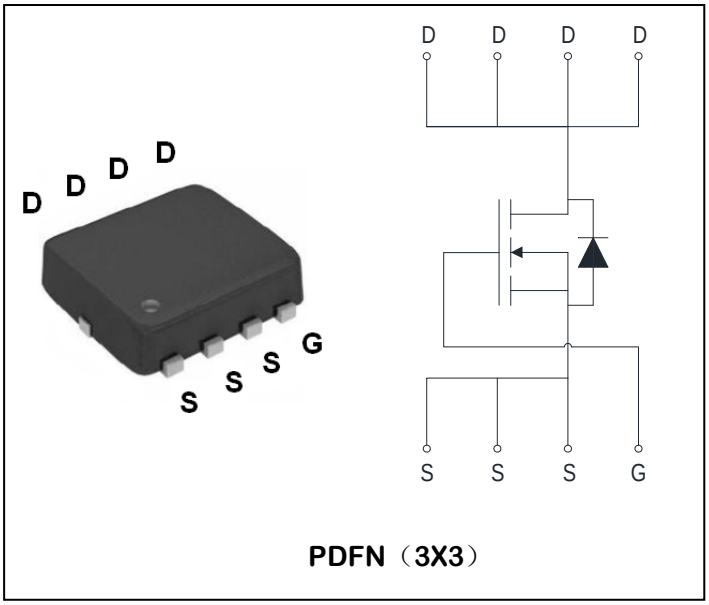
N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY

V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ)
30V	80A	3.3mΩ



PDFN（3X3）

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

Description:

The ADM80N03Z 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		±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	80	A
Mounted on Large Heat Sink				
I_{DM}	300μs Pulse Drain Current Tested (2)	T_C=25°C, V_{GS}=10V	320	A
I_D	Continuous Drain Current (1)	T_C=25°C, V_{GS}=10V	80	A
		T_C=100°C V_{GS}=10V	52	A
P_D	Maximum Power Dissipation	T_C=25°C	31.7	W

Thermal Characteristics

Symbol	Parameter	Ratings	Unit
R_{thJC}	Thermal resistance junction-case max (1)	3.94	°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	1.6	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}=30A	--	2.5	3.3	mΩ
		V_{GS}= 4.5V, I_{DS}=20A	--	4.5	6.5	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS}=0V,	--	3500	--	pF
C_{oss}	Output Capacitance	V_{DS}= 15V,	--	500	--	
C_{rss}	Reverse Transfer Capacitance	Frequency=1.0MHz	--	431	--	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time(1)	V_{DD}=20V,	--	26	--	ns
t_r	Turn-on Rise Time(1)	I_D= 30A, V_{GS}= 10V,	--	24	--	
$t_{d(OFF)}$	Turn-off Delay Time(1)	R_{GEN}=3Ω	--	91	--	
t_f	Turn-off Fall Time(1)		--	39	--	
Q_g	Total Gate Charge(1)	V_{DS}=15V, V_{GS}= 10V,	--	38	--	nC
Q_{gs}	Gate-Source Charge(1)	I_{DS}=30A	--	9	--	
Q_{gd}	Gate-Drain Charge(1)		--	13	--	
Avalanche Characteristics						
EAS	Single Pulse Avalanche Energy (3)	V_{DD}=24V,L=0.5mH ,V_{GS}=10 V,R_g=25Ω, I_{AS}=30A T_J=25°C	225			mJ
Diode Characteristics						
V_{SD}	Diode Forward Voltage(2)	I_{SD} = 30A, V_{GS} = 0 ,T_J=25°C	--	--	1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=20A, dI_{SD}/dt=100A/μs	--	42	--	ns
q_{rr}	Reverse Recovery Charge		--	39	--	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

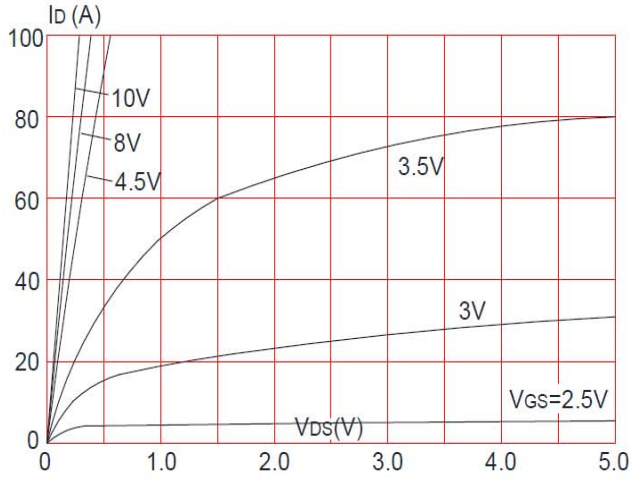


Figure 2: Typical Transfer Characteristics

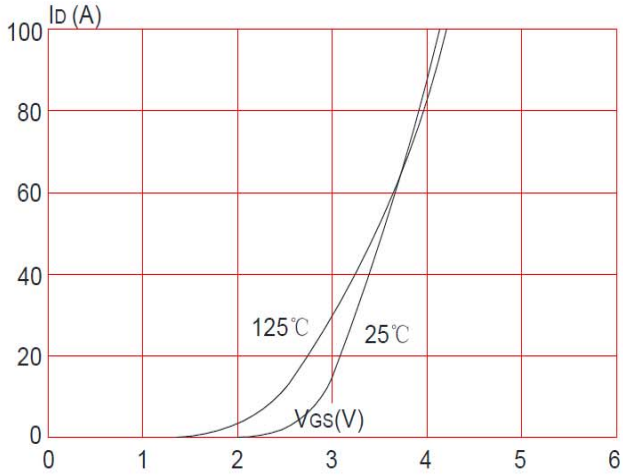


Figure 3: On-resistance vs. Drain Current

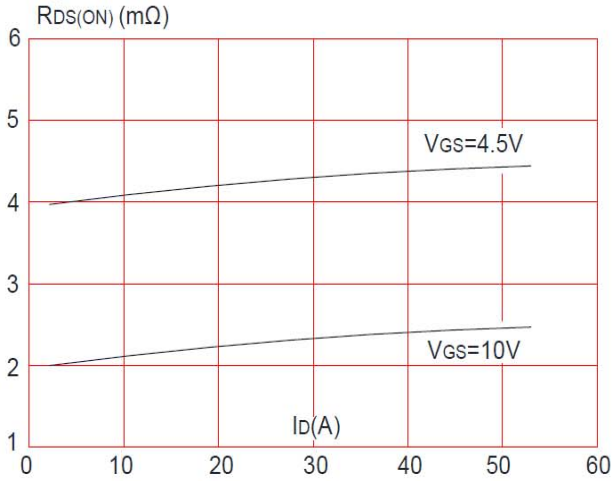


Figure 4: Body Diode Characteristics

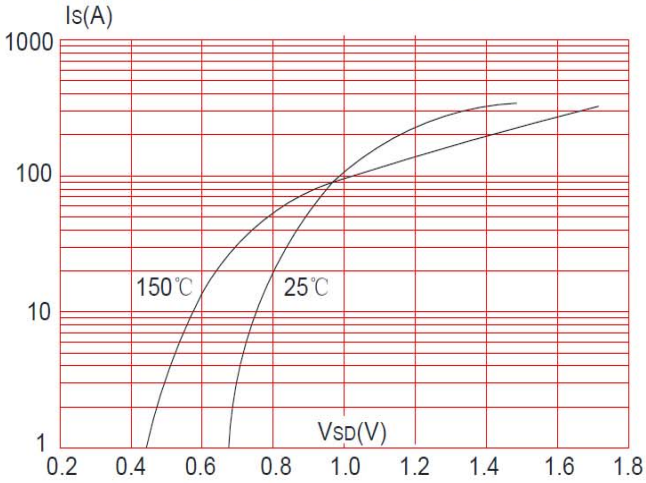


Figure 5: Gate Charge Characteristics

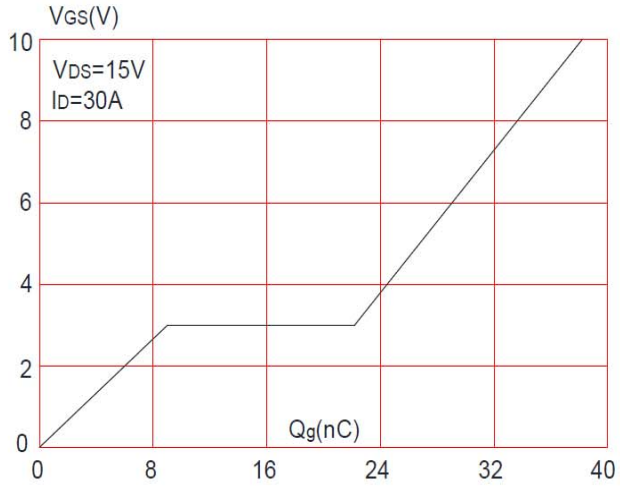


Figure 6: Capacitance Characteristics

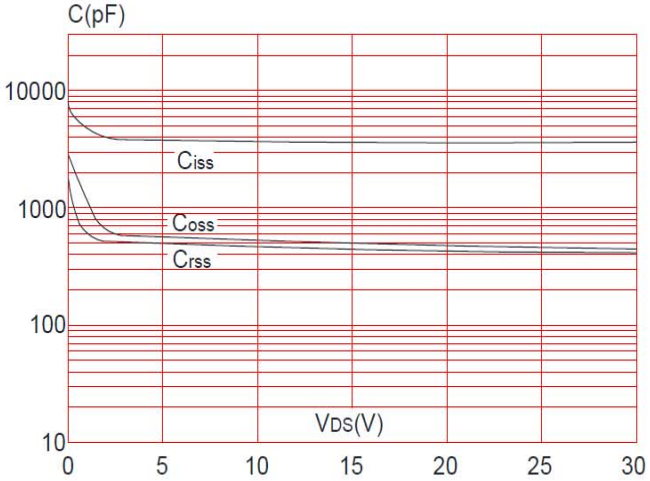


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

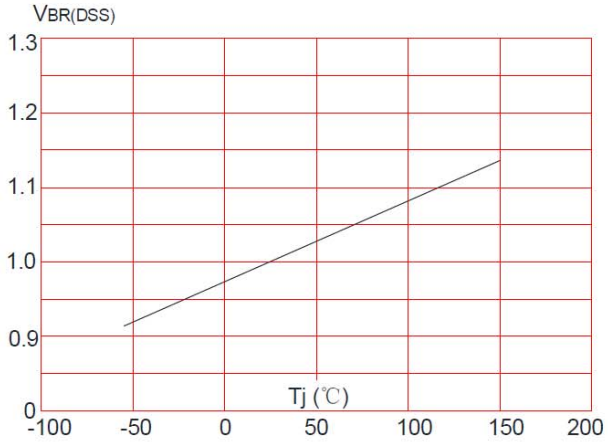


Figure 8: Normalized on Resistance vs. Junction Temperature

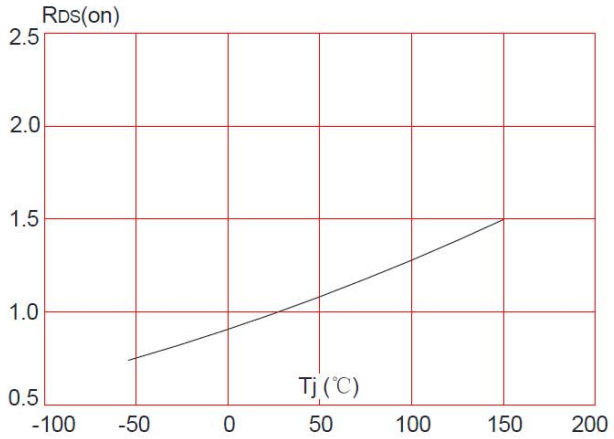


Figure 9: Maximum Safe Operating Area

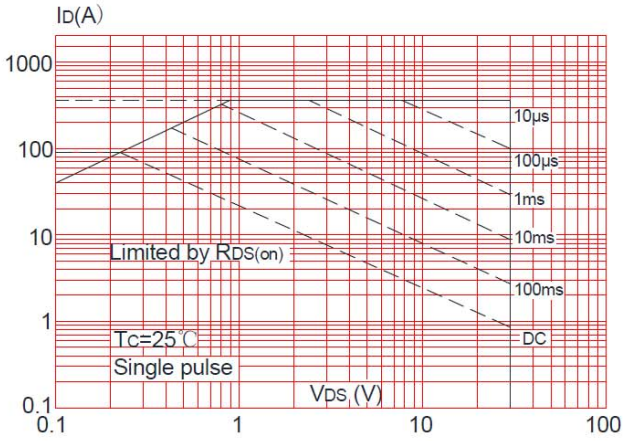


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

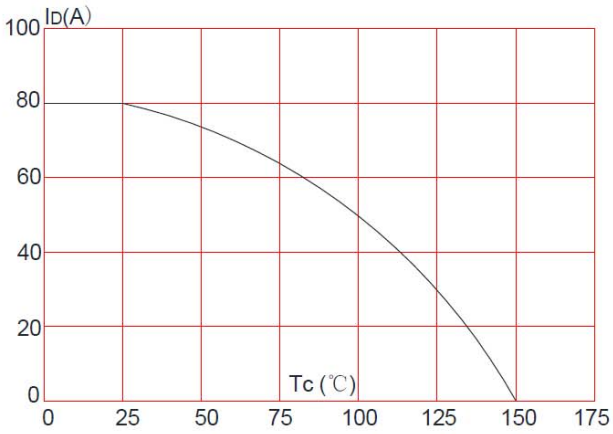


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

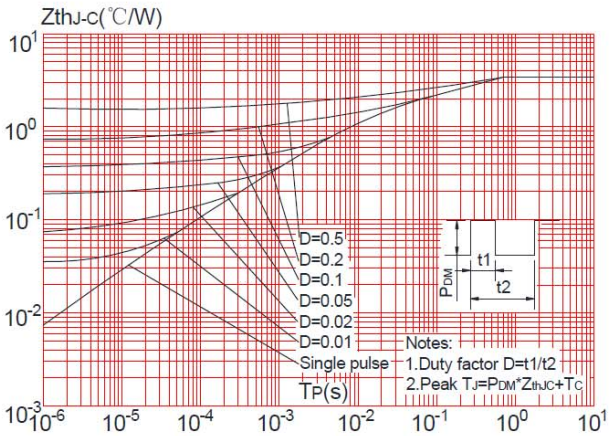


Figure 12: Switching Time Waveform

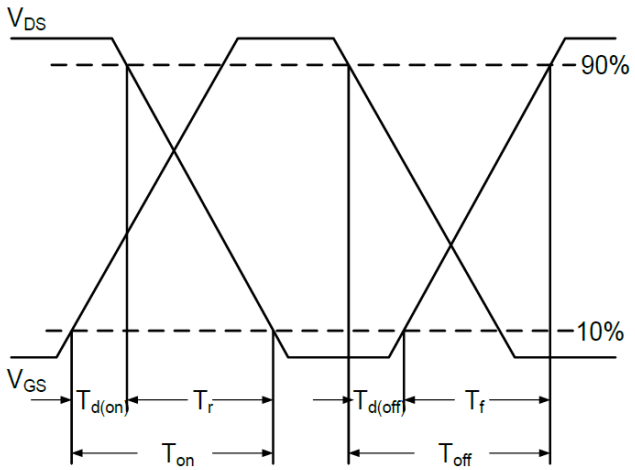
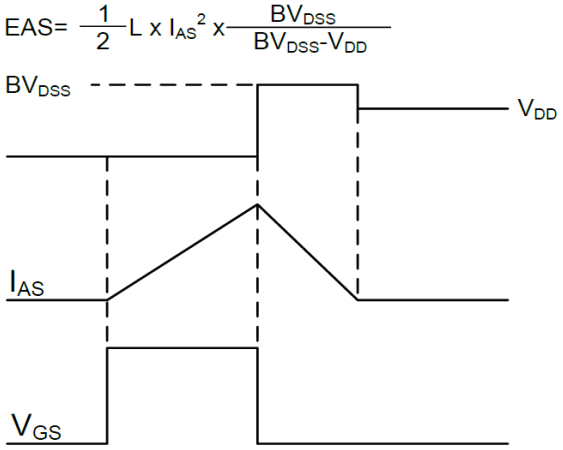
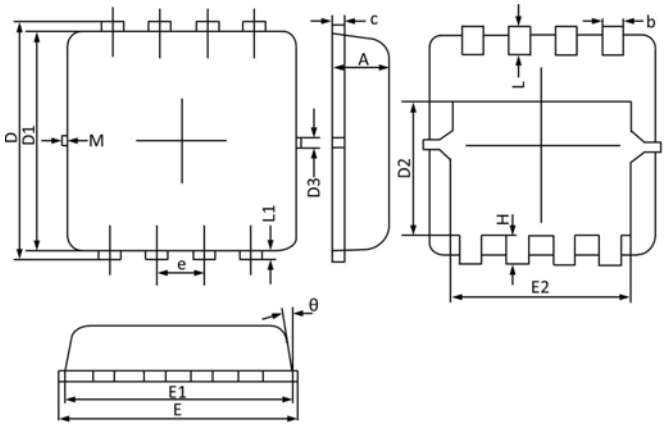


Figure 13: EAS Waveform



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
ADM80N03Z	PDFN3*3	M80N03Z	Embossed tape	5000pcs

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