General Description

The AGM20P16AS 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

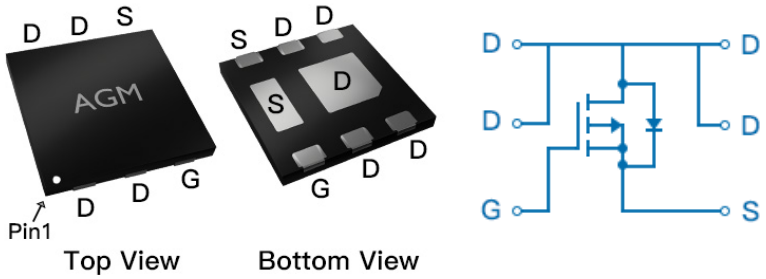
Application

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

Product Summary

BVDSS	RDSON	ID
-20V	12mΩ	-26A

DFN2*2 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM20P16	AGM20P16AS	DFN2*2	178mm	8mm	3000

Table 1. Absolute Maximum Ratings (TC=25℃)

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	-20	V
VGS	Gate-Source Voltage (VDS=0V)	±12	V
ID	Drain Current-Continuous(TA=25℃) **(Note 1)**	-26	A
	Drain Current-Continuous(TA=70℃)	-17	A
IDM (pluse)	Drain Current-Pulsed **(Note 2)**	-104	A
PD	Maximum Power Dissipation(TA=25℃)	3.5	w
	Maximum Power Dissipation(TA=70℃)	2.2	w
EAS	Avalanche energy **(Note 3)**	25	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 150	℃

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
RθJA	Thermal Resistance Junction-ambient (Steady State)1	---	36	℃/W

Table 3. Electrical Characteristics (TJ=25℃unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV_{DSS}	Drain-Source Breakdown Voltage	VGS=0V ID=-250μA	-20	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=-20V,VGS=0V	--	--	-1	μA
IGSS	Gate-Body Leakage Current	VGS=±12V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=-250μA	-0.5	-0.7	-1.0	V
gFS	Forward Transconductance	VDS=-5V,ID=-5A	--	10	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=-4.5V, ID=-8A	--	12	22	mΩ
		VGS=-2.5V, ID=-6A	--	18	33	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=-10V,VGS=0V, VDS=0V,f=1.0MHz	--	2700	--	pF
Coss	Output Capacitance		--	680	--	pF
Crss	Reverse Transfer Capacitance		--	590	--	Ω
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	--	--	--
Switching Times						
td(on)	Turn-on Delay Time	VGS=-10V, VDS=-4.5V, ID=-5.0A,RG=1Ω	--	12	--	nS
tr	Turn-on Rise Time		--	35	--	nS
td(off)	Turn-Off Delay Time		--	30	--	nS
tf	Turn-Off Fall Time		--	10	--	nC
Qg	Total Gate Charge	VGS=-10V, VDS=-4.5V,ID=5A	--	35	--	nC
Qgs	Gate-Source Charge		--	5.0	--	nC
Qgd	Gate-Drain Charge		--	10	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	-26	A
VSD	Forward on Voltage	VGS=0V,IS=-8A	--	--	-1.2	V
trr	Reverse Recovery Time	IF=-8A , dI/dt=100A/μs ,TJ=25℃	--	--	--	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: TJ=25℃,VDD=-15V,Vgs=-10V,ID=-20A, L=0.5mH,RG=25ohm

Typical Electrical and Thermal Characteristics

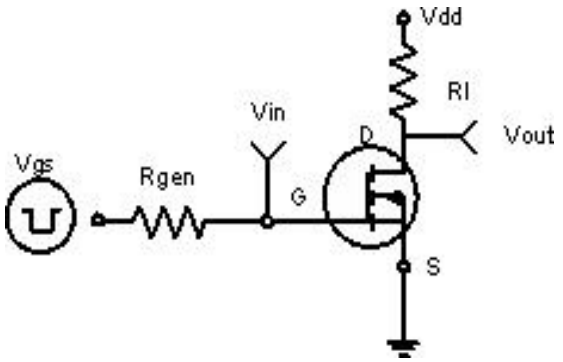


Figure 1:Switching Test Circuit

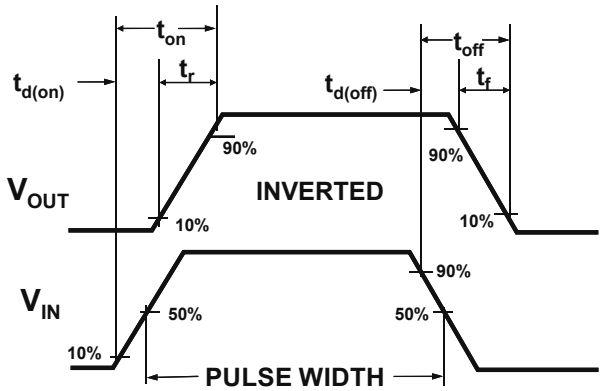


Figure 2:Switching Waveforms

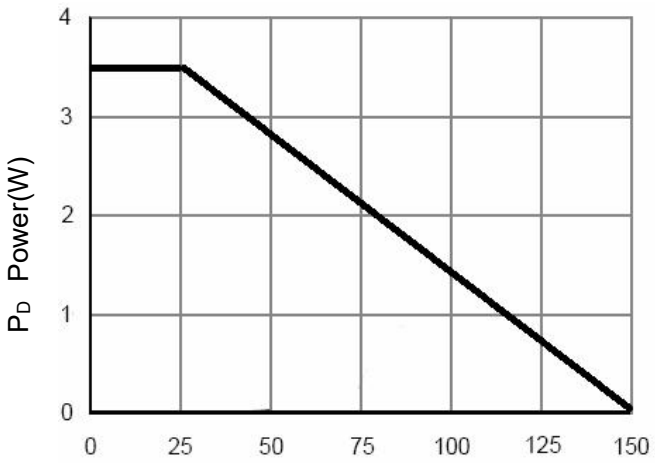


Figure 3 Power Dissipation

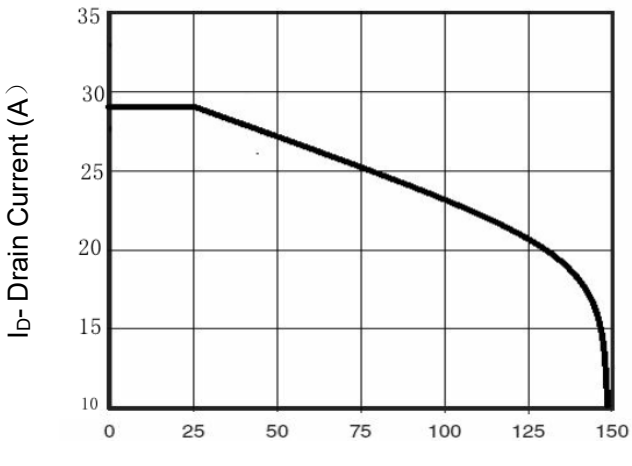


Figure 4 Drain Current

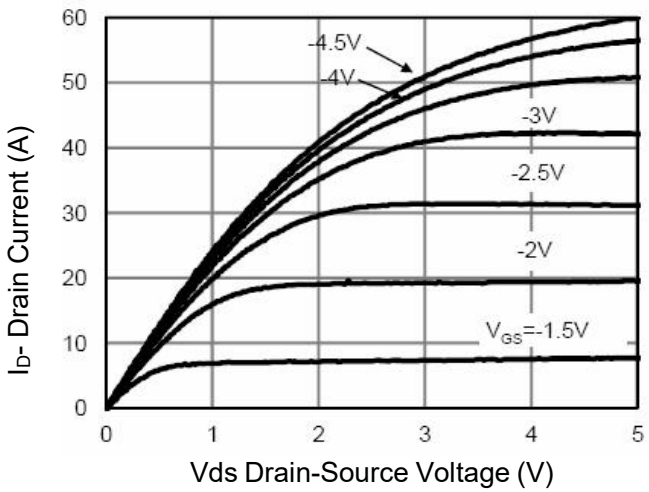


Figure 5 Output Characteristics

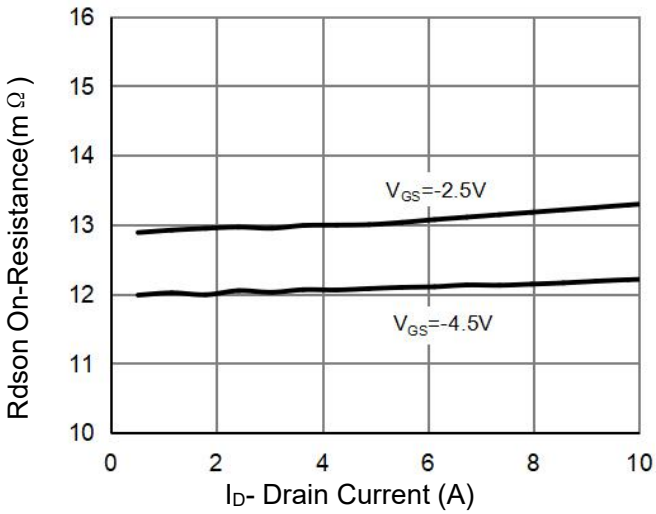


Figure 6 Drain-Source On-Resistance

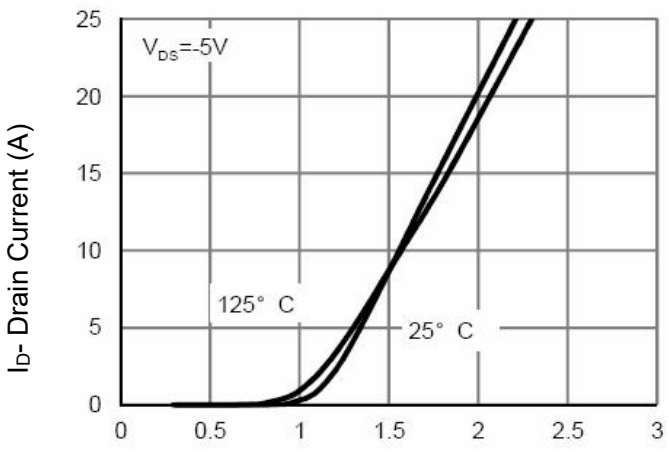


Figure 7 Transfer Characteristics

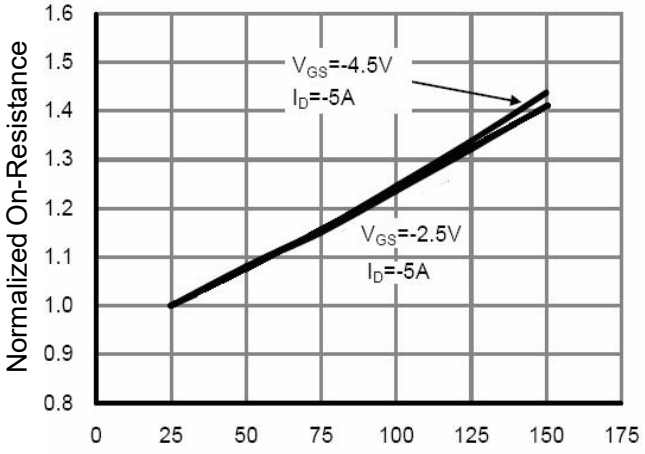


Figure 8 Drain-Source On-Resistance

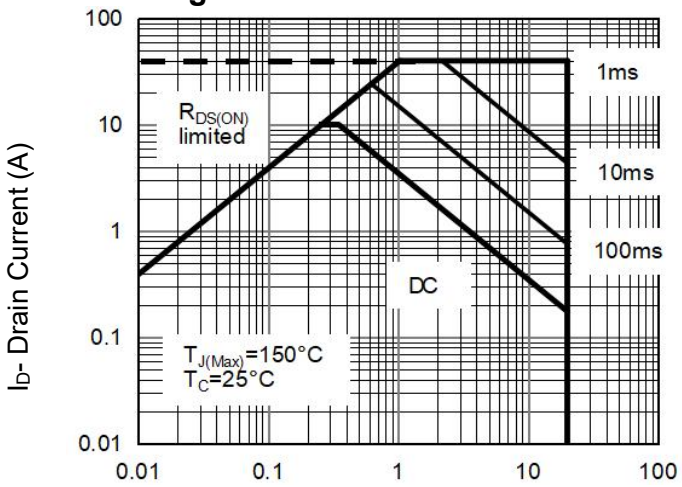


Figure 9 Safe Operation Area

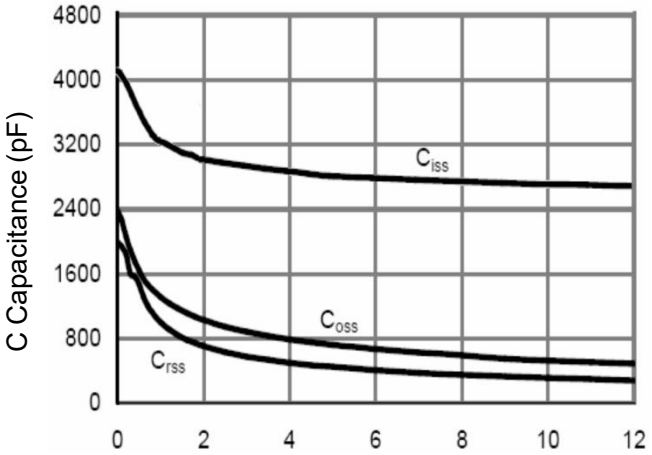


Figure 10 Capacitance vs Vds

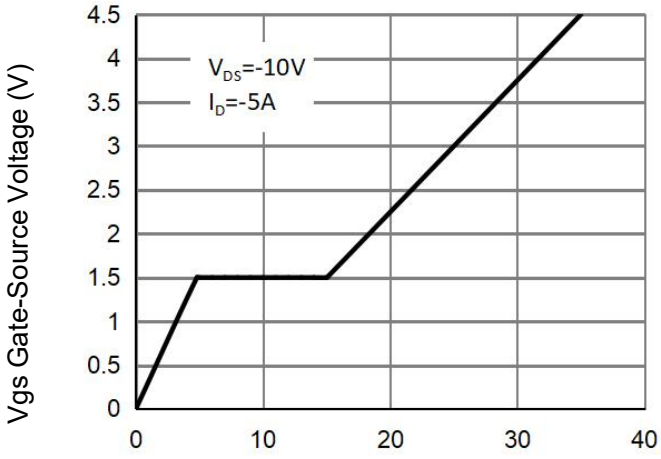


Figure 11 Gate Charge

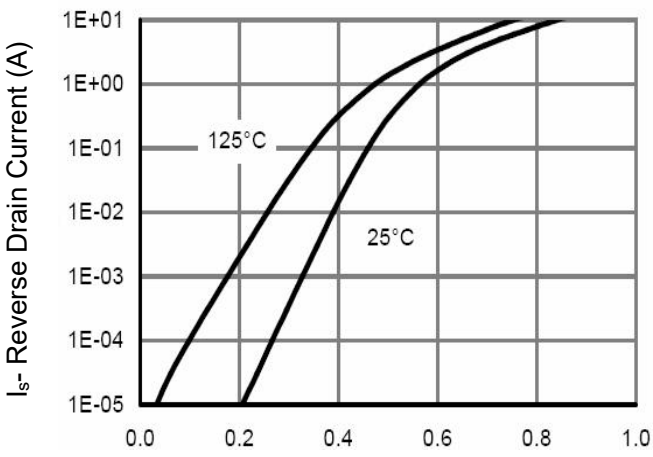


Figure 12 Source- Drain Diode Forward

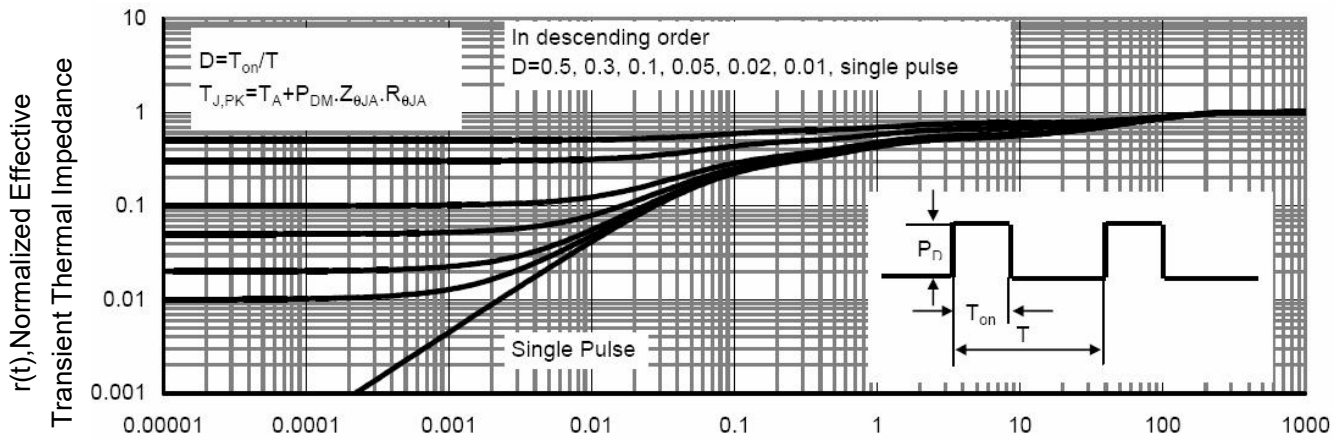
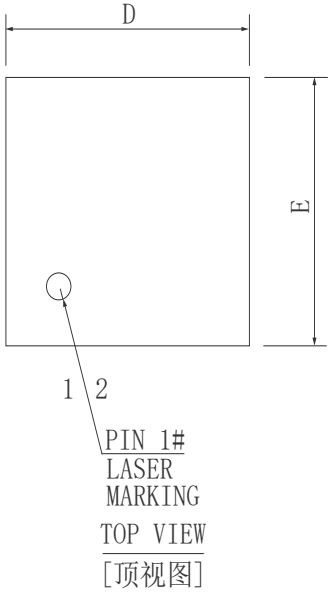
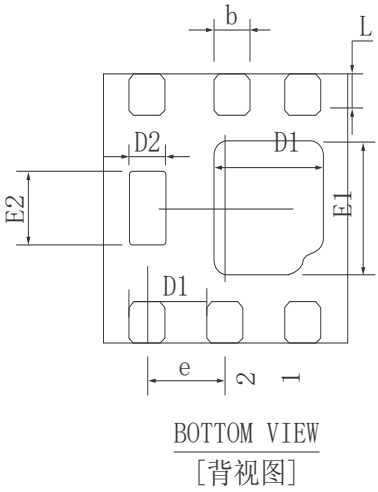


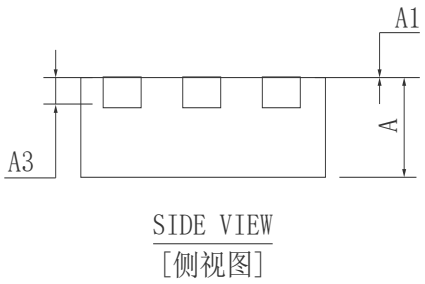
Figure 13 Normalized Maximum Transient Thermal Impedance

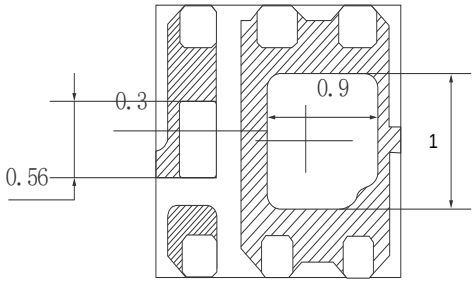
●Dimensions（DFN2*2）

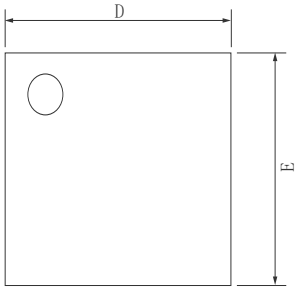


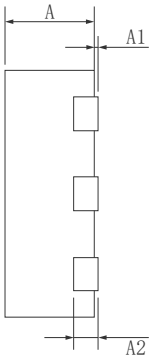


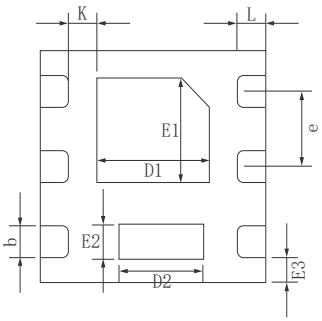
Symbol	Millimeters		
	Min	Nom	Max
A	0.700	0.750	0.800
A1	0.000	0.020	0.050
A3	0.203REF		
b	0.250	0.300	0.350
D	1.900	2.000	2.100
D1	0.850	0.900	0.950
D2	0.250	0.300	0.350
e	0.650BSC		
E	1.900	2.000	2.100
E1	0.950	1.000	1.050
E2	0.510	0.560	0.610
L	0.250	0.300	0.350







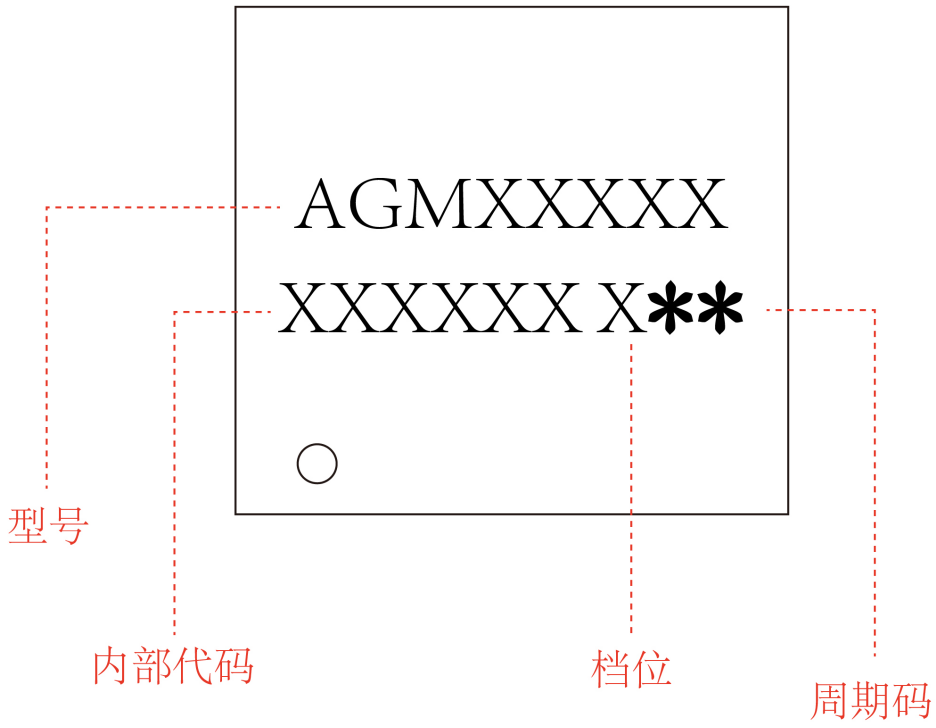




SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.50	0.55	0.60
	0.70	0.75	0.80
A1	0.00	—	0.05
A2	0.203TIY		
b	0.22	0.27	0.32
D	1.95	2.00	2.05
D1	0.90	1.00	1.10
D2	0.70	0.75	0.80
E	1.95	2.00	2.05
E1	0.85	0.90	0.95
E2	0.25	0.30	0.35
E3	0.215 TIY		
e	0.65 BSC		
K	0.25 BSC		
L	0.20	—	0.30

DFN2*2

Marking Instructions:



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