

N-Channel 100V MOSFET

E100N4P5DH1

V_{DS} (V)	$R_{DS(on),max}$ (m Ω)	I_D (A)
100V	4.5 @ $V_{GS} = 10V$	170

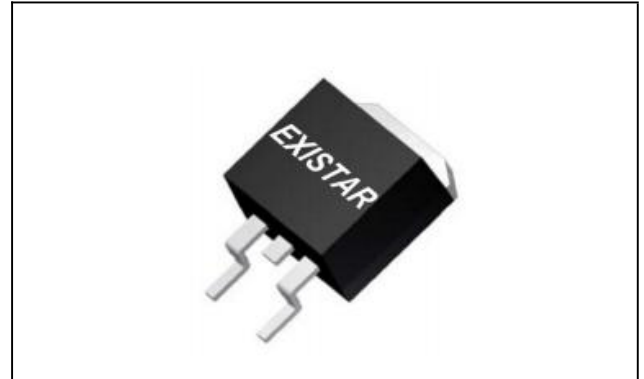
Features

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

Applications

- DC/DC conversion
- Power switch
- PD charger
- Moto driver

TO-263



RoHS
COMPLIANT
HALOGEN
FREE

Package And Ordering Information

Ordering code	Package	Marking
E100N4P5DH1	TO-263	E100N4P5DH1

Ordering Information

Package	Units/ Reel	Reels/ Inner Box	Units/ Inner Box
TO-263	4000	1	4000

Key Performance Parameters

Parameter	Value	Unit
VDS, min @ Tj(max)	100	V
ID, pulse	675	A
RDS(ON), max @ VGS=10V	4.5	mΩ
Qg	91	nC

Absolute Maximum Ratings at Tj=25°C Unless Otherwise Noted

Parameter		Symbol	Limit	Unit
Drain-source voltage		V _{DS}	100	V
Gate-source voltage		V _{GS}	±20	
Continuous drain current	T _C =25°C	I _D	170	A
	T _C =100°C		120	
Pulsed drain current		I _{D,pulse}	675	
Avalanche energy, single pulse		E _{AS}	484	mJ
Power dissipation	T _C =25°C	P _D	250	W
	T _A =25°C		2.1	
Operating junction and storage temperature range		T _J , T _{stg}	-55 to 175	°C

Thermal Characteristics

Parameter		Symbol	Max.	Unit
Thermal resistance, junction-to-case	Steady state	R _{θJC}	0.6	°C/W
Thermal resistance, junction-to-ambient	Steady state	R _{θJA}	60	

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 μA
Gate-source threshold voltage	V _{GS(th)}	2.2	2.7	3.2	V	V _{DS} = V _{GS} , I _D = 250 μA
Gate-body leakage	I _{GSS}			±100	nA	V _{DS} = 0 V, V _{GS} = ±20 V
Zero gate voltage drain current	I _{DSS}			1	μA	V _{DS} = 100 V, V _{GS} = 0 V
Drain-source on-resistance	R _{DS(on)}		3.6	4.5	mΩ	V _{GS} = 10 V, I _D = 40 A
Forward transconductance	g _{fs}		-		S	V _{DS} = 5 V, I _D = 30 A
Gate resistance	R _g		1.8		Ω	f=1MHz

Gate Charge						
Total gate charge	Qg		91		nC	V _{DS} = 50 V, I _D = 40 A, V _{GS} = 10 V
Gate-source charge	Qgs		25			
Gate-drain charge	Qgd		25			
Dynamic						
Turn-on delay time	t _{d(on)}		21		ns	V _{DS} = 50 V, I _D =40 A, V _{GS} = 10 V, R _{GEN} = 3 Ω
Rise time	t _r		69			
Turn-off delay time	t _{d(off)}		57			
Fall time	t _f		70			
Input capacitance	C _{iSS}		5440		pF	V _{DS} =50 V, V _{GS} = 0 V, f = 1MHz
Output capacitance	C _{oss}		1035			
Reverse transfer capacitance	C _{rSS}		35			
Body Diode						
Diode forward voltage	V _{SD}		0.8	1.2	V	V _{GS} = 0 V, I _F = 40 A
Reverse recovery time	t _{rr}		59		ns	V _{GS} = 0 V, I _S =40 A, di/dt = 100 A/μs
Reverse recovery charge	Q _{rr}		71		nC	

Electrical Characteristics Diagrams

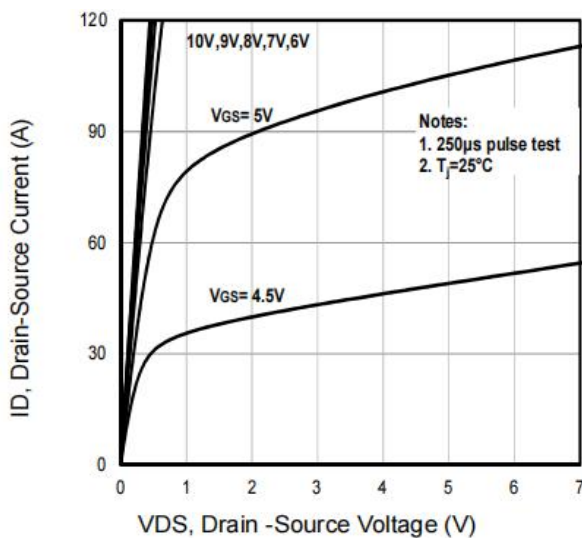


Fig1. Typical Output Characteristics

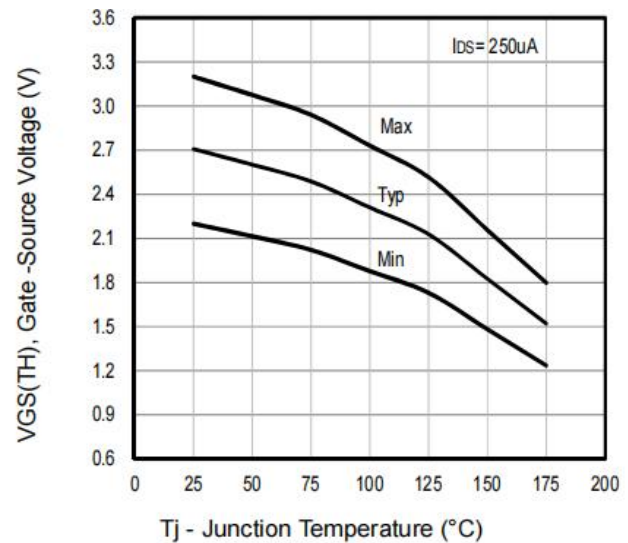
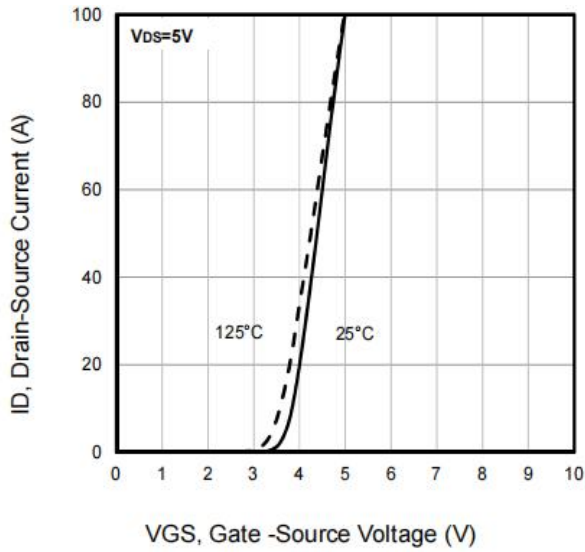
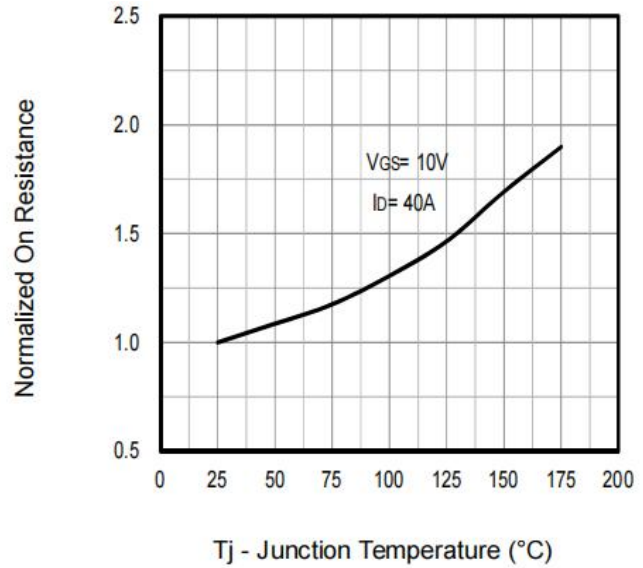
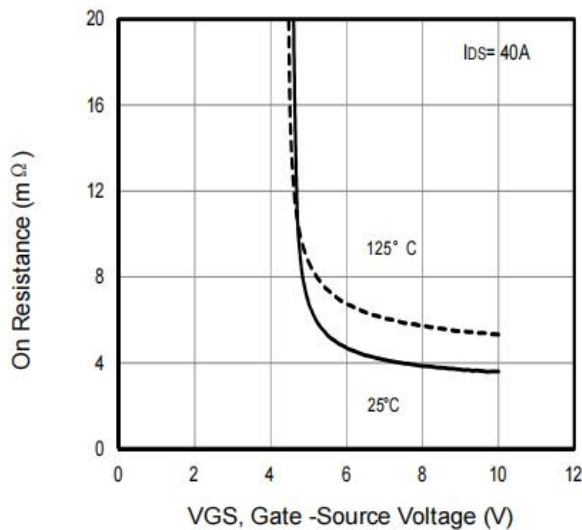
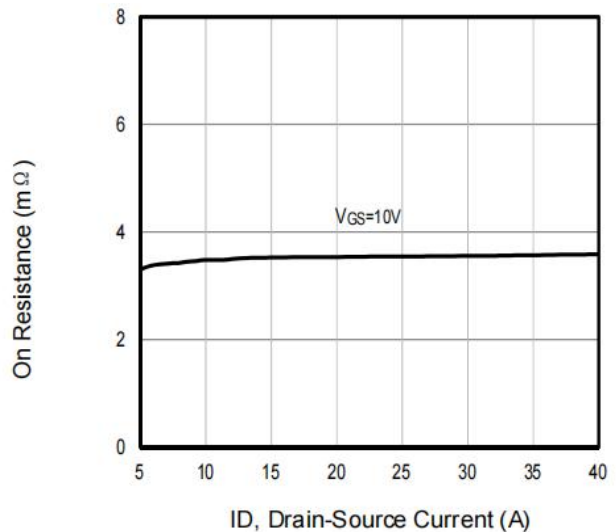
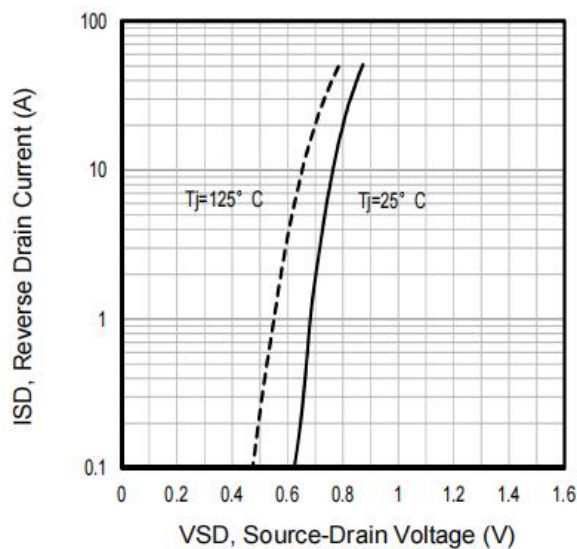
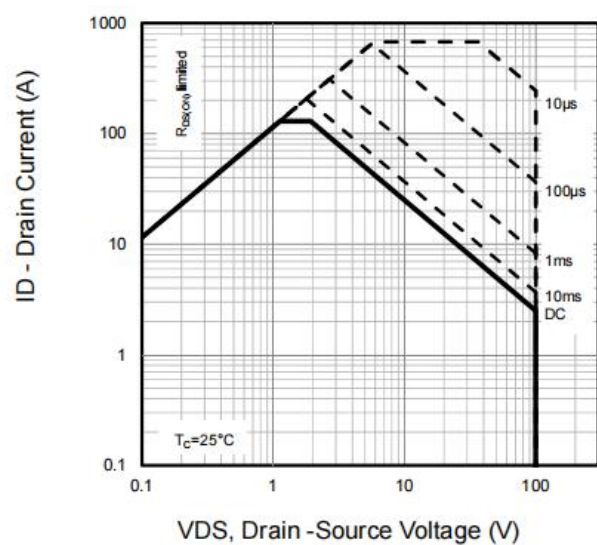
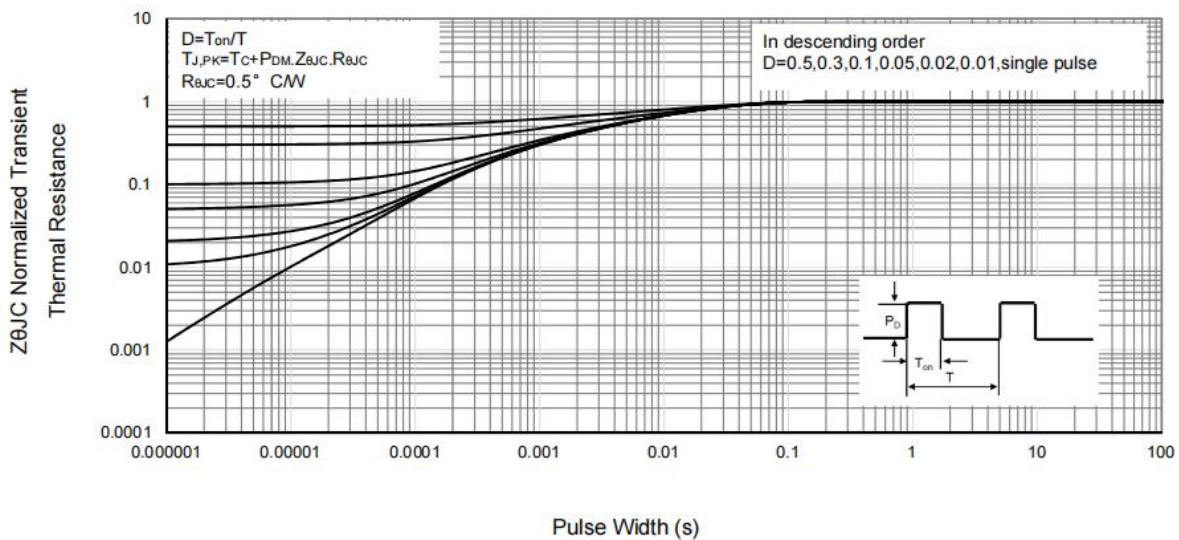
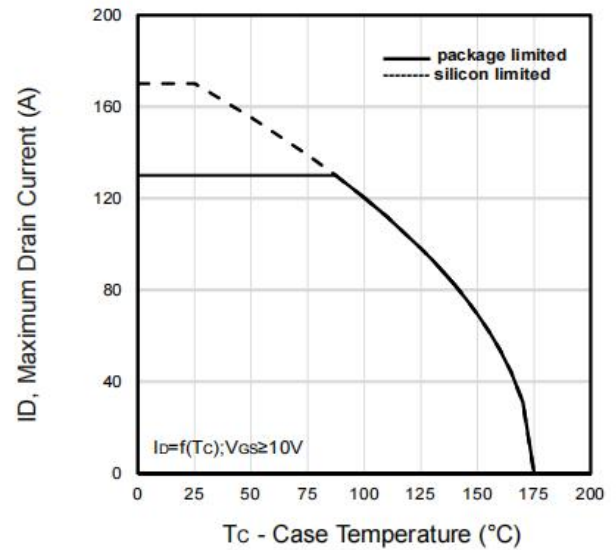
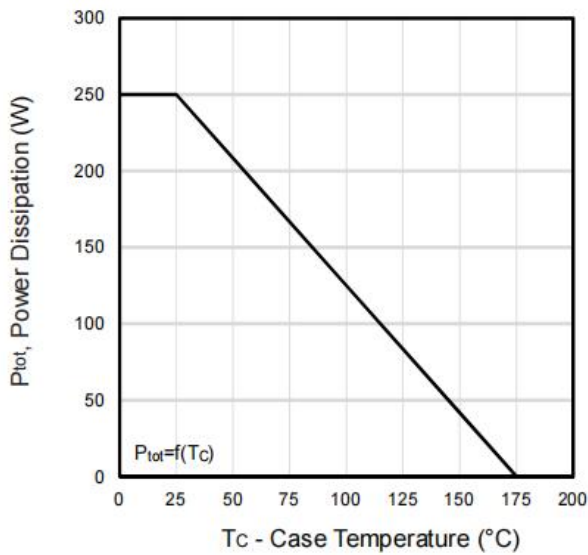
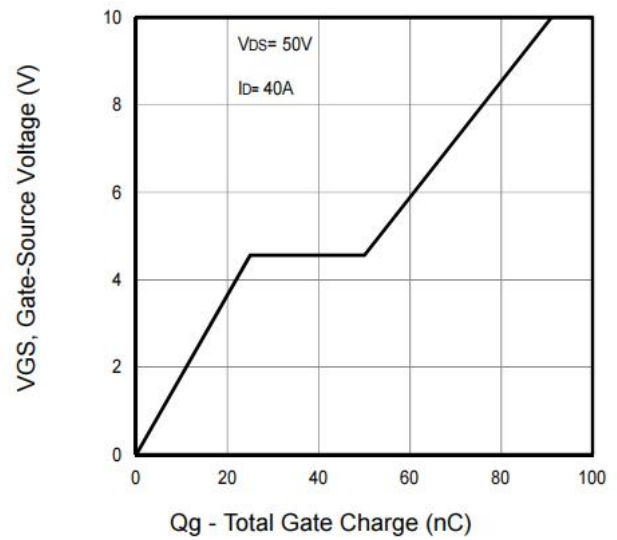
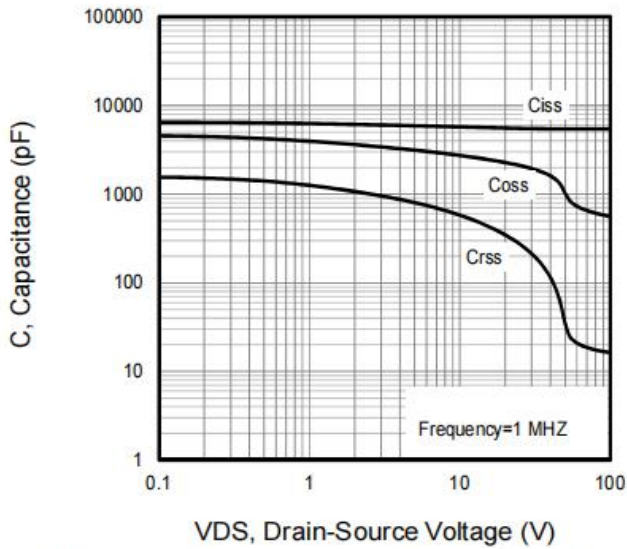


Fig2. $V_{GS(TH)}$ Gate -Source Voltage Vs. T_J


Fig3. Typical Transfer Characteristics

Fig4. Typical Normalized On-Resistance Vs. T_J

Fig5. Typical On Resistance Vs Gate-Source Voltage

Fig6. Typical On Resistance Vs Drain Current and Gate

Fig7. Typical Source-Drain Diode Forward Voltage

Fig8. Maximum Safe Operating Area



Test circuits and waveforms

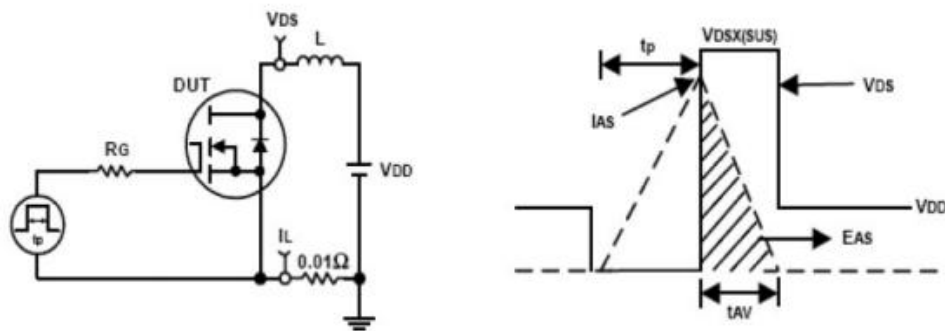


Fig14. Unclamped Inductive Test Circuit and waveforms

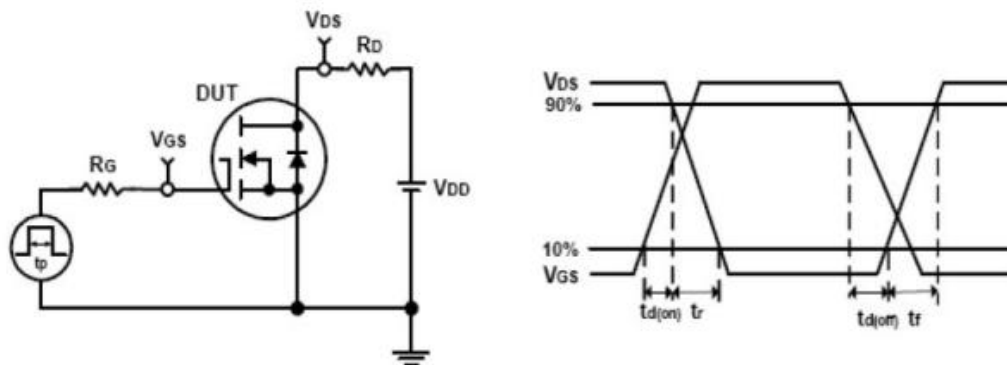
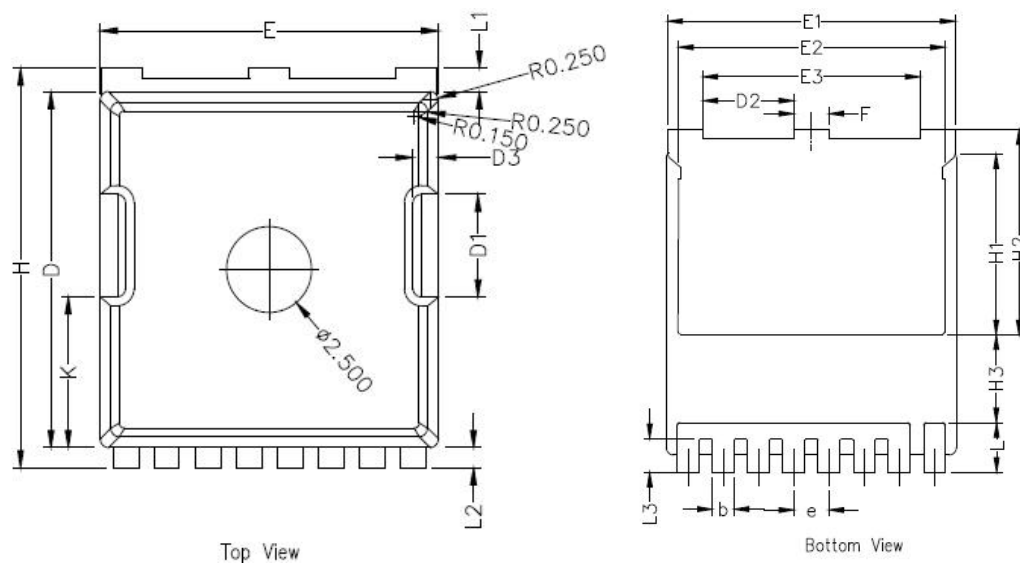


Fig15. Switching Time Test Circuit and waveforms

Package Outline Dimensions



Symbols	Millimeters		
	MIN.	NOM.	MAX.
A	2.20	2.30	2.40
b	0.65	0.75	0.85
C	0.508 REF		
D	10.25	10.40	10.55
D1	2.85	3.00	3.15
D2	2.95	3.10	3.25
D3	0.75 REF		
E	9.75	9.90	10.05
E1	9.65	9.80	9.95
E2	8.95	9.10	9.25
E3	7.25	7.40	7.55
e	1.20 BSC		
F	1.05	1.20	1.35
H	11.55	11.70	11.85
H1	6.03	6.18	6.33
H2	6.85	7.00	7.15
H3	3.00 BSC		
L	1.55	1.70	1.85
L1	0.55	0.70	0.85
L2	0.45	0.60	0.75
L3	1.00	1.15	1.30
M	0.08 REF		
β	8°	10°	12°
K	4.25	4.40	4.55

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