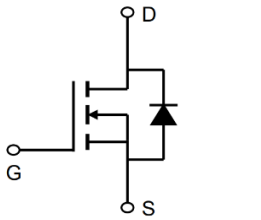
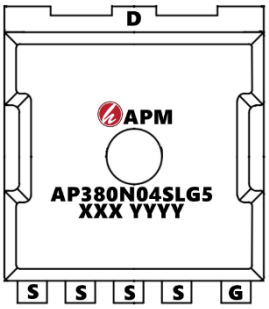
AP380N04SLG5

40V N-Channel Enhancement Mode MOSFET

Description

The AP380N04SLG5 uses advanced **APM-SGT V** technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 10V. This device is suitable for use as a Battery protection or in other Switching application.





General Features

V_{DS} = 40V I_D =380A

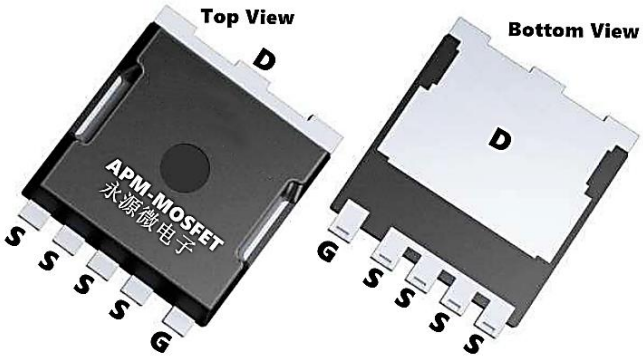
$R_{DS(ON)}$ < 1.0mΩ @ V_{GS}=10V （**Type：0.75mΩ**）

Application

BMS

BLDC

UPS



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP380N04SLG5	STOLL-6L	AP380N04SLG5 XXX YYYY	2000

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

Symbol	Parameter	Max.	Units
VDSS	Drain-Source Voltage	40	V
VGSS	Gate-Source Voltage	±20	V
ID@TC=25℃	Continuous Drain Current, VGS @ 10V1	380	A
ID@TC=100℃	Continuous Drain Current, VGS @ 10V1	280	A
IDM	Pulsed Drain Current	1250	A
EAS	Single Pulsed Avalanche Energy	627.2	mJ
IAS	Avalanche Current	70	A
PD@TC=25℃	Power Dissipation	65.7	W
T_J,TSTG	Storage Temperature Range	-55 to 175	°C
R_{θ}JA	Thermal Resistance Junction-Ambient [1]	40	°C/W
RθJC	Thermal Resistance, Junction to Case	1.9	°C/W

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	40	45	-	V
IDSS	Zero Gate Voltage Drain Current	V_{DS}=40V, V_{GS}=0V,	-	-	1.0	μA
IGSS	Gate to Body Leakage Current	V_{DS}=0V, V_{GS}= ±20V	-	-	±100	nA
VGS(th)	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	2.0	3.0	4.0	V
RDS(on)	Static Drain-Source on-Resistance	V_{GS}=10V, I_D=30A	-	0.75	1.0	mΩ
Ciss	Input Capacitance	V_{DS}=20V, V_{GS}=0V, f=1.0MHz	-	6650	-	pF
Coss	Output Capacitance		-	1495	-	pF
Crss	Reverse Transfer Capacitance		-	103	-	pF
Q_g	Total Gate Charge	V_{DS}=20V, I_D=20A, V_{GS}=10V	-	118	-	nC
Qgs	Gate-Source Charge		-	19	-	nC
Qgd	Gate-Drain(“Miller”) Charge		-	22.2	-	nC
td(on)	Turn-on Delay Time	V_{DD}=20V, I_D=20A, R_G=3Ω, V_{GS}=10V	-	13.8	-	ns
tr	Turn-on Rise Time		-	14	-	ns
td(off)	Turn-off Delay Time		-	91	-	ns
t_f	Turn-off Fall Time		-	43	-	ns
IS	Maximum Continuous Drain to Source Diode Forward Current		-	-	200	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	800	A
VSD	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S=20A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	T_J=25℃,IF=20A I_F=I_S,dI/dt=100A/μs	-	66	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	39.6	-	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 VDD=32V,VGS =10V,L=0.1mH,IAS =70A

4、The power dissipation is limited by 150℃ junction temperature

5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

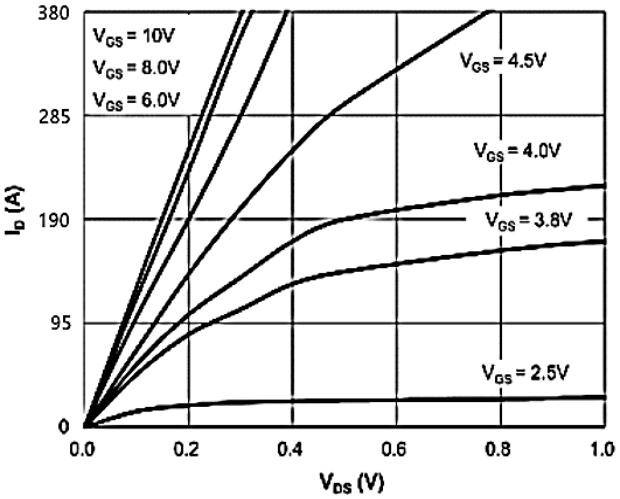


Figure 1. Output Characteristics

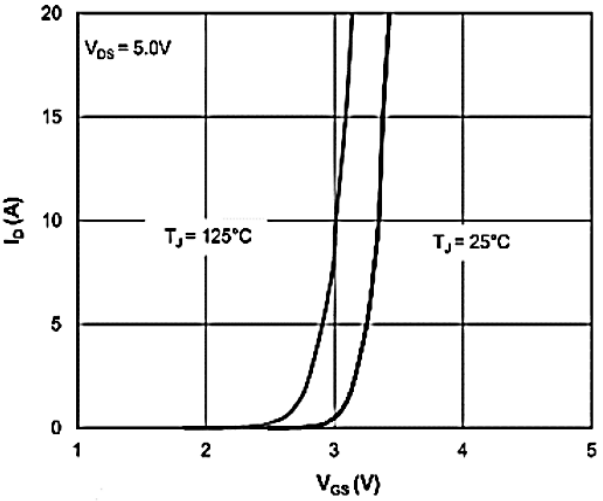


Figure 2. Transfer Characteristics

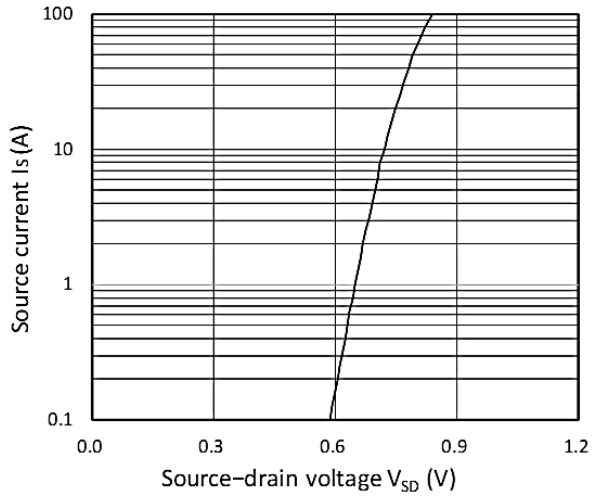


Figure 3. Forward Characteristics of Reverse

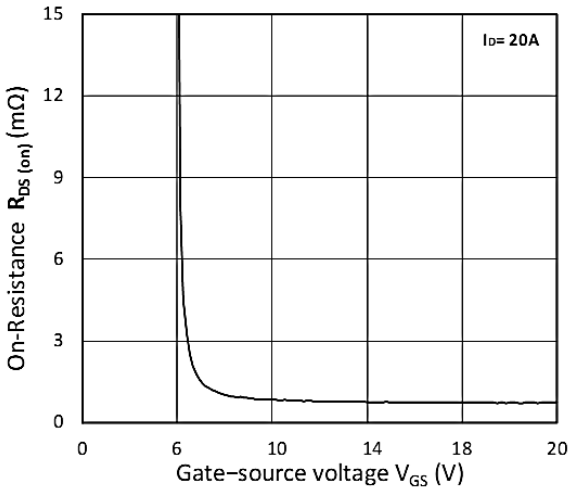


Figure 4. RDS(ON) vs. VGS

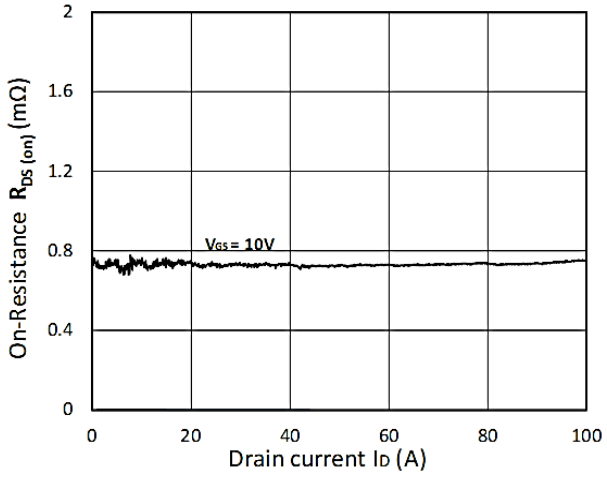


Figure 5. RDS(ON) vs. ID

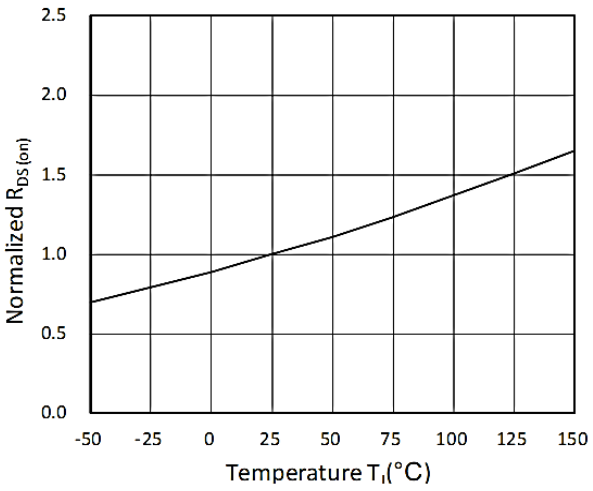


Figure 6. Normalized RDS(on) vs. Temperature

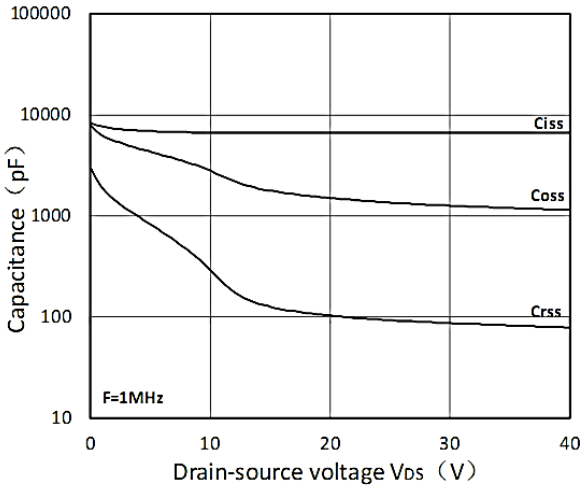


Figure 7. Capacitance Characteristics

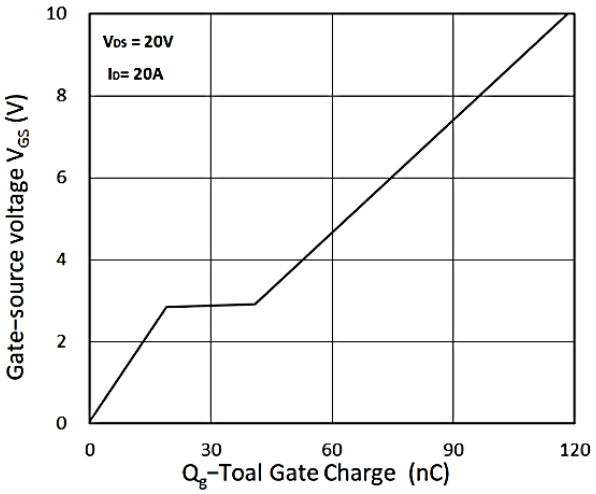


Figure 8. Gate Charge Characteristics

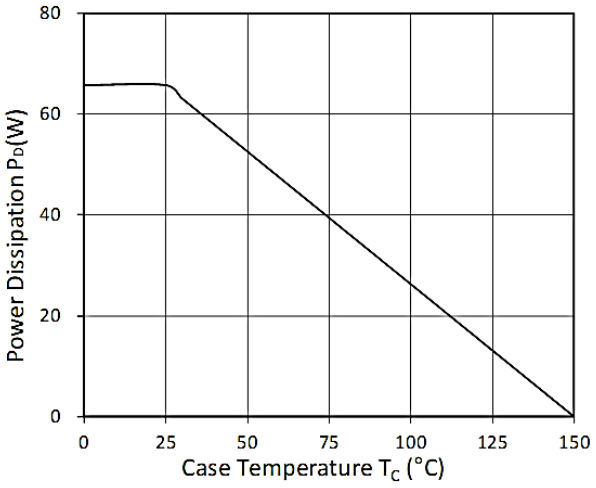


Figure 9. Power Dissipation

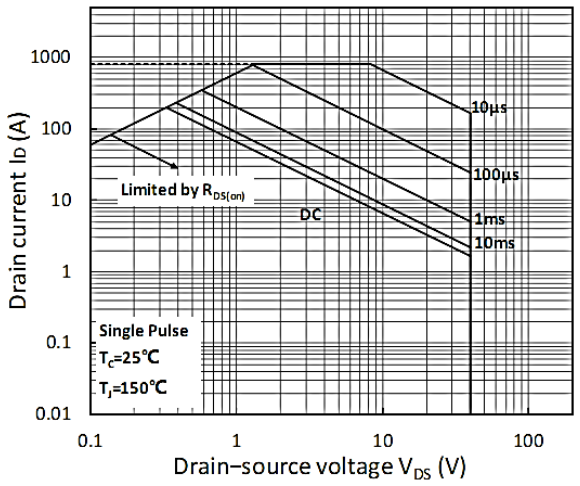


Figure10. Safe Operating Area

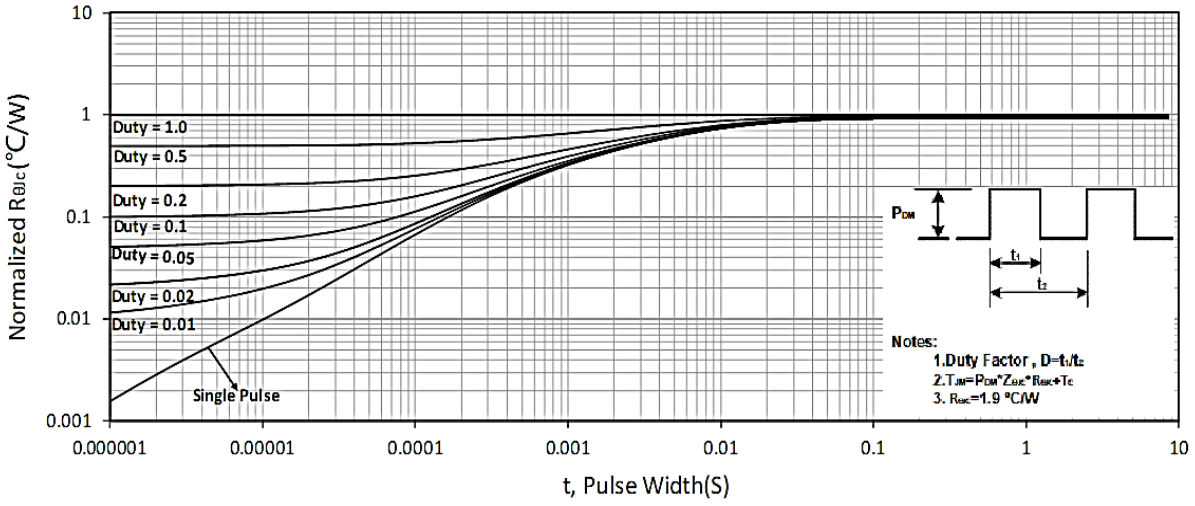
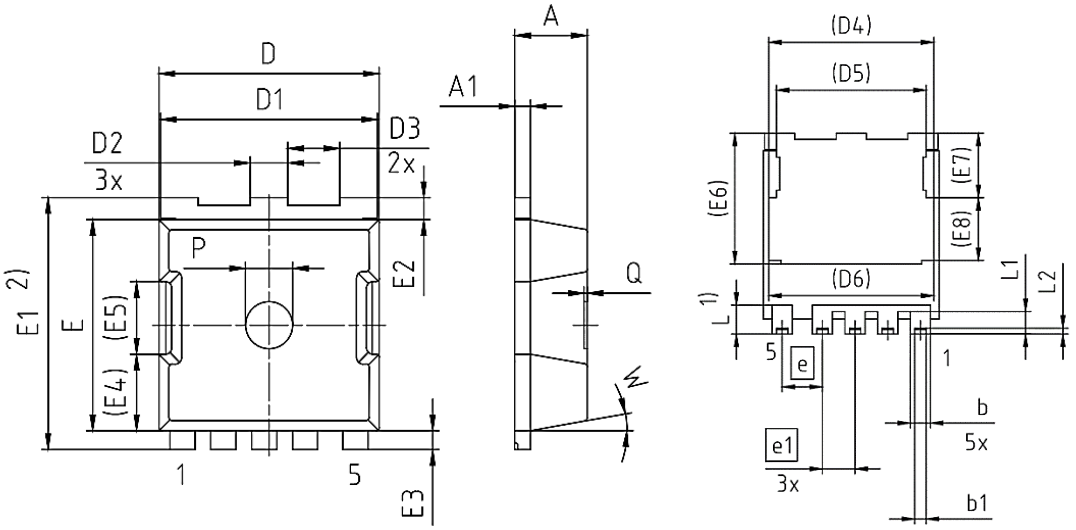


Figure 11 Normalized Maximum Transient Thermal Impedance

Package Mechanical Data-STOLL-6L-JJ Single



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	2.2	2.4
A1	0.40	0.60
b	0.70	0.90
b1	0.42	0.50
D	6.80	7.20
D1	6.80	7.00
D2	1.10	1.30
D3	1.55	1.75
D4	6.56	
D5	5.96	
D6	5.60	
E	6.50	6.90
E1	7.80	8.20
E2	0.60	0.80
E3	0.50	0.70
E4	2.43	
E5	2.30	
E6	5.20	
E7	2.57	
E8	2.50	
e	1.60	
e1	1.30	
L	1.05	1.25
L1	0.80	1.00
L2	0.13	0.33
P	1.40	1.60
Q	0.00	0.10
W	8.50°	11.50°

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40V N-Channel Enhancement Mode MOSFET

Edition	Date	Change
REV1.0	2023/5/31	Initial release