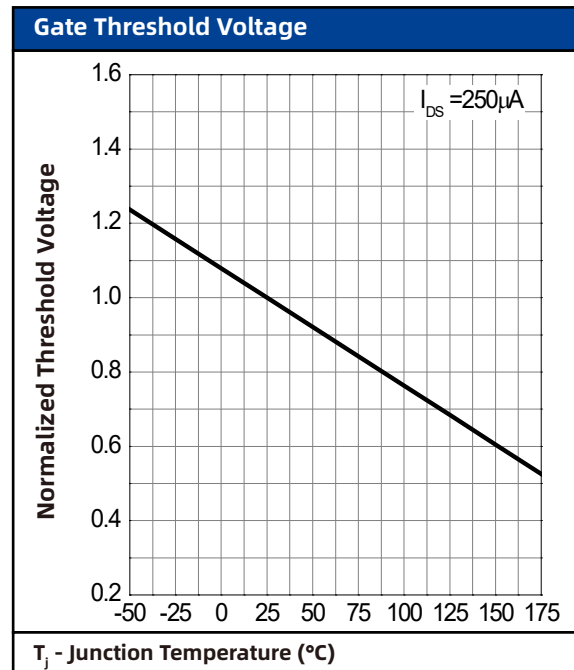
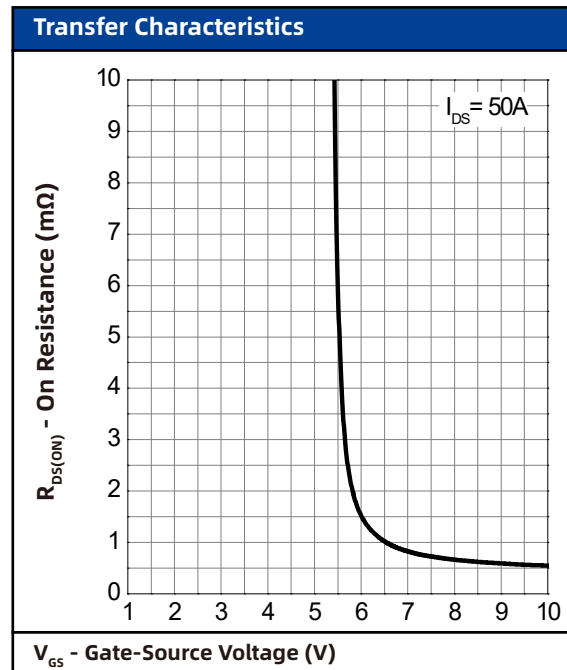
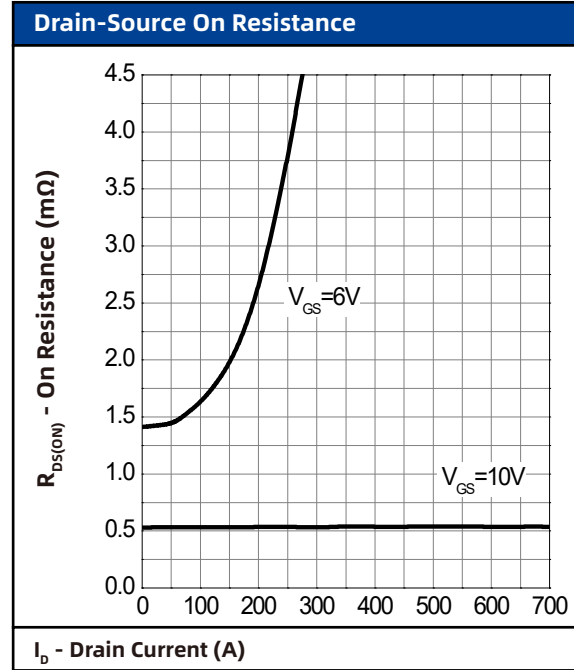
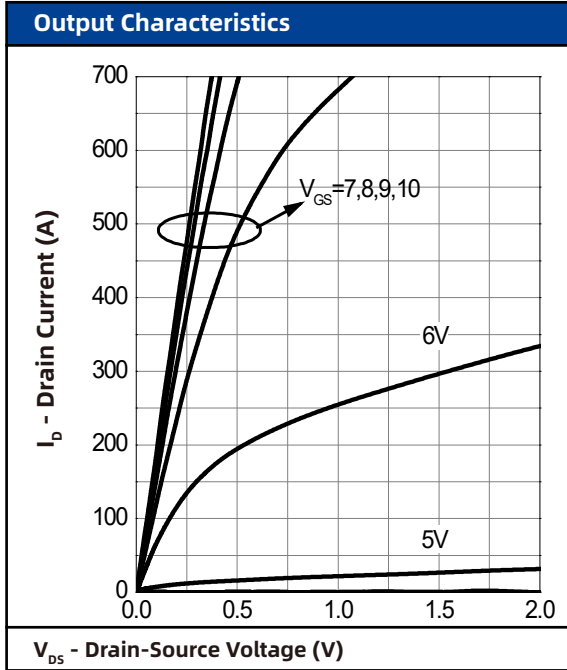
a : Pulse test ; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$

b : Guaranteed by design, not subject to production testing

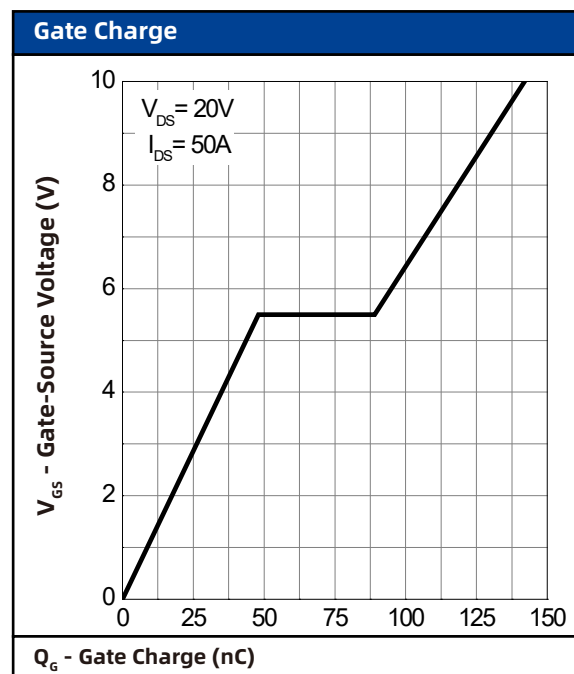
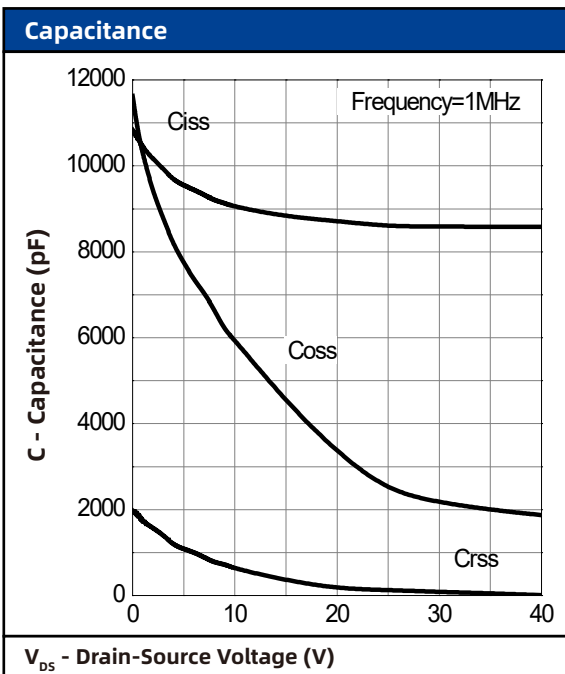
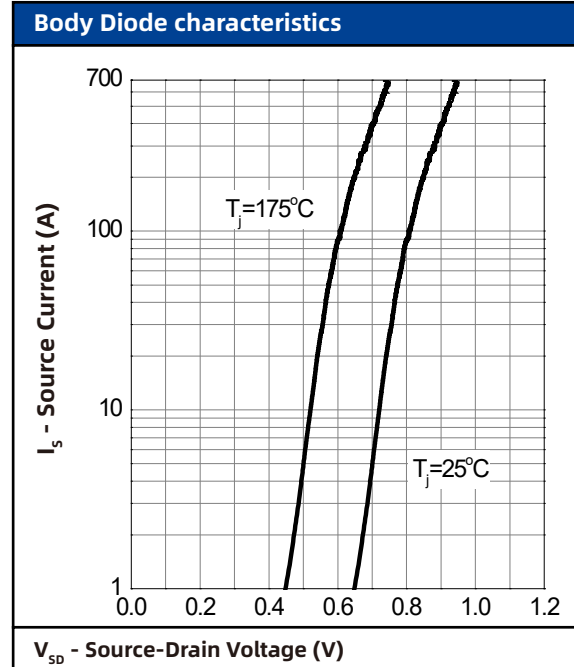
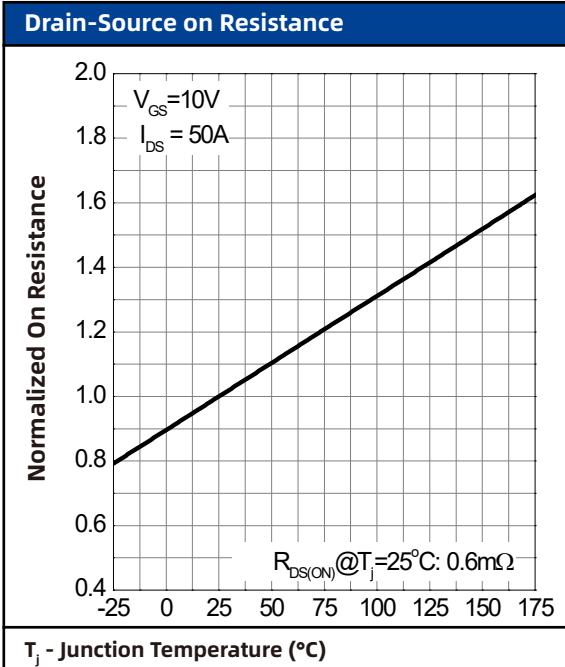
7. Typical Characteristics



7. Typical Characteristics (cont.)

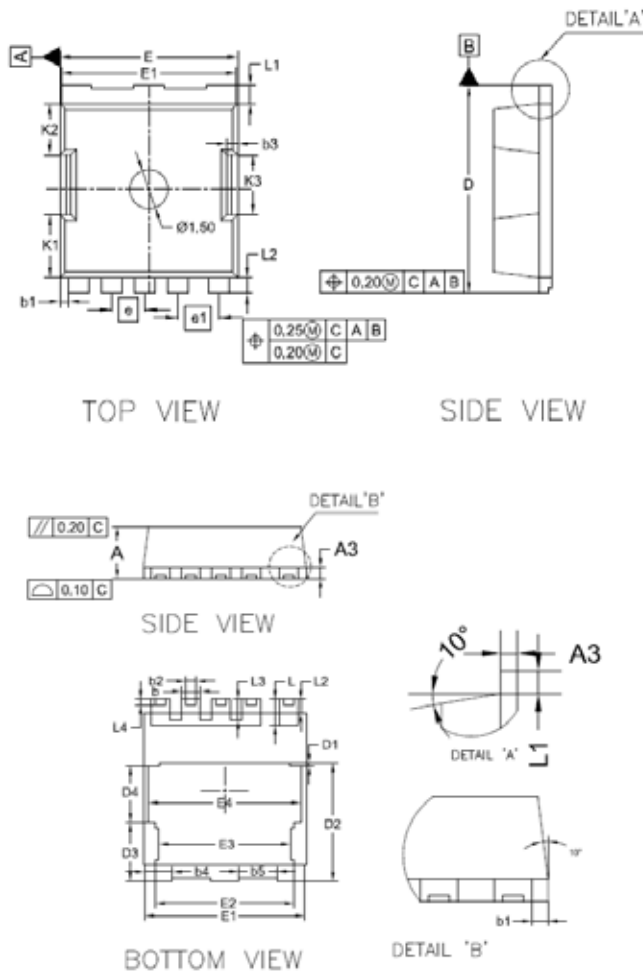


7. Typical Characteristics (cont.)



8. Package Dimensions

sTOLL Package



SYMBOLS	DIMENSION IN MM		
	MIN	NOM	MAX
A	2.300	2.200	2.400
A3	0.490	0.500	0.508
D	7.900	8.000	8.100
E	6.900	7.000	7.100
e	1.30 BSC		
e1	1.60 BSC		
D1	0.130 ref		
D2	5.100	5.200	5.300
D3	2.470	2.570	2.670
D4	2.400	2.500	2.600
b	0.750	0.800	0.850
b1	0.350 ref		
b2	0.350	0.450	0.550
b3	0.425 ref		
b4	1.100	1.200	1.300
b5	1.550	1.650	1.750
L	1.050	1.150	1.250
L1	0.600	0.700	0.800
L2	0.500	0.600	0.700
L3	0.800	0.900	1.000
L4	0.135	0.235	0.335
E1	6.800	6.900	7.000
E2	5.860	5.960	6.060
E3	5.560	5.660	5.760
E4	6.460	6.560	6.660
K1	2.430 ref		
K2	1.970 ref		