

### ● General Description

The AGM03N85H combines advanced trench MOSFET technology with a low resistance package to provide extremely low  $R_{DS(ON)}$ .

This device is ideal for load switch and battery protection applications.

### ● Features

- Advance high cell density Trench technology
- Low  $R_{DS(ON)}$  to minimize conductive loss
- Low Gate Charge for fast switching
- Low Thermal resistance

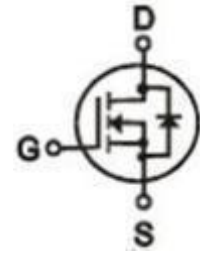
### ● Application

- MB/VGA Vcore
- SMPS 2<sup>nd</sup> Synchronous Rectifier
- POL application
- BLDC Motor driver

### Product Summary

BVDSS	RDSON	ID
85V	2.8mΩ	140A

### TO-263 Pin Configuration



### Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM03N85H	AGM03N85H	TO-263	----	----	800

**Table 1. Absolute Maximum Ratings (TA=25°C)**

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	85	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(Tc=25°C) <b>(Note 1)</b>	140	A
	Drain Current-Continuous(Tc=100°C)	116	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed <b>(Note 2)</b>	550	A
PD	Maximum Power Dissipation(Tc=25°C)	227	w
	Maximum Power Dissipation(Tc=100°C)	90	w
EAS	Avalanche energy <b>(Note 3)</b>	560	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 150	°C

**Table 2. Thermal Characteristic**

Symbol	Parameter	Typ	Max	Unit
RθJA	Thermal Resistance Junction-ambient (Steady State) <sup>1</sup>	---	62	°C/W
RθJC	Thermal Resistance Junction-Case <sup>1</sup>	---	0.55	°C/W

**Table 3. Electrical Characteristics (TA=25°C unless otherwise noted)**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>On/Off States</b>						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	85	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=80V,VGS=0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=250μA	2.0	3.0	4.0	V
gFS	Forward Transconductance	VDS=10V,ID=15A	--	10	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=20A	--	2.8	3.4	mΩ
		VGS=4.5V, ID=15A	--	--	--	mΩ
<b>Dynamic Characteristics</b>						
Ciss	Input Capacitance	VDS=50V,VGS=0V, F=1MHZ	--	6890	--	pF
Coss	Output Capacitance		--	2500	--	pF
Crss	Reverse Transfer Capacitance		--	140	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	--	--	Ω
<b>Switching Times</b>						
td(on)	Turn-on Delay Time	VGS=10V,VDS=50V ID=10A,RGEN=3Ω	--	29	--	nS
tr	Turn-on Rise Time		--	33	--	nS
td(off)	Turn-Off Delay Time		--	48	--	nS
tf	Turn-Off Fall Time		--	26	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=50V, ID=12A	--	102	--	nC
Qgs	Gate-Source Charge		--	30	--	nC
Qgd	Gate-Drain Charge		--	20	--	nC
<b>Source-Drain Diode Characteristics</b>						
ISD	Source-Drain Current(Body Diode)		--	--	140	A
VSD	Forward on Voltage	VGS=0V,IS=20A	--	--	1.0	V
trr	Reverse Recovery Time	IS=10A , di/dt=100A/μs , TJ=25°C	--	82	--	ns
Qrr	Reverse Recovery Charge		--	170	--	nc

Notes 1.The maximum current rating is package limited.

Notes 2.Repetitive Rating: Pulse width limited by maximum junction temperature

Notes 3.EAS condition: TJ=25°C

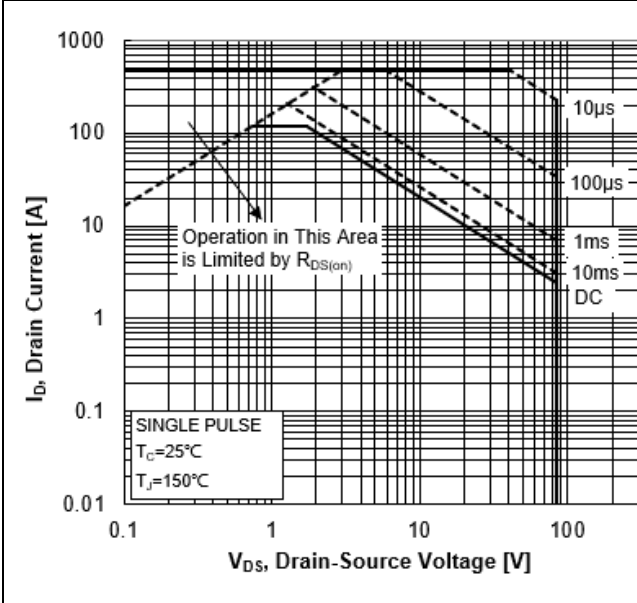
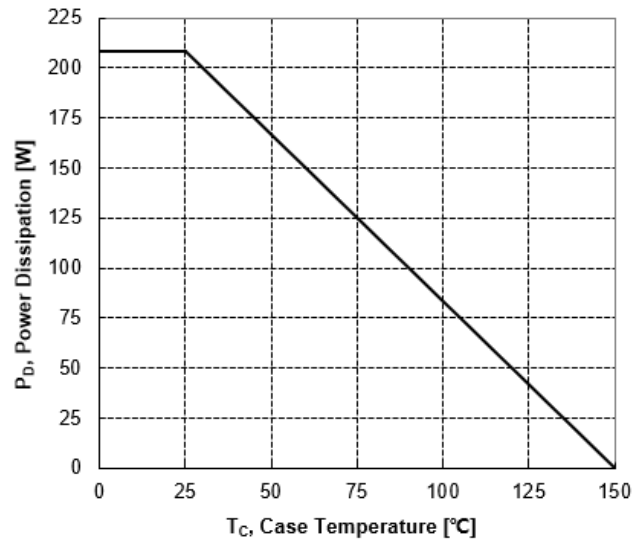
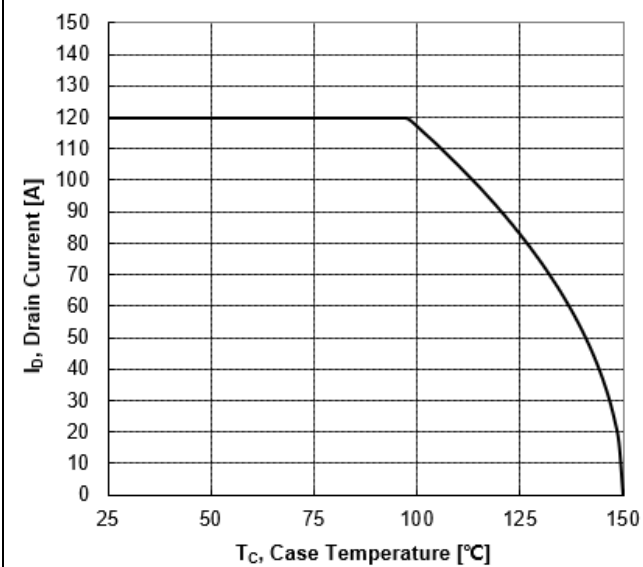
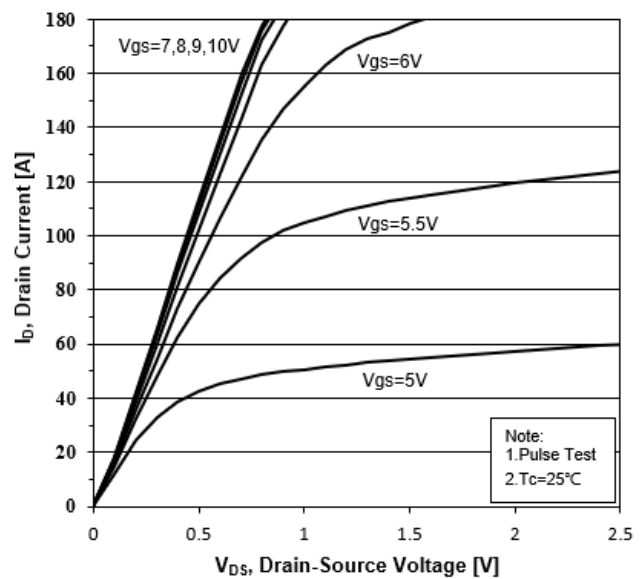
**Figure 1. Safe Operating Area**

**Figure 2. Maximum Power Dissipation vs Case Temperature**

**Figure 3. Maximum Continuous Drain Current vs Case Temperature**

**Figure 4. Typical Output Characteristics**


Figure 5. Transient Thermal Impedance

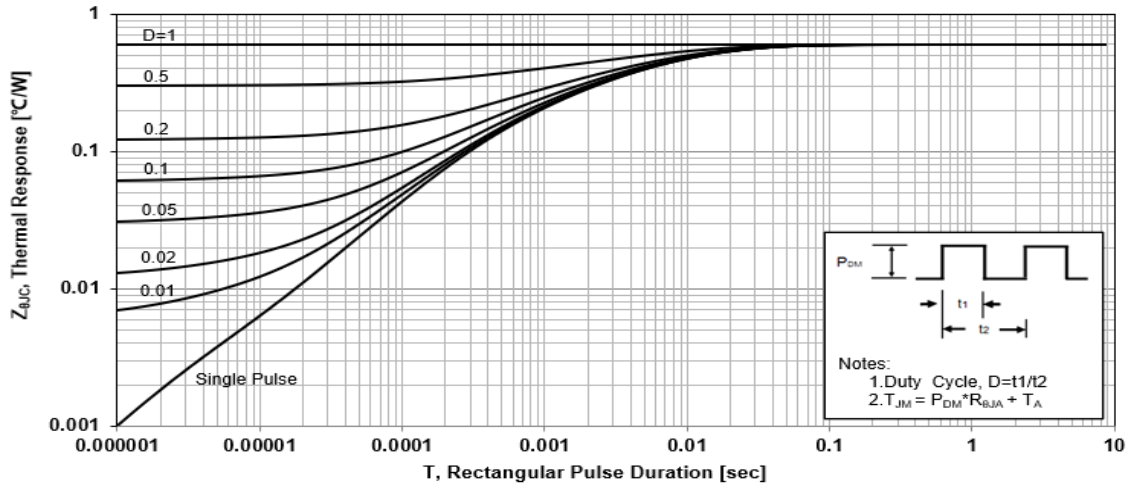


Figure 6. Typical Transfer Characteristics

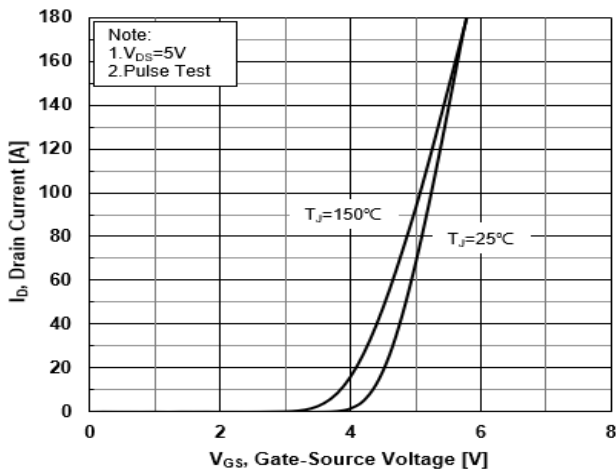


Figure 7. Source-Drain Diode Forward Characteristics

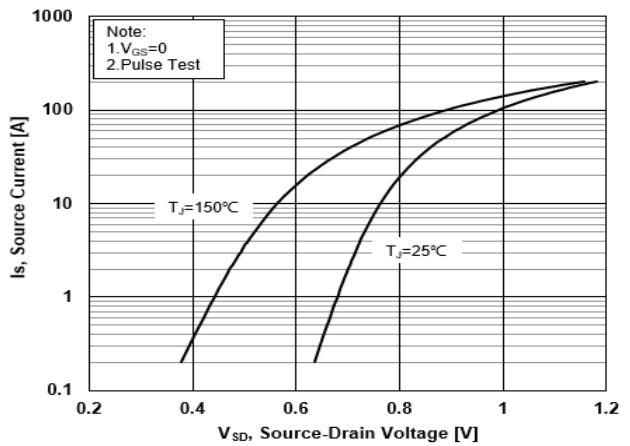


Figure 12. Capacitance Characteristics

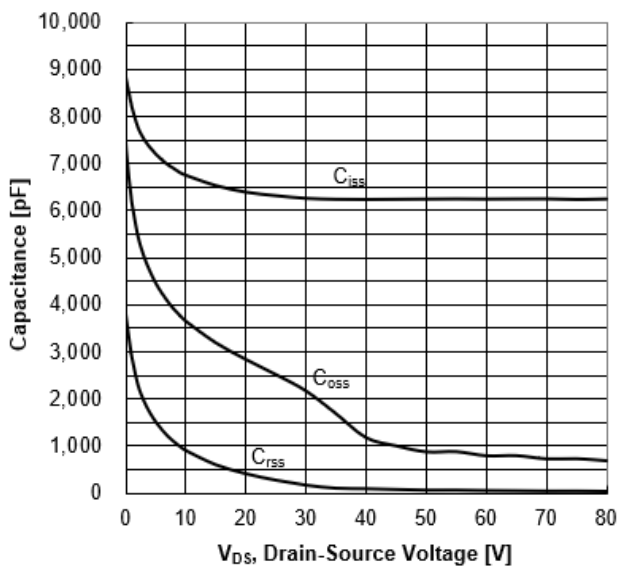
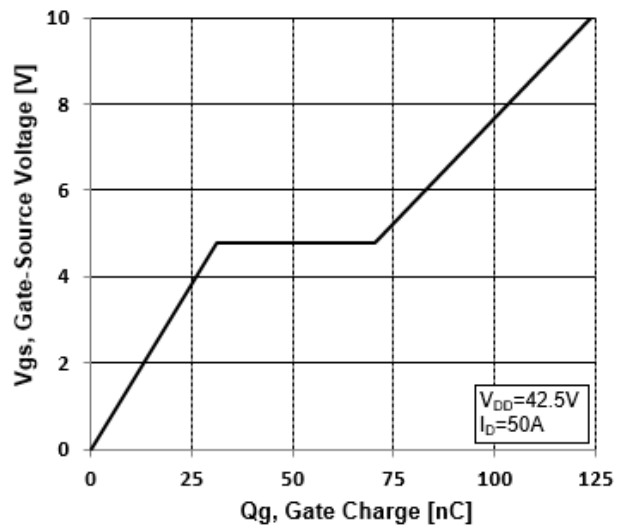


Figure 13. Typical Gate Charge vs Gate\_Source Voltage



## Test Circuit and Waveform

Figure 14. Resistive Switching Test Circuit

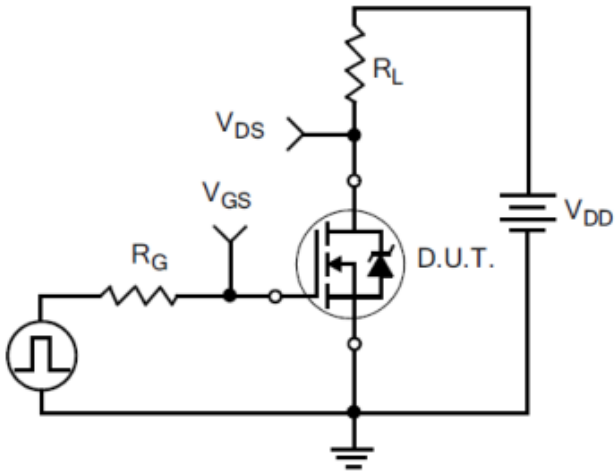


Figure 15. Resistive Switching Waveforms

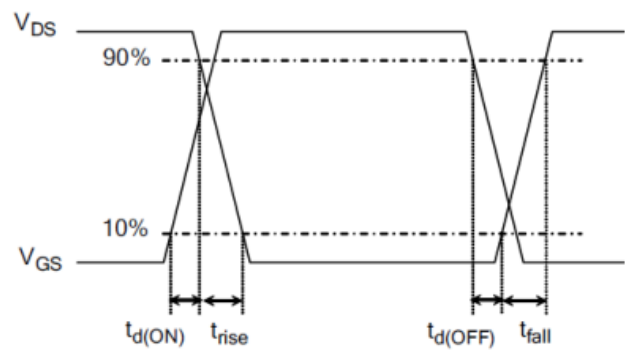


Figure 16. Gate Charge Test Circuit

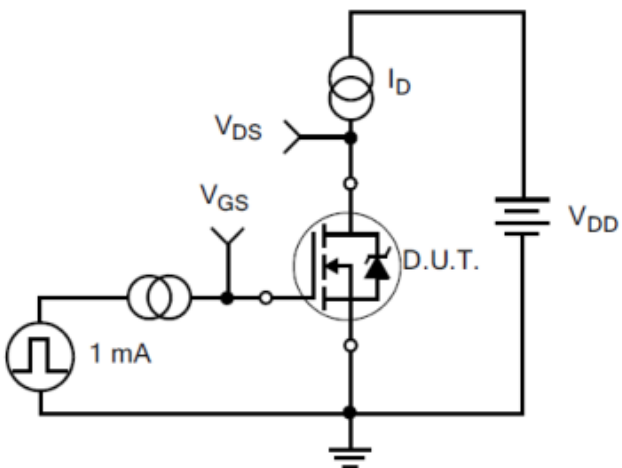


Figure 17. Gate Charge Waveforms

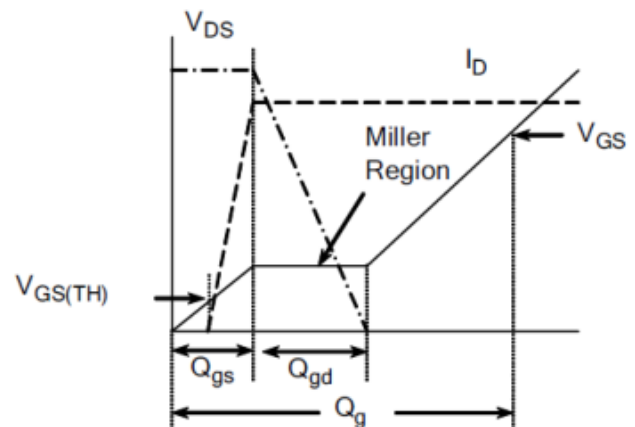


Figure 18. Diode Reverse Recovery Test Circuit

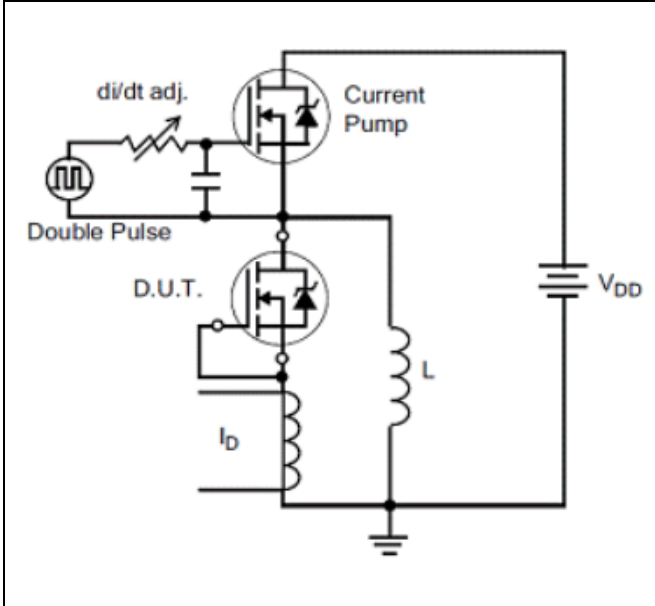


Figure 19. Diode Reverse Recovery Waveform

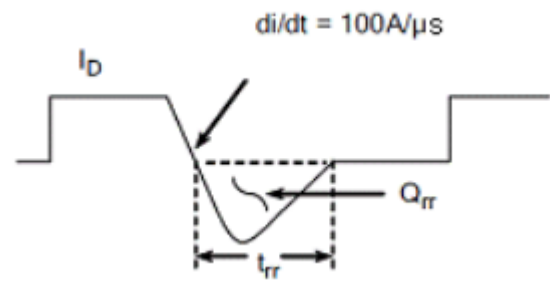


Figure 20. Unclamped Inductive Switching Test Circuit

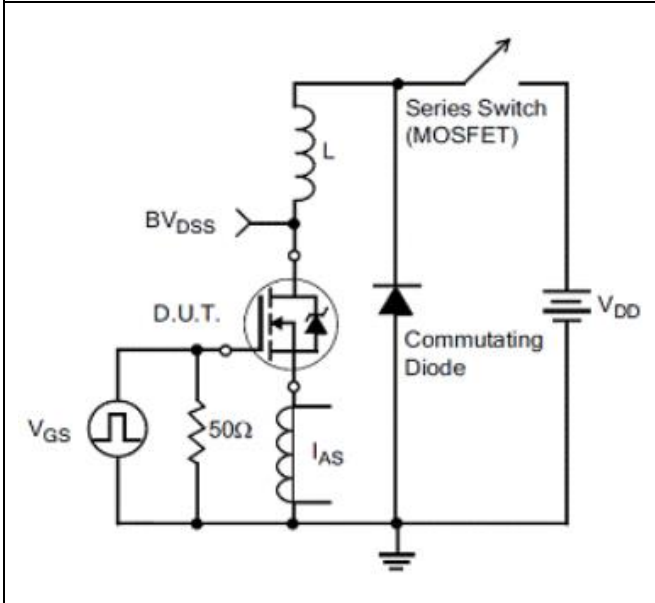
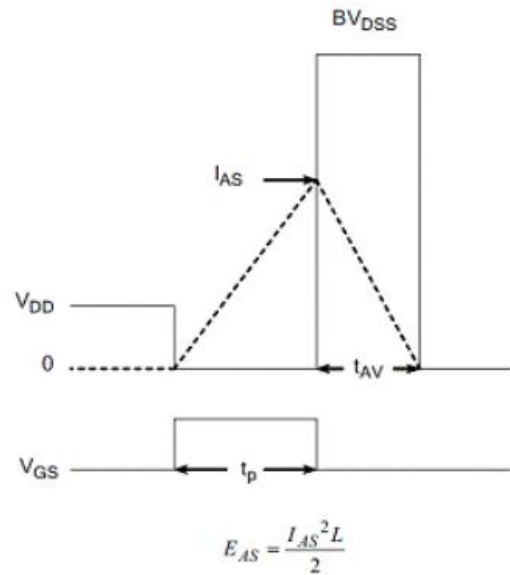
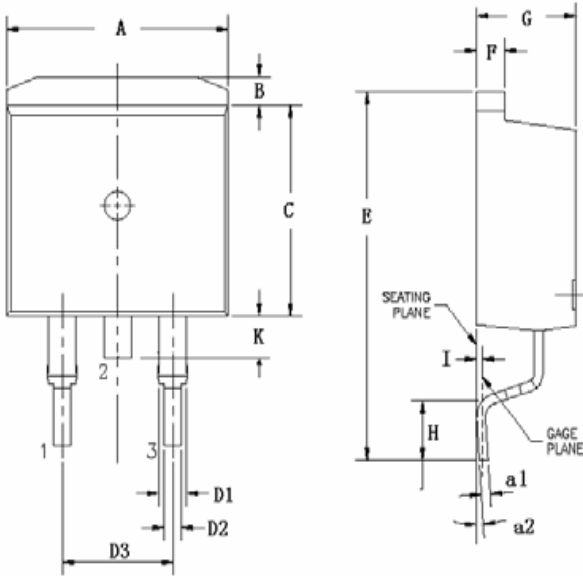


Figure 21. Unclamped Inductive Switching Waveform



## TO-263 PACKAGE INFORMATION

Dimensions in mm unless otherwise specified



Symbol	Min	Nom	Max
A	9.66	9.97	10.28
B	1.02	1.17	1.32
C	8.59	9.00	9.40
D1	1.14	1.27	1.40
D2	0.70	0.83	0.95
D3		5.08	
E	15.09	15.24	15.39
F	1.15	1.28	1.40
G	4.30	4.50	4.70
H	2.29	2.54	2.79
I		0.25	
K	1.30	1.45	1.60
a1	0.45	0.55	0.65
a2(degree)	0°		8°


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