

100V 30A Advanced N-Ch Power MOSFET

FEATURES

- High Voltage : $BV_{DS} = 100V(\text{Min.})$
- Low gate charge : $Q_g = 71nC(\text{Typ.})$
- Low $R_{DS(on)}$: $R_{DS(on)} = 50m\Omega(\text{Typ.})$

Marking Information

Row 1 : AP

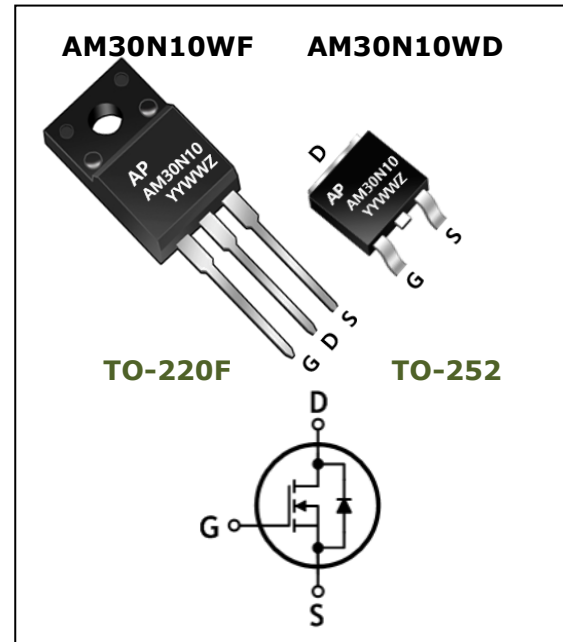
Row 2 : Product Information

Row 3 : Date Code

- YY : Year Code

- WW : Week Code

Ordering Information



Part No	Package	Packing	Finish	Halogen	Packing Unit
AM30N10WF	TO-220F	Tube	Sn	Free	5,000EA
AM30N10WD	TO-252	13" REEL & Tape	Sn	Free	2,500EA

Maximum Ratings (Tc=25 °C, unless otherwise noted)

Characteristic	Symbol		Rating	Unit
Drain-source voltage	V_{DS}		100	V
Gate-source voltage	V_{GS}		± 20	V
Drain current (DC)*	I_D	$T_C = 25^\circ C$	27	A
		$T_C = 100^\circ C$	17	
Drain current (Pulsed)*	I_{DM}		50	A
Power Dissipation	P_D	TO-220F	60	W
		TO-252	48	
Avalanche current (Single) (Note 2)	I_{AS}		18	A
Single pulsed avalanche energy (Note 2)	E_{AS}		250	mJ
Avalanche current (Repetitive) (Note 1)	I_{AR}		27	A
Repetitive avalanche energy (Note 1)	E_{AR}		16	mJ
Junction temperature	T_J		150	$^\circ C$
Storage temperature range	T_{stg}		-55~150	

*Limited only maximum junction temperature

Thermal Characteristic (TO-220F)

Characteristic	Symbol	Rating	Unit
Thermal resistance, junction to case	$R_{th(j-c)}$	Max. 3.33	°C/W
Thermal resistance, junction to ambient	$R_{th(j-a)}$	Max. 62.5	

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

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Drain-source breakdown voltage	BV_{DSS}	$I_D = 250\mu\text{A}$, $V_{GS} = 0$	100	-	-	V
Gate threshold voltage	$V_{GS(th)}$	$I_D = 250\mu\text{A}$, $V_{DS} = V_{GS}$	2	-	4	V
Drain-source cut-off current	I_{DSS}	$V_{DS} = 100\text{V}$, $V_{GS} = 0\text{V}$	-	-	1	μA
		$V_{DS} = 100\text{V}$, $T_C=150^{\circ}\text{C}$			100	
Gate leakage current	I_{GSS}	$V_{DS} = 0\text{V}$, $V_{GS} = \pm 20\text{V}$	-	-	± 100	nA
Drain-source on-resistance (Note 4)	$R_{DS(ON)}$	$V_{GS} = 10\text{V}$, $I_D = 15.0\text{A}$	-	0.045	0.050	Ω
Input capacitance	C_{iss}	$V_{DS} = 25\text{V}$, $V_{GS} = 0\text{V}$, $f = 1.0\text{MHz}$	-	1700	-	pF
Output capacitance	C_{oss}		-	560	-	
Reverse transfer capacitance	C_{rss}		-	120	-	
Turn-on delay time (Note 3,4)	$T_{d(on)}$	$V_{DS} = 125\text{V}$, $I_D = 18\text{A}$, $R_G = 25\Omega$	-	11	-	ns
Rise time (Note 3,4)	T_r		-	44	-	
Turn-off delay time (Note 3,4)	$t_{d(off)}$		-	53	-	
Fall time (Note 3,4)	t_f		-	43	-	
Total gate charge (Note 3,4)	Q_g	$V_{DS} = 160\text{V}$, $V_{GS} = 10\text{V}$, $I_D = 18\text{A}$	-	71	-	nC
Gate-source charge (Note 3,4)	Q_{gs}		-	14	-	
Gate-drain charge (Note 3,4)	Q_g		-	21	-	

Source-Drain Diode Ratings and Characteristics ($T_C=25\text{ }^{\circ}\text{C}$, unless otherwise noted)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Source current (DC)	I_S	Integral reverse diode in the MOSFET	-	-	28	A
Source current (Pulsed) (Note 1)	I_{SM}		-	-	110	A
Forward voltage (Note 4)	V_{SD}	$V_{GS} = 0\text{V}$, $I_S = 14\text{A}$	-	-	1.5	V
Reverse recovery time	t_{rr}	$I_S = 12\text{A}$, $V_{GS} = 0\text{V}$ $dI/dt = 100\text{A}/\mu\text{s}$	-	180	-	ns
Reverse recovery charge	Q_{rr}		-	1.3	-	μC

Note :

1. Repetitive rating : Pulse width limited by maximum junction temperature.
2. $L=440\mu\text{H}$, $I_{AS}=28\text{A}$, $V_{DD}=25\text{V}$, $R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$
3. Pulse Test : Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$
4. Essentially independent of operating temperature

REV. 02



Typical Electrical Characteristic

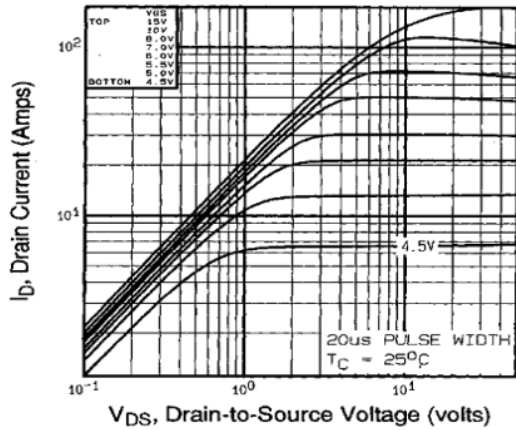


Figure 1. Output Characteristics

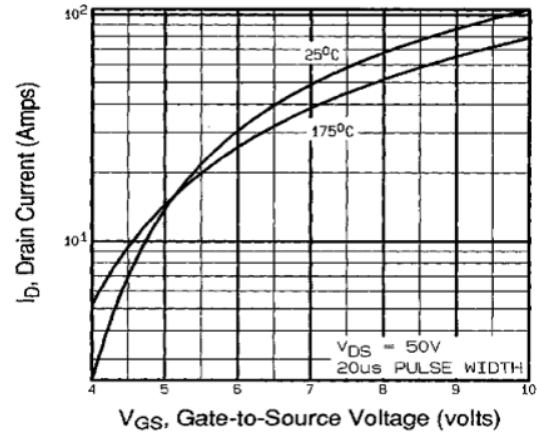


Figure 2. Transfer Characteristics

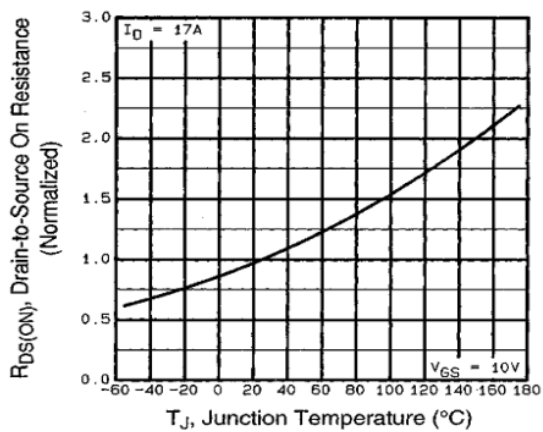


Figure 3. Normalized On-Resistance vs Temperature

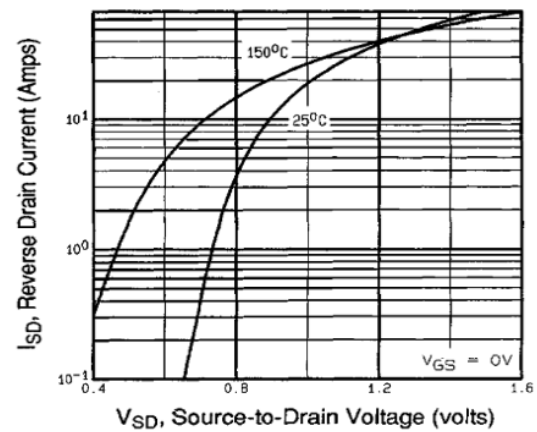


Figure 4. Typical Source-Drain Diode Forward voltage

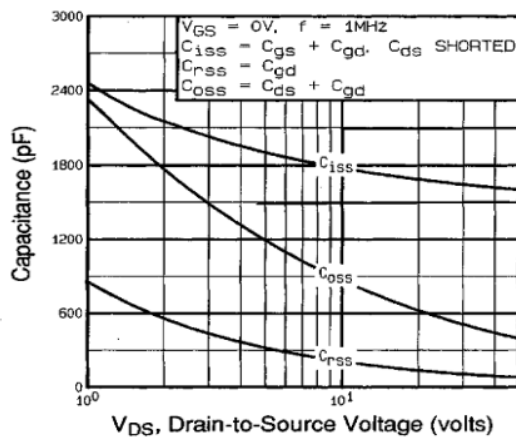


Figure 5. Capacitance Characteristics

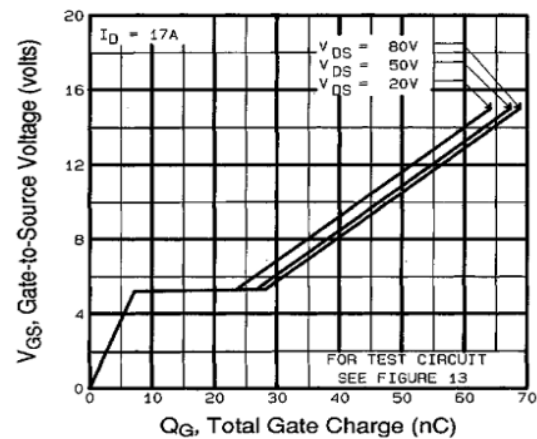


Figure 6. Gate Charge Characteristics

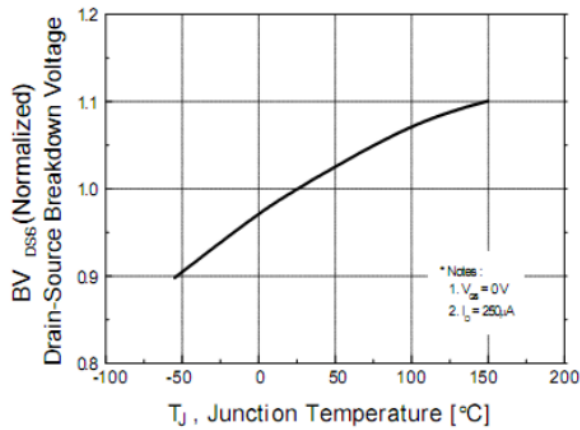


Figure 7. Breakdown Voltage Variation vs Temperature

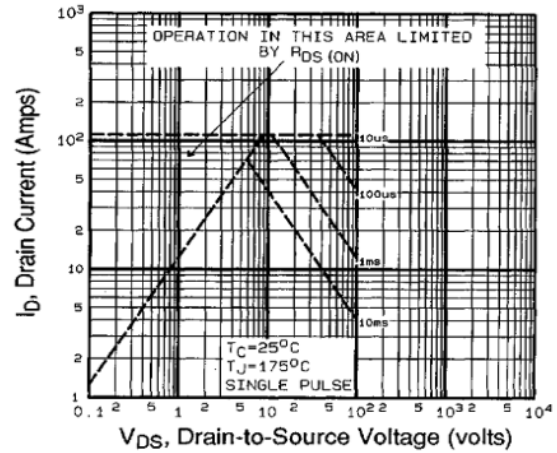


Figure 8. Safe Operating Area

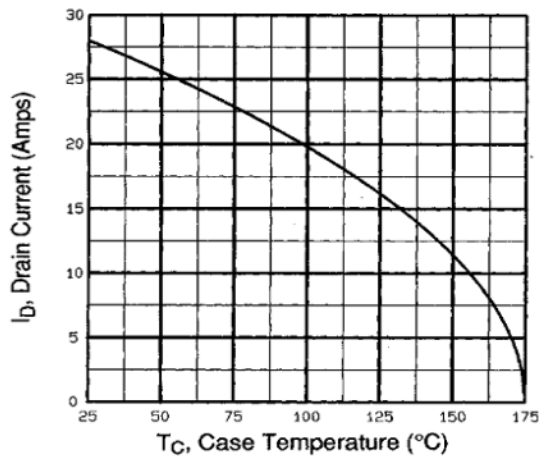


Figure 9. Maximum Drain Current vs Case Temperature

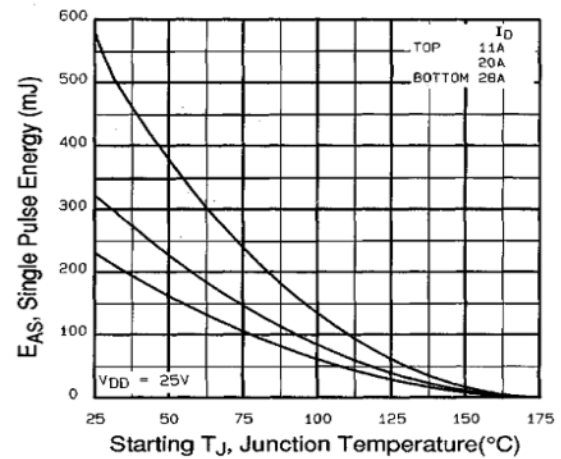


Figure 10. Maximum Avalanche Energy vs. Drain Current

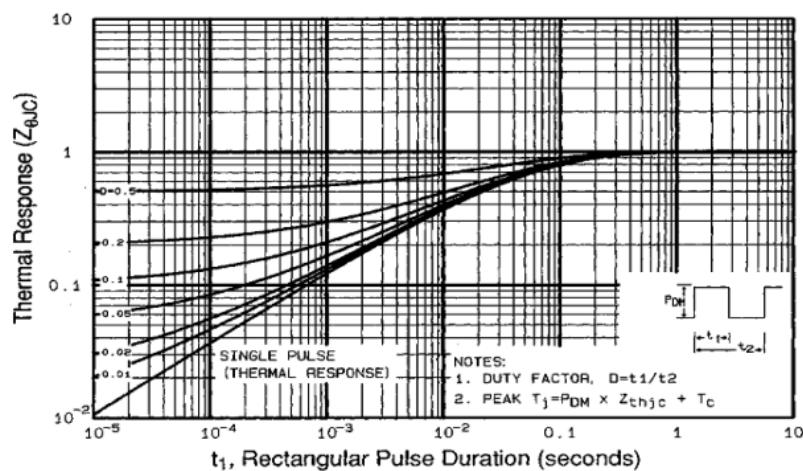


Figure 11. Transient Thermal Response Curve



Test Circuit and Waveforms

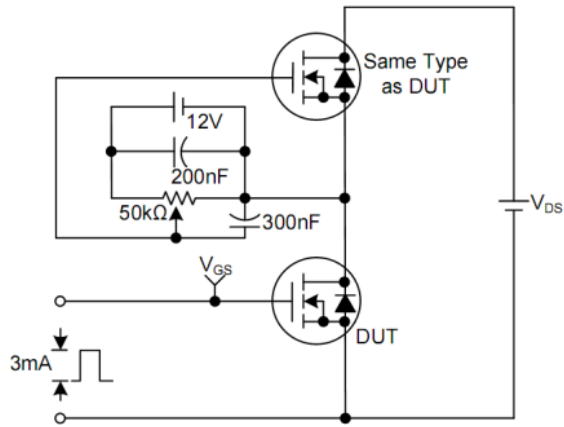


Figure 12. Gate Charge Test Circuit

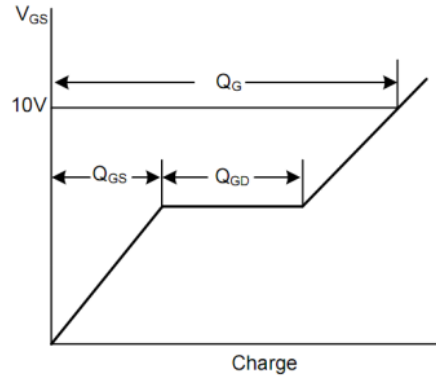


Figure 13. Gate Charge Waveforms

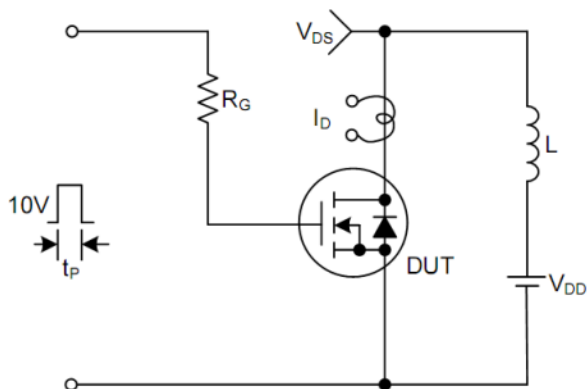
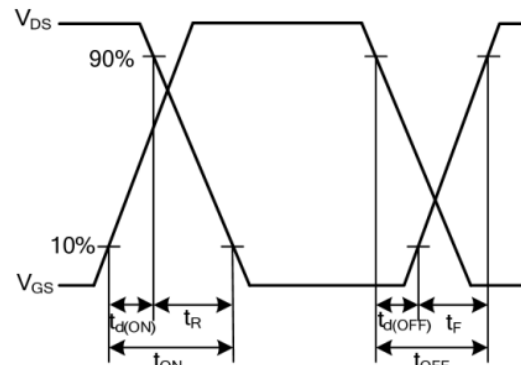
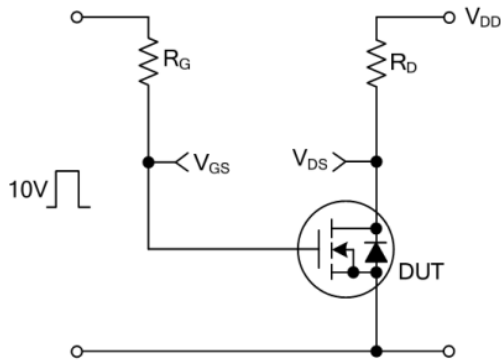


Figure 16. Unclamped Inductive Switching Test Circuit

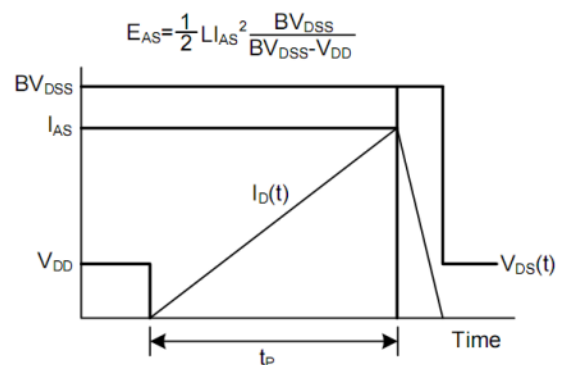


Figure 17. Unclamped Inductive Switching Waveforms

Package Dimensions

TO-220F(unit : mm)

Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.50	4.90	0.177	0.193
A1	2.34	2.74	0.092	0.108
A2	2.66	2.86	0.105	0.113
b	0.75	0.85	0.030	0.033
b1	1.24	1.44	0.049	0.057
c	0.40	0.60	0.016	0.024
D	10.00	10.32	0.394	0.406
E	15.75	16.05	0.620	0.632
e	2.44	2.64	0.096	0.104
e1	4.88	5.28	0.192	0.208
F	3.10	3.5	0.122	0.138
L	12.90	13.50	0.508	0.531
L1	2.90	3.30	0.114	0.130
Φ	3.10	3.30	0.122	0.130

TO-252(unit : mm)

Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.50	0.087	0.094
A1	1.00	1.40	0.039	0.055
A2	0.00	0.15	0.000	0.006
b	0.50	0.70	0.020	0.028
b1	0.70	0.90	0.028	0.035
c	0.40	0.60	0.016	0.024
c1	0.40	0.60	0.016	0.024
D	6.20	6.70	0.244	0.264
D1	5.10	5.50	0.201	0.217
D2	2.70	3.20	0.106	0.126
E	5.50	6.00	0.217	0.236
E1	2.60	3.00	0.102	0.118
E2	0.60	0.80	0.024	0.315
e	2.20	2.40	0.087	0.094
e1	4.40	4.80	0.173	0.189
L	9.70	10.40	0.382	0.409
L1	1.40	1.70	0.055	0.063
L2	0.60	1.20	0.024	0.047

Revision History

No	Date	Contents
0	2026-03-25	Initial Brief Datasheet Release

<http://www.apsemi.com>

IMPORTANT NOTICE

AP Semiconductor co, Ltd reserves the right to make changes without further notice to any products or specifications herein. AP Semiconductor co, Ltd does not assume any responsibility for use of any its products for any particular purpose, nor does AP Semiconductor co, Ltd assume any liability arising out of the application or use of any its products or circuits. AP Semiconductor co, Ltd does not convey any license under its patent rights or other rights nor the rights of others.

AP Semiconductor Co., Ltd

Contact. **Tel** 82.70.4693.2299 **FAX** 82.70.4000.4009

E-mail: sales@apsemi.com

© 2015 AP semiconductor Co., Ltd. –Printed in KOREA –All Rights Reserved.