

● General Description

The AGM3012H 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

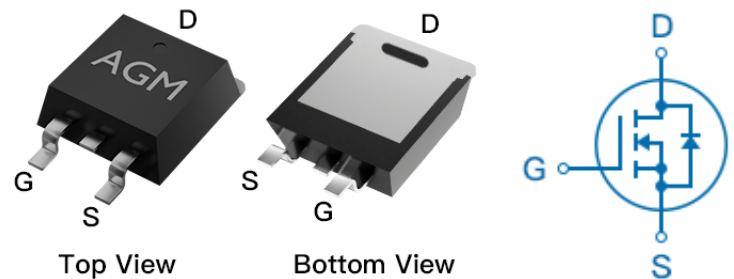
● Application

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

Product Summary

BVDSS	RDSON	ID
30V	1.2mΩ	193A

TO-263 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM3012H	AGM3012H	TO-263	330mm	25mm	800

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	30	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(Tc=25°C) (Note 1)	193	A
	Drain Current-Continuous(Tc=100°C)	122	A
IDM (pluse)	Drain Current-Pulsed (Note 2)	772	A
PD	Maximum Power Dissipation(Tc=25°C)	95	w
	Maximum Power Dissipation(Tc=100°C)	38	w
EAS	Avalanche energy (Note 3)	238	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) ¹	---	40	°C/W
RθJC	Thermal Resistance Junction-Case ¹	---	1.32	°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 I _D =250μA	30	--	--	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} =30V, V _{GS} =0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.2	--	2.2	V
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =95A	--	90	--	S
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =20A	--	1.2	1.7	mΩ
		V _{GS} =4.5V, I _D =15A	--	1.6	2.1	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, F=1MHZ	--	7865	--	pF
C _{oss}	Output Capacitance		--	960	--	pF
C _{rss}	Reverse Transfer Capacitance		--	932	--	pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1.0MHz	--	2.8	--	Ω
Switching Times						
t _{d(on)}	Turn-on Delay Time	V _{GS} =10V, V _{DS} =15V, I _D =95A, R _{GEN} =3.0Ω	--	15	--	nS
t _r	Turn-on Rise Time		--	10	--	nS
t _{d(off)}	Turn-Off Delay Time		--	51	--	nS
t _f	Turn-Off Fall Time		--	12	--	nS
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =15V, I _D =95A	--	125	--	nC
Q _{gs}	Gate-Source Charge		--	18	--	nC
Q _{gd}	Gate-Drain Charge		--	13	--	nC
Source-Drain Diode Characteristics						
I _{SD}	Source-Drain Current(Body Diode)		--	--	193	A
V _{SD}	Forward on Voltage	V _{GS} =0V, I _S =95A	--	--	1.2	V
t _{rr}	Reverse Recovery Time	I _F =95A , dI/dt=100A/μs , T _J =25°C	--	38	--	ns
Q _{rr}	Reverse Recovery Charge		--	126	--	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, V_{DD}=20V, V_{gs}=10V, I_D=69A, L=0.1mH, R_G=25ohm

Typical Electrical and Thermal Characteristics

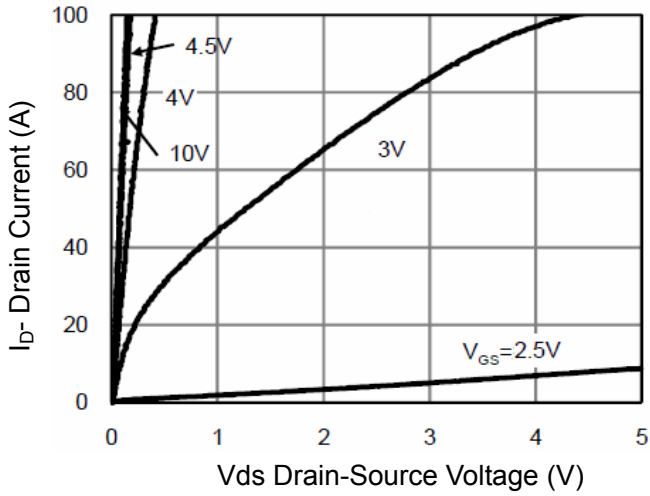


Figure 1 Output Characteristics

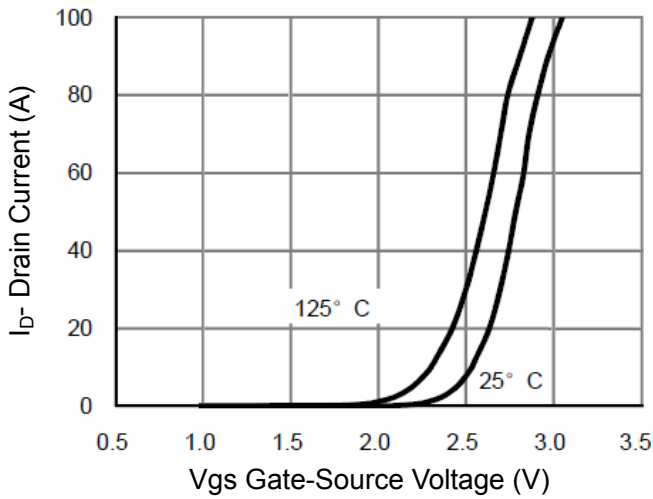


Figure 2 Transfer Characteristics

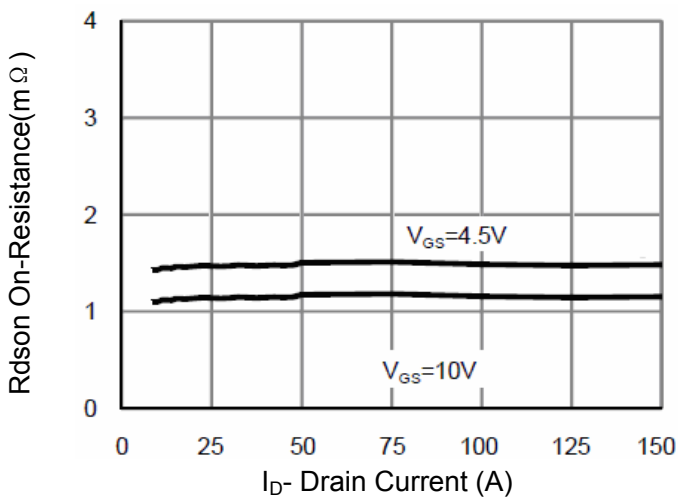


Figure 3 Rds(on)- Drain Current

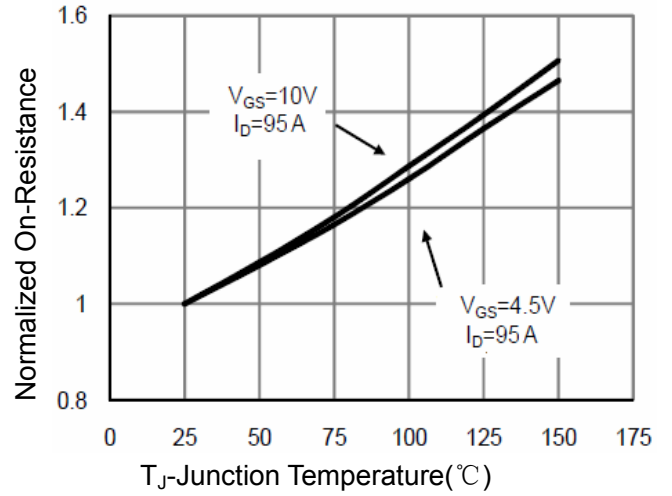


Figure 4 Rds(on)-Junction Temperature

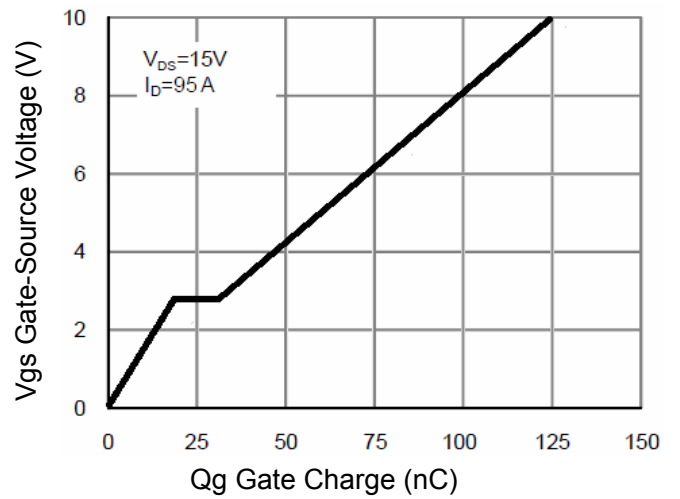


Figure 5 Gate Charge

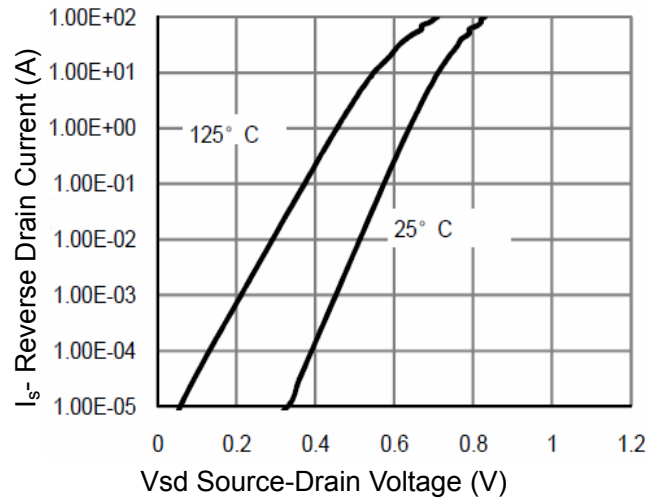


Figure 6 Source- Drain Diode Forward

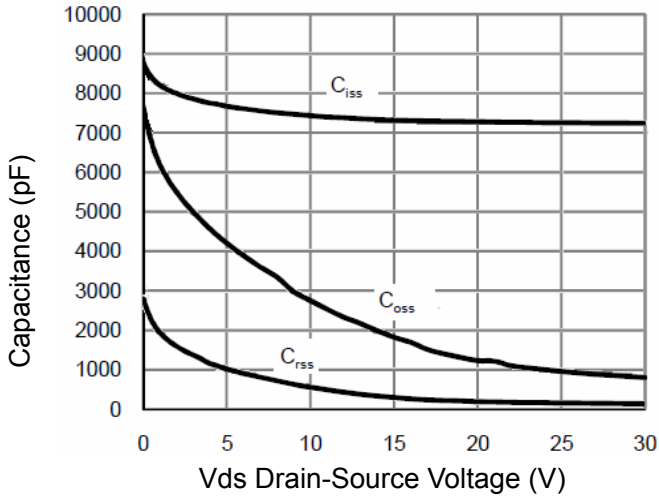


Figure 7 Capacitance vs Vds

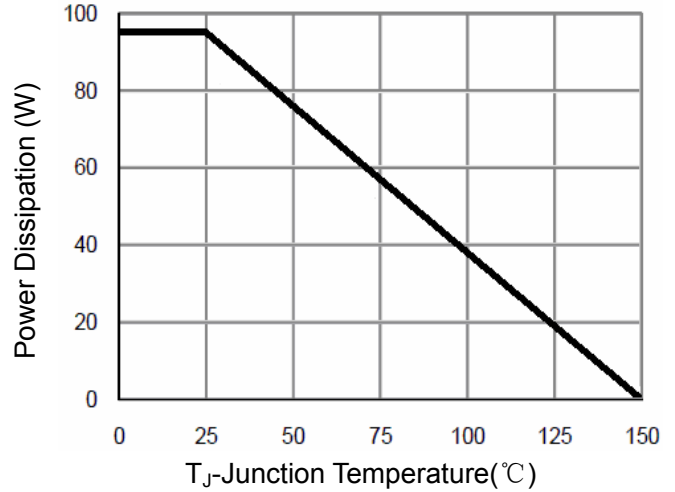


Figure 9 Power De-rating

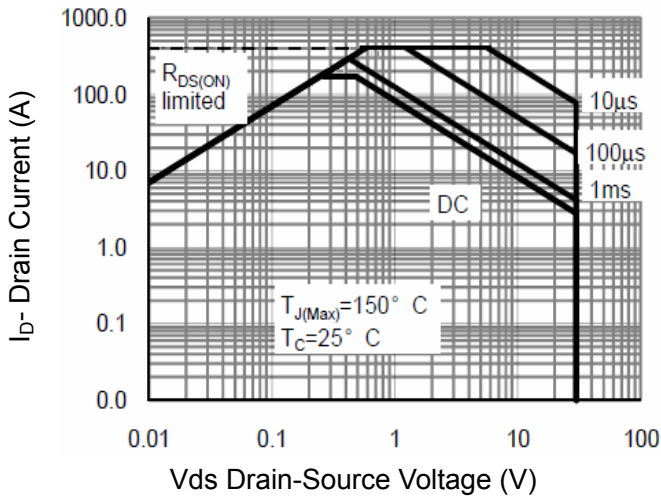


Figure 8 Safe Operation Area

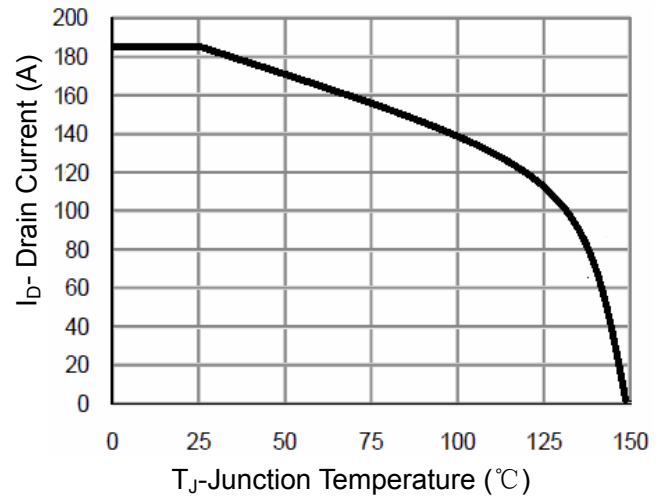


Figure 10 Current De-rating

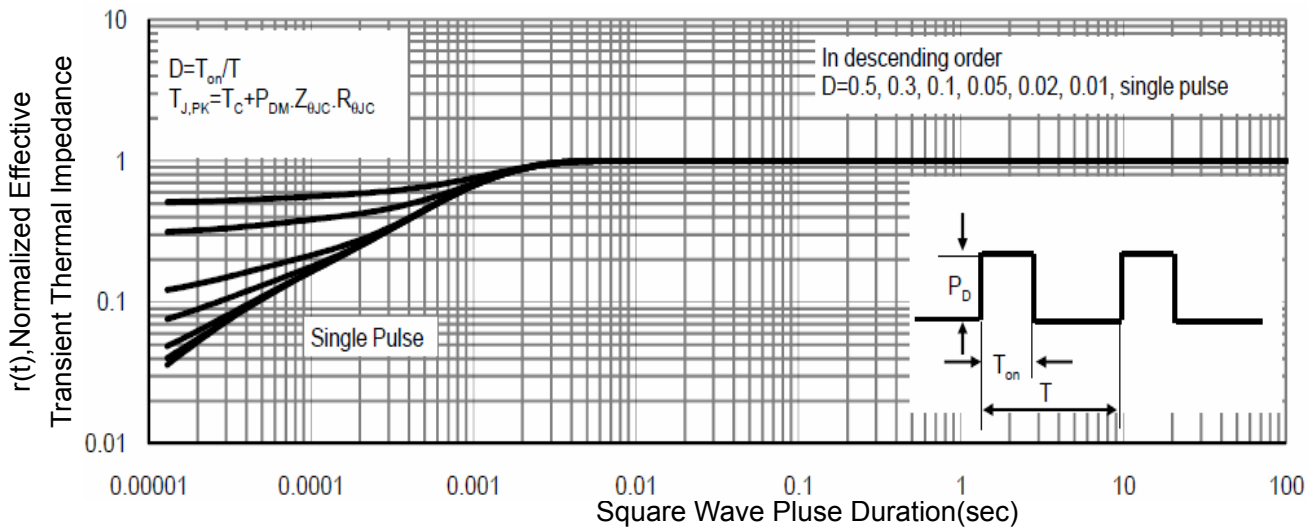
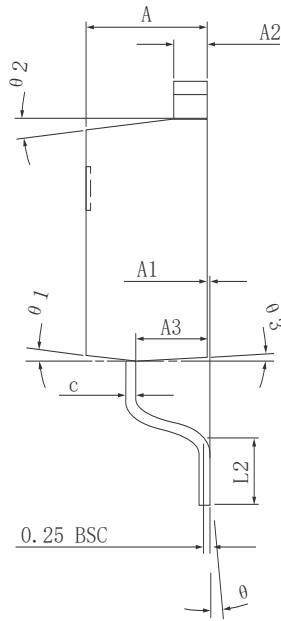
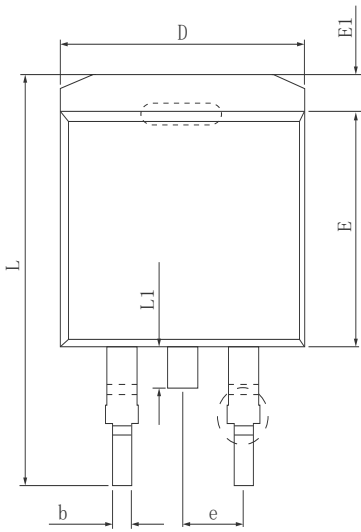
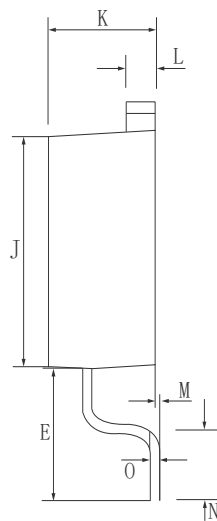
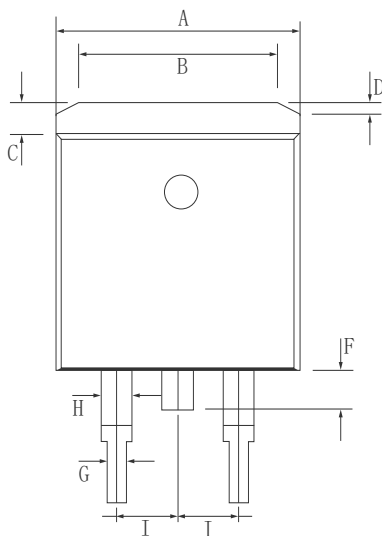
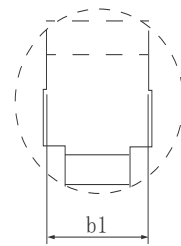
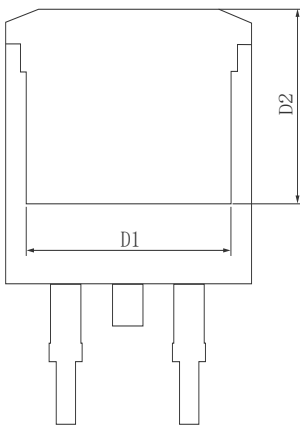


Figure 11 Normalized Maximum Transient Thermal Impedance

●Dimensions (TO-263)


SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	4.370	4.570	4.770
A1	0.000		0.250
A2	1.220	1.270	1.420
A3	2.490	2.690	2.890
b	0.700	0.810	0.960
b1	1.170	1.270	1.470
c	0.300	0.380	0.530
D	9.860	10.160	10.360
D1	8.400 REF		
D2	7.073 REF		
E	8.500	8.700	8.900
E1	1.070	1.270	1.470
e	2.540 TYP		
L	14.700	15.100	15.500
L1	1.400	1.550	1.700
L2	2.000	2.300	2.600
θ	0°		9°
$\theta 1$	7° TYP		
$\theta 2$	7° TYP		
$\theta 3$	3° TYP		

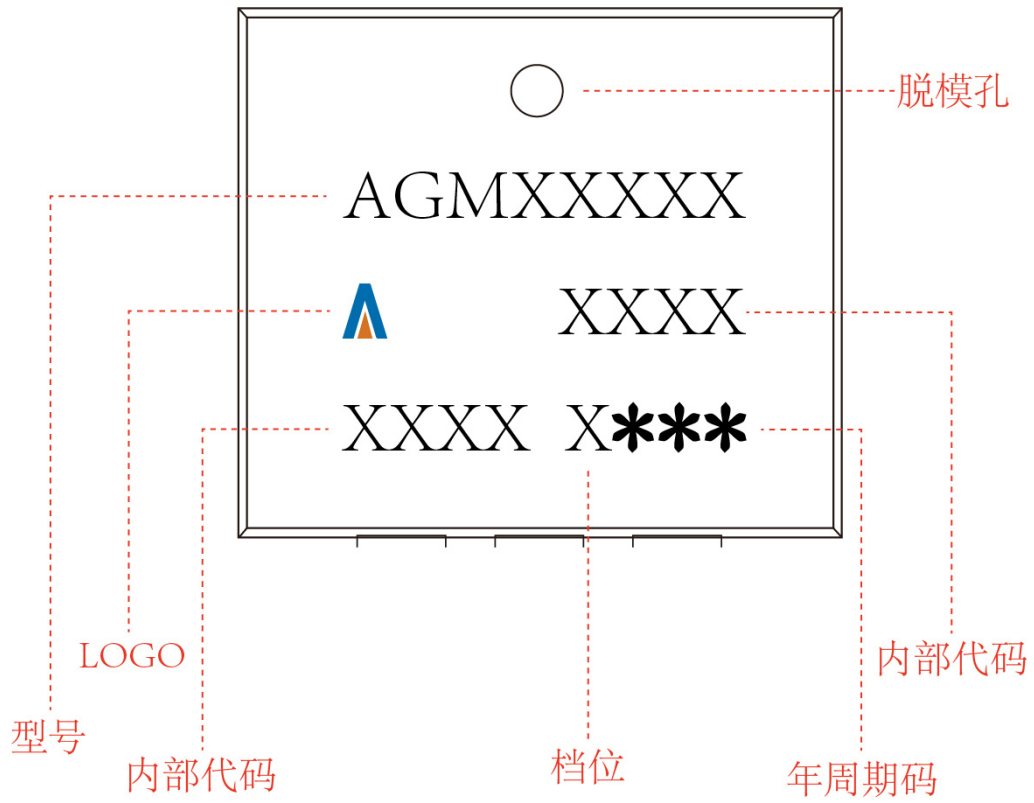


Dim.	Min.	Max.
A	9.8	10.2
B	6.1	6.7
C	1.1	1.4
D	0.5	1.0
E	4.6	5.0
F	1.4	1.6
G	0.7	0.9
H	1.17	1.37
I	Typ2.54	
J	9	9.2
K	4.3	4.7
L	1.25	1.35
M	0.02	0.23
N	2.2	2.8
O	0.45	0.55

All Dimensions in millimeter

TO-263

Marking Instructions:




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