

• General Description

The AGM216MNE 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

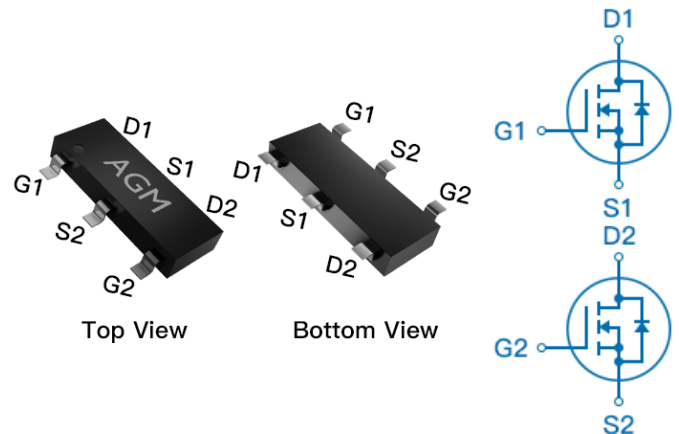
• Application

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

Product Summary

BVDSS	RDSON	ID
20V	21mΩ	3.3A

SOT23-6L Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM216MNE	AGM216MNE	SOT23-6L	178mm	8mm	3000

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

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage ($V_{GS}=0V$)	20	V
V_{GS}	Gate-Source Voltage ($V_{DS}=0V$)	±12	V
I_D	Drain Current-Continuous($T_A=25^\circ C$) (Note 1)	3.3	A
	Drain Current-Continuous($T_A=100^\circ C$)	2.1	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	13.2	A
P_D	Total Power Dissipation($T_A=25^\circ C$)	1.25	W
	Total Power Dissipation($T_A=100^\circ C$)	0.5	W
EAS	Avalanche energy (Note 3)	25	mJ
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	°C

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient (Steady State) ¹	---	100	°C/W

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	20	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=19.5V,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=4A	--	3	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=4.5V, ID=5A	--	21	24	mΩ
		VGS=2.5V, ID=4A	--	25	30	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=10V,VGS=0V, F=1MHZ	--	356	--	pF
Coss	Output Capacitance		--	67	--	pF
Crss	Reverse Transfer Capacitance		--	58	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	--	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=4.5V,VDS=10V ID=4A,RGEN=3Ω	--	15	--	nS
tr	Turn-on Rise Time		--	50	--	nS
td(off)	Turn-Off Delay Time		--	20	--	nS
tf	Turn-Off Fall Time		--	15	--	nS
Qg	Total Gate Charge	VGS=4.5V, VDS=10V, ID=2A	--	5.4	--	nC
Qgs	Gate-Source Charge		--	0.65	--	nC
Qgd	Gate-Drain Charge		--	0.89	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	3.3	A
VSD	Forward on Voltage	VGS=0V,IS=5A	--	--	1.2	V
trr	Reverse Recovery Time	IF=5A , dl/dt=100A/μs ,	--	--	--	ns
Qrr	Reverse Recovery Charge	TJ=25°C	--	--	--	nc

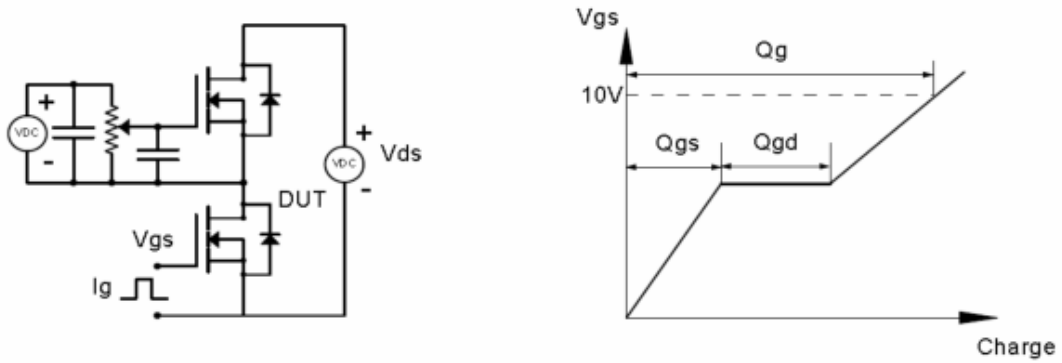
Notes 1.The maximum current rating is package limited.

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

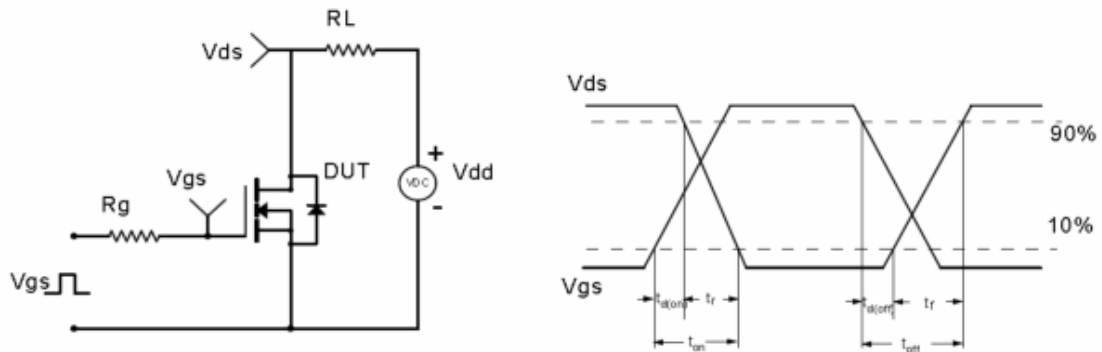
Notes 3.EAS condition: T_J=25°C, VDD=15V, Vgs=10V, ID=10A, L=0.5mH, RG=25ohm

Test Circuit & Waveform

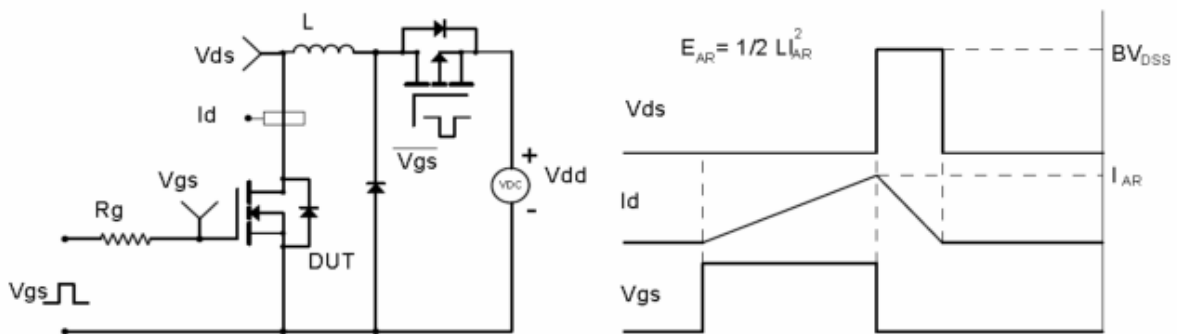
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

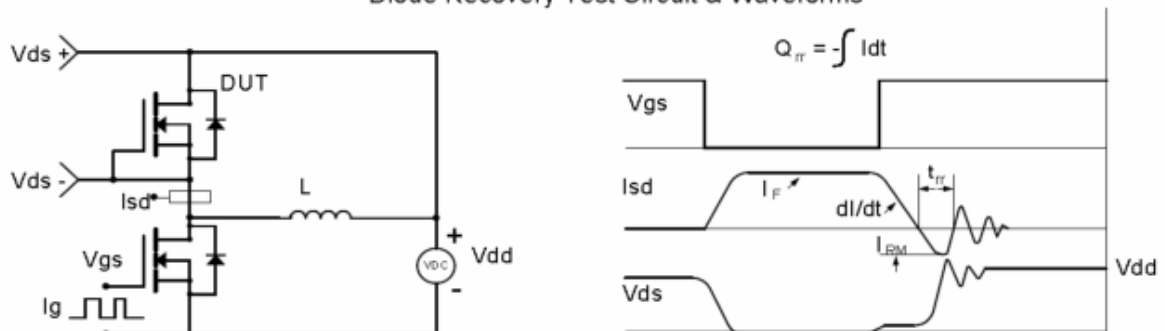


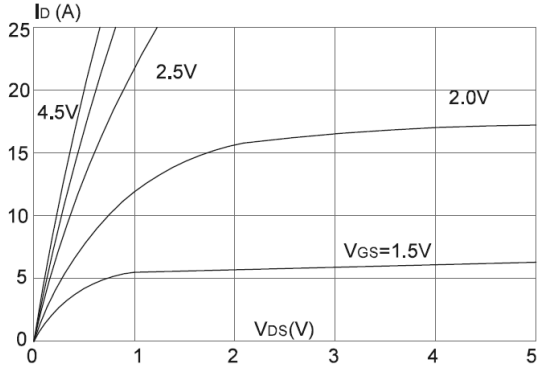
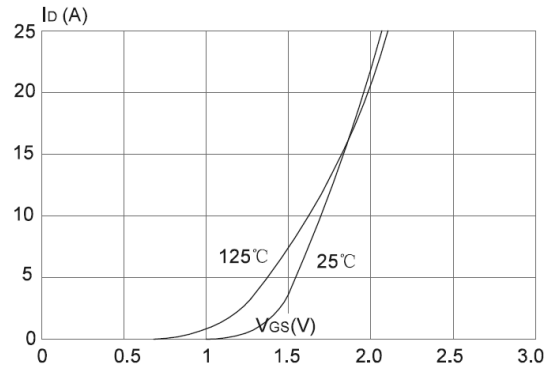
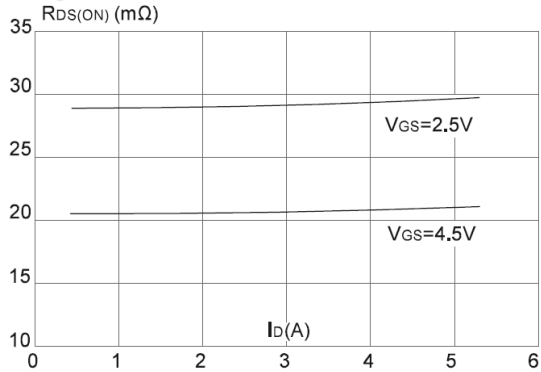
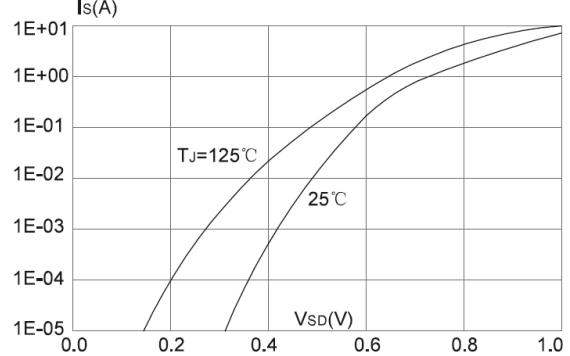
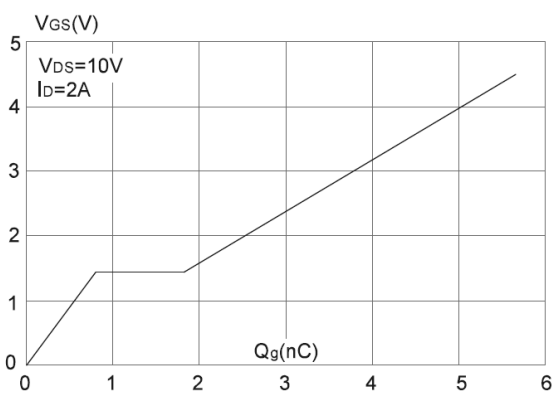
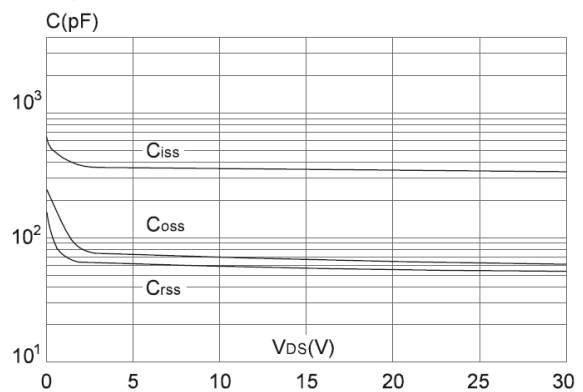
Figure 1: Output Characteristics

Figure 2: Typical Transfer Characteristics

Figure 3: On-resistance vs. Drain Current

Figure 4: Body Diode Characteristics

Figure 5: Gate Charge Characteristics

Figure 6: Capacitance Characteristics


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

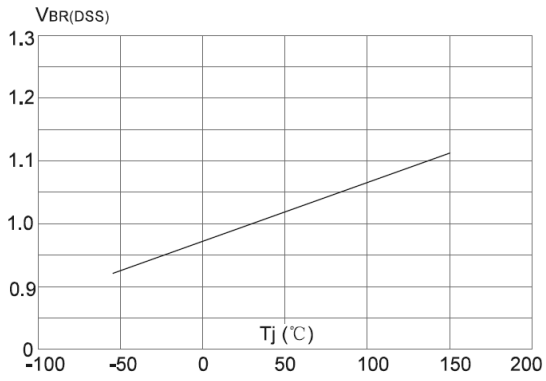


Figure 8: Normalized on Resistance vs. Junction Temperature

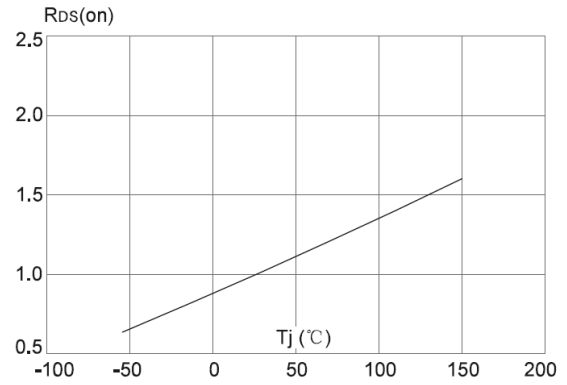


Fig.9 Maximum Continuous Drain Current VS. Ambient Temperature

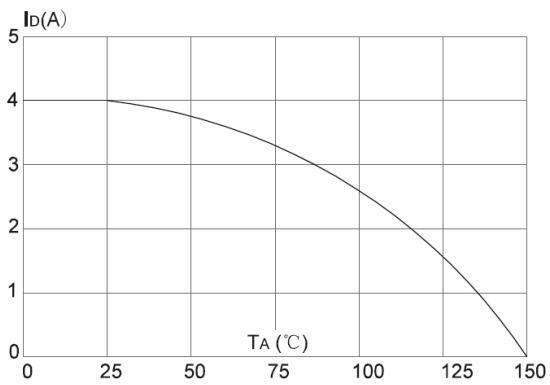


Fig.10 Maximum Safe Operating Area

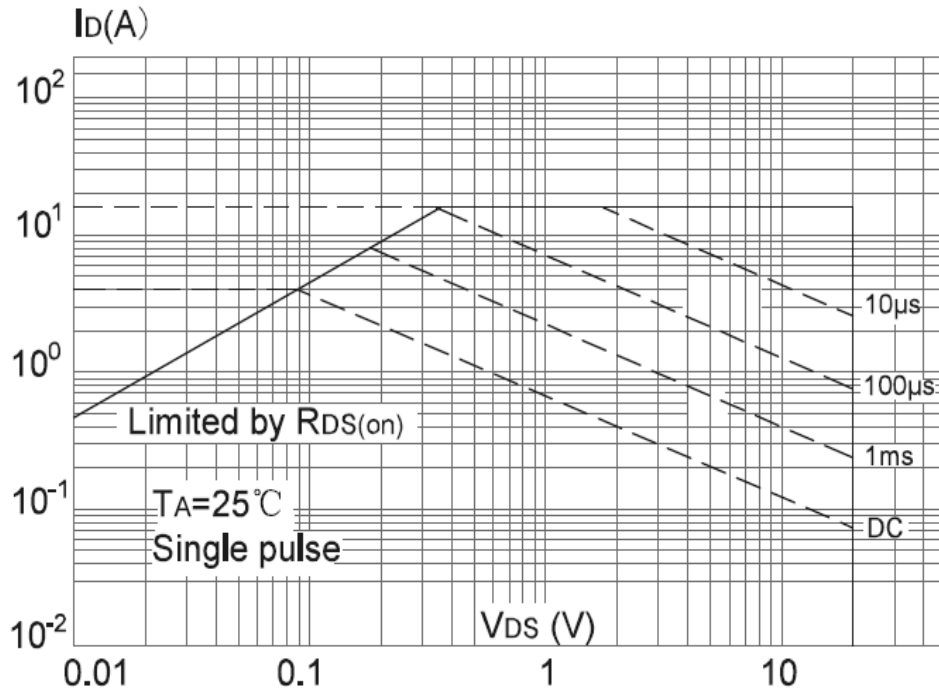
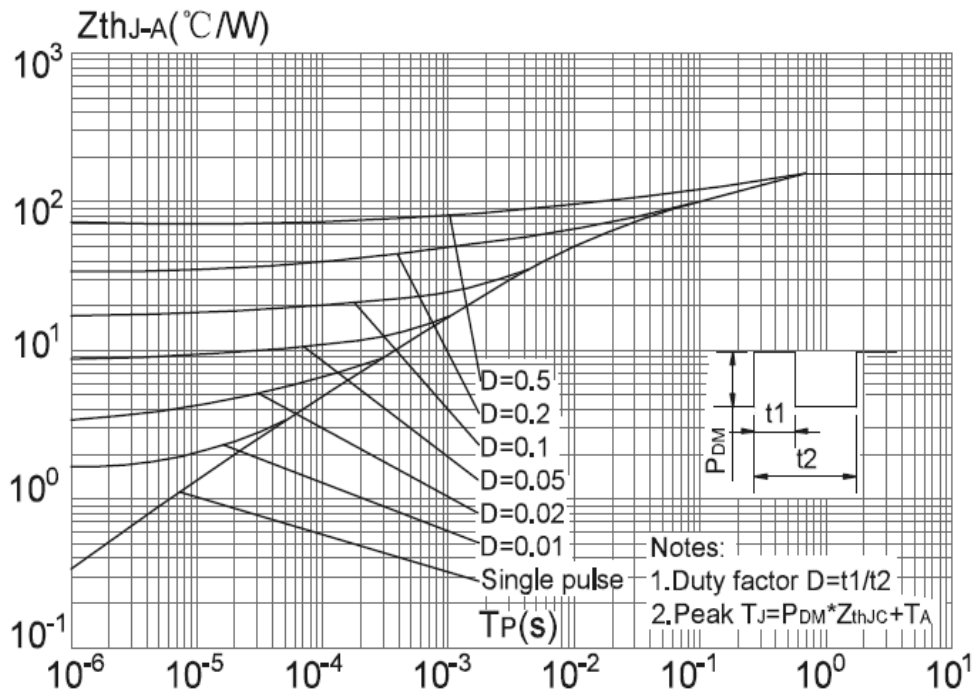
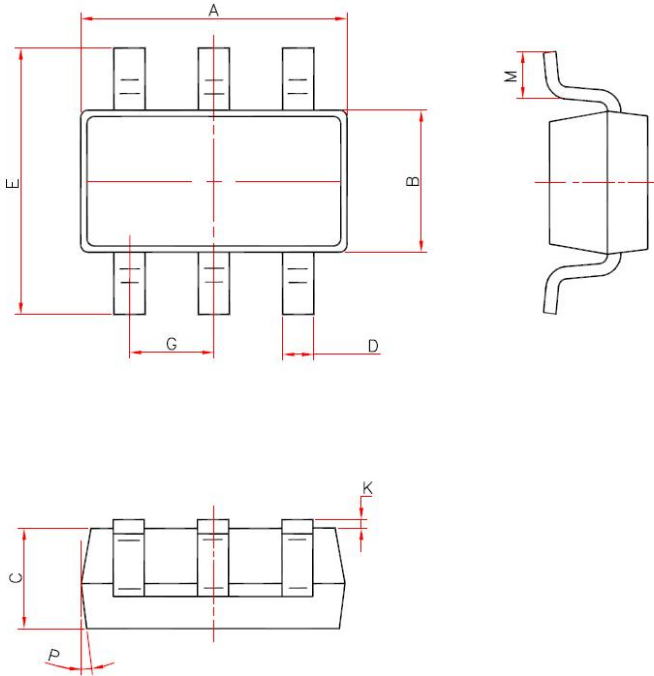


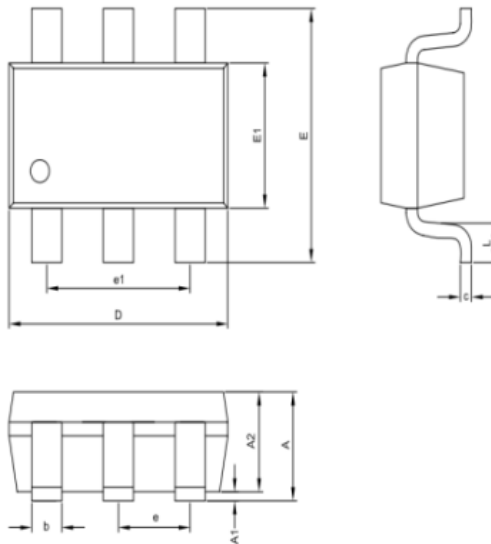
Fig. 11 Maximum Effective Transient Thermal Impedance , Junction-to-Ambient



Package Outline Data SOT-23-6



DIM	MILLIMETERS
A	2.82~3.02
B	1.60 ± 0.10
C	1.10 ± 0.05
D	0.40 ± 0.10
E	2.65~2.95
G	0.95typ
K	0.00~0.10
M	0.20MIN
P	9 ± 2°



SOT23-6 Package Outline			
Symbol	Dim in mm		
	Min	Nor	Max
A	1.00	1.10	1.45
A1	0.05	0.10	0.15
A2	1.0	1.1	1.3
D	2.8	2.9	3.1
E	2.65	2.8	2.95
E1	1.5	1.6	1.7
c	0.10	0.15	0.25
b	0.3	0.4	0.5
e	0.95BSC		
e1	1.9BSC		
L	0.300	0.450	0.600

封装形式	站高		脚宽		跨度		脚厚		水口		长板脚		胶厚		毛刺
	Min	max	min	max	min	max	min	max	min	max	min	max	min	max	
SOT23-6	0.05	0.15	0.30	0.50	2.65	2.95	0.10	0.25	0.00	0.10	0.00	0.15	1.0	1.3	0.00-0.10


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