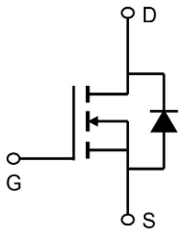
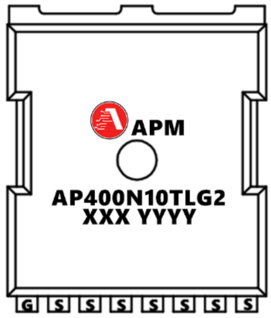
AP400N10TLG2

100V N-Channel Enhancement Mode MOSFET

Description

The AP400N10TLG2 uses advanced **APM-SGT I I** 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.





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General Features

V_{DS} = 100V I_D =400A

$R_{DS(ON)}$ <1.2mΩ @ V_{GS}=10V **(Type：1.0mΩ)**

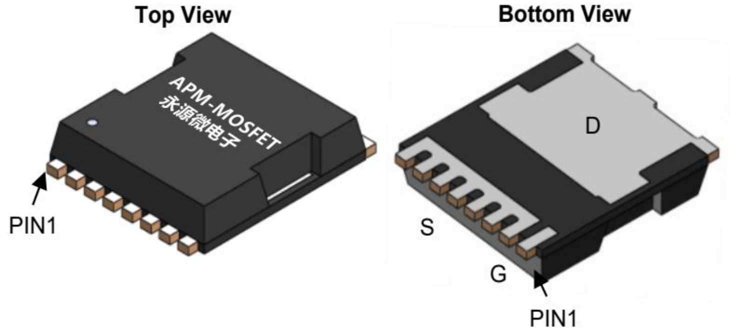
Application

DC/DC Converter

LED Backlighting

Power Management Switches

Top View **Bottom View**



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP400N10TLG2	TOLLA-8L	AP400N10TLG2 XXX YYYY	2000

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

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	100	V
VGS	Gate-Source Voltage	±20	V
I_D@T_A=25℃	Continuous Drain Current, V_{GS} @ 10V[1]	400	A
I_D@T_A=100℃	Continuous Drain Current, V_{GS} @ 10V[1]	295	A
IDM	Pulsed Drain Current[2]	1800	A
EAS	Single Pulse Avalanche Energy[3]	1987	mJ
IAS	Avalanche Current	50	A
P_D@T_A=25℃	Total Power Dissipation[3]	500	W
TSTG	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
R_{θ}JA	Thermal Resistance Junction-ambient [1]	45	℃/W
R_{θ}JC	Thermal Resistance Junction-Case[1]	0.25	℃/W

Electrical Characteristics (T_C=25℃unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V(BR)DSS	Drain-Source Breakdown Voltage	I_D = 250mA, V_{GS} = 0V	100	108	-	V
IDSS	Zero Gate Voltage Drain Current	V_{DS} = 80V, V_{GS} = 0V	-	-	1.0	uA
IGSS	Gate-Body Leakage Current	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
VGS(th)	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250mA	2.5	2.9	4.0	V
RDS(ON)	Static Drain-Source ON-Resistance(4)	V_{GS} = 10V, I_D = 20A	-	1.0	1.2	mΩ
R_g	Gate Resistance	f = 1MHz	-	3.8	-	Ω
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 50V, f = 1MHz	-	13360	-	pF
Coss	Output Capacitance		-	5113	-	pF
C_{rss}	Reverse Transfer Capacitance		-	122	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to 10V V_{DS} = 50V, I_D = 20A	-	217	-	nC
Q_{gs}	Gate Source Charge		-	65	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	57	-	nC
td(on)	Turn-On DelayTime	V_{GS} = 10V, V_{DD} = 50V I_D= 20A, R_{GEN} = 3W	-	41	-	ns
t_r	Turn-On Rise Time		-	69	-	ns
td(off)	Turn-Off DelayTime		-	157	-	ns
t_f	Turn-Off Fall Time		-	92	-	ns
IS	Maximum Continuous Body Diode Forward Current		-	-	400	A
ISM	Maximum Pulsed Body Diode Forward Current		-	-	1800	A
VSD	Body Diode Forward Voltage	V_{GS} = 0V, I_S = 20A	-		1.2	V
trr	Body Diode Reverse Recovery Time	I_F = 20A, di/dt = 100A/us	93	130	176	ns
Qrr	Body Diode Reverse Recovery Charge		-	374	-	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}=90V, V_{GS}=10V, L=1.0mH, I_{AS}=50A

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

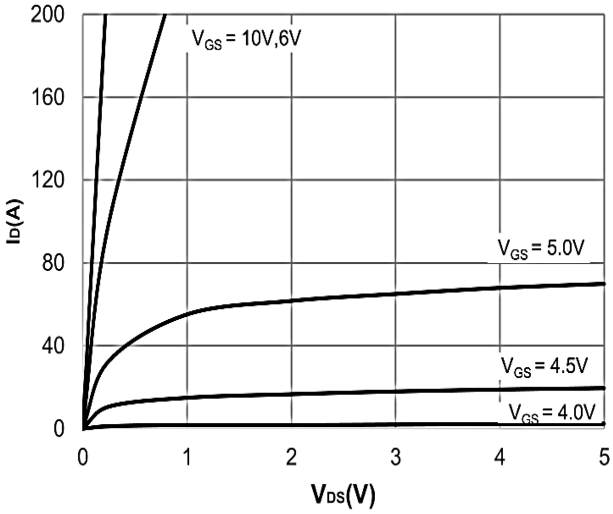


Figure 1: Output Characteristics

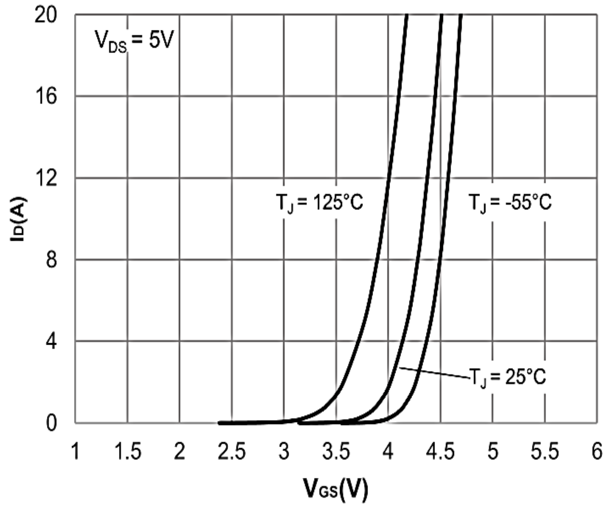


Figure 2: Typical Transfer Characteristics

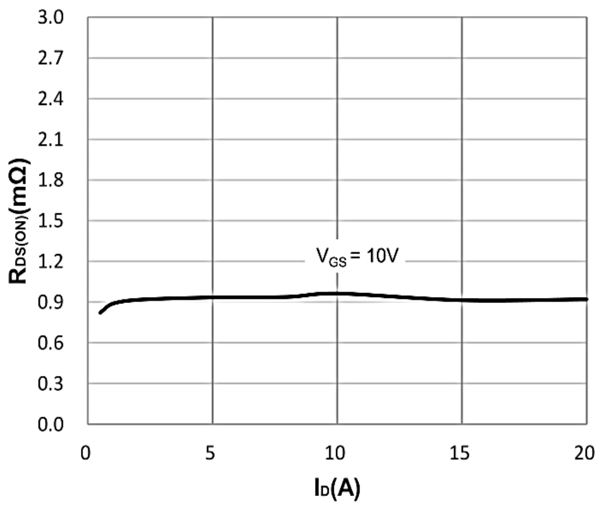


Figure 3: On-resistance vs. Drain Current

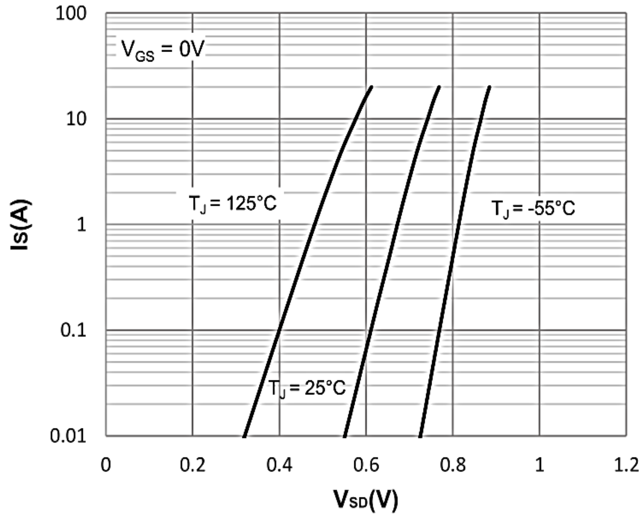


Figure 4: Body Diode Characteristics

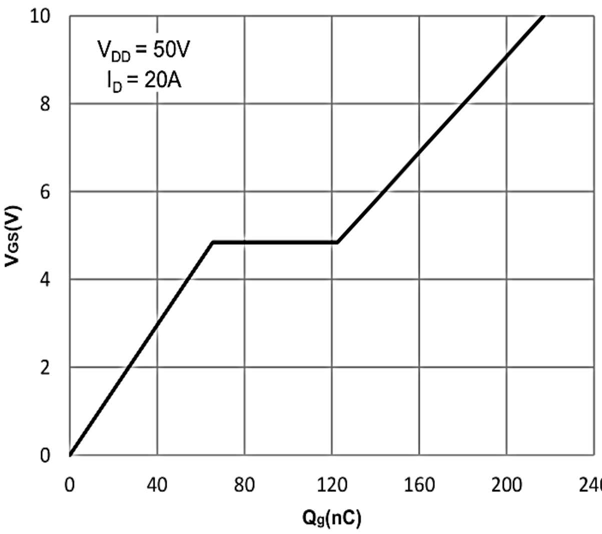


Figure 5: Gate Charge Characteristics

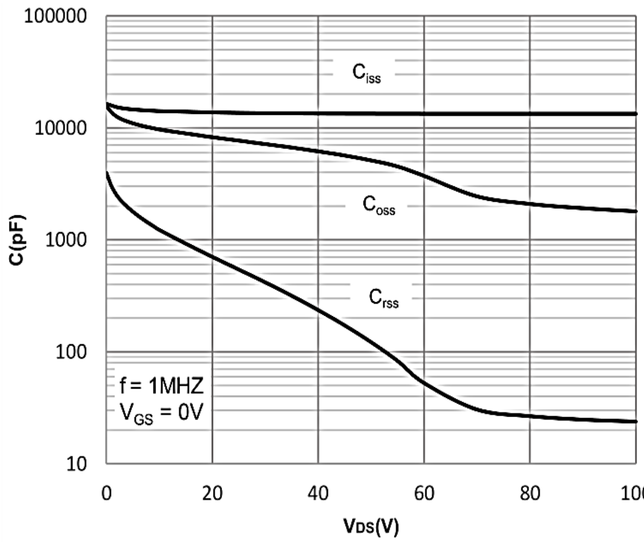


Figure 6: Capacitance Characteristics

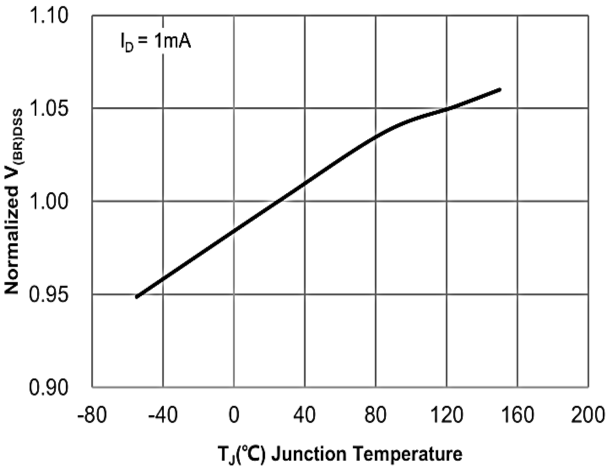


Figure 7: Normalized Breakdown voltage vs. Junction Temperature

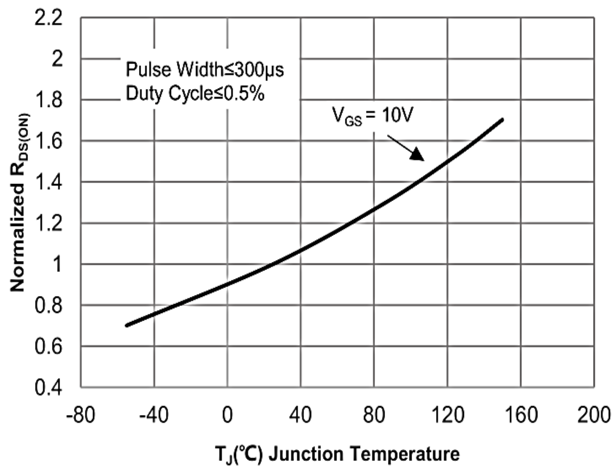


Figure 8: Normalized on Resistance vs. Junction Temperature

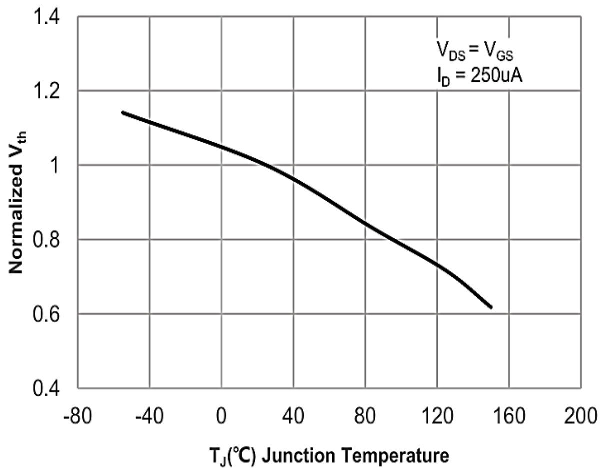


Figure 9: Maximum Safe Operating Area

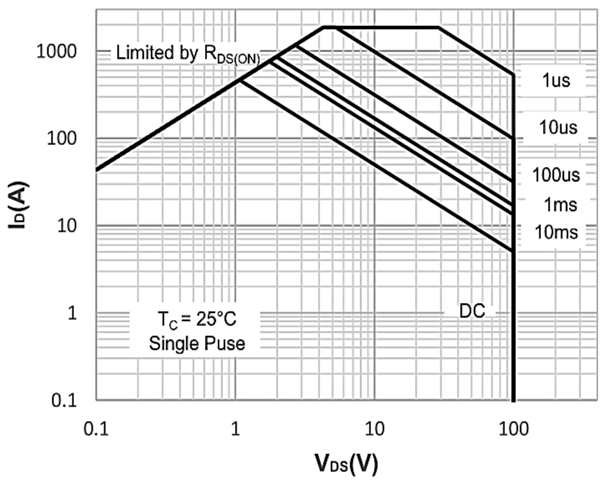


Figure 10: Maximum Continuous Drian Current vs. Case Temperature

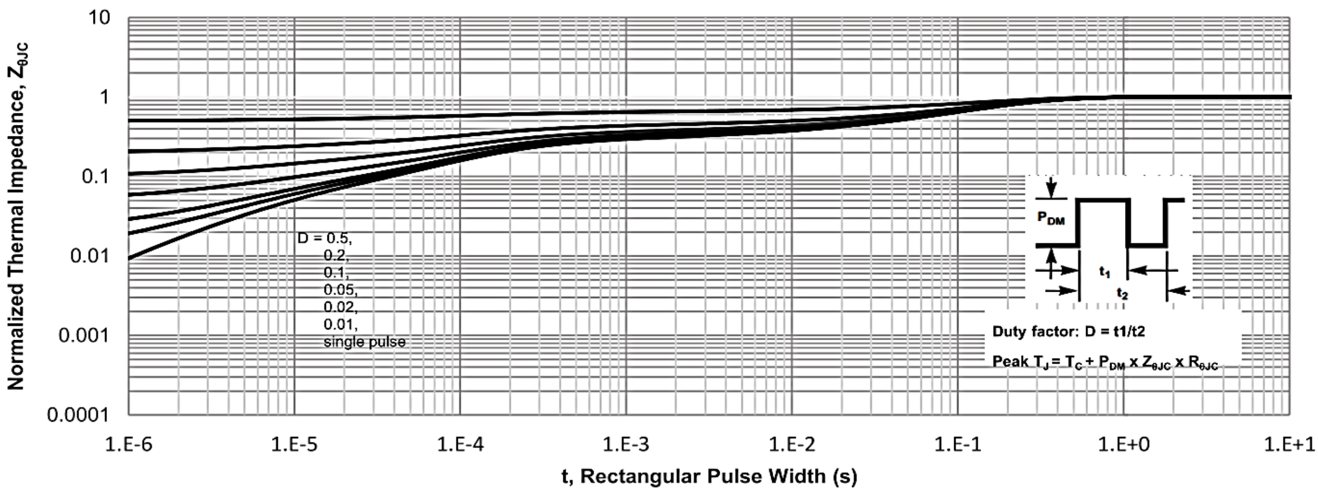
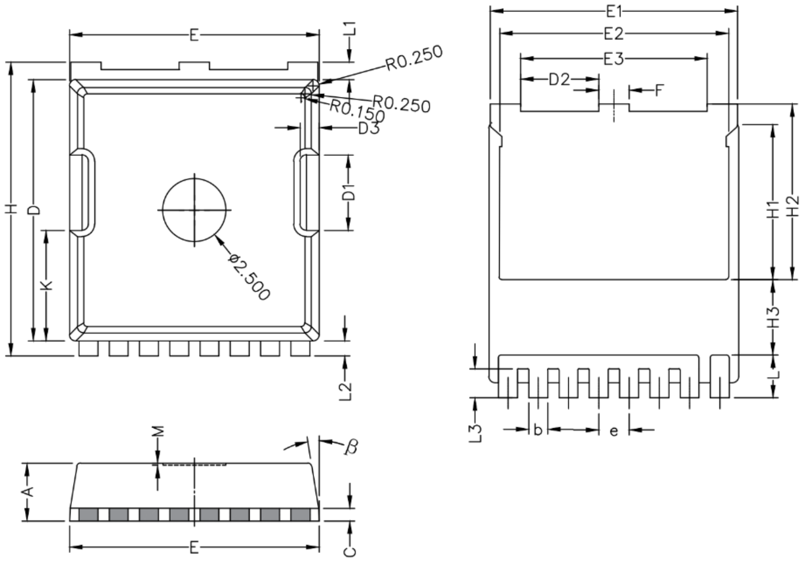


Figure 11: Normalized Maximum Transient Thermal Impedance

Package Mechanical Data-TOLLA-8L



Symbol	Dim in mm		
	Min	Tpy	Max
A	2.20	2.30	2.40
b	0.65	0.75	0.85
C	0.508REF		
D	10.25	10.40	10.55
D1	2.85	3.00	3.15
D2	2.95	3.10	3.25
D3	0.75REF		
E	9.75	9.90	10.05
E1	9.65	9.80	9.95
E2	8.95	9.10	9.25
E3	7.23	7.40	7.55
e	1.20BSC		
F	1.05	1.20	1.35
H	11.55	11.70	11.85
H1	6.03	6.18	6.33
H2	6.85	7.00	7.15
H3	3.00 BSC		
L	1.55	1.70	1.85
L1	0.55	0.70	0.85
L2	0.45	0.60	0.75
L3	1.00	1.15	1.30
β	8°	10°	12°
M	0.08REF		
K	4.25	4.40	4.55

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Edition	Date	Change
REV1.0	2024/5/5	Initial release