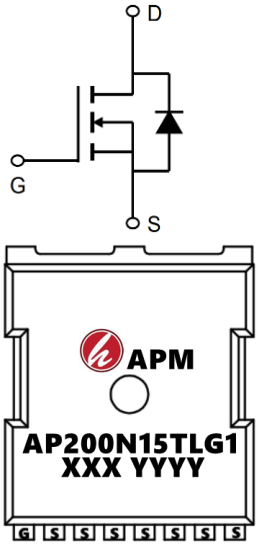
AP200N15TLG1

150V N-Channel Enhancement Mode MOSFET

Description

The AP200N15TLG1 uses advanced APM-SGT1 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.



TOLLA

General Features

V_{DS} = 150V I_D =200A

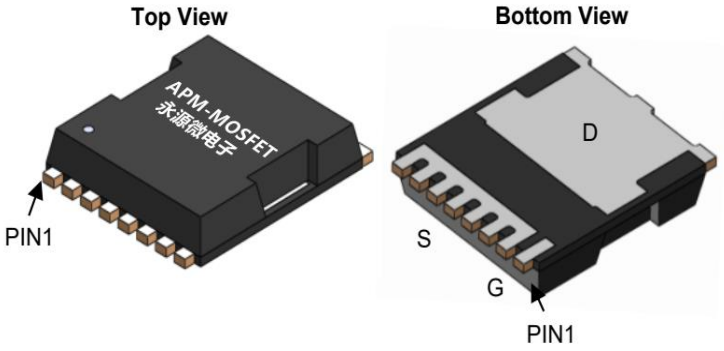
$R_{DS(ON)}$ < 7.2mΩ @ V_{GS}=10V **(Type：6.2mΩ)**

Application

DC/DC Converter

Power Management Switches

BMS/UPS



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP200N15TLG1	TOLLA-8L	AP200N15TLG1 XXX YYYY	300

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

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	150	V
VGS	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V	200	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V	140	A
IDM	Pulsed Drain Current	550	A
EAS	Single Pulse Avalanche Energy	506	mJ
IAS	Avalanche Current	53.4	A
P_D@T_C=25℃	Total Power Dissipation[4]	210	W
TSTG	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
RθJA	Thermal Resistance Junction-Ambient	0.84	℃/W
RθJC	Thermal Resistance Junction-Case	40	℃/W

Electrical Characteristics (T_C=25℃unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
VDSS	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	150	-	-	V
IGSS	Gate-body Leakage current	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
IDSS	Zero Gate Voltage Drain Current T_J=25°C	V_{DS} =100V, V_{GS} = 0V	-	-	1	μA
IDSS	Zero Gate Voltage Drain Current T_J=100°C		-	-	100	
VGS(th)	Gate-Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2.0	2.9	4.0	V
RDS(on)	Drain-Source on-Resistance[2]	V_{GS} = 10V, I_D = 20A	-	6.6	7.5	mΩ
Ciss	Input Capacitance	V_{DS} = 50V, V_{GS} =0V, f =1MHz	-	5240	-	pF
Coss	Output Capacitance		-	412	-	
Crss	Reverse Transfer Capacitance		-	10	-	
R_g	Gate Resistance	V_{GS} = 0V, V_{DS} = 0V, f =1MHz	-	1.7	-	Ω
Q_g	Total Gate Charge	V_{GS} = 10V, V_{DS} = 50V, I_D=20A	-	18	-	nC
Qgs	Gate-Source Charge		-	10	-	
Qgd	Gate-Drain Charge		-	72	-	
td(on)	Turn-on Delay Time	V_{GS} =10V, V_{DS} =50V, R_G = 3Ω, I_D= 20A	-	22	-	ns
t_r	Rise Time		-	115	-	
td(off)	Turn-off Delay Time		-	44	-	
t_f	Fall Time		-	105	-	
VSD	Diode Forward Voltage[2]	I_F = 20A, V_{GS} = 0V	-	-	1.2	V
IS	Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	-	-	190	A
trr	Body Diode Reverse Recovery Time	I_F = 20A, dI/dt=100A/μs	-	45	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	12	-	nC

Notes:

1、The data tested by surface mounted on a 1 inch2 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}=50V, V_{GS}=10V, L=0.5mH, I_{AS}=45A

4、The power dissipation is limited by 150°C 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

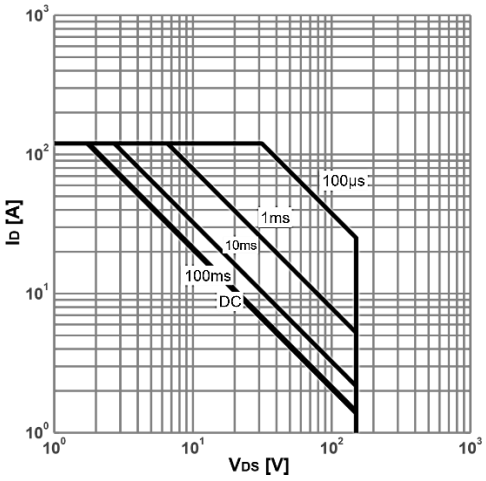


Figure 1. Power dissipation

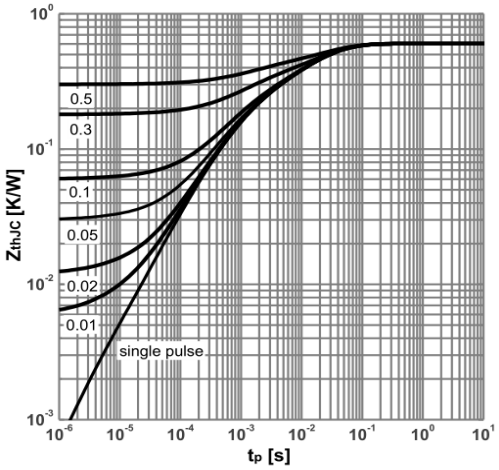


Figure 2. Max. transient thermal impedance

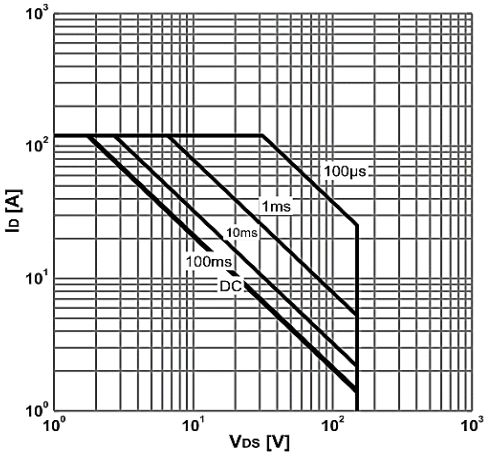


Figure 3. Safe operating area

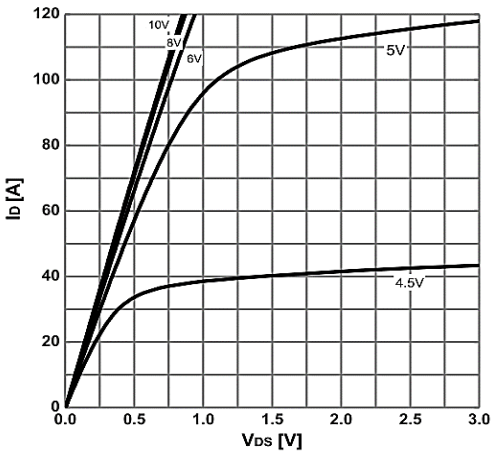


Figure 4. Typ. output characteristics

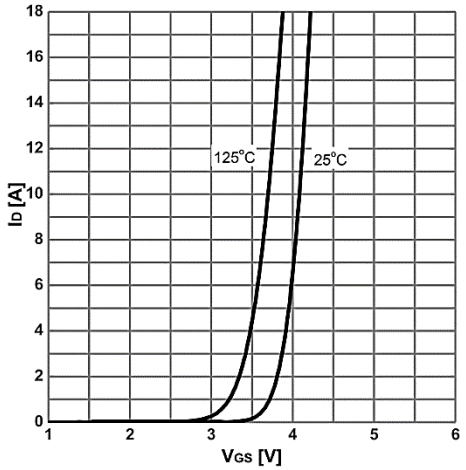


Figure 5. Typ. transfer characteristics

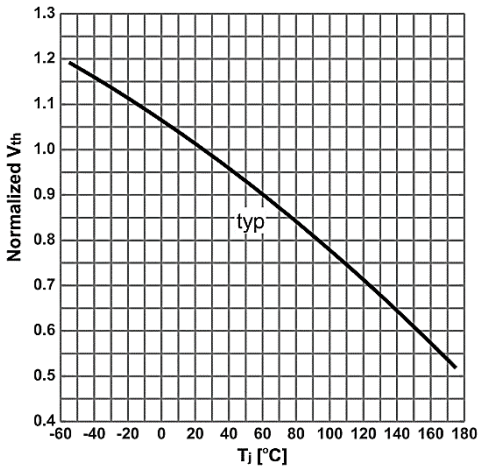


Figure 6. Gate threshold voltage vs. Junction Temperature

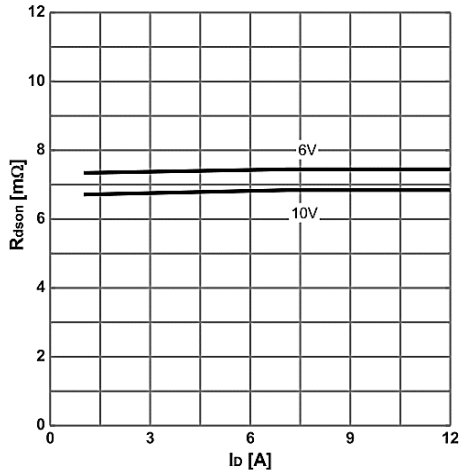


Figure 7. On-state resistance vs. Drain current

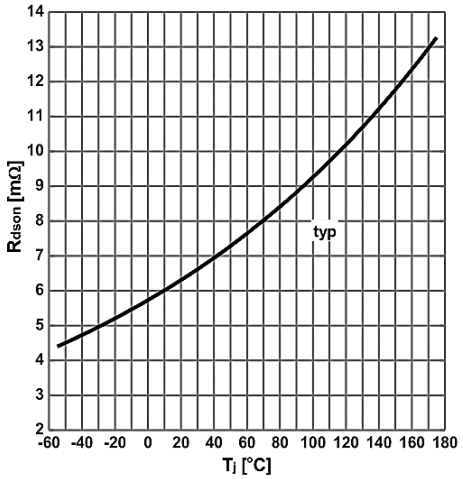


Figure 8. On-state resistance vs. Junction temperature

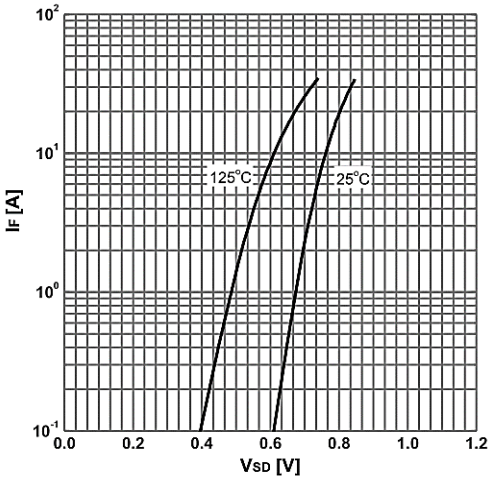


Figure 9. Forward characteristics of reverse diode

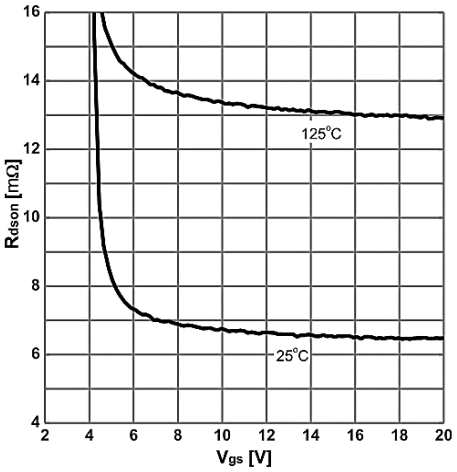


Figure10. On-state resistance vs. Vgs characteristics

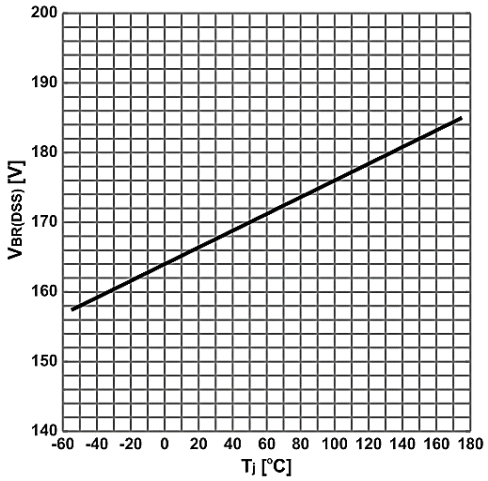


Figure 10：Breakdown Voltage Variation vs. Temperature

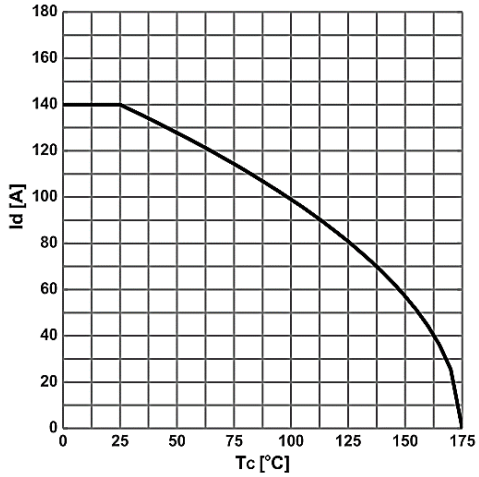
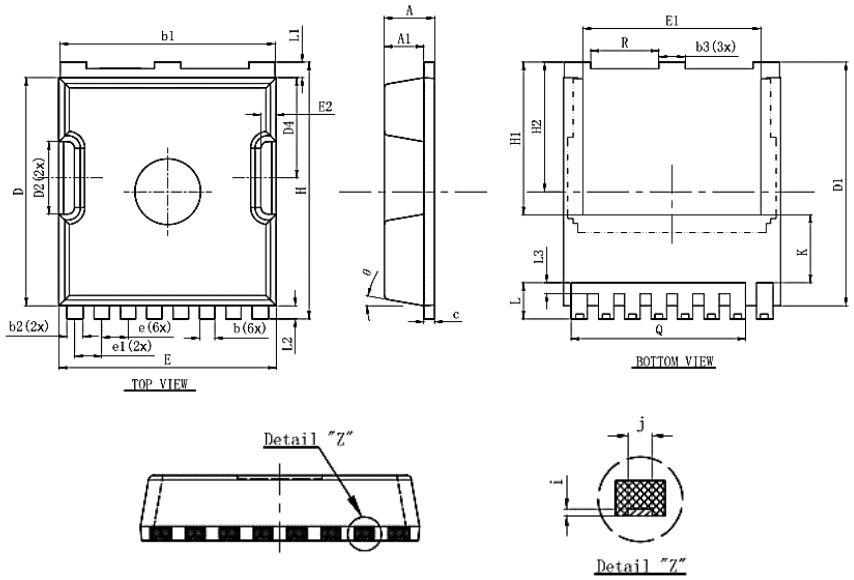


Figure 11：Maximum Drain Current

Package Mechanical Data-TOLLA-8-XZ Single



Symbol	Dimensions In Millimeters		
	Min.	Nom	Max.
A	2.2	2.3	2.4
A1	1.7	1.8	1.9
b	0.6	0.7	0.8
b1	9.7	9.8	9.9
b2	0.65	0.75	0.85
b3	1.1	1.2	1.3
C	0.4	0.5	0.6
D	10.3	10.4	10.5
D1	11.0	11.1	11.2
D2	3.2	3.3	3.4
D4	4.47	4.57	4.67
E	9.8	9.9	10.0
E1	8.0	8.1	8.2
E2	0.5	0.6	0.7
e	1.200（BSC）		
e1	1.225（BSC）		
H	11.6	11.7	11.8
H1	6.95BSC		
H2	5.9BSC		
i	0.1REF		
j	0.350REF		
K	3.100REF		
L	1.55	1.65	1.75
L1	0.6	0.7	0.8
L2	0.5	0.6	0.7
L3	0.4	0.5	0.6
Q	7.95REF		
R	3.0	3.1	3.2
θ	10°REG		

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AP200N15TLG1

150V N-Channel Enhancement Mode MOSFET

Edition	Date	Change
Rve1.0	2021/8/5	Initial release