

● General Description

The AGMH022N10LL 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
- 100% Avalanche tested
- 100% DVDS tested

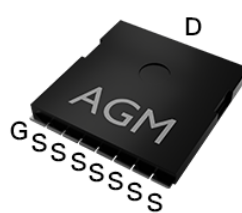
● Application

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

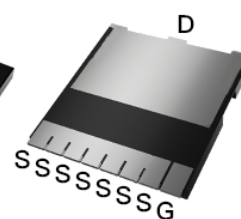
Product Summary

BVDS	RDS(ON)	ID
100V	1.8mΩ	295A

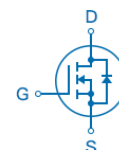
TOLL Pin Configuration



Top View



Bottom View



Pin	Description
1	Gate(G)
2,3,4,5,6,7,8	Source(S)
9	Drain(D)

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGMH022N10LL	AGMH022N10LL	TOLL	330mm	25mm	2000

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	100	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(Tc=25°C) (Note 1)	295	A
	Drain Current-Continuous(Tc=100°C)	177	A
IDM (pluse)	Drain Current-Pulsed (Note 2)	1180	A
PD	Maximum Power Dissipation(Tc=25°C)	520	w
	Maximum Power Dissipation(Tc=100°C)	259	w
EAS	Avalanche energy (Note 3)	1024	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 175	°C

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
RθJC	Thermal Resistance Junction-Case ¹	---	0.29	°C/W

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	V _{GS} =0V ID=250μA	100	--	--	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} =100V,V _{GS} =0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	V _{GS} =±20V,V _{DS} =0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	V _{DS} =V _{GS} ,ID=250μA	2	3.4	4	V
gFS	Forward Transconductance	V _{DS} =5V,ID=10A	--	35	--	S
RDS(on)	Drain-Source On-State Resistance	V _{GS} =10V, ID=50A	--	1.8	2.3	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	V _{DS} =40V,V _{GS} =0V ,F=1MHZ	--	6220	--	pF
Coss	Output Capacitance		--	2100	--	pF
Crss	Reverse Transfer Capacitance		--	120	--	pF
Switching Times						
td(on)	Turn-on Delay Time	V _{GS} =10V,V _{DS} =50V, ID=80A,RGEN=1.6Ω	--	82	--	nS
tr	Turn-on Rise Time		--	99	--	nS
td(off)	Turn-Off Delay Time		--	146	--	nS
tf	Turn-Off Fall Time		--	42	--	nS
Qg	Total Gate Charge	V _{GS} =10V, V _{DS} =50V, ID=20A	--	163	--	nC
Qgs	Gate-Source Charge		--	51	--	nC
Qgd	Gate-Drain Charge		--	43	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	295	A
VSD	Forward on Voltage	V _{GS} =0V,IS=20A	--	--	1.2	V
trr	Reverse Recovery Time	IF=20A , dI/dt=100A/μs , T _J =25°C	--	134	--	ns
Qrr	Reverse Recovery Charge		--	689	--	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: T_J=25°C,VDD=50V,Vgs=10V , ID=64A,L=0.5mH,RG=25ohm

Typical Electrical and Thermal Characteristics

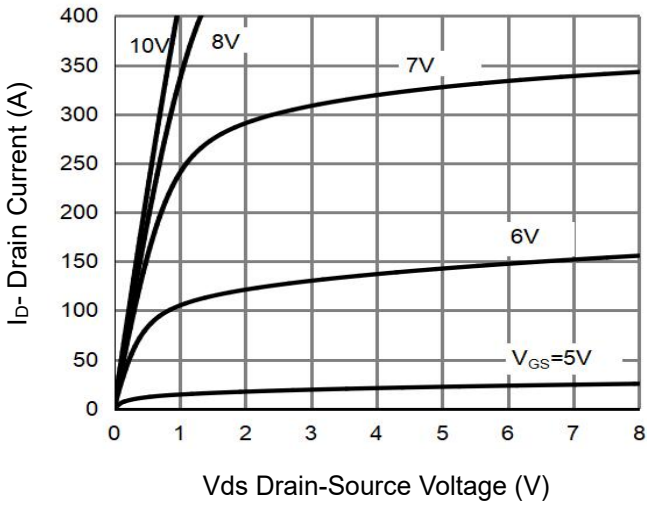


Figure 1 Output Characteristics

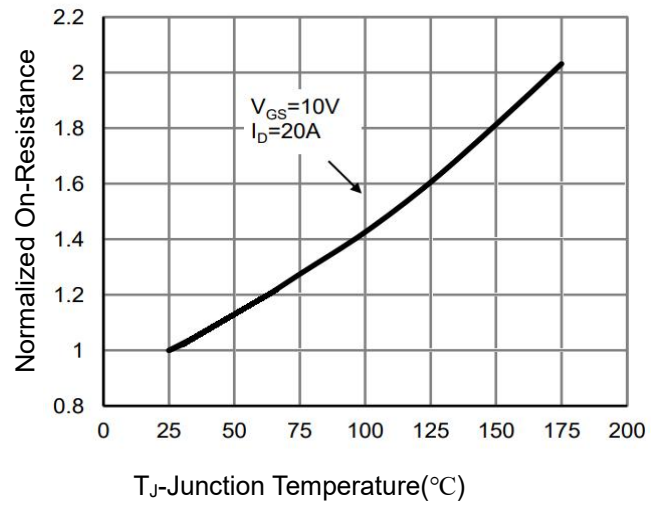


Figure 4 Rdson-Junction Temperature

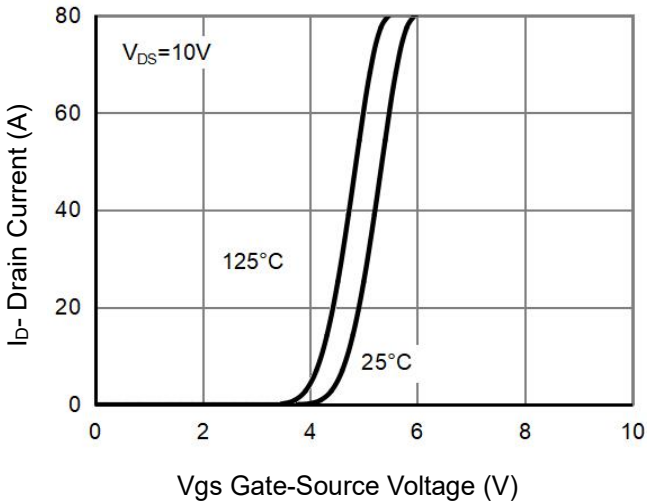


Figure 2 Transfer Characteristics

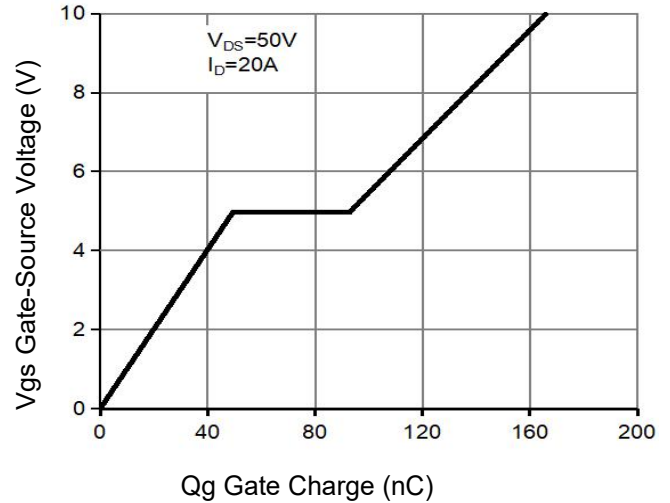


Figure 5 Gate Charge

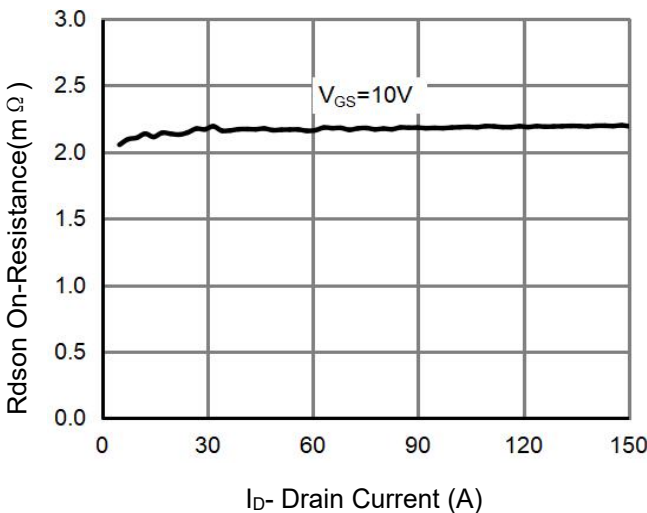


Figure 3 Rdson- Drain Current

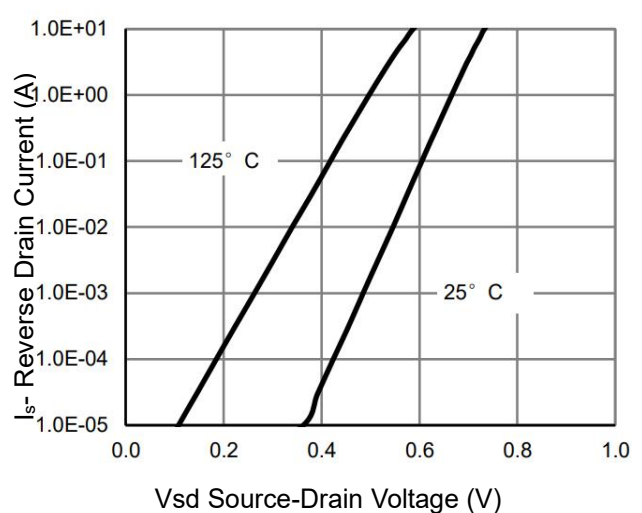
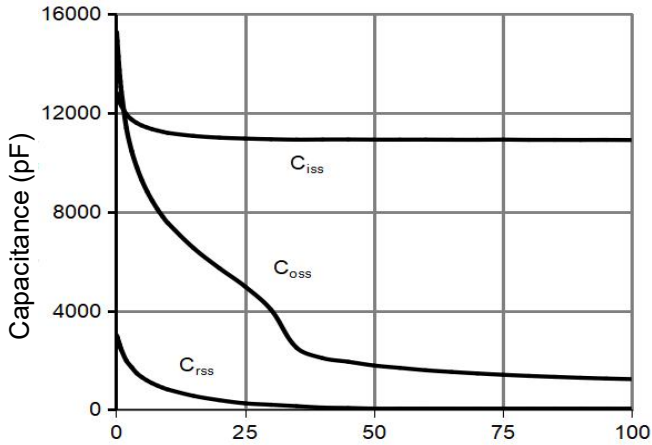
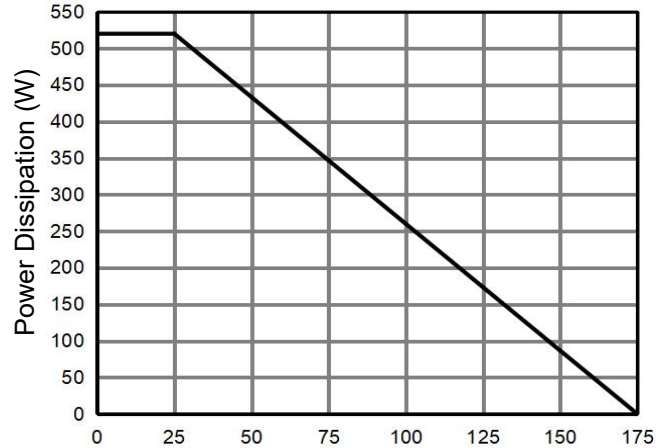


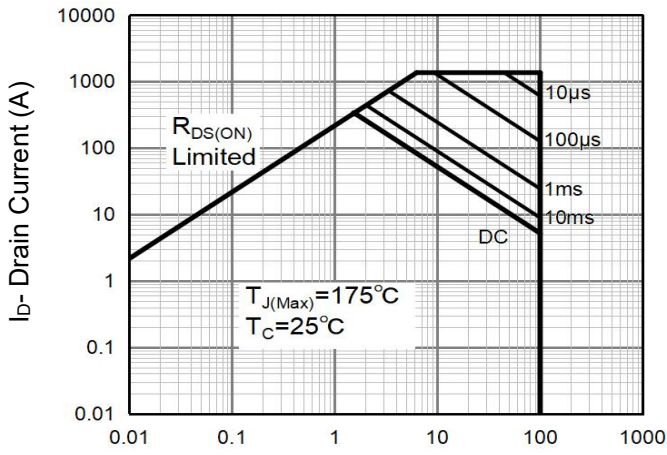
Figure 6 Source- Drain Diode Forward



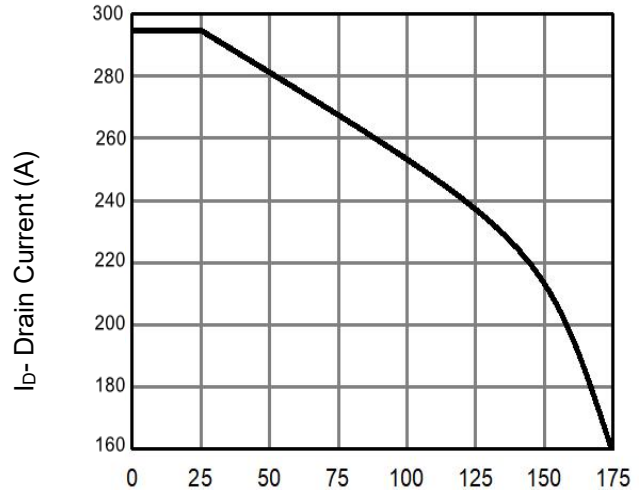
Vds Drain-Source Voltage (V)
Figure 7 Capacitance vs Vds



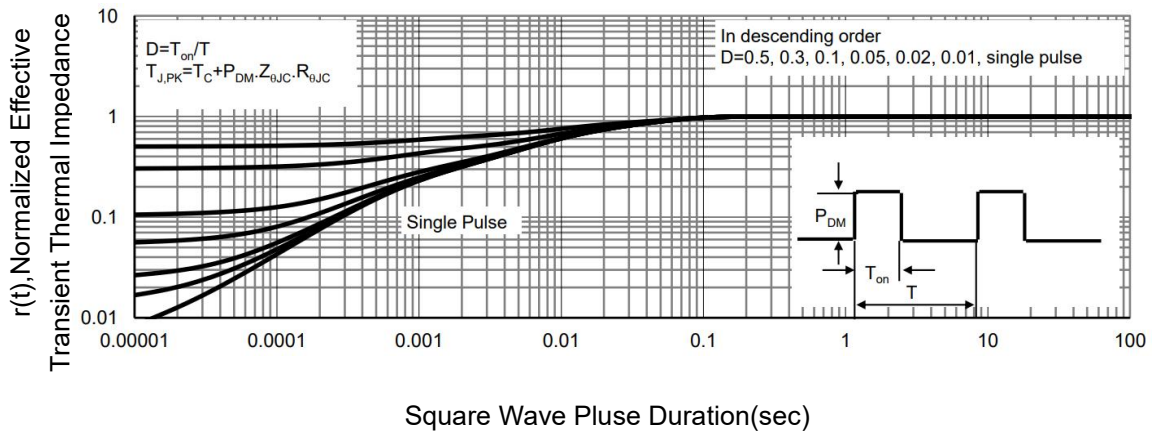
TJ-Junction Temperature(°C)
Figure 9 Power De-rating



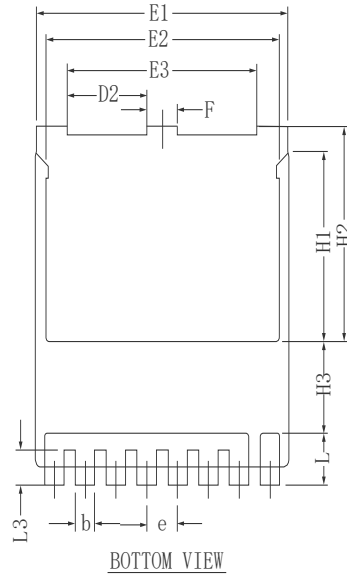
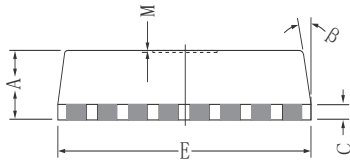
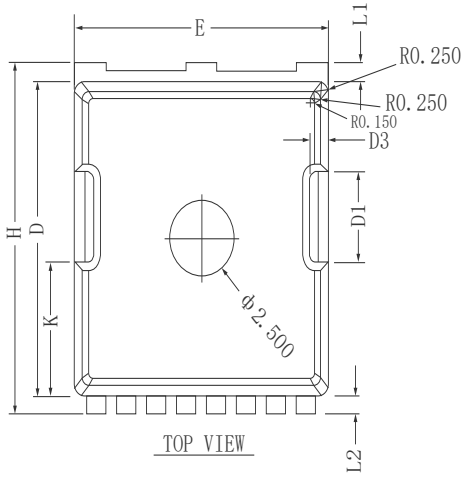
Vds Drain-Source Voltage (V)
Figure 8 Safe Operation Area (Note3)



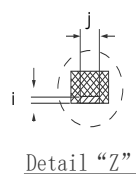
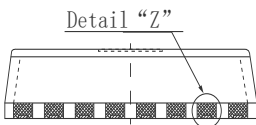
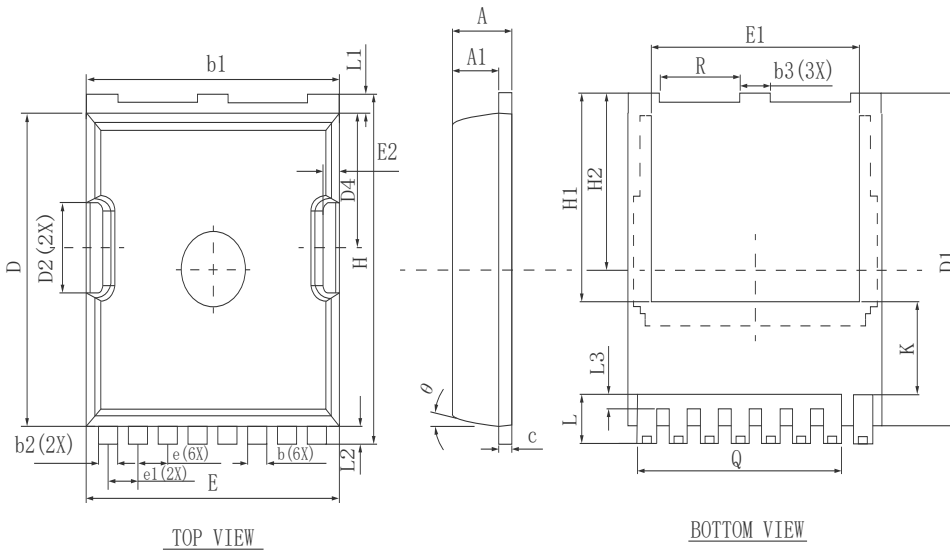
TJ-Junction Temperature (°C)
Figure 10 Current De-rating



Square Wave Pulse Duration(sec)
Figure 11 Maximum Transient Thermal Impedance

●Dimensions (TOLL)


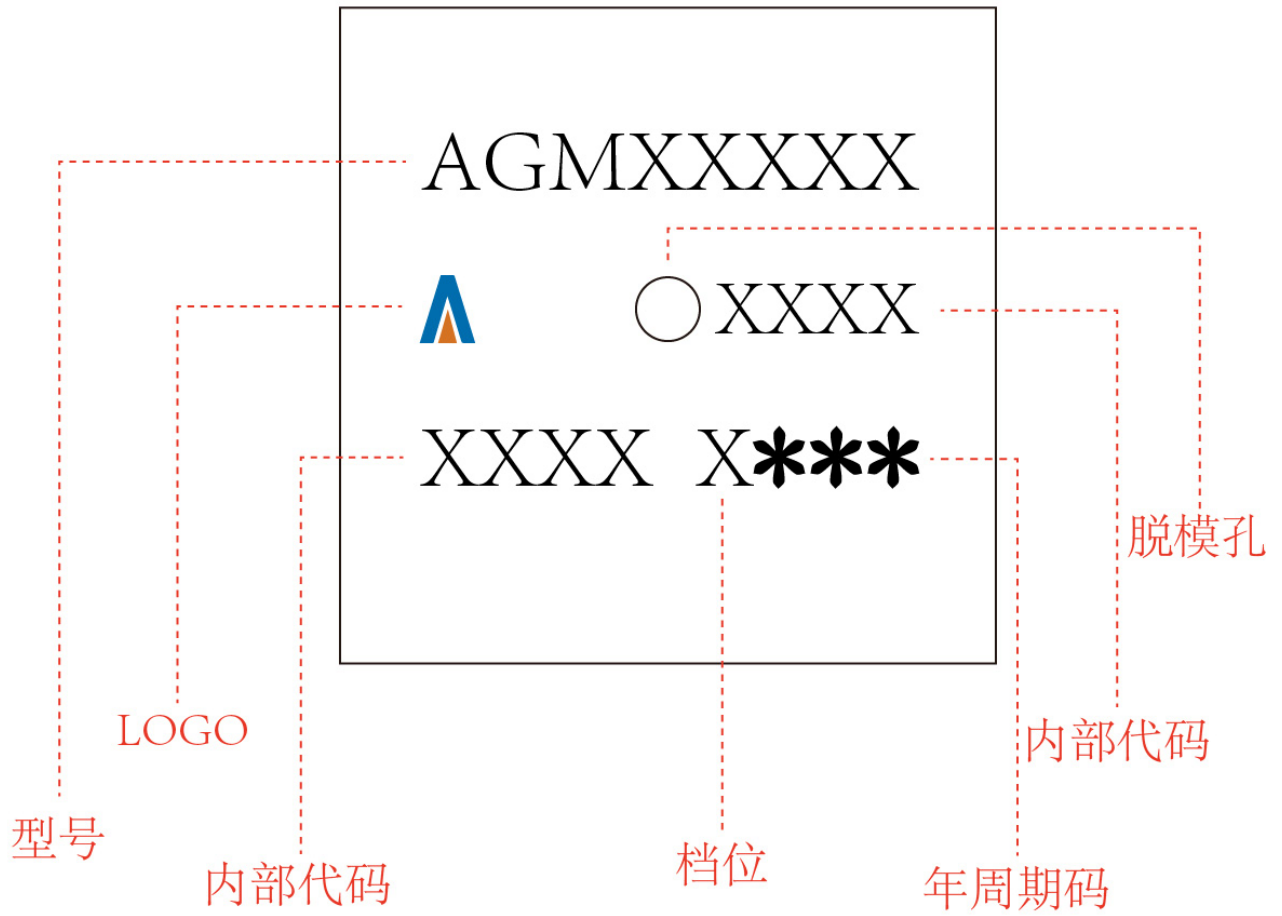
Symbols	Millimeters		
	MIN.	NOM.	MAX.
A	2.20	2.30	2.40
b	0.65	0.75	0.85
C	0.508 REF		
D	10.25	10.40	10.55
D1	2.85	3.00	3.15
D2	2.95	3.10	3.25
D3	0.75 REF		
E	9.75	9.90	10.05
E1	9.65	9.80	9.95
E2	8.95	9.10	9.25
E3	7.25	7.40	7.55
e	1.20 BSC		
F	1.05	1.20	1.35
H	11.55	11.70	11.85
H1	6.03	6.18	6.33
H2	6.85	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



SYMBOL	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.200	2.300	2.400
A1	1.700	1.800	1.900
b	0.600	0.700	0.800
b1	9.700	9.800	9.900
b2	0.650	0.750	0.850
b3	1.100	1.200	1.300
c	0.400	0.500	0.600
D	10.300	10.400	10.500
D1	11.000	11.100	11.200
D2	3.200	3.300	3.400
D4	4.470	4.570	4.670
E	9.800	9.900	10.000
E1	8.000	8.100	8.200
E2	0.500	0.600	0.700
e	1.200 BSC		
e1	1.225 BSC		
H	11.600	11.700	11.800
H1	6.950 BSC		
H2	5.900 BSC		
i	0.100 REF.		
j	0.350 REF.		
K	3.100 REF.		
L	1.550	1.650	1.750
L1	0.600	0.700	0.800
L2	0.500	0.600	0.700
L3	0.400	0.500	0.600
Q	7.950 REF.		
R	3.000	3.100	3.200
θ	10° REF.		

TOLL

Marking Instructions:




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