ADV

ADM18N03Z

N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY

V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ)
30V	18A	13mΩ

Features:

- Low Gate Charge for Fast Switching Application
- Low $R_{DS(ON)}$ to Minimize Conductive Loss
- 100% EAS Guaranteed
- Optimized $V_{(BR)DSS}$ Ruggedness
- Green Device Available

PDFN（3X3）
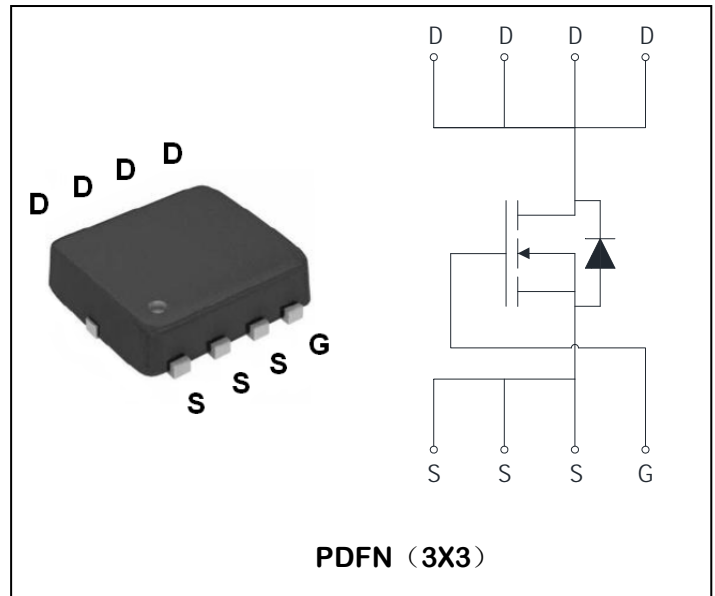
Description:

The ADM18N03Z uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

Absolute Maximum Ratings (T_A = 25°C unless otherwise specifed)

Symbol	Parameter		Ratings	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		$\pm$20	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to150	°C
I_S	Diode Continuous Forward Current	T_C =25°C	18	A
Mounted on Large Heat Sink				
I_{DM}	300μs Pulse Drain Current Tested [2]	T_C=25°C, V_{GS}=10V	72	A
I_D	Continuous Drain Current [1]	T_C=25°C, V_{GS}=10V	18	A
		T_C=100°C V_{GS}=10V	12	A
P_D	Maximum Power Dissipation	T_C=25°C	7	W

Thermal Characteristics

Symbol	Parameter	Ratings	Unit
R_{thJC}	Thermal resistance junction-case max [1]	18	°C/W
R_{thJA}	Thermal resistance junction-ambient max [1]	30	°C/W

Electrical Characteristics (T$_A$=25°C Unless Otherwise Noted)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
On/off Characteristics						
BV$_{DSS}$	Drain-Source Breakdown Voltage	V$_{GS}$=0V, I$_{DS}$=250uA	30	--	--	V
I$_{DSS}$	Zero Gate Voltage Drain Current	V$_{DS}$= 30V, V$_{GS}$=0V T$_J$=25°C	--	--	1.0	uA
V$_{GS(th)}$	Gate Threshold Voltage	V$_{DS}$=V$_{GS}$, I$_{DS}$=250uA	1.0	1.5	2.5	V
I$_{GSS}$	Gate Leakage Current	V$_{GS}$=±20V, V$_{DS}$=0V	--	--	±100	nA
R$_{DS(ON)}$	Drain-SourceOn-stateResistance(2)	V$_{GS}$= 10V, I$_{DS}$=10A	--	10	13	mΩ
		V$_{GS}$= 4.5V, I$_{DS}$=5A	--	16	22.5	
Dynamic Characteristics						
C$_{iss}$	Input Capacitance	V$_{GS}$=0V,	--	633	--	pF
C$_{oss}$	Output Capacitance	V$_{DS}$= 15V,	--	120	--	
C$_{rss}$	Reverse Transfer Capacitance	Frequency=1.0MHz	--	99	--	
Switching Characteristics						
t$_{d(ON)}$	Turn-on Delay Time(1)	V$_{DD}$=20V,	--	5	--	ns
t$_r$	Turn-on Rise Time(1)	I$_D$= 18A, V$_{GS}$= 10V,	--	8	--	
t$_{d(OFF)}$	Turn-off Delay Time(1)	R$_{GEN}$=3 Ω	--	21	--	
t$_f$	Turn-off Fall Time(1)		--	7	--	
Q$_g$	Total Gate Charge(1)	V$_{DS}$=15V, V$_{GS}$= 10V,	--	15	--	nC
Q$_{gs}$	Gate-Source Charge(1)	I$_{DS}$=10A	--	4.7	--	
Q$_{gd}$	Gate-Drain Charge(1)		--	3.6	--	
Avalanche Characteristics						
EAS	Single Pulse Avalanche Energy (3)	V$_{DD}$=24V,L=0.5mH ,V$_{GS}$=10 V,R$_g$=25 Ω , I$_{AS}$=8A T$_J$=25°C		16		mJ
Diode Characteristics						
V$_{SD}$	Diode Forward Voltage(2)	I$_{SD}$ = 18A, V$_{GS}$ = 0 ,T$_J$=25°C	--	--	1.2	V
t$_{rr}$	Reverse Recovery Time	I$_{SD}$=18A, dI$_{SD}$/dt=100A/μs	--	7	--	ns
q$_{rr}$	Reverse Recovery Charge		--	5.9	--	nC

NOTES:

1. Surface Mounted on FR4 Board, t ≤ 10 sec.

2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3.The Min. value is 100% EAS tested guarantee.

Typical Performance Characteristics
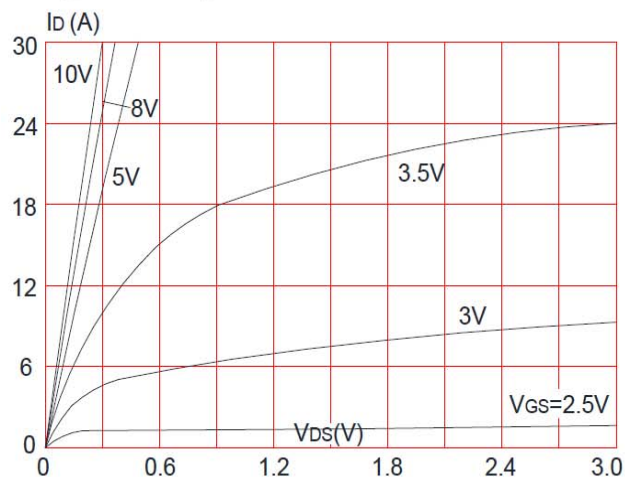
Figure1: Output Characteristics
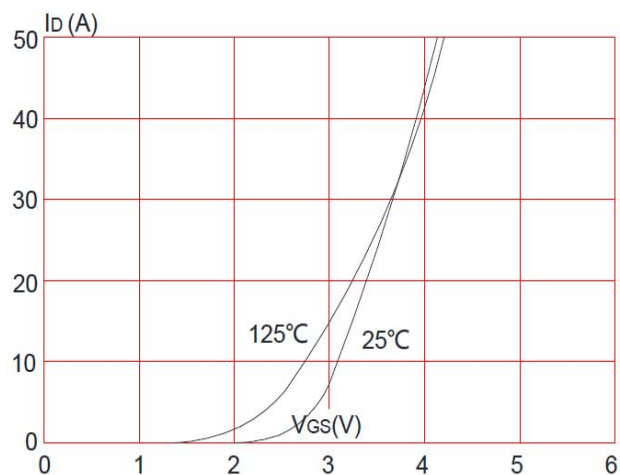

Figure 2: Typical Transfer Characteristics
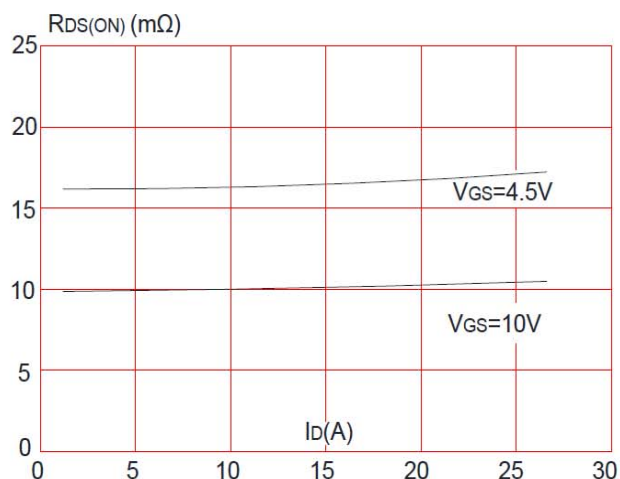

Figure 3: On-resistance vs. Drain Current

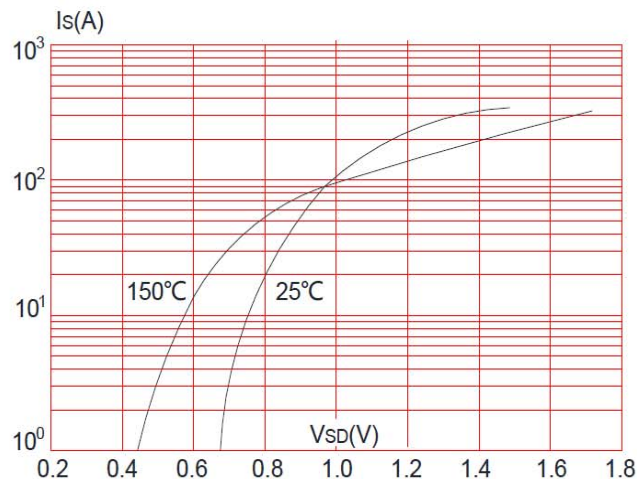**Figure 4: Body Diode Characteristics**

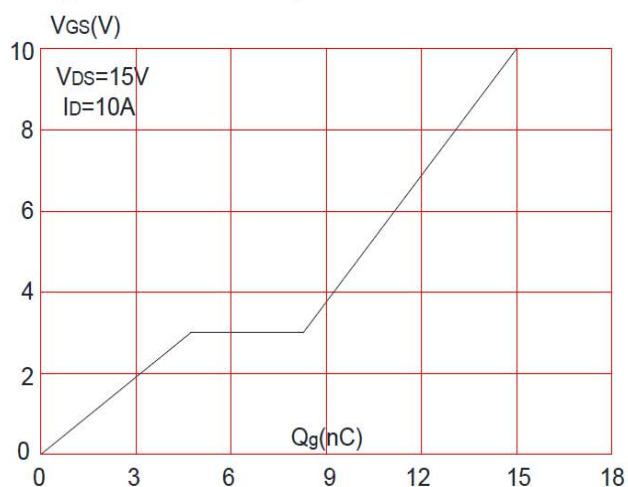**Figure 5: Gate Charge Characteristics**

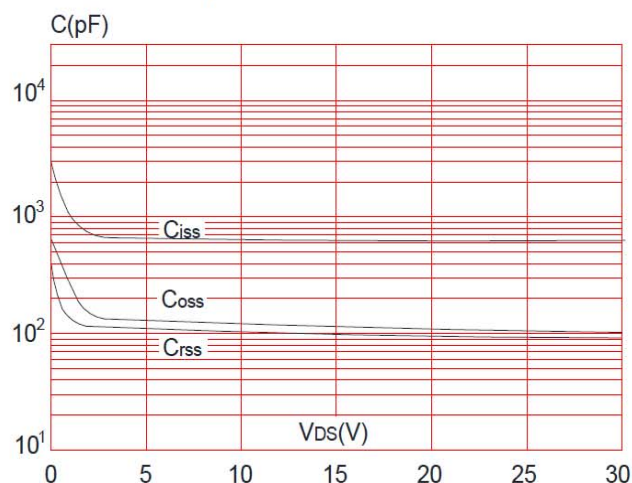**Figure 6: Capacitance Characteristics**

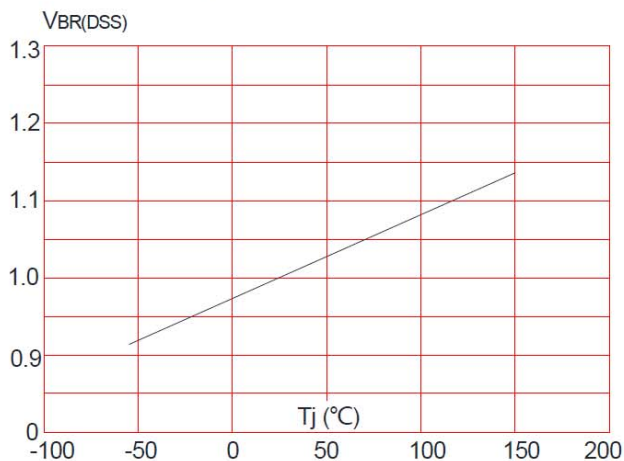**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature

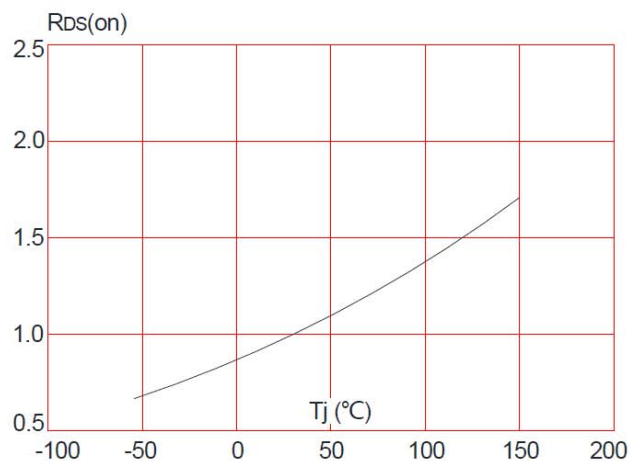**Figure 8:** Normalized on Resistance vs. Junction Temperature

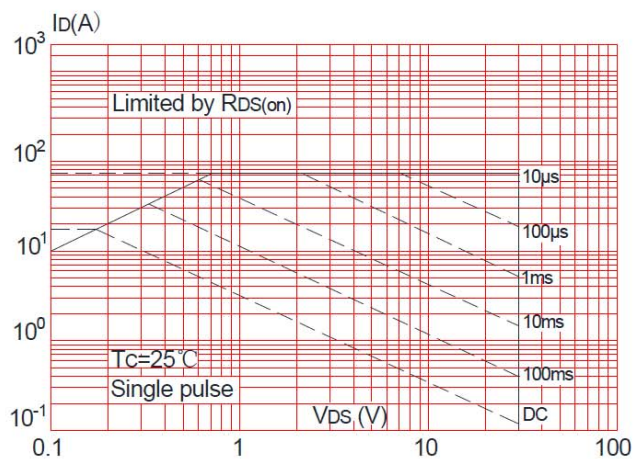**Figure 9:** Maximum Safe Operating Area

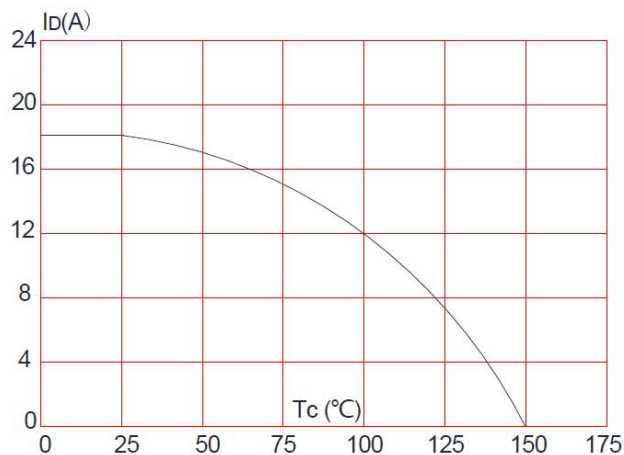**Figure 10:** Maximum Continuous Drain Current vs. Case Temperature

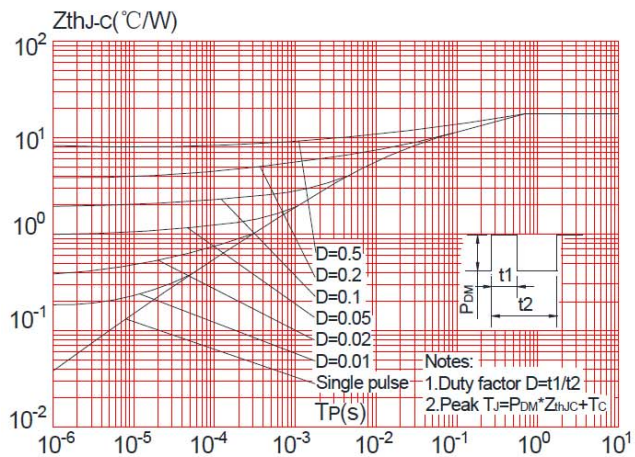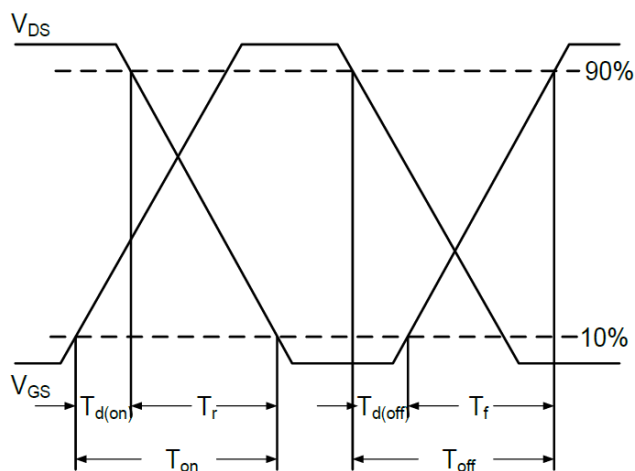**Figure.11:** Maximum Effective Transient Thermal Impedance, Junction-to-Case

Notes:
1. Duty factor $D = t1/t2$
2. Peak $T_J = P_{DM} * Z_{thJC} + T_C$

Figure 12: Switching Time Waveform

Figure 13: EAS Waveform

$$EAS = \frac{1}{2} L \times I_{AS}^2 \times \frac{BV_{DSS}}{BV_{DSS} - V_{DD}}$$
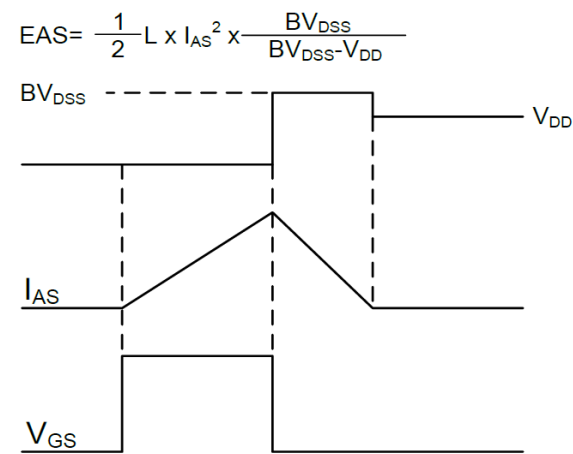
PDFN（3X3） Package Dimension
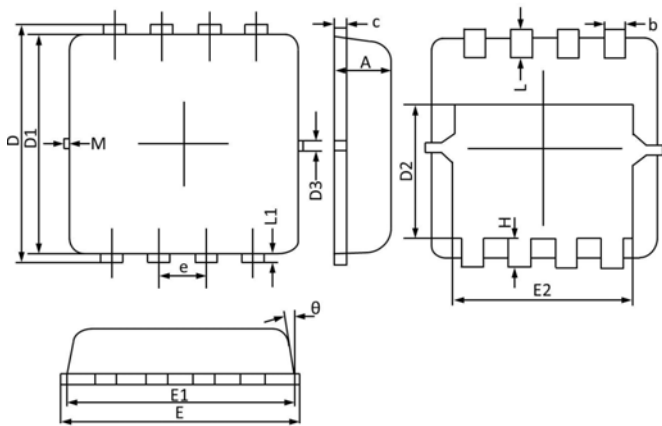
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
b	0.250	0.350	0.010	0.013
c	0.100	0.250	0.004	0.009
D	3.250	3.450	0.128	0.135
D1	3.000	3.200	0.119	0.125
D2	1.780	1.980	0.070	0.077
D3	0.130REF		0.005REF	
E	3.200	3.400	0.126	0.133
E1	3.000	3.200	0.119	0.125
E2	2.390	2.590	0.094	0.102
H	0.300	0.500	0.011	0.019
M	0.150REF		0.006REF	
e	0.650 TYP.		0.026 TYP.	
L	0.300	0.500	0.011	0.019
L1	0.130REF		0.005REF	
θ	0°	12°	0°	12°

Ordering information

Part number	Package	Marking	Packing	Quantity
ADM18N03Z	PDFN3*3	M18N03Z	Embossed tape	5000pcs

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