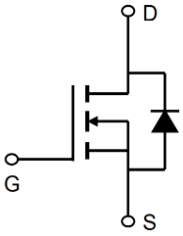
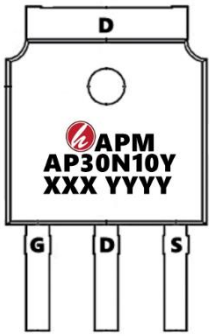
AP30N10Y

100V N-Channel Enhancement Mode MOSFET

Description

The AP30N10D 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

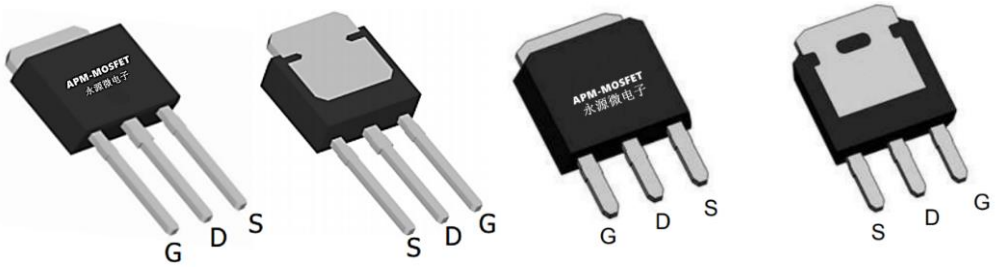
$R_{DS(ON)}$ < 48mΩ@ V_{GS}=10V （Type：36mΩ）

Application

Automative lighting

Load switch

Uninterruptible power supp



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP30N10Y	TO-251L-3L	AP30N10Y XXXX YYYY	4000
AP30N10Y	TO-251S-3L	AP30N10Y XXXX YYYY	4000

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

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	100	V
VGS	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Drain Current, V_{GS} @ 10V	30	A
I_D@T_C=100℃	Drain Current, V_{GS} @ 10V	13	A
IDM	Pulsed Drain Current[1]	90	A
P_D@T_C=25℃	Total Power Dissipation	42	W
P_D@T_A=25℃	Total Power Dissipation[3]	1.7	W
TSTG	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
RθJA	Maximum Thermal Resistance, Junctionambient	62.5	℃/W
RθJC	Maximum Thermal Resistance, Junction-case	3.6	℃/W

100V N-Channel Enhancement Mode MOSFET

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
Q_g	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℃ 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

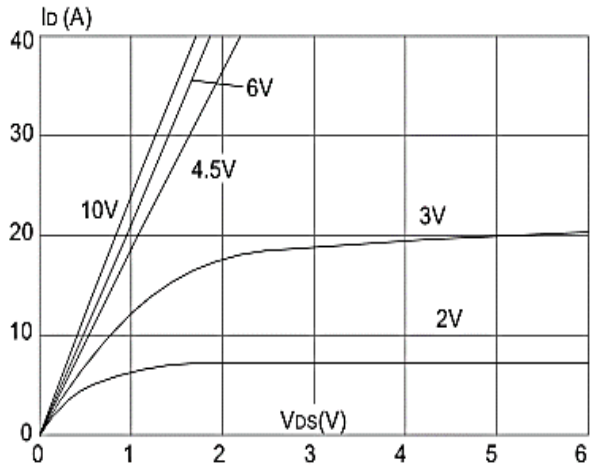


Figure1: Output Characteristics

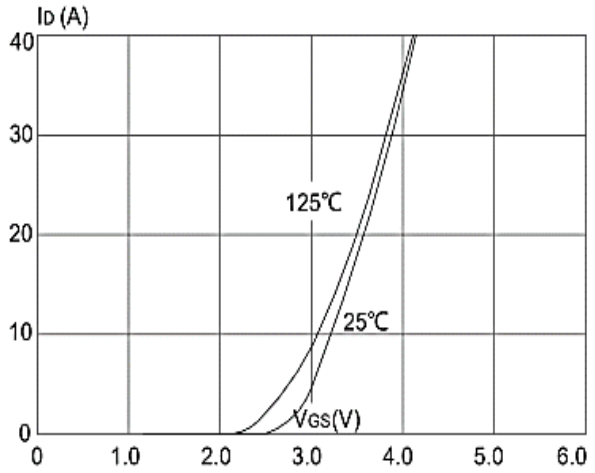


Figure 2: Typical Transfer Characteristics

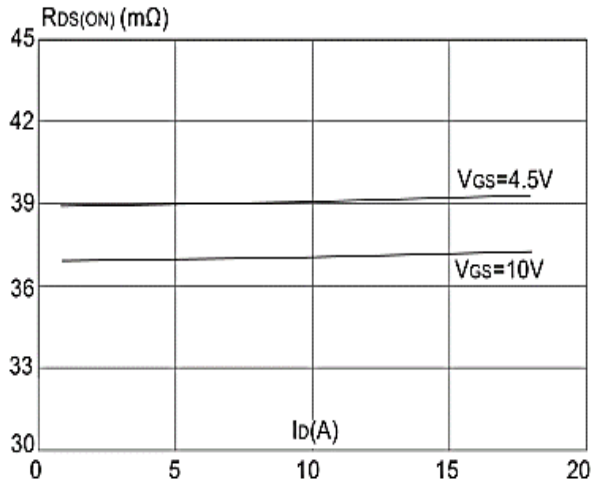


Figure 3:On-resistance vs. Drain Current

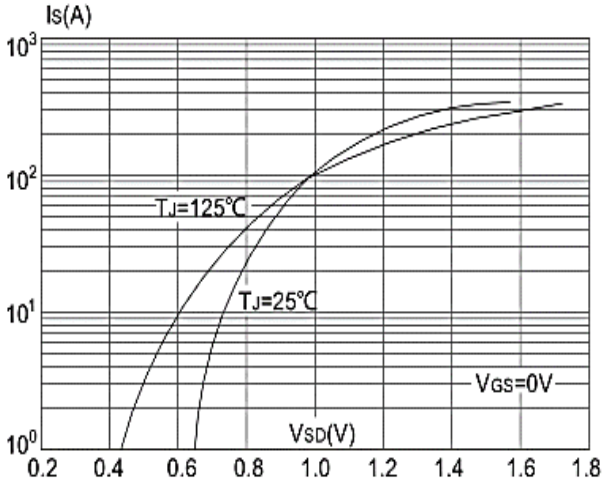


Figure 4: Body Diode Characteristics

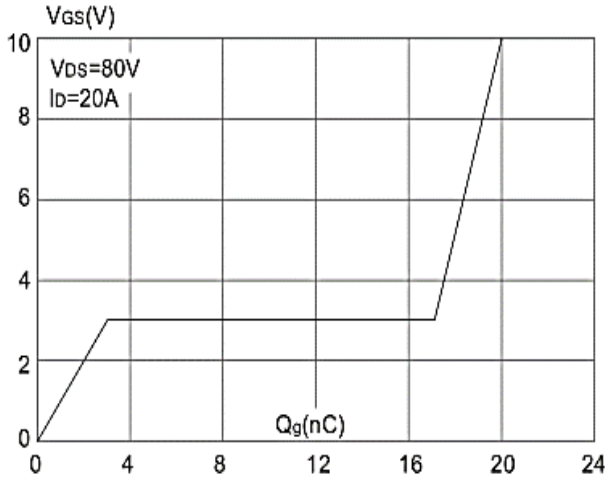


Figure 5: Gate Charge Characteristics

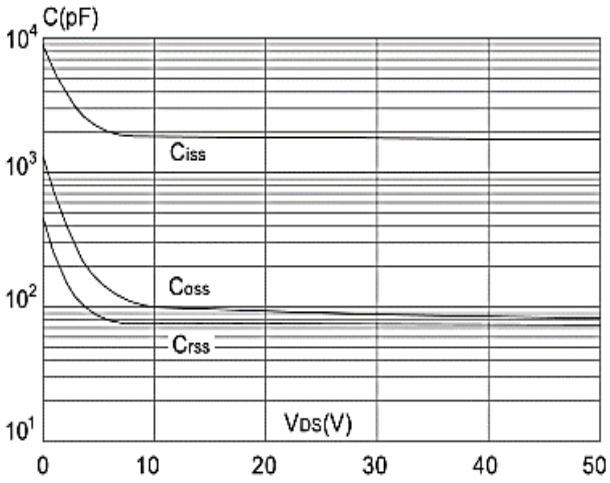


Figure 6: Capacitance Characteristics

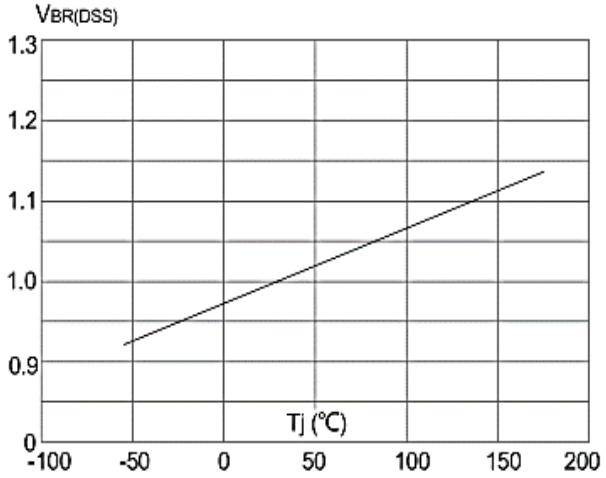


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

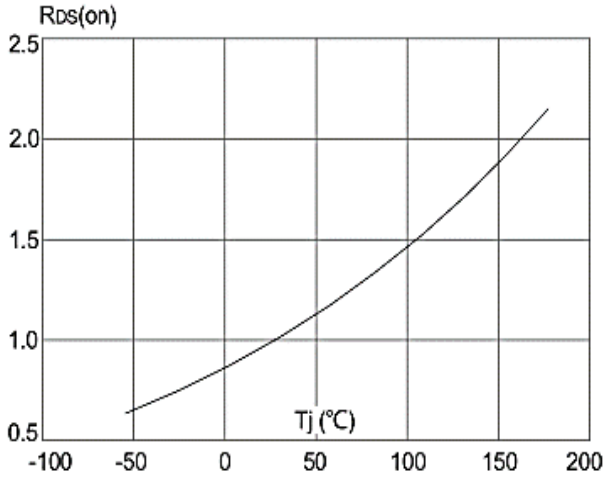


Figure 8: Normalized on Resistance vs Junction Temperature

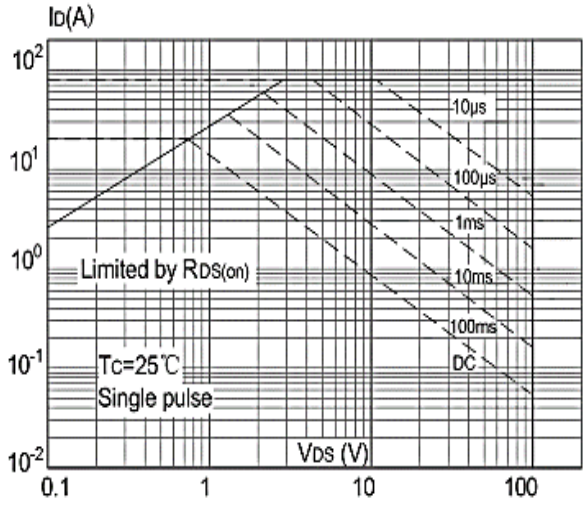


Figure 9: Maximum Safe Operating Area vs. Case Temperature

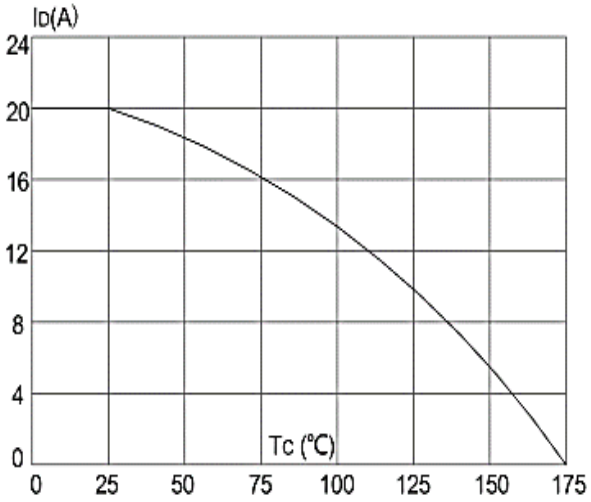


Figure 10: Maximum Continuous Drain Current

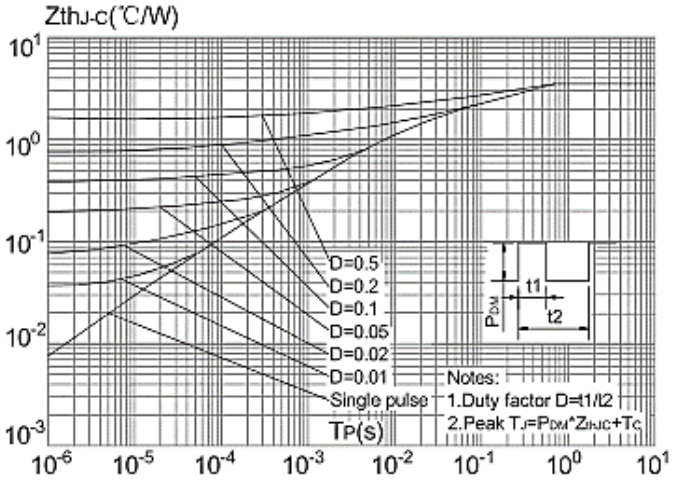
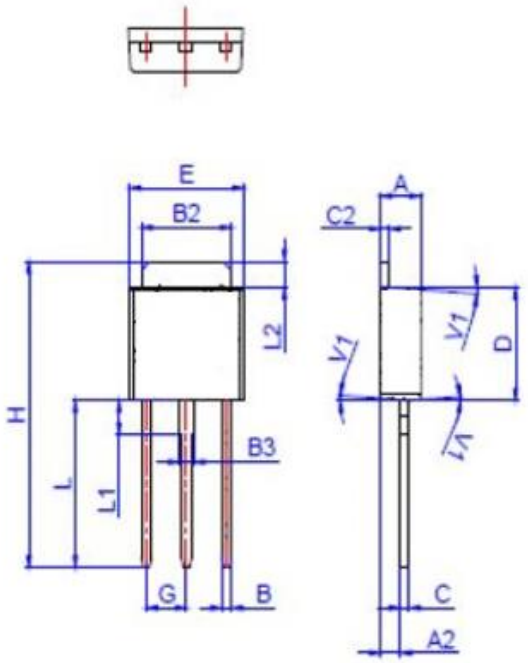


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

Package Mechanical Data-TO-251L-3L



TO-251

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.20		2.40	0.086		0.095
A2	0.90		1.20	0.035		0.047
B	0.55		0.65	0.022		0.026
B2	5.10		5.40	0.200		0.213
B3	0.76		0.85	0.030		0.033
C	0.45		0.62	0.018		0.024
C2	0.48		0.62	0.019		0.024
D	6.00		6.20	0.236		0.244
E	6.40		6.70	0.252		0.264
G		2.30			0.091	
H	16.0		17.0	0.630		0.669
L	8.90		9.40	0.350		0.370
L1	1.80		1.90	0.071		0.075
L2	1.37		1.50	0.054		0.059
V1		4°			4°	

Package Information -TO-251

OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON (PCS)
TUBE	80	4,000	32,000

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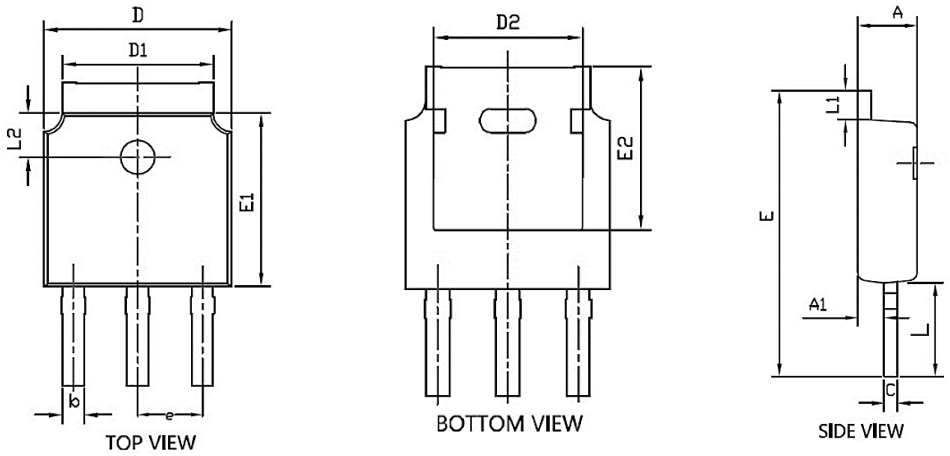
Package Mechanical Data-TO-251S-3L



Symbol	Common		
	mm		
	Mim	Nom	Max
A	2.2	2.3	2.4
A1	0.9	1.0	1.1
b	0.66	0.76	0.86
C	0.46	0.52	0.58
D	6.50	6.6	6.7
D1	5.15	5.3	5.45
D2	4.6	4.8	4.95
E	10.4	----	11.5
E1	6.0	6.1	6.2
E2	5.400REF		
e	2.286BSC		
L	3.5	4.0	4.3
L1	0.9	---	1.27
L2	1.4	---	1.9

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100V N-Channel Enhancement Mode MOSFET

Edition	Date	Change
Rve1.0	2021/10/29	Initial release