

100V N-Channel Enhancement Mode MOSFET

Description

The AP3N10CI 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

$V_{DS} = 100V$ $I_D = 2.8A$

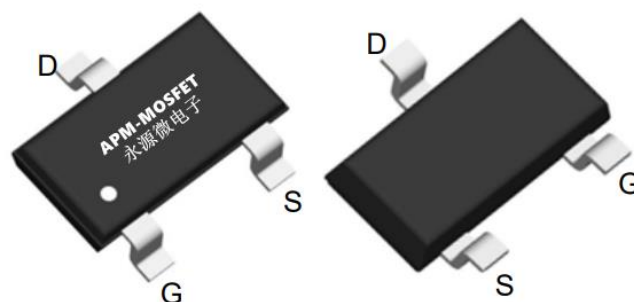
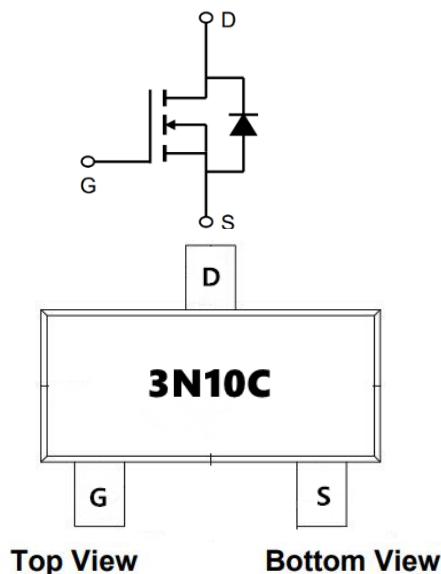
$R_{DS(ON)} < 300m\Omega$ @ $V_{GS}=10V$ (Type: 220m Ω)

Application

Atomizer

Load switch

Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP3N10CI	SOT23L	3N10C	3000

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_A=25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10V^1$	2.8	A
$I_D @ T_A=100^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10V^1$	1.4	A
I_{DM}	Pulsed Drain Current ²	8.8	A
$P_D @ T_A=25^\circ\text{C}$	Total Power Dissipation ³	2.3	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance Junction-ambient ¹	125	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	45	$^\circ\text{C/W}$

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Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	100	-	-	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} =100V, 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	1.0	1.5	2.2	V
RDS(on)	Static Drain-Source on-Resistance note2	V _{GS} =10V, I _D =2A	-	220	300	mΩ
		V _{GS} =4.5V, I _D =1A	-	250	320	
Ciss	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	321	-	pF
Coss	Output Capacitance		-	21	-	pF
Crss	Reverse Transfer Capacitance		-	15	-	pF
Q _g	Total Gate Charge	V _{DS} =30V, I _D =2A, V _{GS} =10V	-	5.3	-	nC
Q _{gs}	Gate-Source Charge		-	1.3	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	1.7	-	nC
td(on)	Turn-on Delay Time	V _{DS} =30V, I _D =1A, R _{GEN} =3Ω, V _{GS} =10V	-	14	-	ns
tr	Turn-on Rise Time		-	54	-	ns
td(off)	Turn-off Delay Time		-	18	-	ns
tr	Turn-off Fall Time		-	11	-	ns
IS	Maximum Continuous Drain to Source Diode Forward Current		-	-	2.2	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	8.8	A
VSD	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =2.2A	-	-	1.2	V

Note :

- 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 $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3、The power dissipation is limited by 150 $^{\circ}\text{C}$ junction temperature
- 4、The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

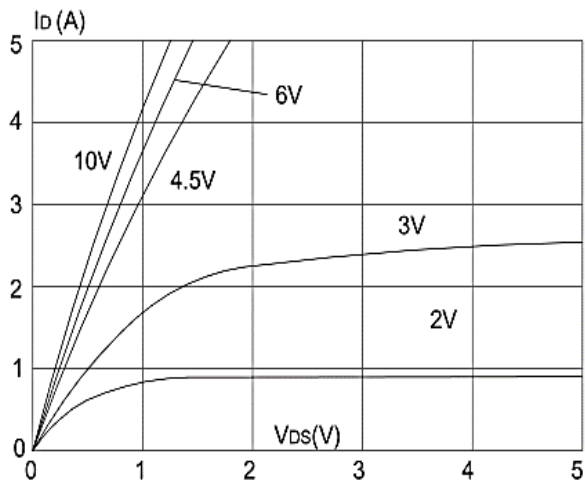


Figure1: Output Characteristics

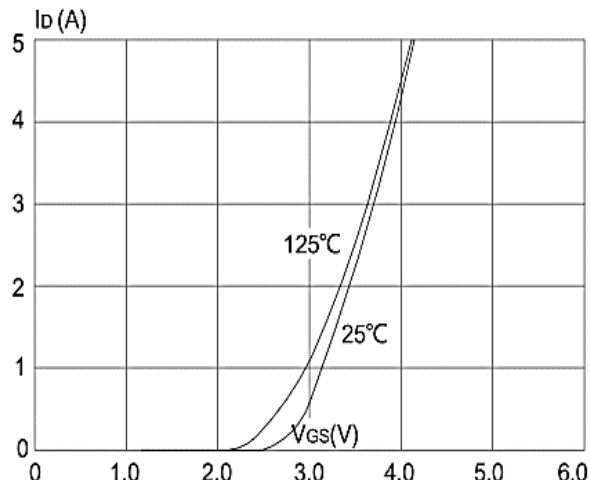


Figure 2: Typical Transfer Characteristics

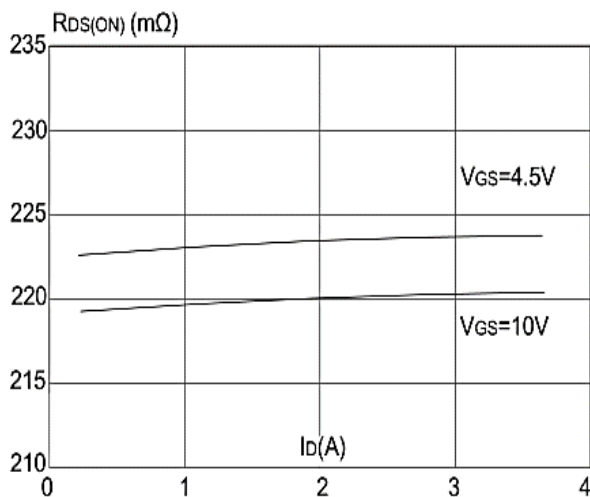


Figure 3: On-resistance vs. Drain Current

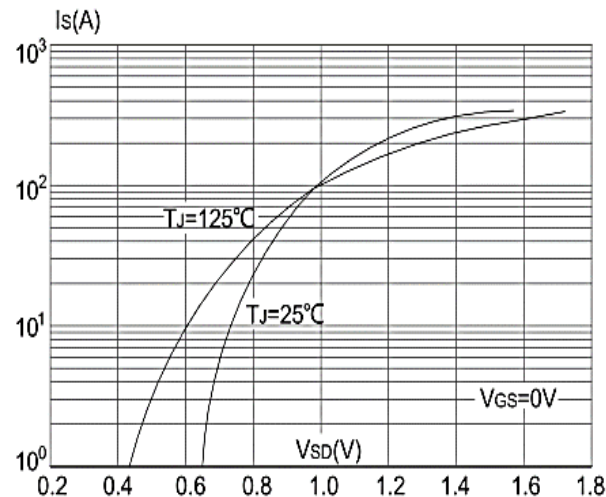


Figure 4: Body Diode Characteristics

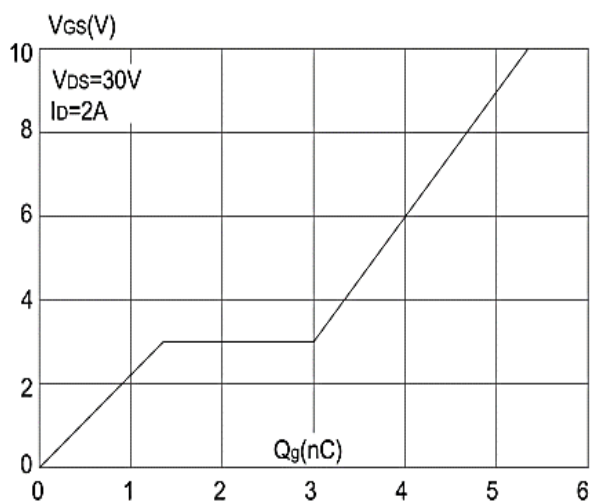


Figure 5: Gate Charge Characteristics

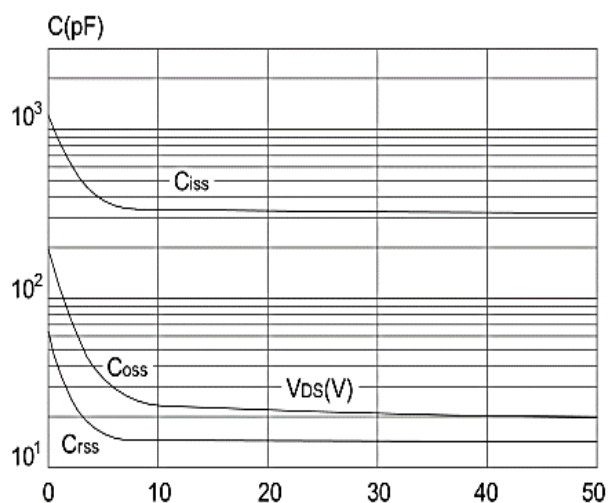


Figure 6: Capacitance Characteristics

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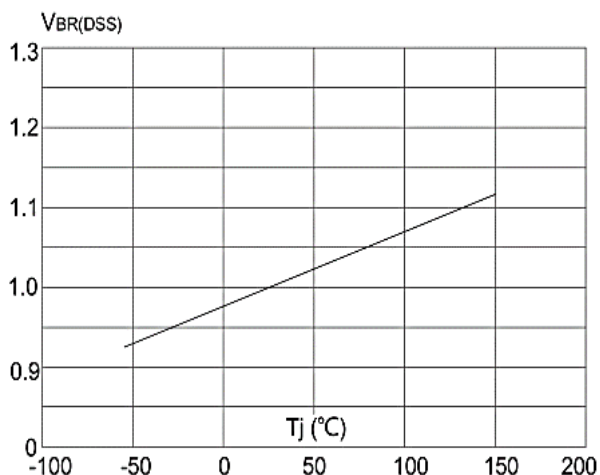


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

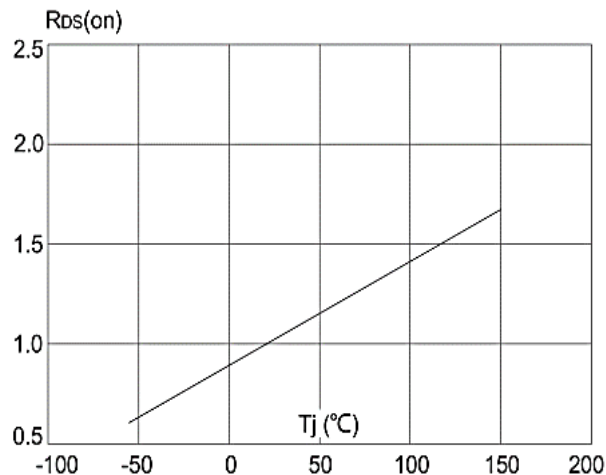


Figure 8: Normalized on Resistance vs. Junction Temperature

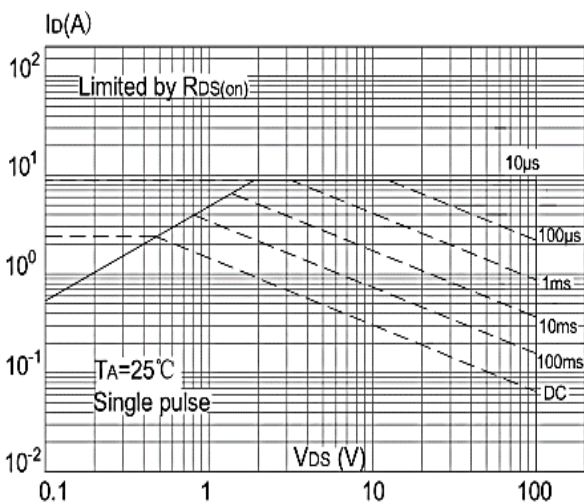


Figure 9: Maximum Safe Operating Area

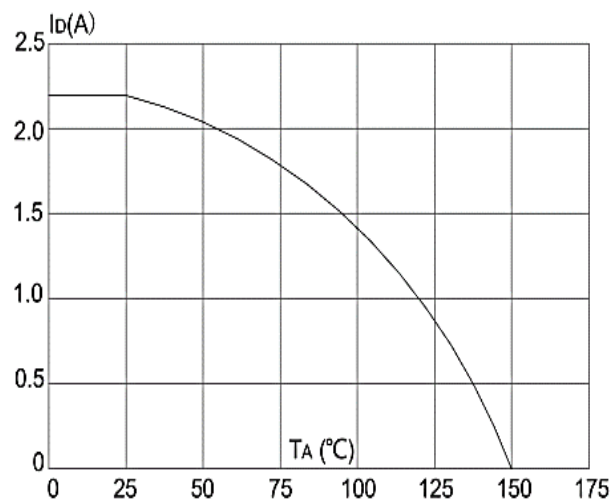


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

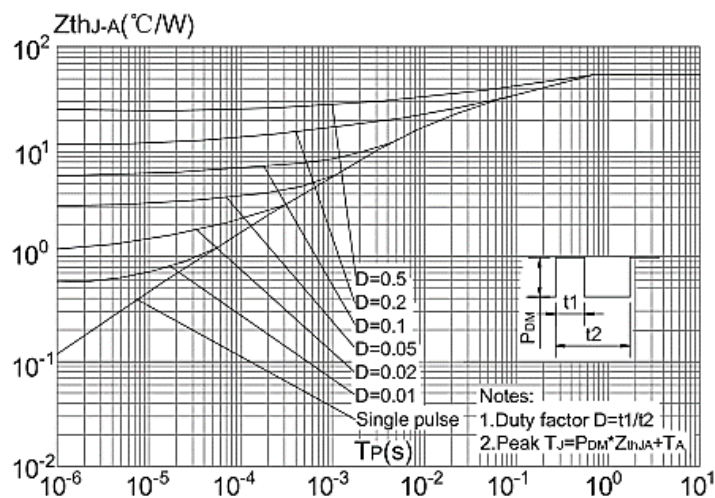
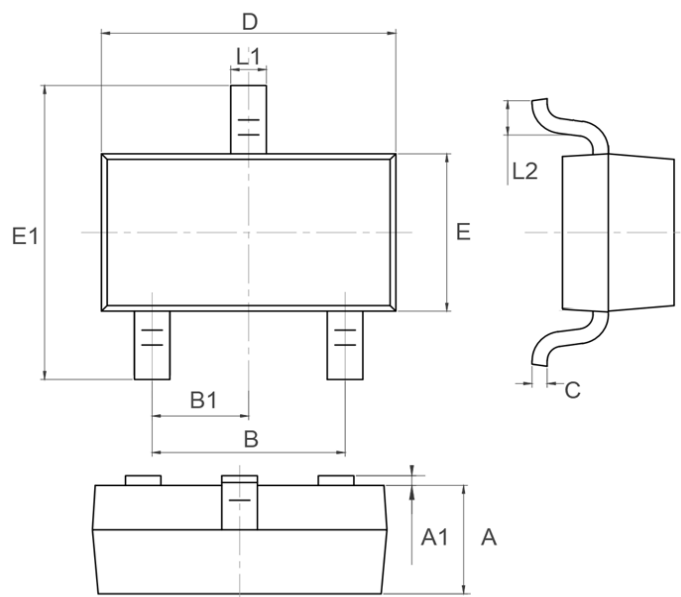


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

Package Mechanical Data-SOT23L



Symbol	Dim in mm		
	Min	Typ	Max
A	0.9	1	1.1
A1	0	0.05	0.1
B	1.8	1.9	2
B1	0.95TYP		
C	0.08	0.115	0.15
D	2.8	2.9	3
E	1.2	1.3	1.4
E1	2.25	2.4	2.55
L1	0.3	0.4	0.5
L2	0.2	0.35	0.5

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Edition	Date	Change
REV1.0	2023/5/1	Initial release
REV1.1	2025/8/19	Change logo

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