

H18N20D

200V SGT N-Channel MOSFET

VDSS	R _{DS(ON)} (Typ)	ID
200V	95mΩ	18A

Features:

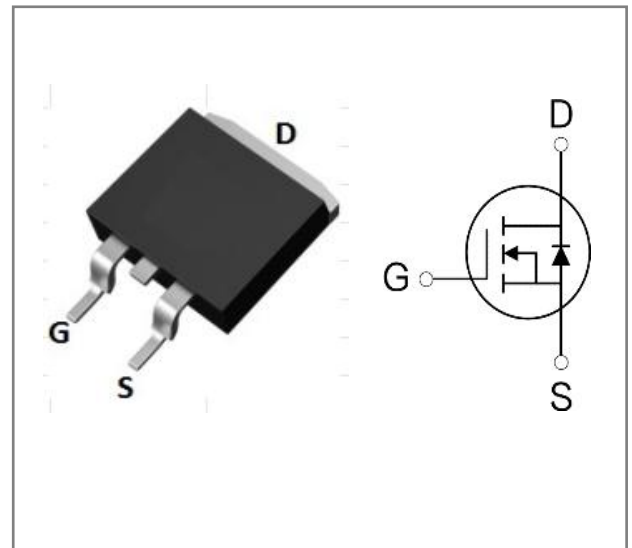
- Fast switching speed
- 100% avalanche tested
- Improved dv/dt capability
- Enhanced Avalanche Ruggedness
- Lead Free

Applications:

- Synchronous Rectification in SMPS
- Hard Switching and High Speed Circuit
- Power Tools
- UPS
- Motor Control

Ordering Information

Part Number	Package	Marking	Packing	Qty.
H18N20D	TO-252	H18N20D	Tape&reel	2500 PCS



Absolute Maximum Ratings (T_c= 25°C unless otherwise specified)

Symbol	Parameter	Rating	Units
VDS	Drain-to-Source Voltage	200	V
VGS	Gate- to- Source Voltage	±20	V
ID	Continuous Drain Current TC=25°C	18	A
	Continuous Drain Current TC=100°C	12.5	
IDM	Pulsed Drain Current	25	
PD	Power Dissipation	83	W
EAS	Single Pulse Avalanche Energy L = 0.4mH, R _G = 25 Ω, TC=25°C	5	mJ
TJ, TSTG	Operating Junction and Storage Temperature Range	-55 to 175	°C

Thermal Characteristics

Symbol	Parameter	Typ	Max	Unit
RθJC	Thermal Resistance Junction-Case	--	1.8	°C/W
RθJA	Thermal Resistance Junction-Ambient	--	65	°C/W

Electrical Characteristics (TJ= 25℃ unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
V(BR)DSS	Drain- Source Breakdown Voltage	200	--	--	V	VGS=0V,ID=250μA
IDSS	Zero Gate Voltage Drain Current (25℃)	--	--	1	μA	VDS=200V,VGS=0V
	Zero Gate Voltage Drain Current (100℃)	--	--	100	μA	VDS=200V,VGS=0V
IGSS	Gate to Source Forward Leakage	--	--	100	nA	VGS=20V ,VDS=0V
	Gate to Source Reverse Leakage	--	--	-100		VGS=-20V ,VDS=0V
VGS(TH)	Gate Threshold Voltage	1	2.1	3	V	VGS=VDS,ID=250μA
RDS(on)	Static Drain- to- Source On-Resistance	--	95	120	mΩ	VGS=10V,ID=5A
		--	106	140	mΩ	VGS=4.5V,ID=3A

Dynamic Electrical Characteristics

Ciss	Input Capacitance	--	491	--	pF	VGS=0V VDS=100V f=1MHz
Coss	Output Capacitance	--	22	--		
Crss	Reverse Transfer Capacitance	--	5.5	--		
Rg	Gate Resistance	--	5.5	--	Ω	f=1MHz
Qg	Total Gate Charge	--	9.8	--	nC	VDS=10V ID=5A VGS=10V
Qgs	Gate- to- Source Charge	--	1.6	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	3.2	--		

Switching Characteristics

td(ON)	Turn- on Delay Time	--	9	--	nS	VDS=100V ID=5A VGS=10V RG=10Ω
trise	Rise Time	--	5	--		
td(OFF)	Turn- OFF Delay Time	--	13	--		
tfall	Fall Time	--	4	--		

Source- Drain Diode Characteristics

VSD	Diode Forward Voltage	--	0.9	1.2	V	IF=20A,VGS=0V
trr	Reverse Recovery Time	--	60	--	nS	VR=100V,IF=5A di/dt=100A/μs
Qrr	Reverse Recovery Charge	--	126	--	nC	

Typical Characteristics

Fig 1. Typical Output Characteristics

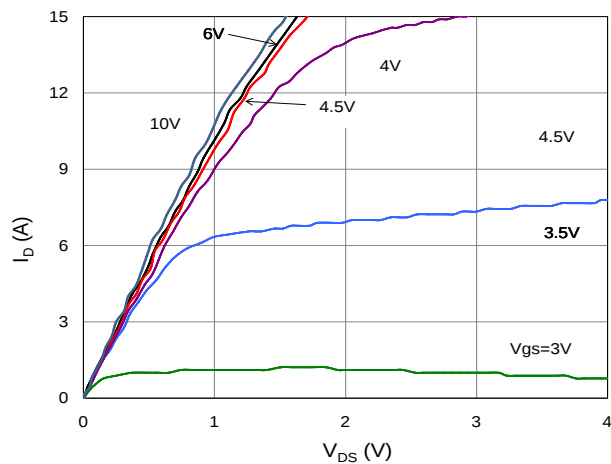


Figure 2. On-Resistance vs. Gate-Source Voltage

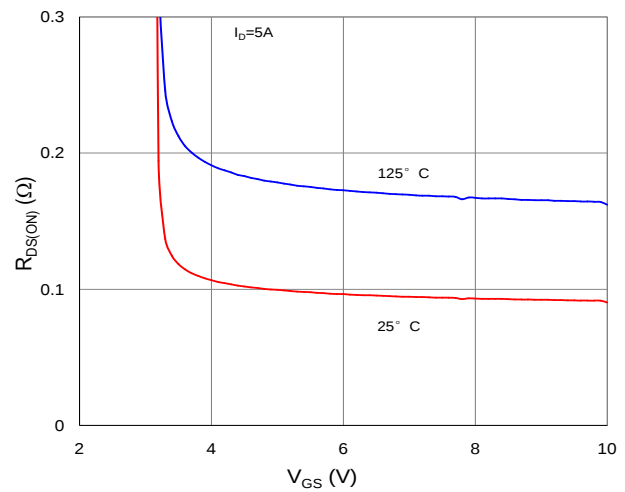


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

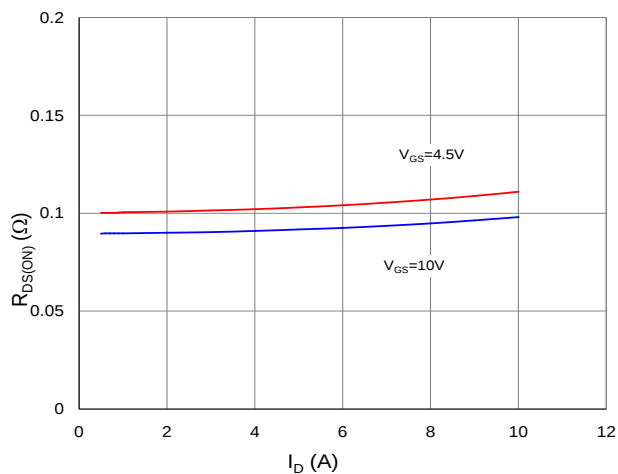


Figure 4. Normalized On-Resistance vs. Junction Temperature

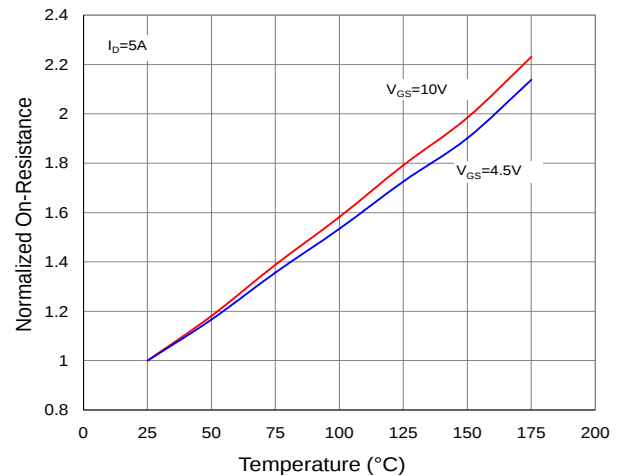


Figure 5. Typical Transfer Characteristics

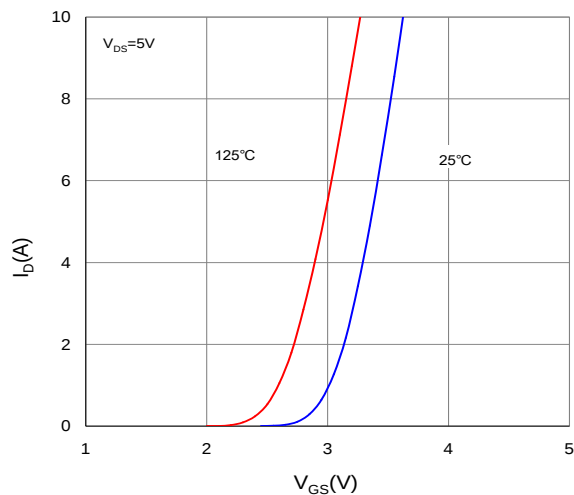


Figure 6. Typical Source-Drain Diode Forward Voltage

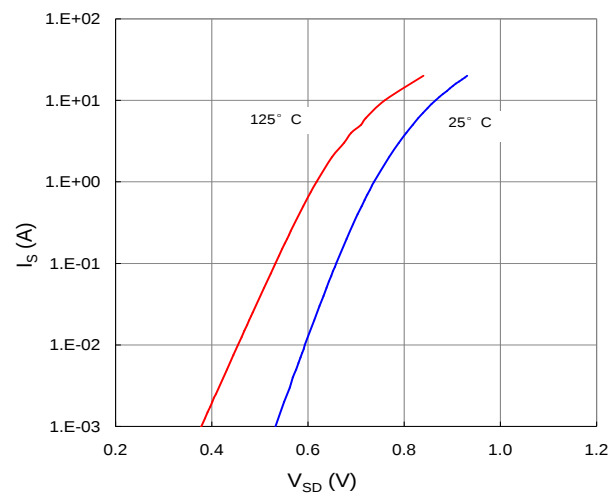


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

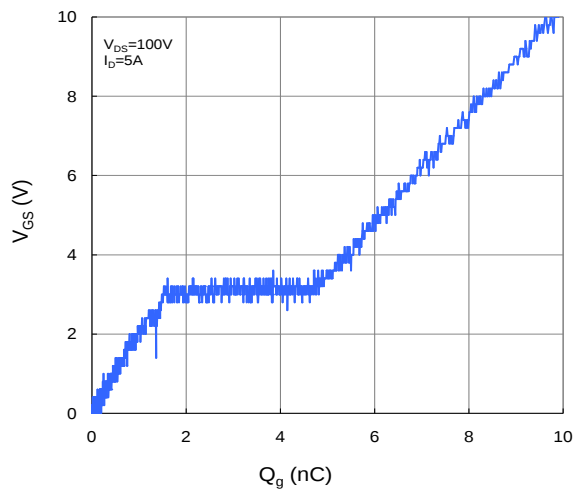


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

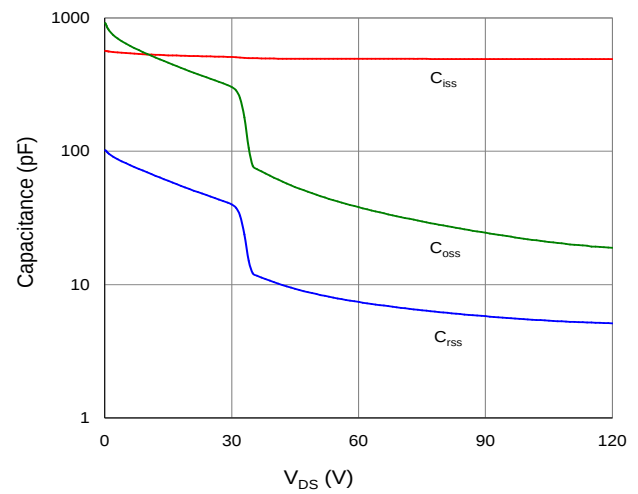


Figure 9. Maximum Safe Operating Area

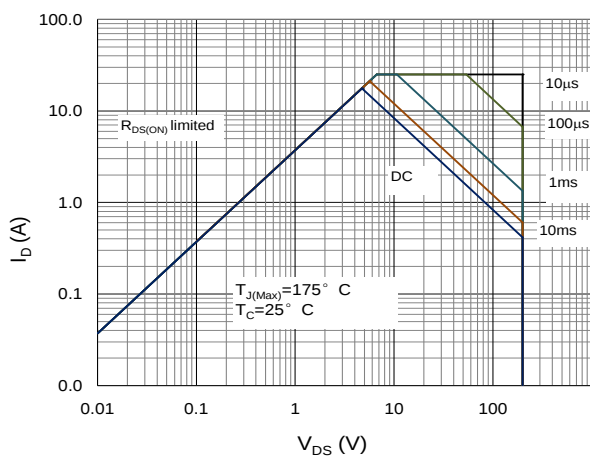


Figure 10. Maximum Drain Current vs. Case Temperature

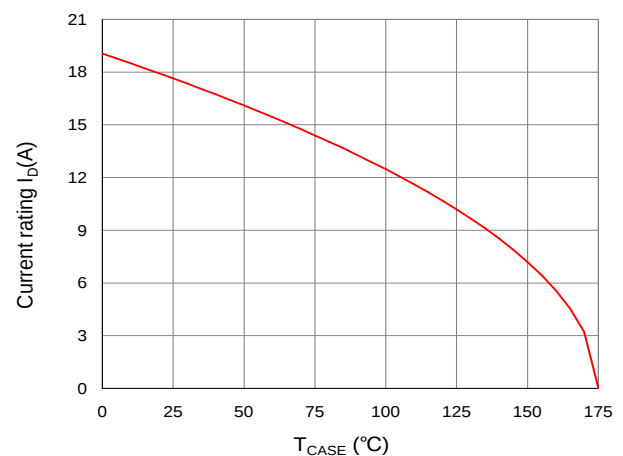
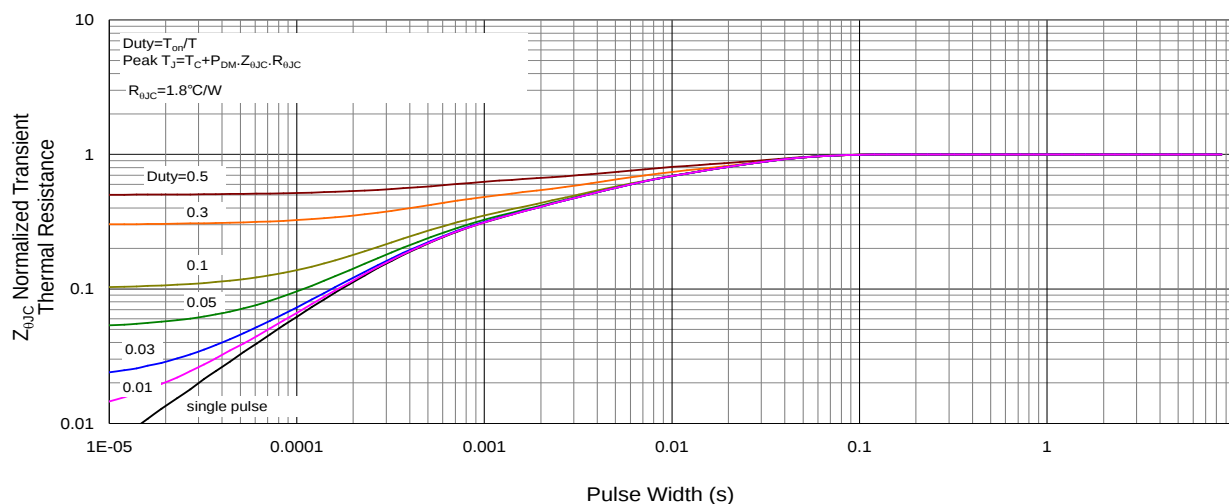


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case



Test Circuits and Waveforms

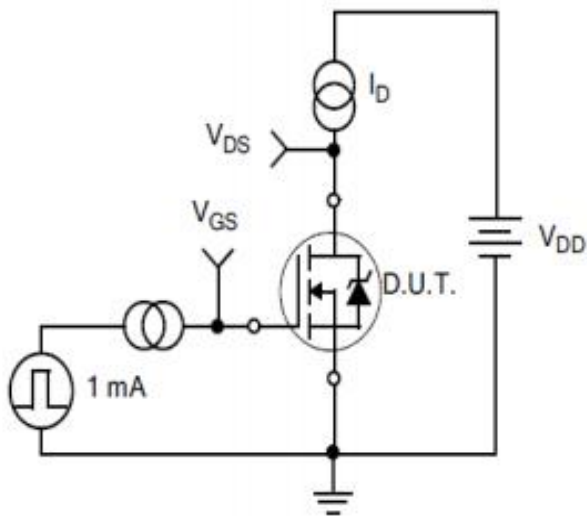


Figure A.
Gate Charge Test Circuit

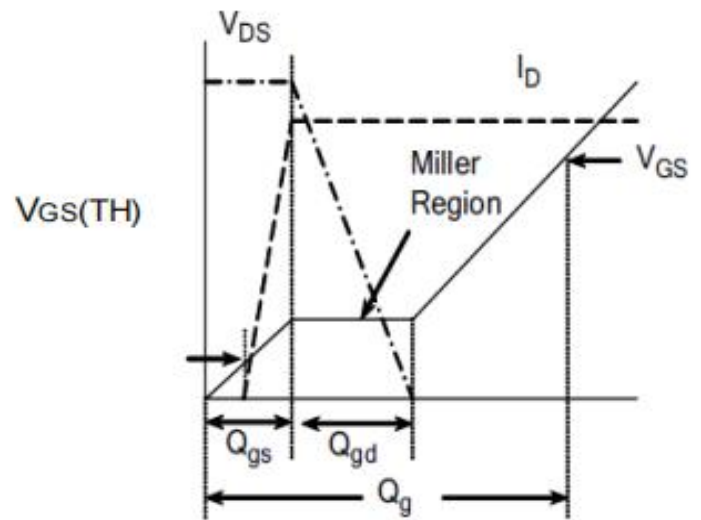


Figure B.
Gate Charge Waveform

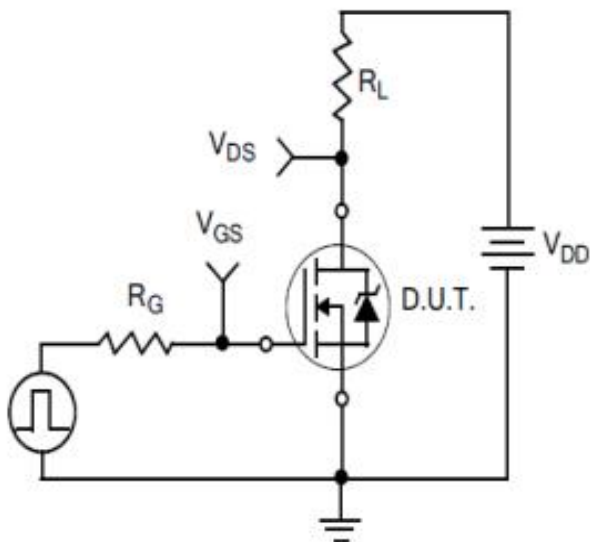


Figure C.
Resistive Switching Test Circuit

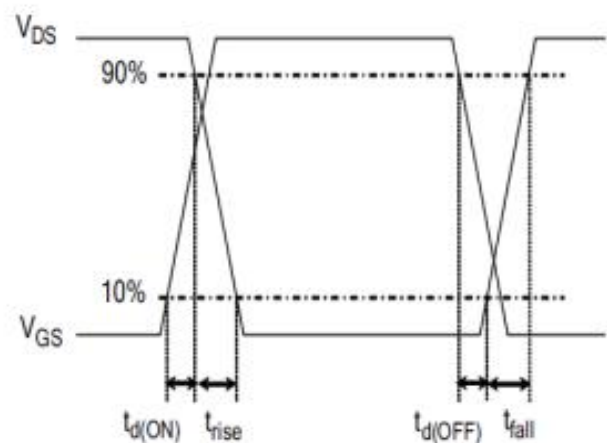
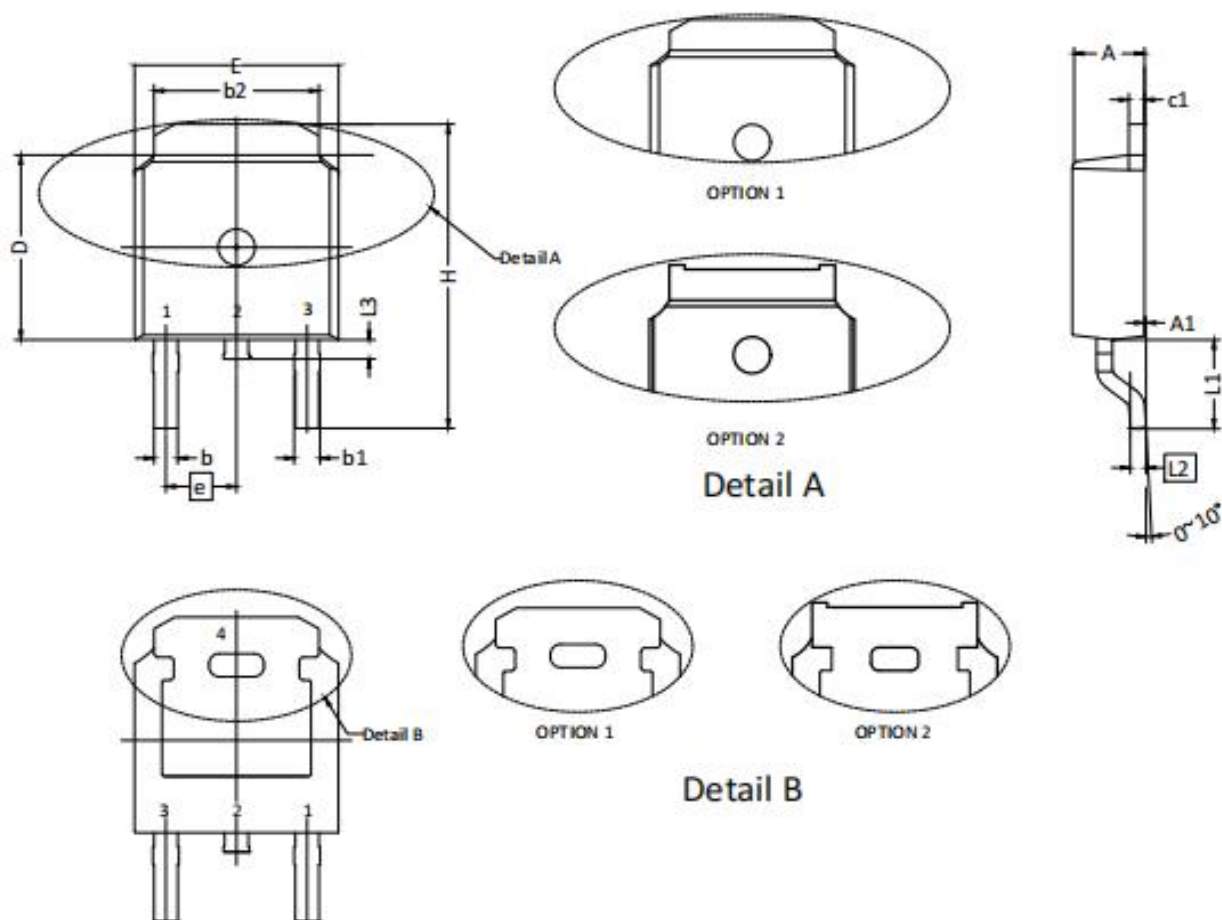


Figure D.
Resistive Switching Waveforms

Package outline drawing (TO-252 Unit: mm)



SYMBOLS	DIMENSION IN MM		
	MIN	NOM	MAX
A	2.184	2.286	2.400
A1	0.000	---	0.200
b	0.635	0.762	0.889
b1	0.680	0.840	1.143
b2	4.953	5.340	5.500
c1	0.450	0.508	0.630
D	5.969	6.096	6.223
E	6.350	6.604	6.800
e	2.286 BSC		
H	9.398	10.033	10.500
L1	2.921 REF.		
L2	0.408	0.508	0.608
L3	0.600	---	1.016