

100V N-Channel Enhancement Mode MOSFET

Description

The AP30N10NF 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

$V_{DS} = 100V$ $I_D = 30A$

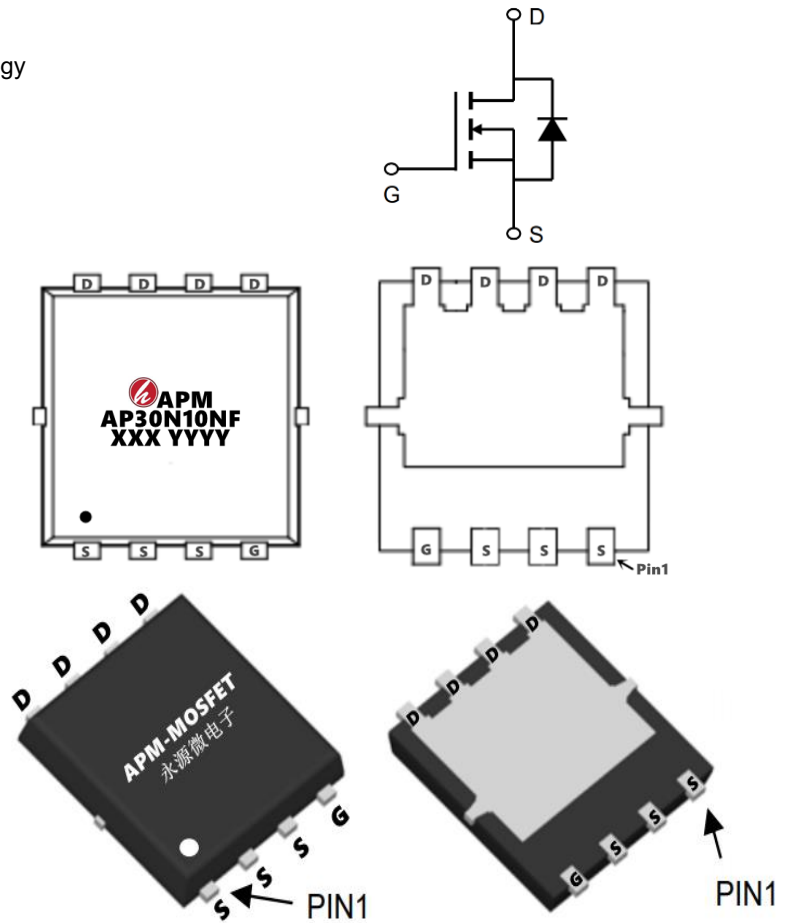
$R_{DS(ON)} < 45m\Omega @ V_{GS}=10V$ (Type: 36m Ω)

Application

Automotive lighting

Load switch

Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP30N10NF	PDFN5*6-8L	AP30N10NF XXX YYYY	2500

Absolute Maximum Ratings (TC=25°C unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_C=25^\circ C$	Drain Current, $V_{GS} @ 10V$	30	A
$I_D @ T_C=100^\circ C$	Drain Current, $V_{GS} @ 10V$	13	A
IDM	Pulsed Drain Current ¹	90	A
$P_D @ T_C=25^\circ C$	Total Power Dissipation	42	W
$P_D @ T_A=25^\circ C$	Total Power Dissipation ³	1.7	W
TSTG	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C
$R_{\theta JA}$	Maximum Thermal Resistance, Junction-ambient	25	°C/W
$R_{\theta JC}$	Maximum Thermal Resistance, Junction-case	3.6	°C/W

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Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	100	107	-	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	V _{GS} =10V, I _D =10A	-	36	48	mΩ
		V _{GS} =4.5V, I _D =6A	-	39	55	mΩ
Ciss	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	1964	-	pF
Coss	Output Capacitance		-	90	-	pF
Crss	Reverse Transfer Capacitance		-	74	-	pF
Qg	Total Gate Charge	V _{DS} =80V, I _D =20A, V _{GS} =4.5V	-	20	-	nC
Qgs	Gate-Source Charge		-	3.1	-	nC
Qgd	Gate-Drain(“Miller”) Charge		-	14	-	nC
td(on)	Turn-on Delay Time	V _{DS} =80V, I _D =20A, R _G =3.1Ω, V _{GS} =4.5V	-	11	-	ns
tr	Turn-on Rise Time		-	91	-	ns
td(off)	Turn-off Delay Time		-	40	-	ns
t _f	Turn-off Fall Time		-	71	-	ns
IS	Maximum Continuous Drain to Source Diode Forward Current		-	-	30	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	80	A
VSD	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =20A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I _F =20A, dI/dt=100A/μs	-	64	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	152	-	nC

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 ≤ 300us , duty cycle ≤ 2%
- 3、The EAS data shows Max. rating . The test condition is VDD=72V,VGS=10V,L=0.1mH,IAS=10A
- 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.

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Typical Characteristics

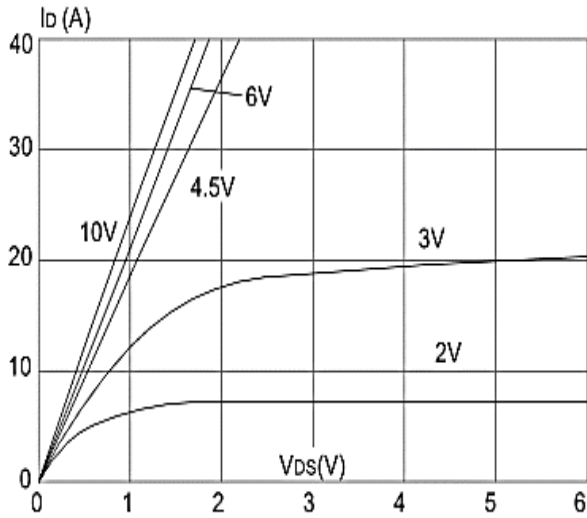


Figure1: Output Characteristics

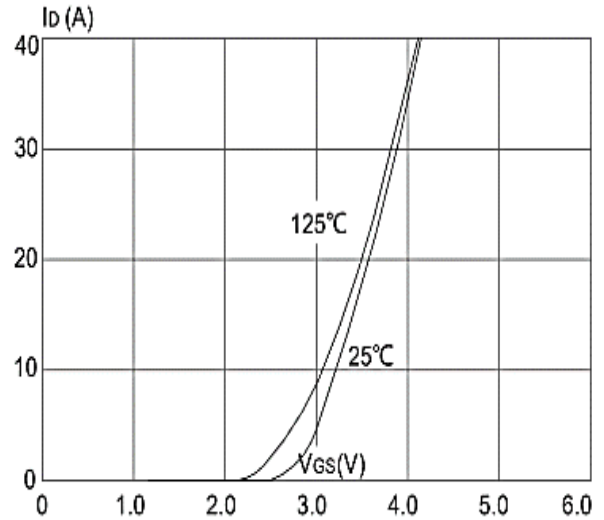


Figure 2: Typical Transfer Characteristics

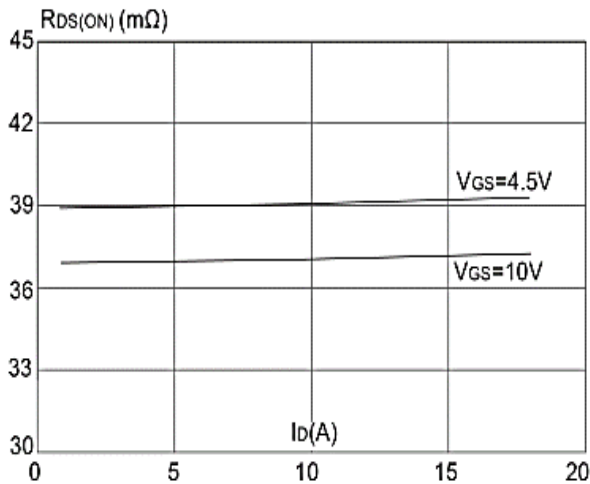


Figure 3: On-resistance vs. Drain Current

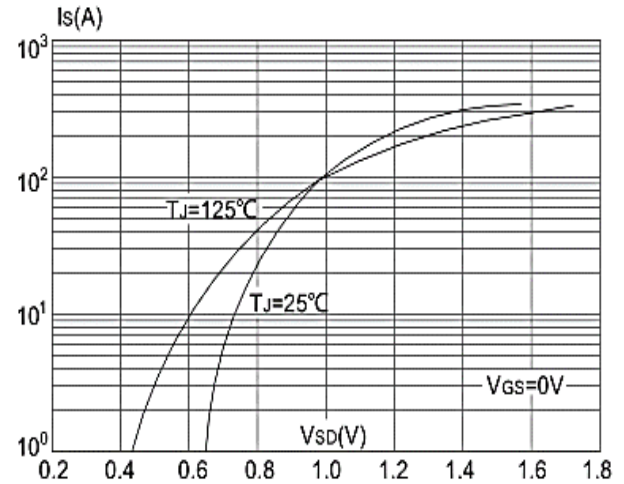


Figure 4: Body Diode Characteristics

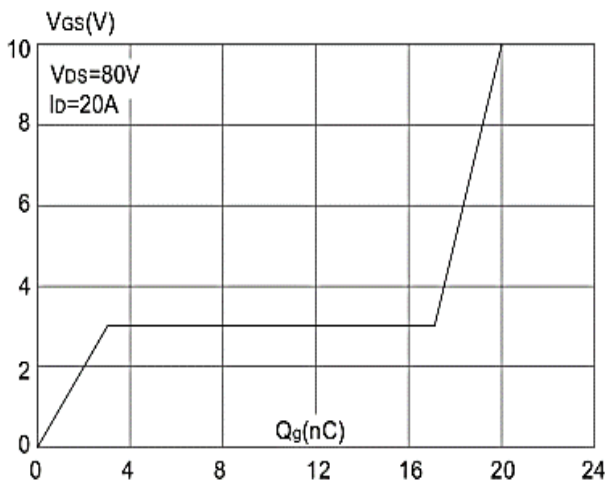


Figure 5: Gate Charge Characteristics

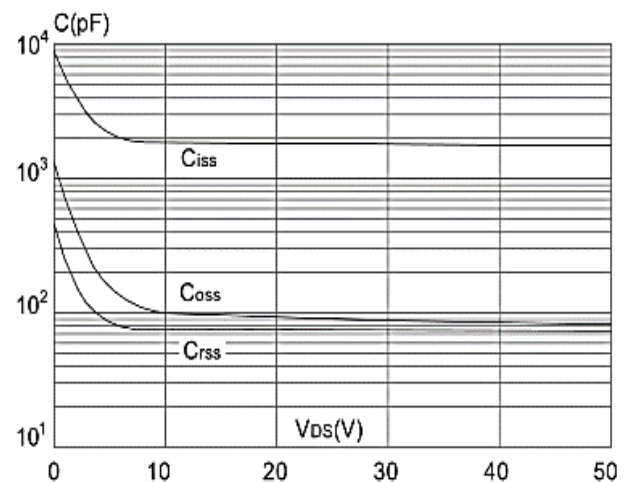


Figure 6: Capacitance Characteristics

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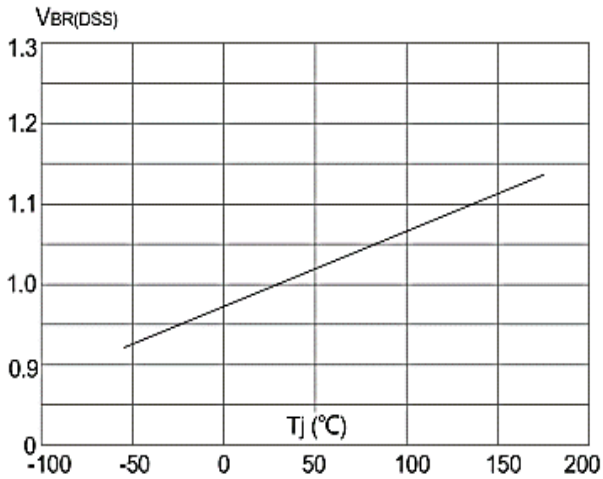


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

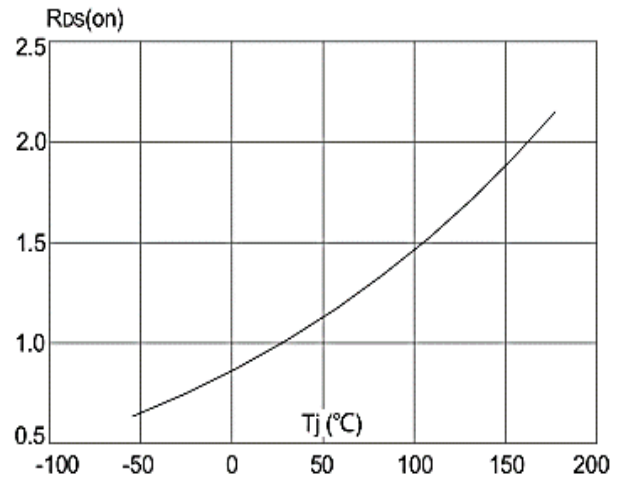


Figure 8: Normalized on Resistance vs. Junction Temperature

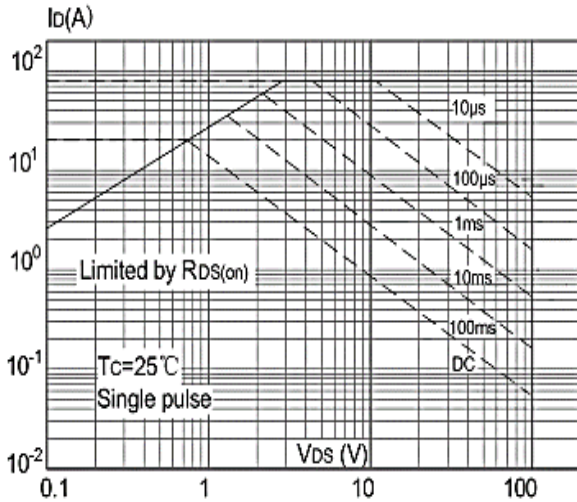


Figure 9: Maximum Safe Operating Area vs. Case Temperature

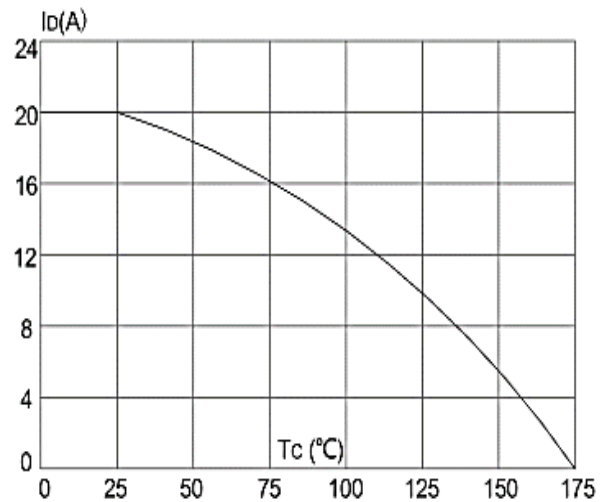


Figure 10: Maximum Continuous Drain Current

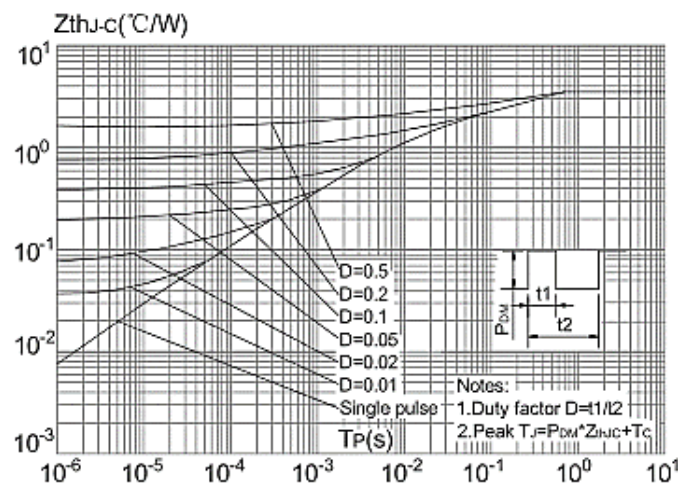
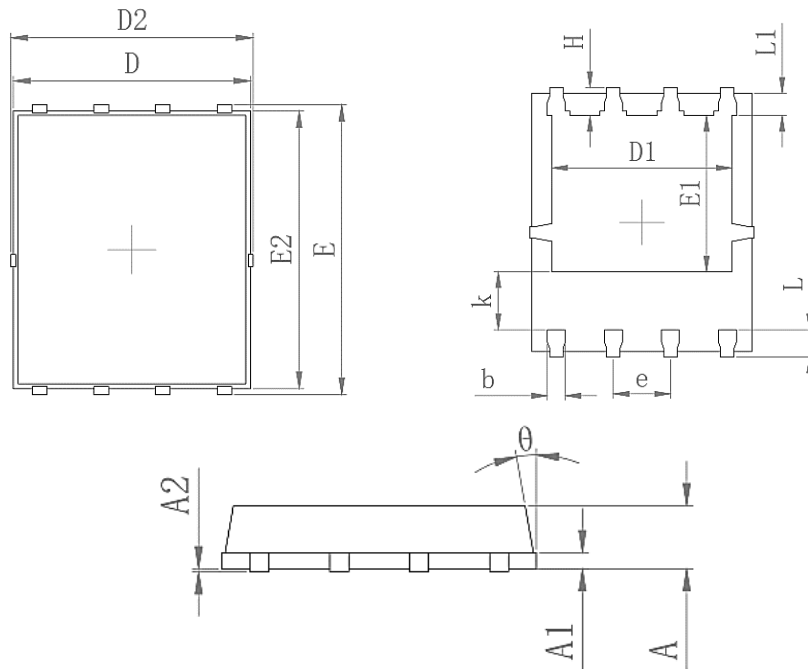


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

100V N-Channel Enhancement Mode MOSFET Package Mechanical Data-PDFN5X6-8L-XZT Single



Symbol	Common	
	mm	
	Mim	Max
A	0.90	1.10
A1	0.254 REF	
A2	0-0.05	
D	4.824	4.976
D1	3.910	4.110
D2	4.944	5.076
E	5.924	6.076
E1	3.375	3.575
E2	5.674	5.826
b	0.350	0.450
e	1.270	
L	0.534	0.686
L1	0.424	0.576
K	1.190	1.390
H	0.549	0.701
Φ	8°	12°

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Edition	Date	Change
REV1.0	2022/10/29	Initial release

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