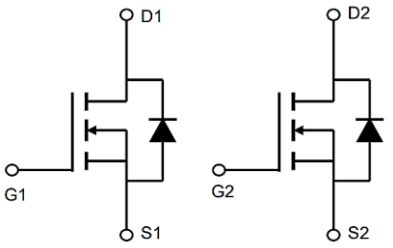
AP10H03DF

30V N+N-Channel Enhancement Mode MOSFET

Description

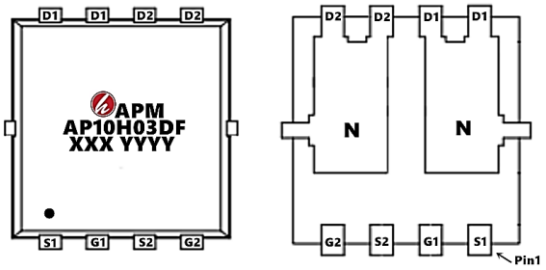
The AP10H03DF uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.



General Features

V_{DS} = 30V I_D =35A

$R_{DS(ON)}$ <12mΩ @ V_{GS}=10V **(Type：10mΩ)**

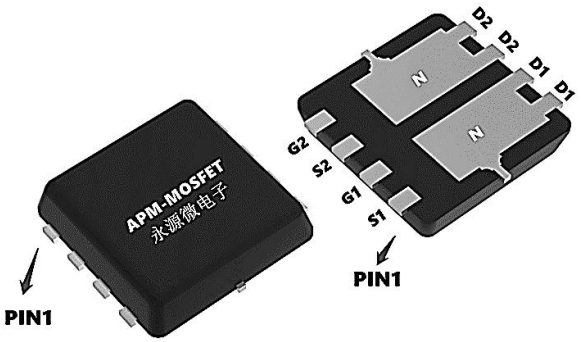


Application

Lithium battery protection

Wireless impact

Mobile phone fast charging



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP10H03DF	PDFN3*3-8L	AP10H03DF XXX YYYY	5000

Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V[1]	35	A
I_D@T_C=75℃	Continuous Drain Current, V_{GS} @ 10V[1]	18	A
I_{DM}	Pulsed Drain Current[2]	10	A
EAS	Single Pulse Avalanche Energy[3]	24.2	mJ
I_{AS}	Avalanche Current	22	A
P_D@T_A=25℃	Total Power Dissipation[4]	7	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1]	62	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	18	℃/W

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V(BR)DSS	Drain-Source Breakdown Voltage	VGS=0V, ID=250μA	30	-	-	V
IDSS	Zero Gate Voltage Drain Current	VDS=30V, VGS=0V,	-	-	1.0	μA
IGSS	Gate to Body Leakage Current	VDS=0V, VGS=±20V	-	-	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=250μA	1.0	1.5	2.5	V
RDS(on)	Static Drain-Source on-Resistance	VGS=10V, ID=10A	-	10	12	mΩ
		VGS=4.5V, ID=5A	-	16	18	
Ciss	Input Capacitance	VDS=15V, VGS=0V, f=1.0MHz	-	633	-	pF
Coss	Output Capacitance		-	120	-	pF
Crss	Reverse Transfer Capacitance		-	99	-	pF
Qg	Total Gate Charge	VDS=15V, ID=10A, VGS=10V	-	15	-	nC
Qgs	Gate-Source Charge		-	4.7	-	nC
Qgd	Gate-Drain("Miller") Charge		-	3.6	-	nC
td(on)	Turn-on Delay Time	VDS=30V,ID=18A, RGEN=3Ω, VGS=10V	-	5	-	ns
tr	Turn-on Rise Time		-	8	-	ns
td(off)	Turn-off Delay Time		-	21	-	ns
tf	Turn-off Fall Time		-	7	-	ns
IS	Maximum Continuous Drain to Source Diode Forward Current		-	-	18	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	72	A
VSD	Drain to Source Diode Forward Voltage	VGS=0V, IS=18A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	IF=18A,dI/dt=100A/μs	-	7	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	5.9	-	nC

Note :

1、The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.

2、The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3、The EAS data shows Max. rating . The test condition is V_{DD}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=10A

4、The power dissipation is limited by 175℃ junction temperature

5、The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

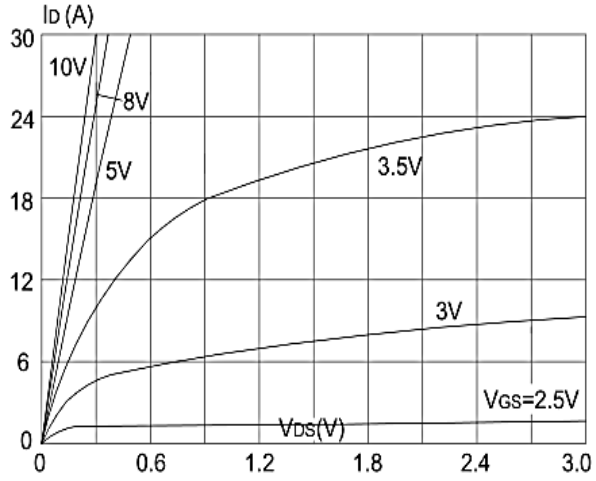


Figure1: Output Characteristics

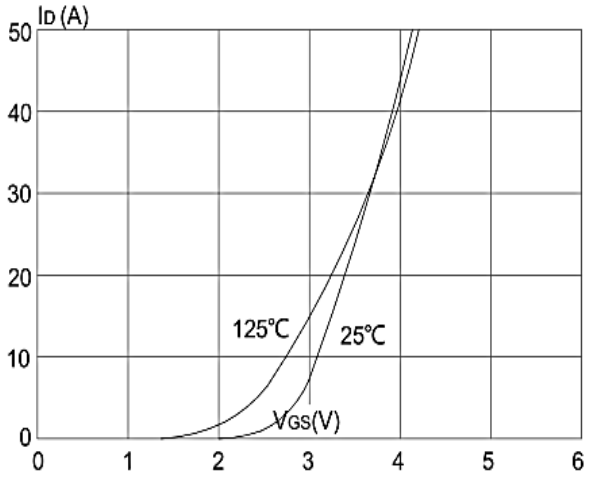


Figure 2: Typical Transfer Characteristics

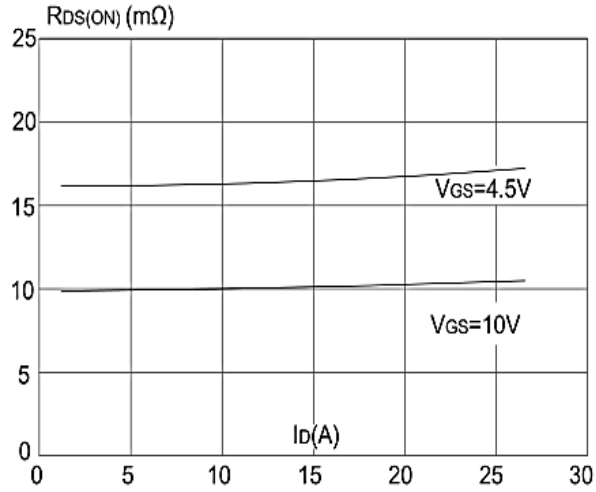


Figure 3:On-resistance vs. Drain Current

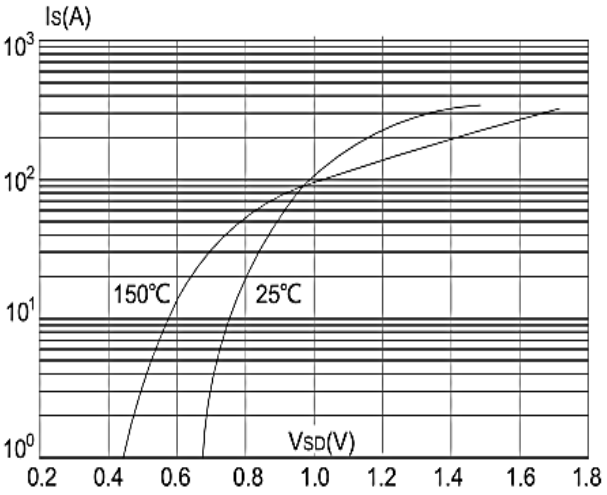


Figure 4: Body Diode Characteristics

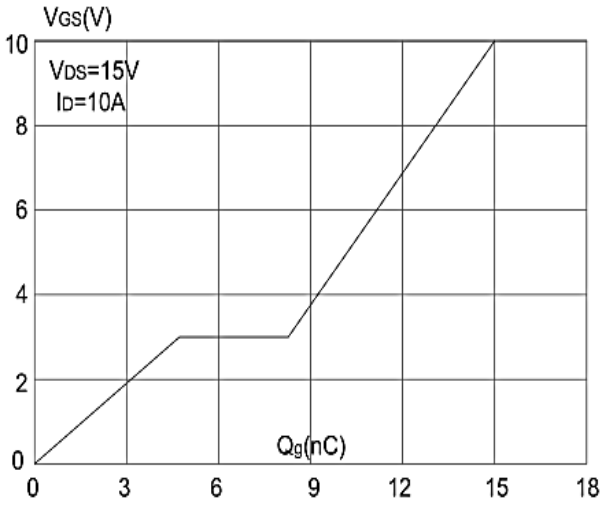


Figure 5: Gate Charge Characteristics

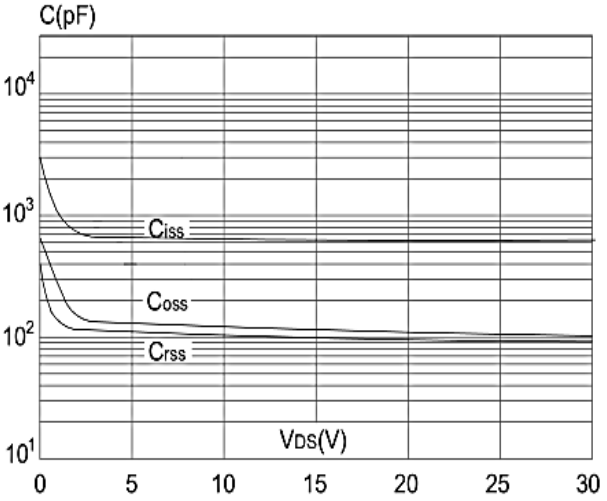


Figure 6: Capacitance Characteristics

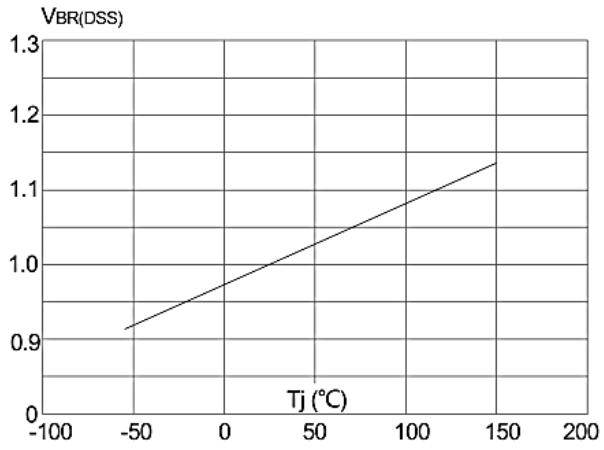


Figure 7: Normalized Breakdown Voltage vs Junction Temperature

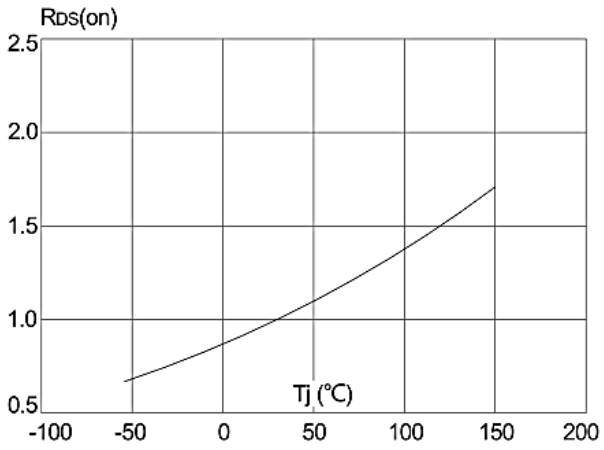


Figure 8: Normalized on Resistance vs. Junction Temperature

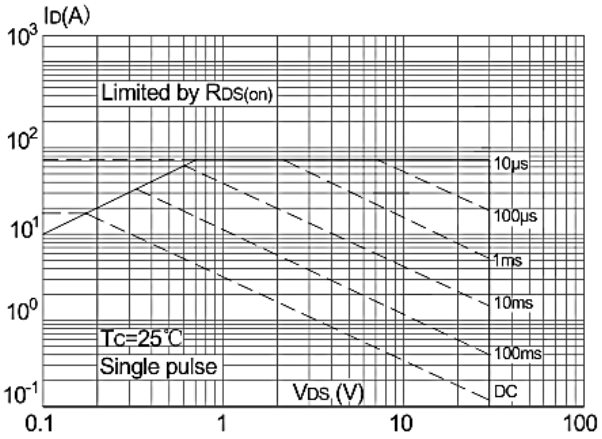


Figure 9: Maximum Safe Operating Area

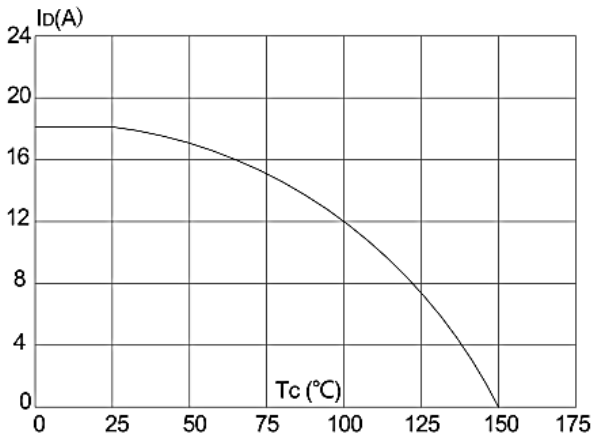


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

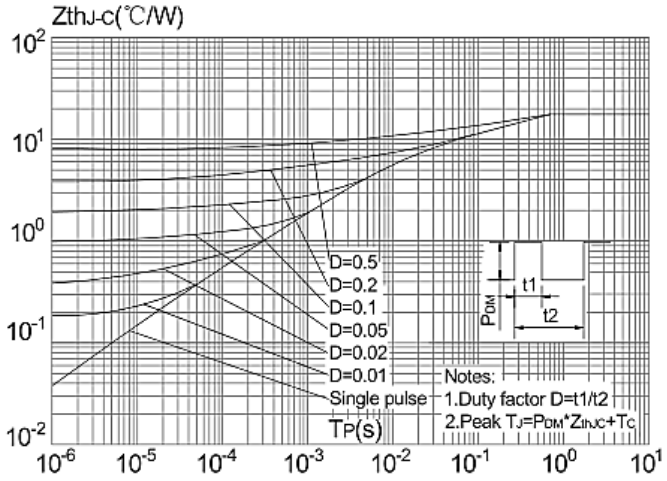
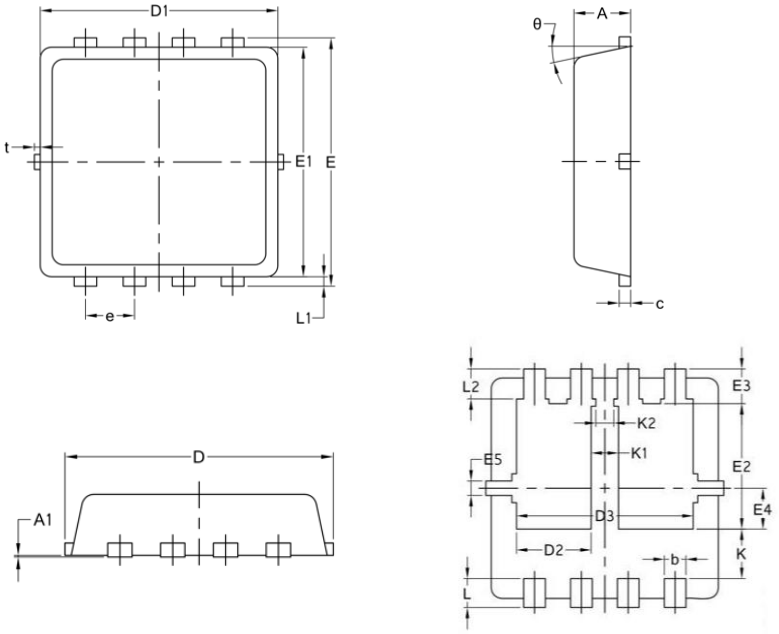


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambien

Package Mechanical Data-PDFN3*3-8L Double



Symbol	Common		
	Mm		
	Min	Nom	Max
A	0.70	0.75	0.85
A1	/	/	0.05
b	0.25	0.30	0.39
c	0.14	0.152	0.20
D	3.20	3.30	3.45
D1	3.05	3.15	3.25
D2	0.84	1.04	1.24
D3	2.30	2.45	2.60
E	3.20	3.30	3.40
E1	2.95	3.05	3.15
E2	1.60	1.74	1.90
E3	0.28	0.48	0.65
E4	0.37	0.57	0.77
E5	0.10	0.20	0.30
e	0.60	0.65	0.70
K	0.50	0.69	0.80
K1	0.30	0.38	0.53
K2	0.15	0.25	0.35
L	0.30	0.40	0.50
L1	0.06	0.125	0.20
L2	0.27	0.42	0.57
t	0	0.075	0.13
Φ	10°	12°	14°

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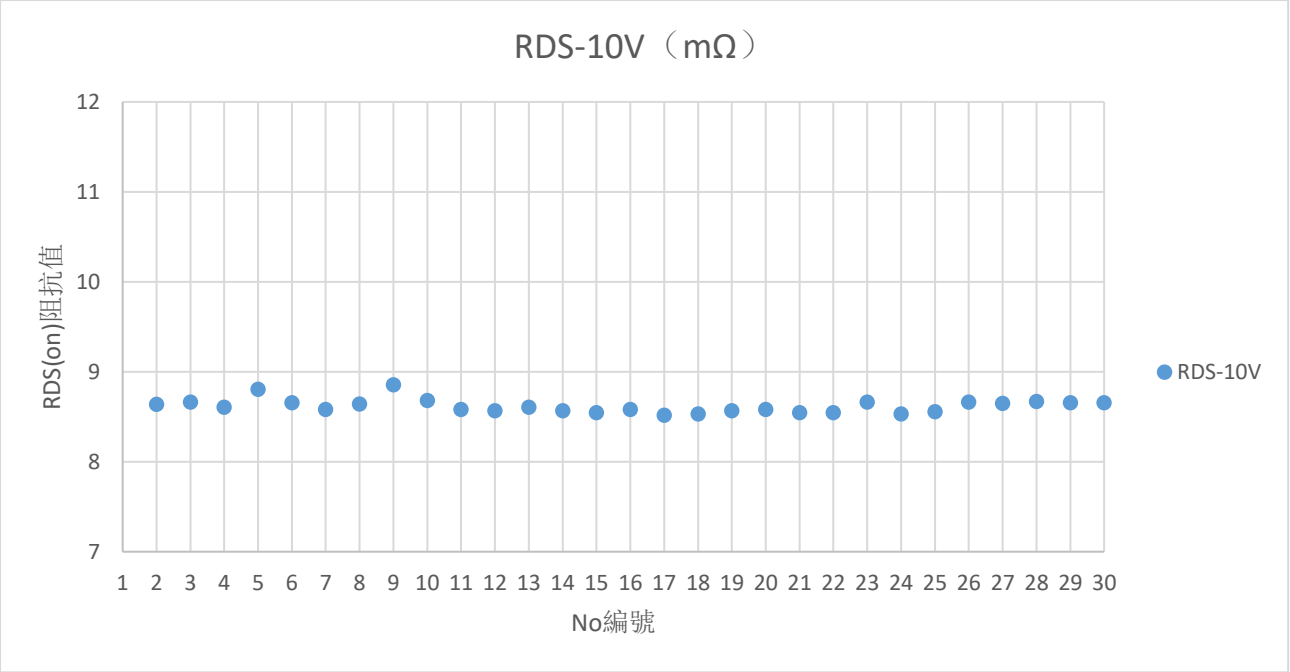
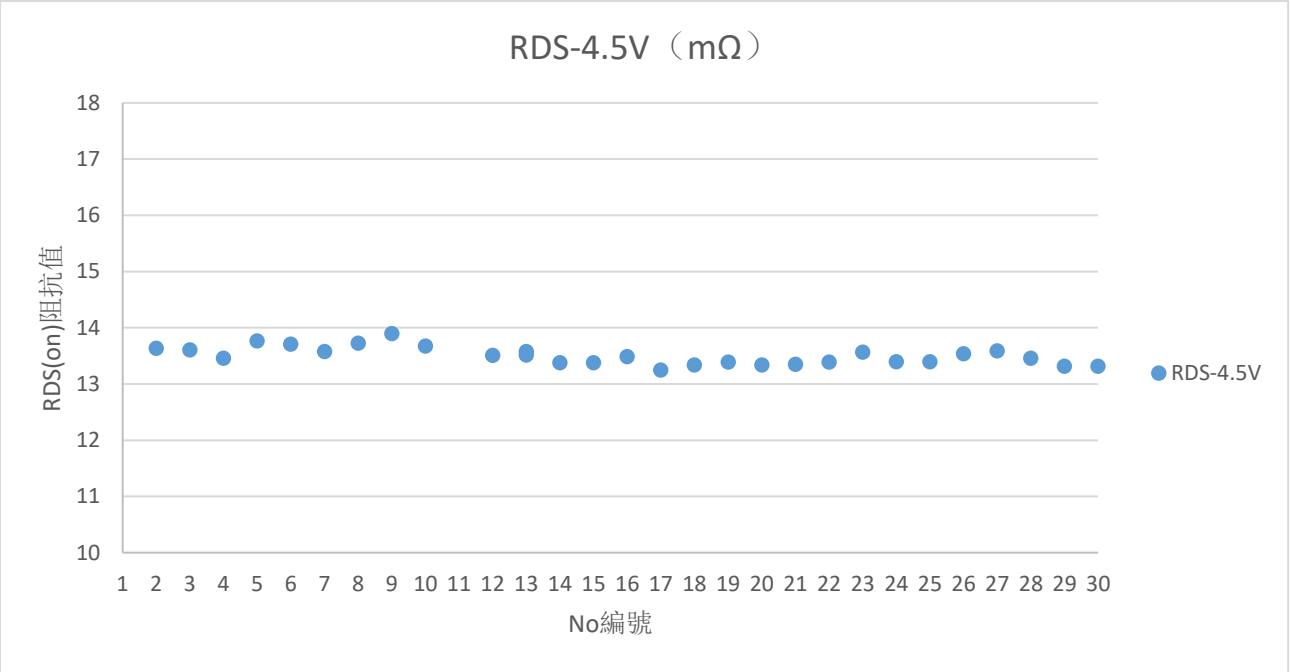
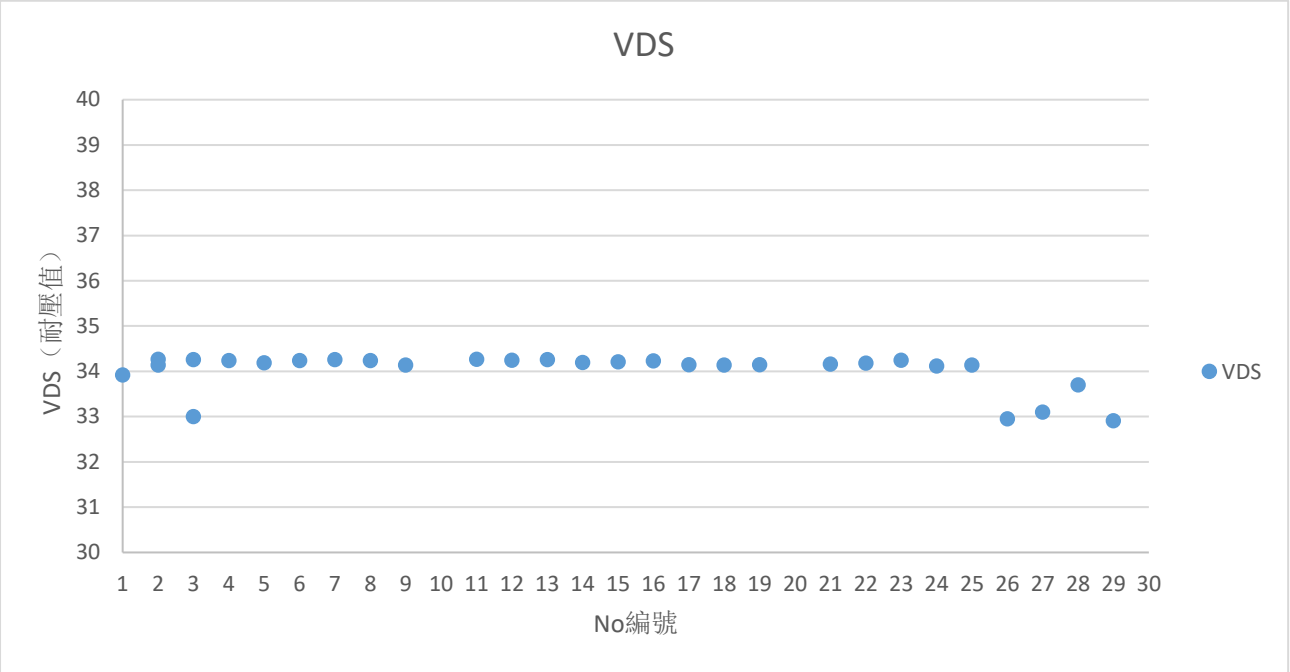
30V N+N-Channel Enhancement Mode MOSFET

Edition	Date	Change
Rve3.0	2018/1/31	Initial release
Rve3.1	2020/5/03	Reduce RDS(on) and Change screen printing

Test Report For 30PCS（30pcs 典型測試報告）






VDS
VDS（耐壓值）
40
39
38
37
36
35
34
33
32
31
30
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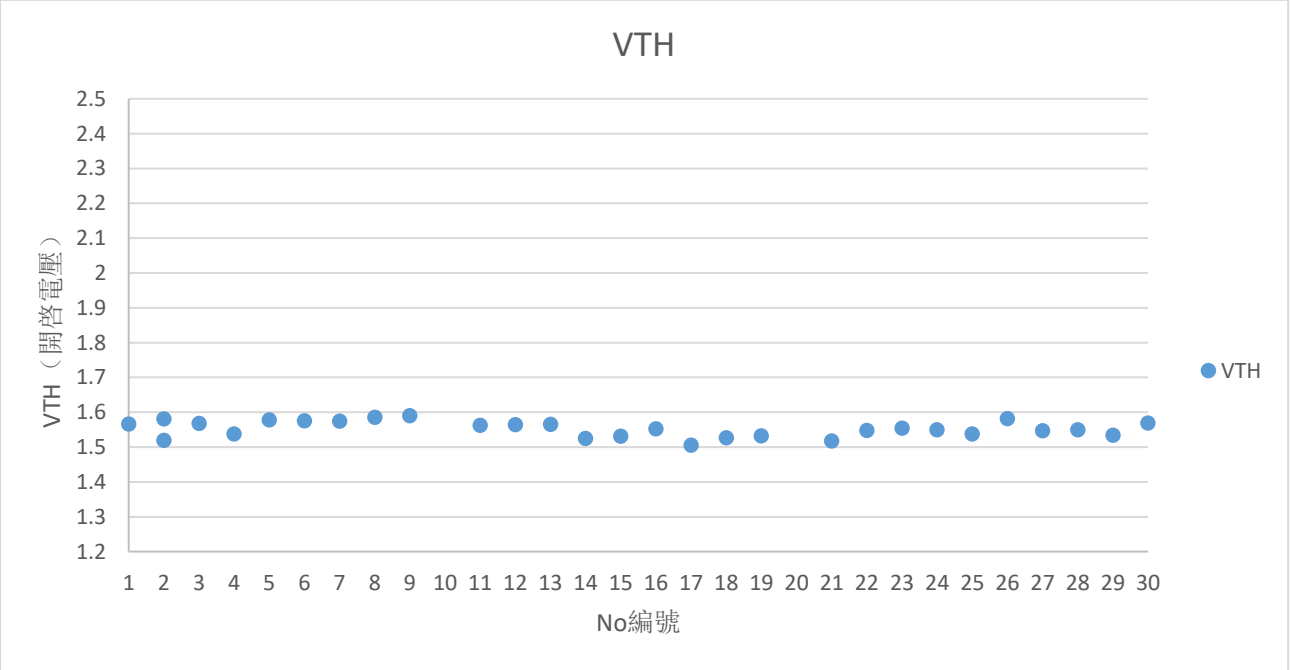
No編號
VDS


VTH
VTH（開啓電壓）
2.5
2.4
2.3
2.2
2.1
2
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
No編號
VTH