

### ● General Description

The AGM40P30AP 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

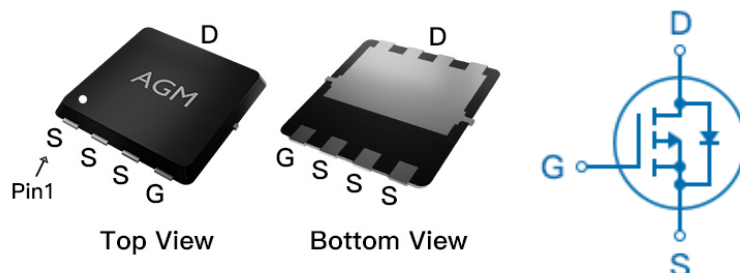
### ● Application

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

### Product Summary

BVDSS	RDSON	ID
-40V	26mΩ	-33A

### PDFN3.3\*3.3 Pin Configuration



### Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM40P30AP	AGM40P30AP	PDFN3.3*3.3	330mm	12mm	5000

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	-40	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(Tc=25°C) <b>(Note 1)</b>	-33	A
	Drain Current-Continuous(Tc=100°C)	-25	A
IDM (pulse)	Drain Current-Pulsed <b>(Note 2)</b>	-98	A
PD	Maximum Power Dissipation(Tc=25°C)	59	w
	Maximum Power Dissipation(Tc=100°C)	23	w
EAS	Avalanche energy <b>(Note 3)</b>	144	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>	---	60	°C/W
RθJC	Thermal Resistance Junction-Case <sup>1</sup>	---	2.1	°C/W

**Table 3. Electrical Characteristics (T<sub>J</sub>=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	-40	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=-40V,VGS=0V	--	--	-1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=-250μA	-1.2	-1.6	-2.2	V
gFS	Forward Transconductance	VDS=-5V,ID=-5A	--	10	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=-10V, ID=-10A	--	26	38	mΩ
		VGS=-4.5V, ID=-5A	--	42	54	mΩ
<b>Dynamic Characteristics</b>						
Ciss	Input Capacitance	VDS=-20V,VGS=0V ,F=1MHZ	--	1820	--	pF
Coss	Output Capacitance		--	200	--	pF
Crss	Reverse Transfer Capacitance		--	171	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	8.0	--	Ω
<b>Switching Times</b>						
td(on)	Turn-on Delay Time	VGS=-10V,VDS=-25V, ID=-10A,RGEN=3.3Ω	--	13.5	--	nS
tr	Turn-on Rise Time		--	18	--	nS
td(off)	Turn-Off Delay Time		--	36	--	nS
tf	Turn-Off Fall Time		--	25	--	nS
Qg	Total Gate Charge	VGS=-10V, VDS=-25V, ID=-12A	--	27	--	nC
Qgs	Gate-Source Charge		--	7.3	--	nC
Qgd	Gate-Drain Charge		--	5.6	--	nC
<b>Source-Drain Diode Characteristics</b>						
ISD	Source-Drain Current(Body Diode)		--	--	-33	A
VSD	Forward on Voltage	VGS=0V,IS=-10A	--	--	-1.2	V
trr	Reverse Recovery Time	Isd=-10A , dl/dt=100A/μs , TJ=25°C	--	--	--	ns
Qrr	Reverse Recovery Charge		--	--	--	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<sub>J</sub>=25°C , VDD=-20V,Vgs=-10V,ID=-24A,L=0.5mH,RG=25ohm

### Typical Characteristics

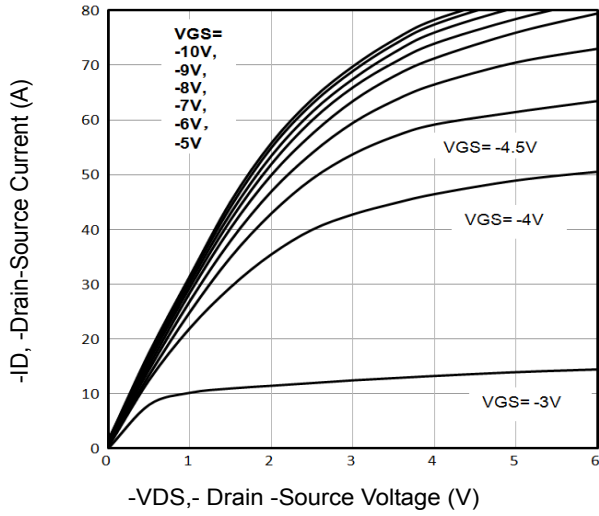


Fig1. Typical Output Characteristics

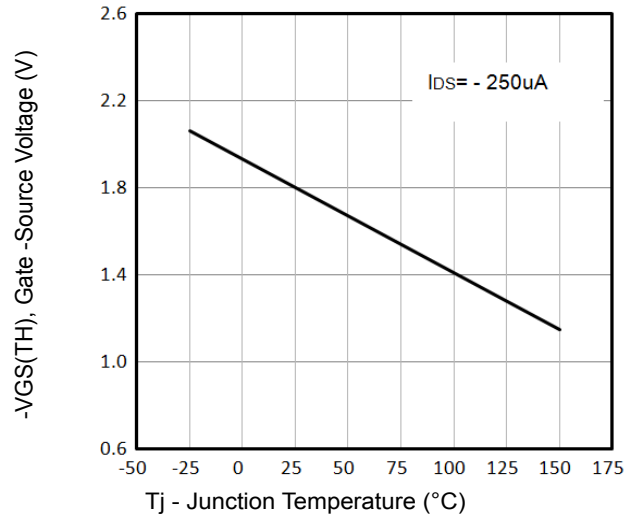


Fig2.  $-V_{GS(TH)}$  Gate -Source Voltage Vs.  $T_j$

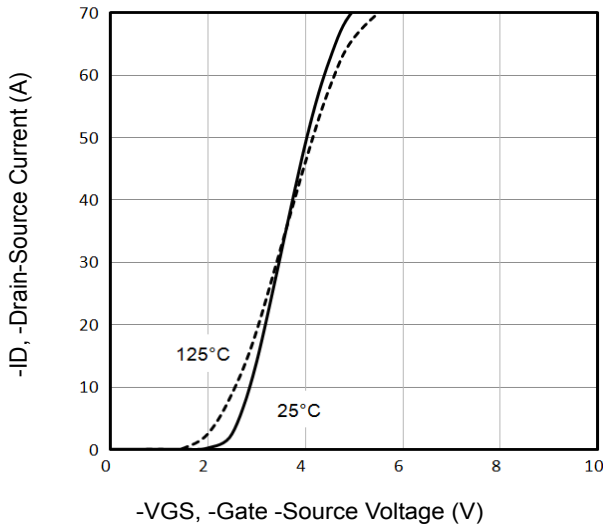


Fig3. Typical Transfer Characteristics

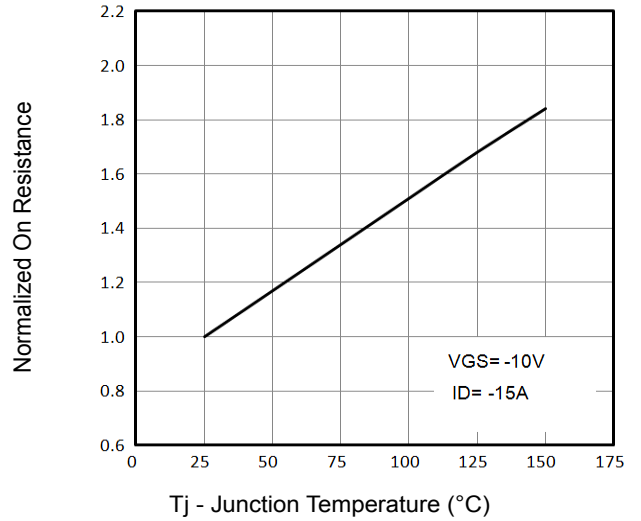


Fig4. Normalized On-Resistance Vs.  $T_j$

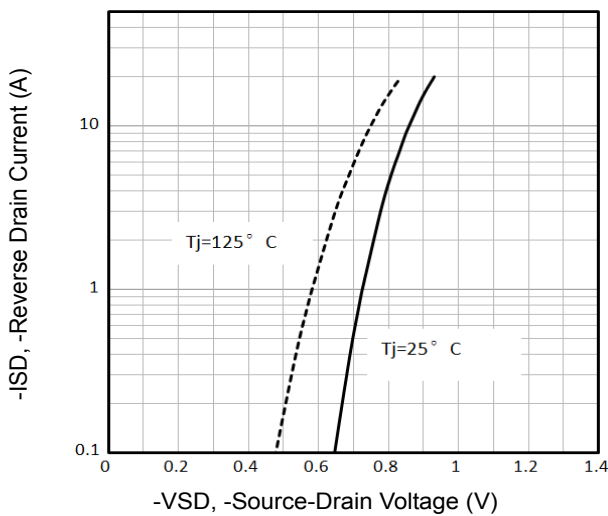


Fig5. Typical Source-Drain Diode Forward Voltage

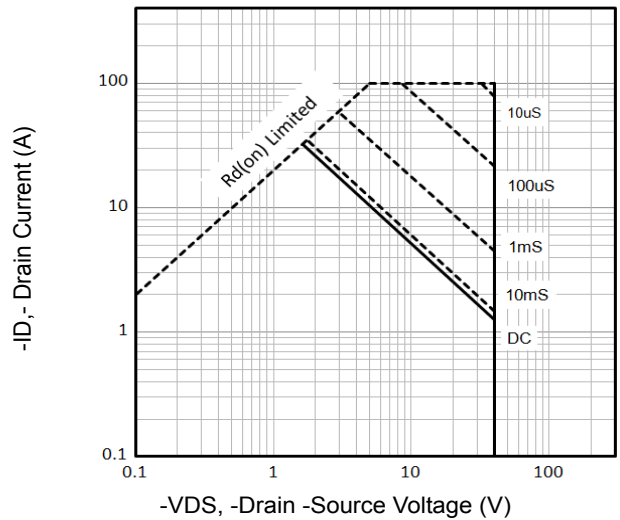


Fig6. Maximum Safe Operating Area

Typical Characteristics

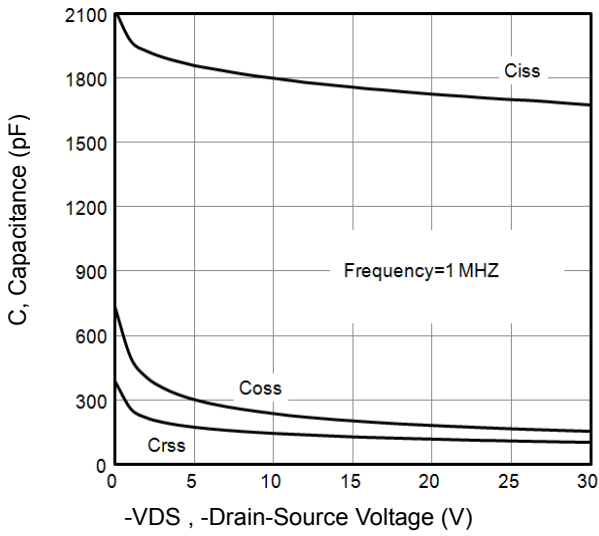


Fig7. Typical Capacitance Vs. Drain-Source Voltage

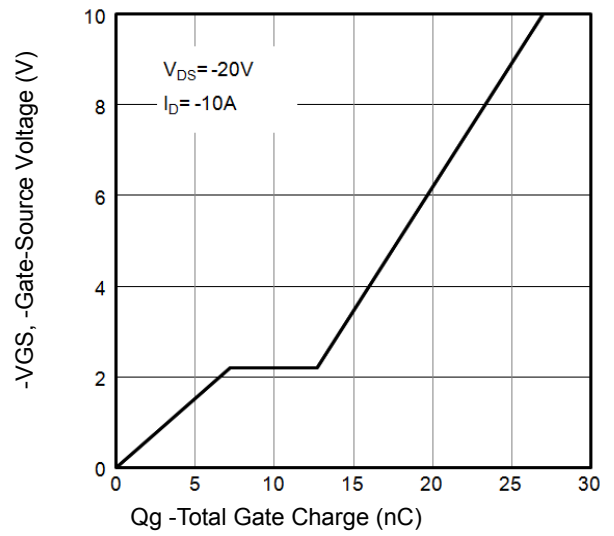


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

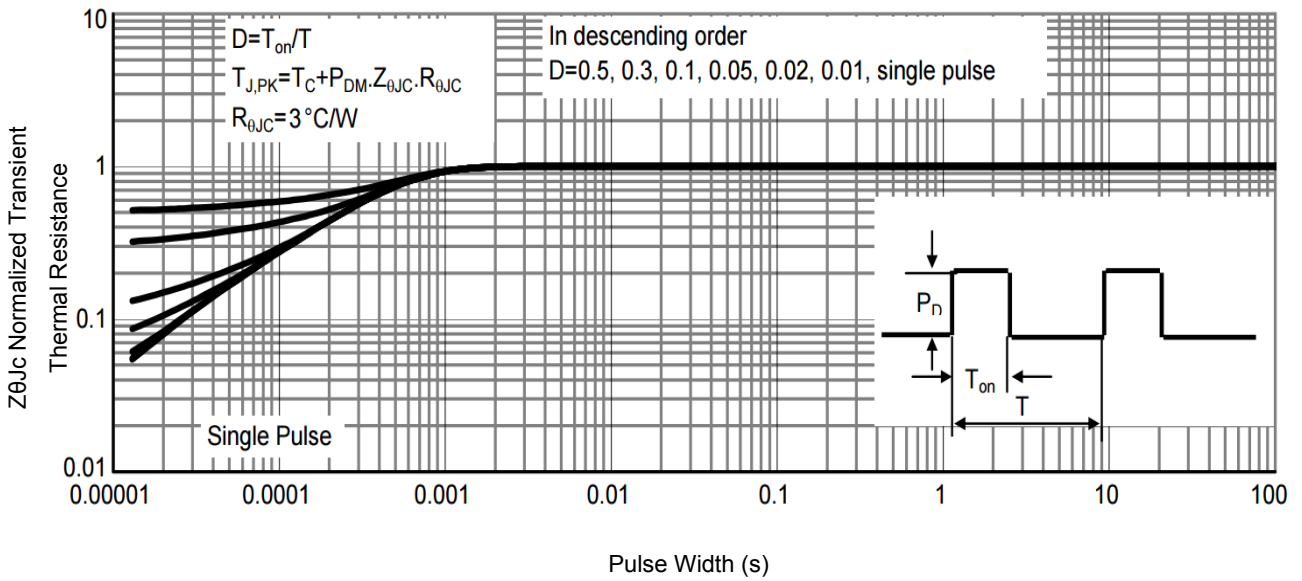


Fig9. Normalized Maximum Transient Thermal Impedance

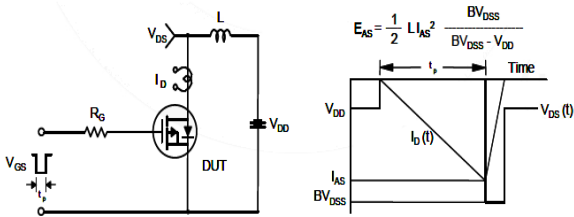


Fig10. Unclamped Inductive Test Circuit and Waveforms

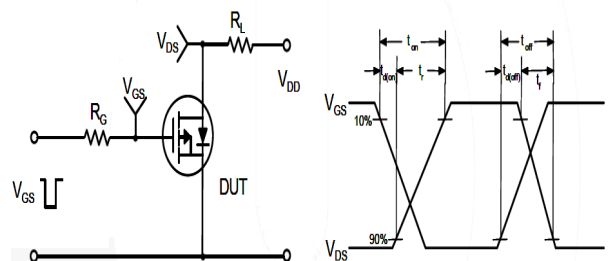
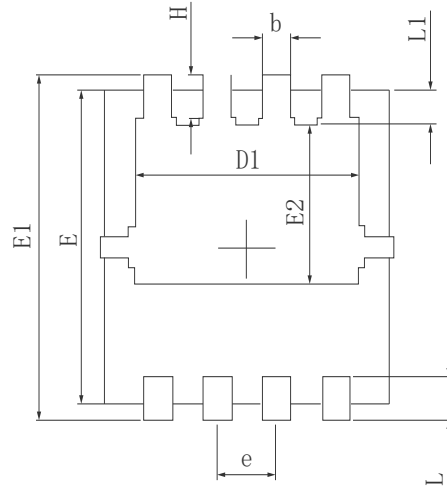
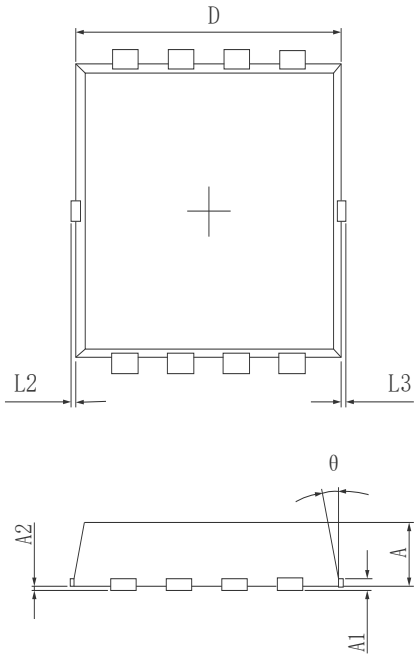
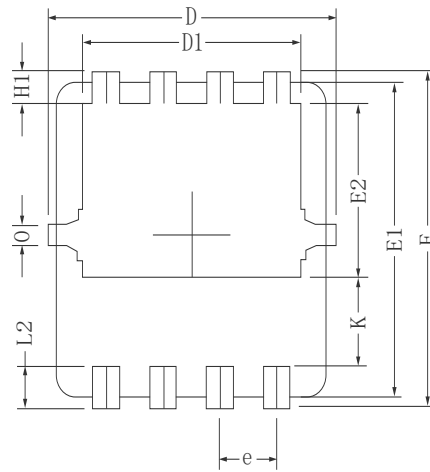
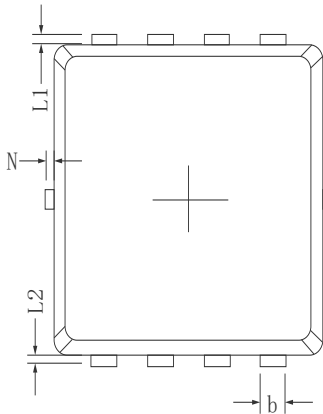


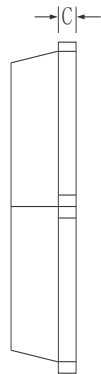
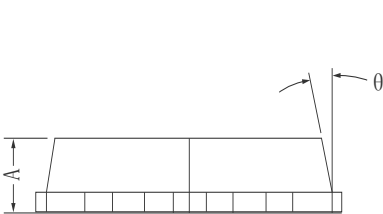
Fig11. Switching Time Test Circuit and waveforms

**●Dimensions (PDFN3.3\*3.3)**


SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.700	0.800	0.900
A1	0.152REF.		
A2	0~0.05		
D	3.000	3.100	3.200
D1	2.300	2.450	2.600
E	2.900	3.000	3.100
E1	3.150	3.300	3.450
E2	1.320	1.520	1.720
b	0.200	0.300	0.400
e	0.550	0.650	0.750
L	0.300	0.400	0.500
L1	0.180	0.330	0.480
L2	0~0.100		
L3	0~0.100		
H	0.315	0.415	0.515
θ	8°	10°	12°

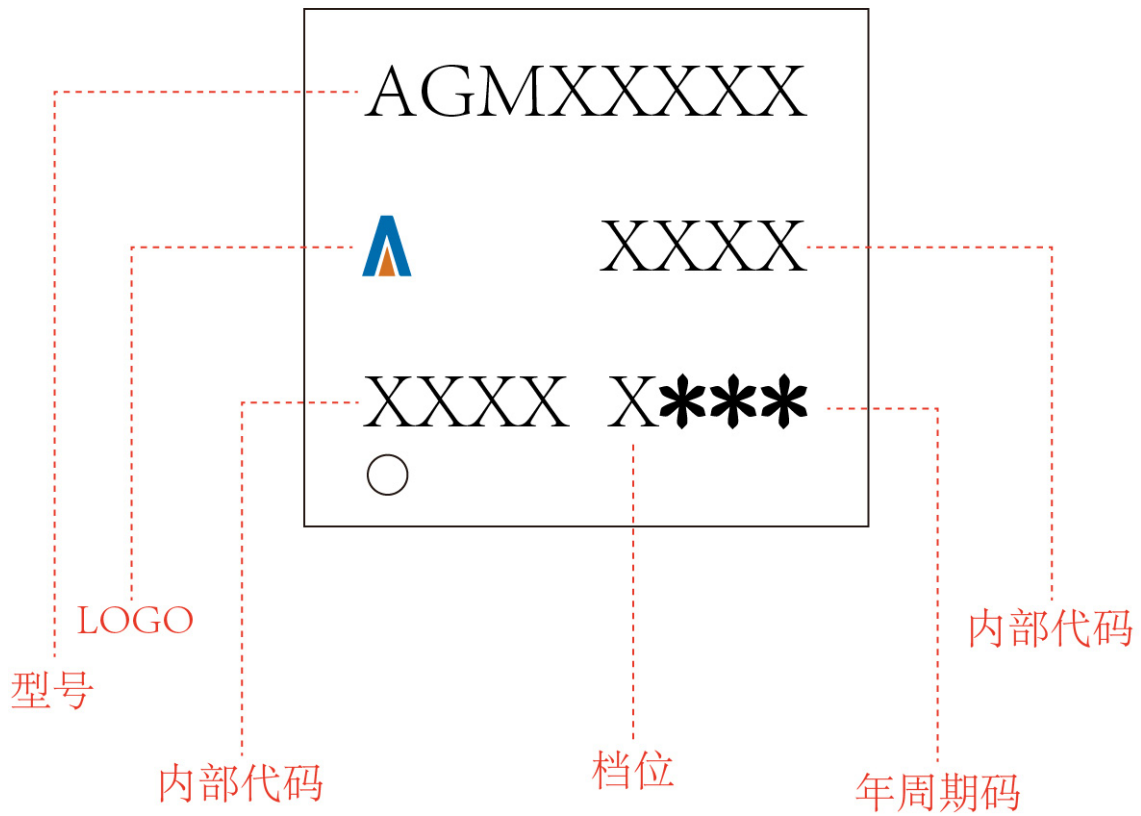


Symbols	Millimeters		
	MIN.	NOM.	MAX.
A	0.65	0.75	0.85
b	0.25	0.30	0.35
C	0.15	0.20	0.25
D	3.00	3.10	3.20
D1	2.40	2.50	2.60
E	3.20	3.30	3.40
E1	3.00	3.10	3.20
E2	1.60	1.70	1.80
e	0.65 BSC.		
H1	0.21	0.31	0.41
H2	0.30	0.40	0.50
K	0.78	0.88	0.98
L1/L2	0.10 REF.		
θ	11°	12°	13°
N	0	-	0.15
0	0.2 REF.		



PDFN3.3\*3.3

Marking Instructions:




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