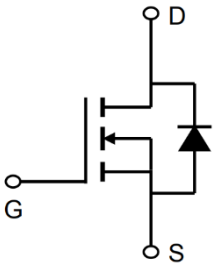
AP2N100D

1000V N-Channel Enhancement Mode MOSFET

Description

The AP2N100D is silicon N-channel Enhanced VDMOSFETs, is obtained by the self-aligned planar Technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy. The transistor can be used in various power switching circuit for system miniaturization and higher efficiency.



General Features

VDS =650V,ID =2A

RDS(ON) <7.2Ω@ VGS=10V

Application

Uninterruptible Power Supply(UPS)

Power Factor Correction (PFC)

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP2N100D	TO-252-3L	AP2N100D XXX YYYY	2500

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS = 0V)	1000	V
ID	Continuous Drain Current	2	A
IDM	Pulsed Drain Current	8	A
VGS	Gate-Source Voltage	±30	V
EAS	Single Pulse Avalanche Energy	45	mJ
IAS	Avalanche Current	3	A
EAR	Repetitive Avalanche Energy	27	mJ
PD	Power Dissipation (TC = 25ºC)	75	W
TJ, Tstg	Operating Junction and Storage Temperature Range	-55~+150	℃
RthJC	Thermal Resistance, Junction-to-Case	1.67	K/W
RthJA	Thermal Resistance, Junction-to-Ambient	60	K/W

Electrical Characteristics (T_A=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	1000	--	--	V
IDSS	Zero Gate Voltage Drain Current	V_{DS} = 1000V, V_{GS} = 0V, T_J = 25ºC	--	--	1	μA
IGSS	Gate-Source Leakage	V_{GS} = ±20V	--	--	±100	nA
VGS(th)	Gate-Source Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2.0	--	4.0	V
RDS(on)	Drain-Source On-Resistance (Note3)	V_{GS} = 10V, I_D = 1.0A	--	6	7.2	Ω
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 25V f = 1.0MHz	--	419	--	pF
C_{oss}	Output Capacitance		--	45	--	
C_{rss}	Reverse Transfer Capacitance		--	9	--	
Q_g	Total Gate Charge	V_{DD} = 800V, I_D = 2.0A, V_{GS} = 15V	--	16	--	nC
Q_{gs}	Gate-Source Charge		--	2	--	
Q_{gd}	Gate-Drain Charge		--	8	--	
td(on)	Turn-on Delay Time	V_{DD} = 500V I_D =2.0A, R_G = 25 Ω	--	36	--	ns
t_r	Turn-on Rise Time		--	12	--	
td(off)	Turn-off Delay Time		--	100	--	
t_f	Turn-off Fall Time		--	43	--	
I_S	Continuous Body Diode Current	T_C = 25 ºC	--	--	2	A
ISM	Pulsed Diode Forward Current		--	--	8	
V_{SD}	Body Diode Voltage	T_J = 25ºC, I_{SD} = 1.0A, V_{GS} = 0V	--	--	1.4	V
trr	Reverse Recovery Time	V_{GS} = 0V,I_S = 2.0A, di_F/dt =100A /μs	--	432.5	--	ns
Q_{rr}	Reverse Recovery Charge		--	424	--	μC

Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. L = 10.0mH, V_{DD} = 50V, R_G = 25 Ω, Starting T_J = 25 ºC
3. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%

Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 1. Output Characteristics (T_J = 25ºC)

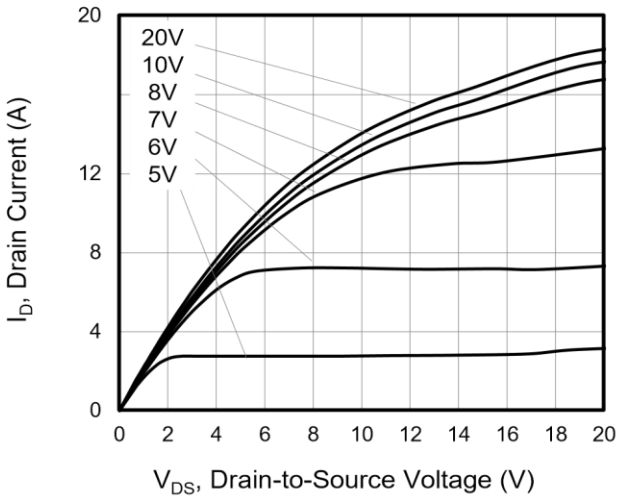


Figure 2. Body Diode Forward Voltage

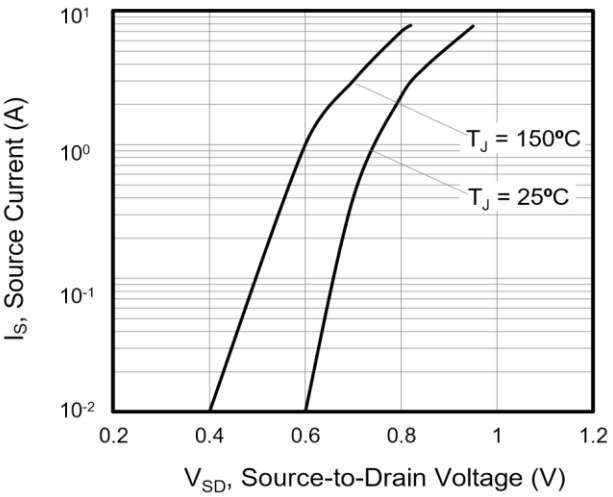


Figure 3. Drain Current vs. Temperature

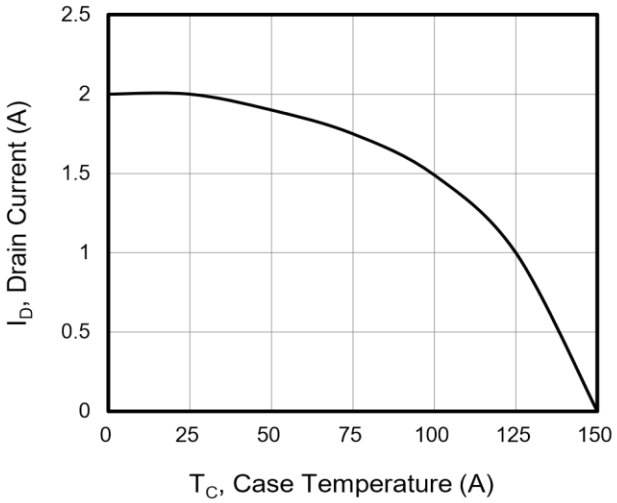


Figure 4. BV_{DSS} Variation vs. Temperature

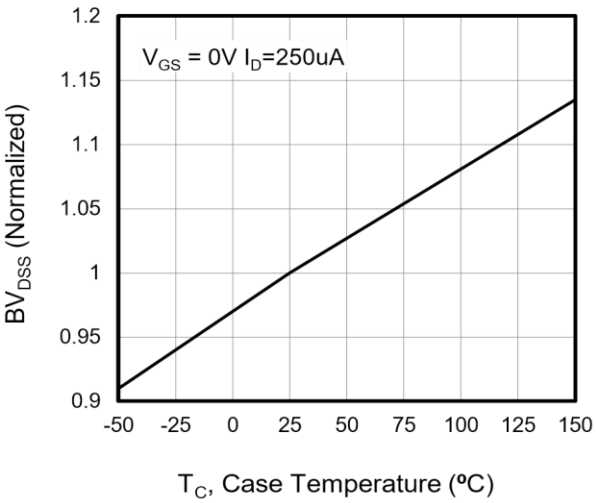


Figure 5. Transfer Characteristics

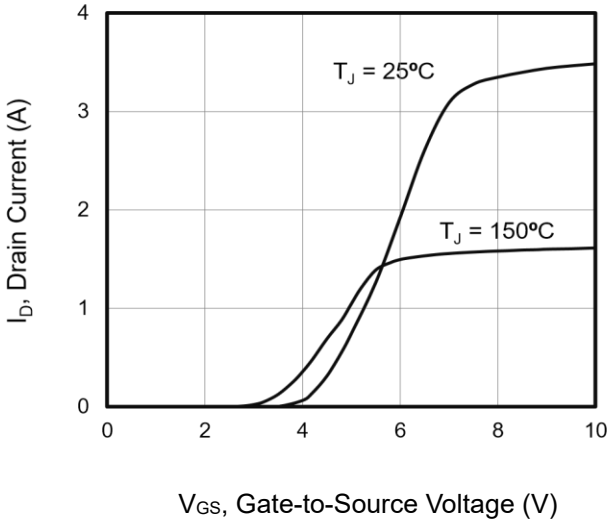


Figure 6. On-Resistance vs. Temperature

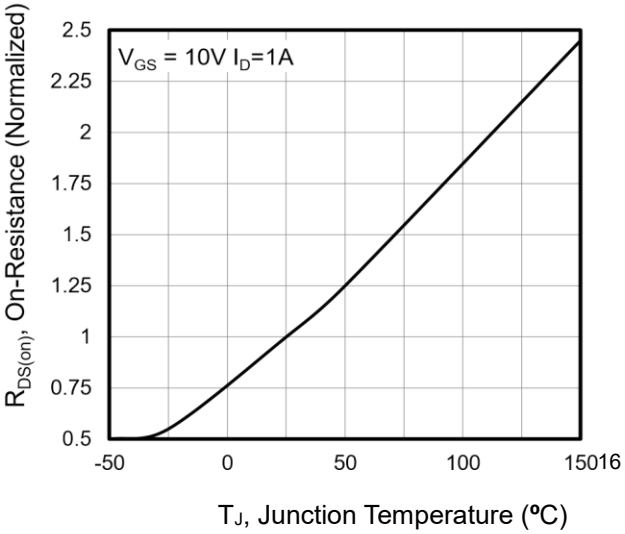


Figure 7. Capacitance

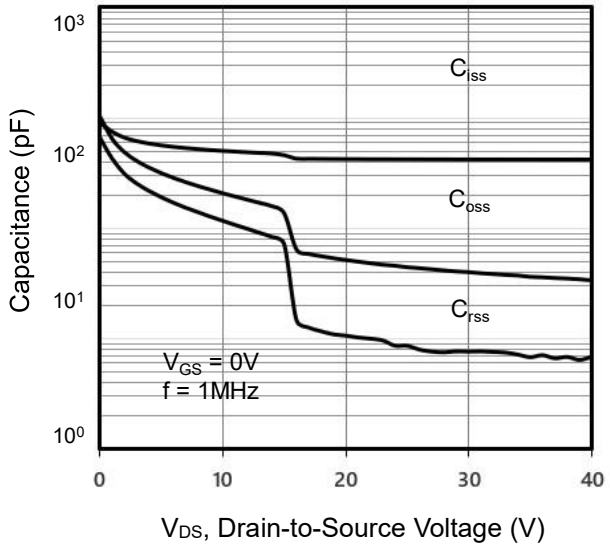


Figure 8. Gate Charge

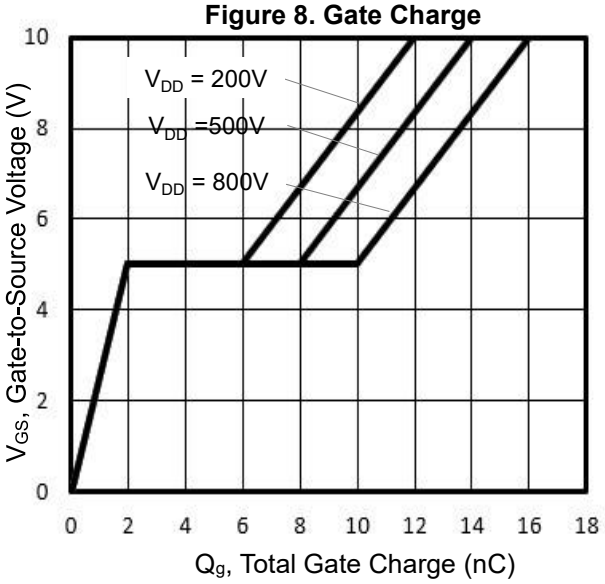


Figure 9. Transient Thermal Impedance

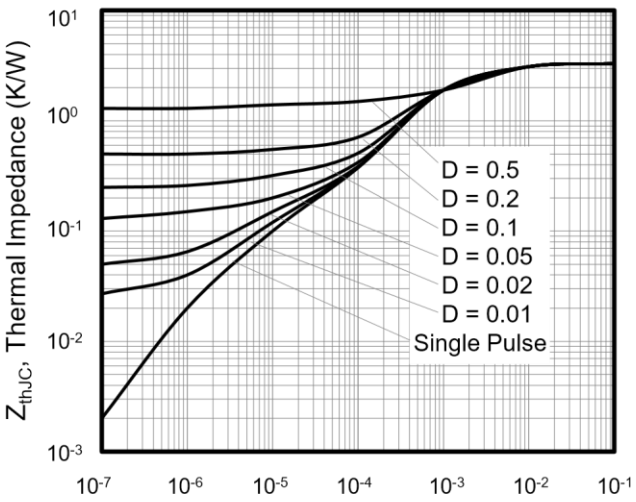
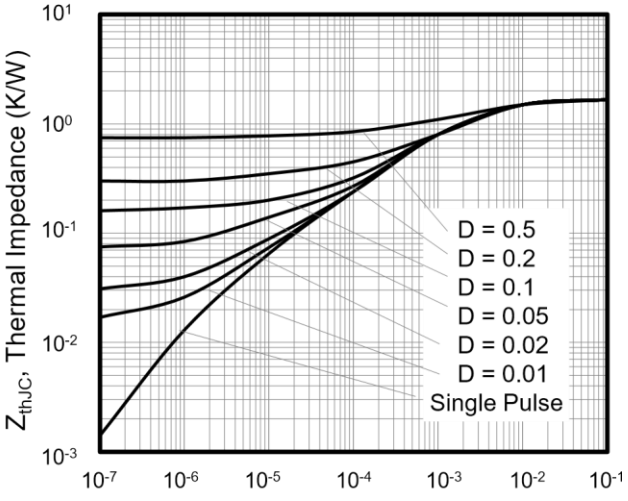
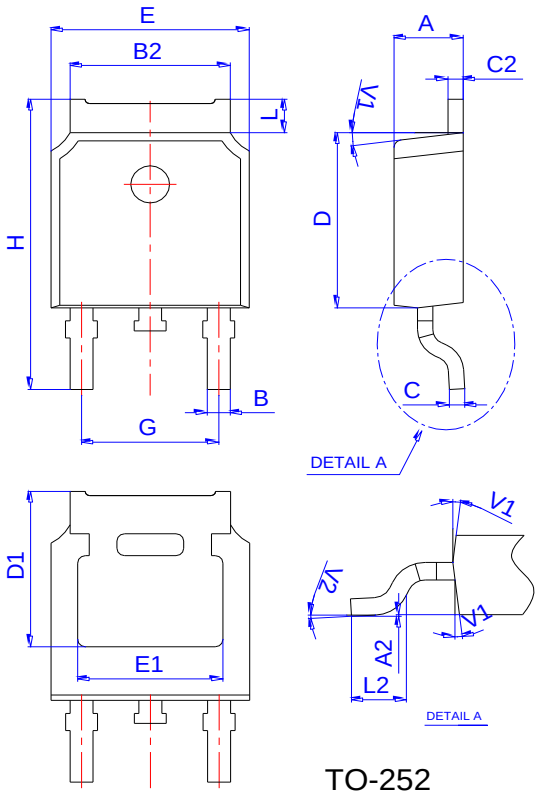


Figure 10. Transient Thermal Impedance



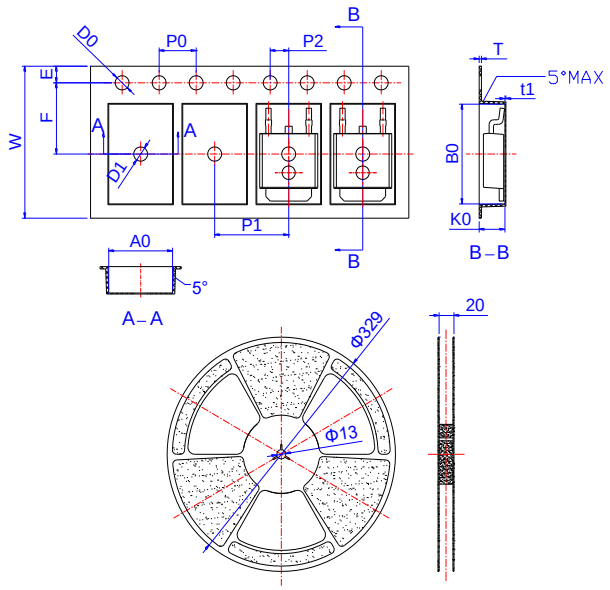
Package Mechanical Data



TO-252

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

Reel Specification-TO-252



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.90	16.00	16.10	0.626	0.630	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
D0	1.40	1.50	1.60	0.055	0.059	0.063
D1	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
A0	6.85	6.90	7.00	0.270	0.271	0.276
B0	10.45	10.50	10.60	0.411	0.413	0.417
K0	2.68	2.78	2.88	0.105	0.109	0.113
T	0.24		0.27	0.009		0.011
t1	0.10			0.004		
10P0	39.80	40.00	40.20	1.567	1.575	1.583