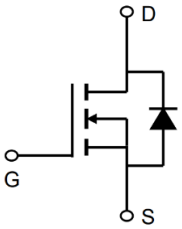
AP300N08T6

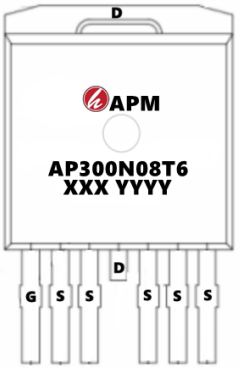
85V N-Channel Enhancement Mode MOSFET

Description

The AP300N08T6 uses advanced **SGT II** 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} = 85V I_D =300A

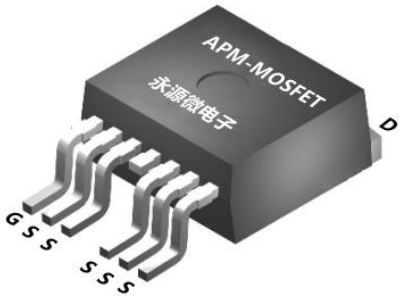
$R_{DS(ON)}$ < 2.0mΩ V_{GS}=10V **（Type：1.6mΩ）**

Application

Battery protection

Load switch

Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP300N08T6	TO-263-6L	AP300N08T6 XXX YYYY	800

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

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	85	V
VGS	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V	300	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V	196	A
IDM	Pulsed Drain Current	1240	A
EAS	Single Pulse Avalanche Energy	1858	mJ
P_D@T_C=25℃	Total Power Dissipation[4]	347.5	W
TSTG	Storage Temperature Range	-55 to 175	℃
T_J	Operating Junction Temperature Range	-55 to 175	℃
$R_{\theta}JA$	Thermal Resistance Junction-Ambient	0.53	℃/W
$R_{\theta}JC$	Thermal Resistance Junction-Case	62.5	℃/W

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V(BR)DSS	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	80	90	-	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} = 80V, V_{GS} = 0V	-	-	1	μA
	Zero Gate Voltage Drain Current T_J=100°C		-	-	100	
VGS(th)	Gate-Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2	3	4	V
RDS(on)	Drain-Source on-Resistance[4]	V_{GS} = 10V, I_D = 20A	-	1.6	2.0	mΩ
gfs	Forward Transconductance[4]	V_{DS} = 10V, I_D =20A	-	70	-	S
Ciss	Input Capacitance	V_{DS} = 40V, V_{GS} =0V, f =1MHz	-	8980	-	pF
Coss	Output Capacitance		-	1560	-	
Crss	Reverse Transfer Capacitance		-	90	-	
R_g	Gate Resistance	f=1MHz	-	2.4	-	Ω
Q_g	Total Gate Charge	V_{GS} = 10V, V_{DS} = 40V, I_D= 20A	-	140	-	nC
Qgs	Gate-Source Charge		-	37.5	-	
Qgd	Gate-Drain Charge		-	37.5	-	
td(on)	Turn-on Delay Time	V_{GS} =10V, V_{DD} = 40V, R_G = 3Ω, I_D= 20A	-	27.5	-	ns
t_r	Rise Time		-	82	-	
td(off)	Turn-off Delay Time		-	85	-	
t_f	Fall Time		-	52	-	
trr	Body Diode Reverse Recovery Time	I_F=20A, di/dt = 100A/μs	-	98	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	166	-	nC
VSD	Diode Forward Voltage[4]	I_S = 20A, V_{GS} = 0V	-	-	1.2	V
IS	Continuous Source Current T_C=25°C		-	-	310	A

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 .The EAS data shows Max. rating .
3、The test cond≦ 300us duty cycle ≦ 2%, duty cycle ition is V_{DD}=64V_{GS}=10V,L=0.1mH,I_{AS}=53.8A
4、The power dissipation is limited by 175℃ 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

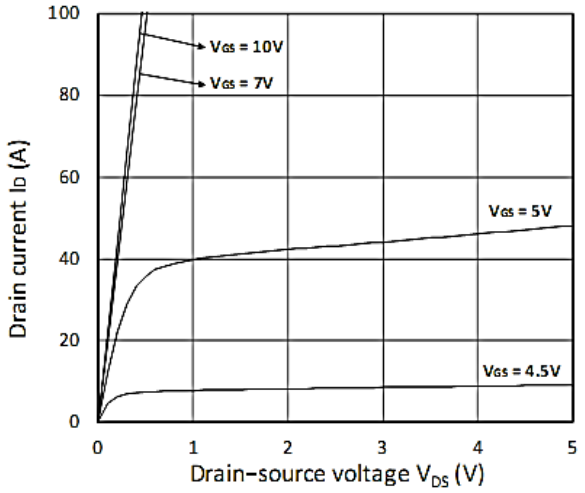


Figure 1. Output Characteristics

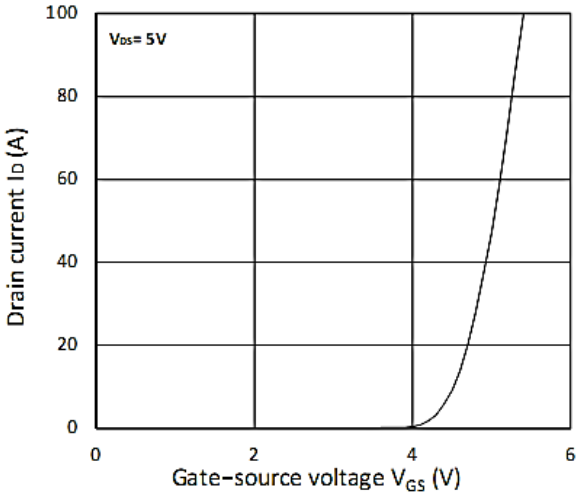


Figure 2. Transfer Characteristics

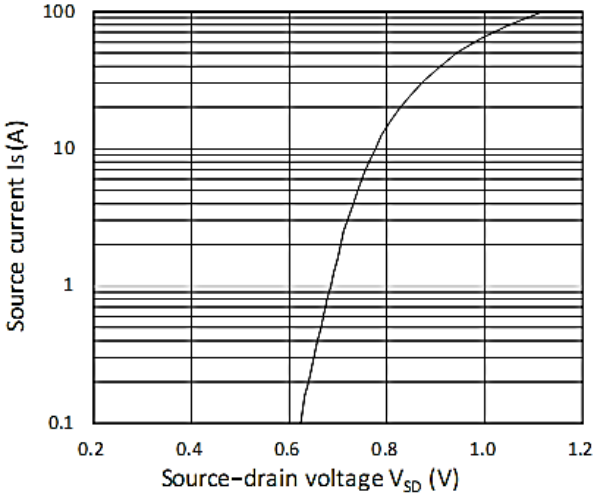


Figure 3. Forward Characteristics of Reverse

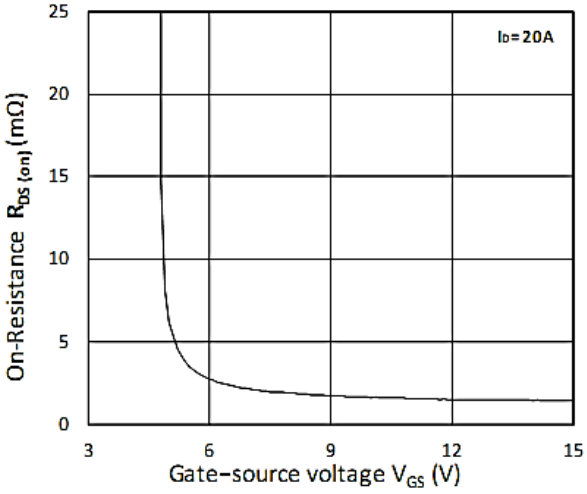


Figure 4. RDS(ON) vs. VGS

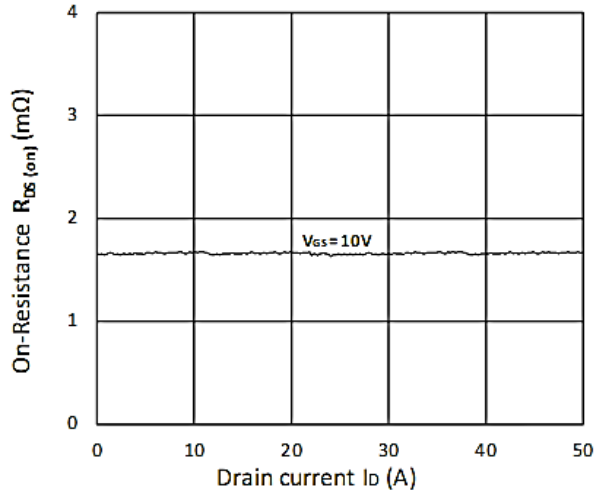


Figure 5. RDS(ON) vs. ID

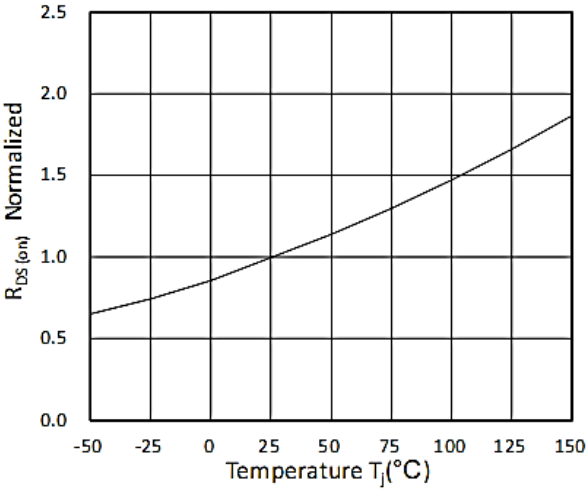


Figure 6. Normalized R DS(on) vs. Temperature

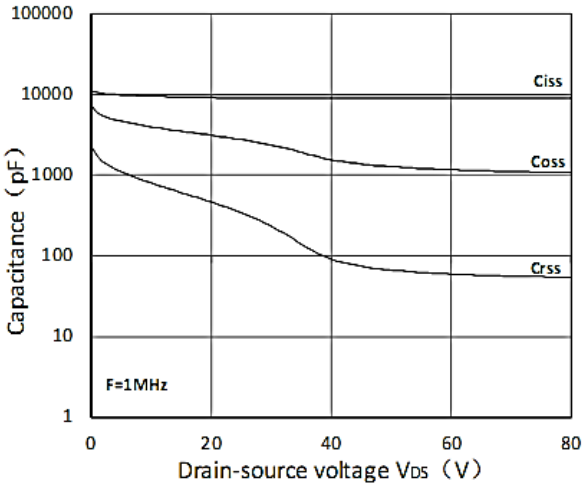


Figure 7. Capacitance Characteristics

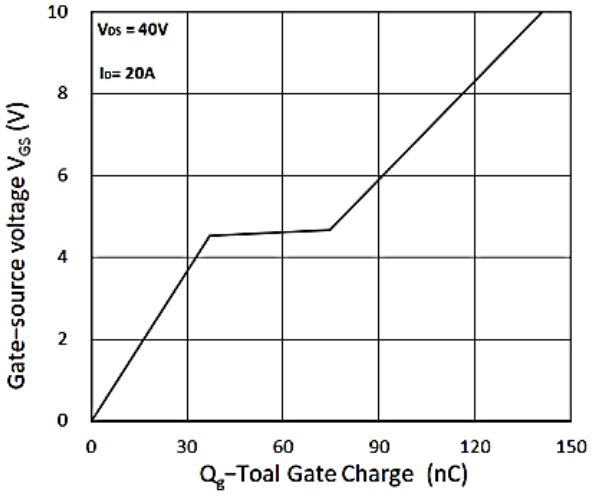


Figure 8. Gate Charge Characteristics

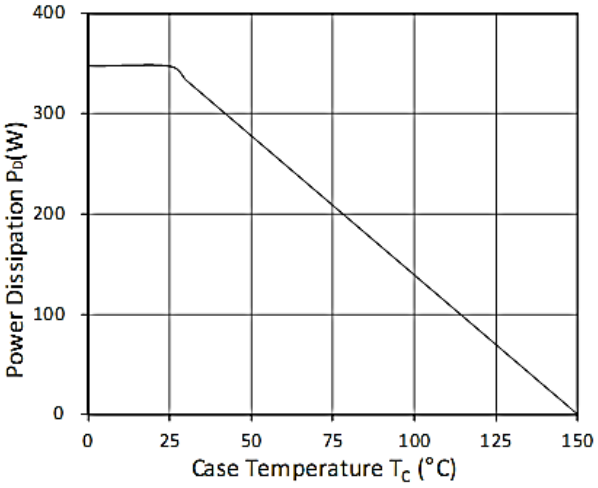


Figure 9. Power Dissipation

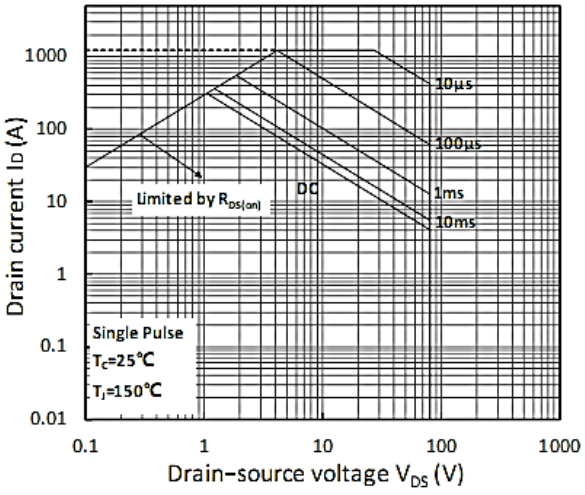


Figure10. Safe Operating Area

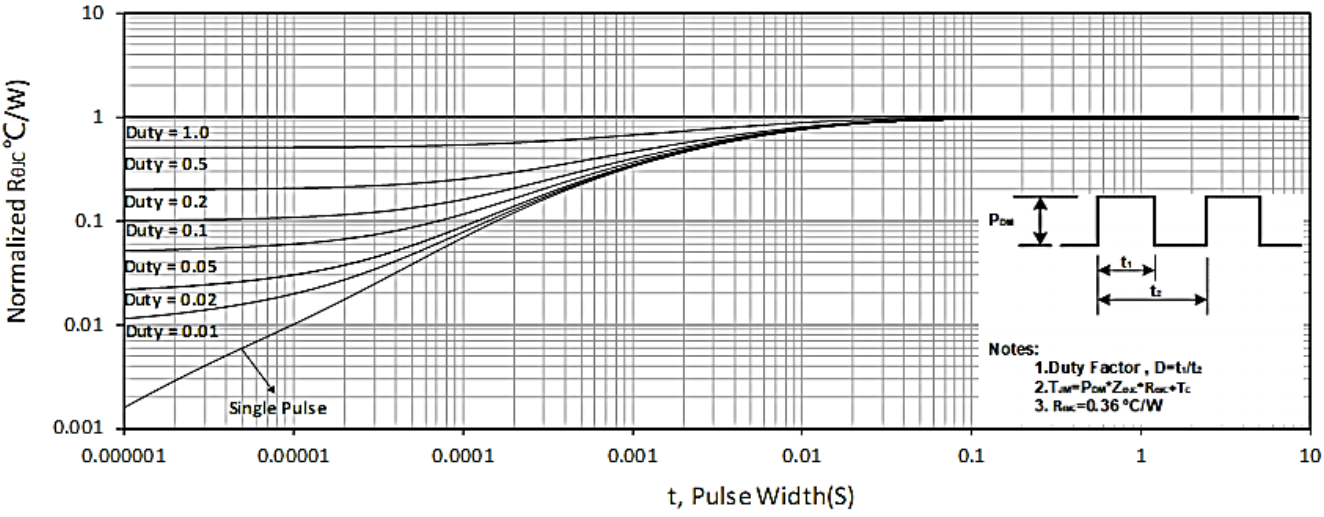
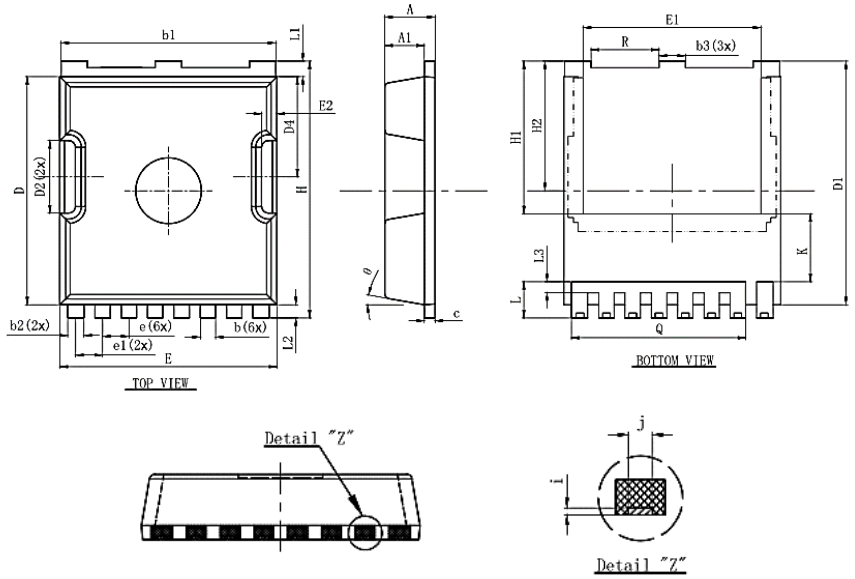


Figure 11. Normalized Maximum Transient Thermal Impedance

Package Mechanical Data-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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Edition	Date	Change
REV1.0	2022/10/31	Initial release