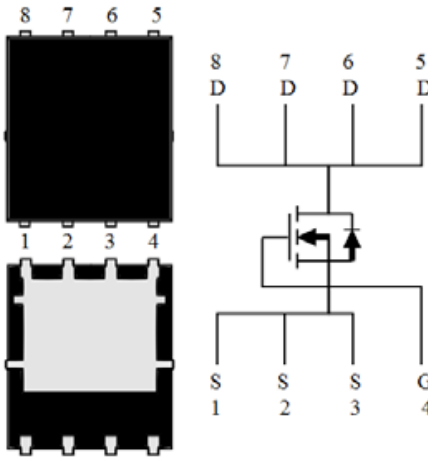
N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY

V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ)
30V	92A	1.9mΩ



PDFN（5X6）

Features:

- Low Gate Charge for Fast Switching Application
- Low $R_{DS(ON)}$ to Minimize Conductive Loss
- 100% EAS Guaranteed
- Optimized $V_{(BR)DSS}$ Ruggedness
- Lead-Free,RoHS Compliant

Description:

The ADM92N03 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	92	A
Mounted on Large Heat Sink				
I_{DM}	300μs Pulse Drain Current Tested (2)	T_C=25°C, V_{GS}=10V	191	A
I_D	Continuous Drain Current (1)	T_C=25°C, V_{GS}=10V	151	A
		T_C=100°C V_{GS}=10V	92	A
P_D	Maximum Power Dissipation	T_C=25°C	78	W

Thermal Characteristics

Symbol	Parameter	Ratings	Unit
R_{thJC}	Thermal resistance junction-case max (1)	1.6	°C/W
R_{thJA}	Thermal resistance junction-ambient max (1)	50	°C/W

Electrical Characteristics (TA=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}=1mA	30	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= 24V, V_{GS}=0V	--	--	1	uA
		V_{DS}=24V,V_{GS}=0V T_J=125°C	--	--	100	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250uA	1.2	--	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}=32A	--	1.4	1.9	mΩ
		V_{GS}= 4.5V, I_{DS}=32A	--	1.8	2.4	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS}=0V,	--	2580	--	pF
C_{oss}	Output Capacitance	V_{DS}= 15V,	--	740	--	
C_{rss}	Reverse Transfer Capacitance	Frequency=1.0MHz	--	210	--	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time(1)	V_{DD}=15V,	--	21.8	--	ns
t_r	Turn-on Rise Time(1)	I_D= 16A, V_{GS}= 10V,	--	15.6	--	
$t_{d(OFF)}$	Turn-off Delay Time(1)	R_{GEN}=10Ω R_L=0.94Ω	--	74.6	--	
t_f	Turn-off Fall Time(1)		--	28.5	--	
Q_g	Total Gate Charge(1)	V_{DS}=15V, V_{GS}= 4.5V,	--	19.6	--	nC
Q_{gs}	Gate-Source Charge(1)	I_{DS}=32A	--	11.6	--	
Q_{gd}	Gate-Drain Charge(1)		--	6.7	--	
Avalanche Characteristics						
EAS	Single Pulse Avalanche Energy (3)	V_{DD}=15V,L=0.1mH ,V_{GS}=10 V,R_g=25Ω	102	--	--	mJ
Diode Characteristics						
V_{SD}	Diode Forward Voltage(2)	I_{SD} = 32A, V_{GS} = 0	--	--	1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=32A, dI_{SD}/dt=100A/μs	--	37.8	--	ns
q_{rr}	Reverse Recovery Charge		--	35.2	--	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

Figure 1: On-Region Characteristics

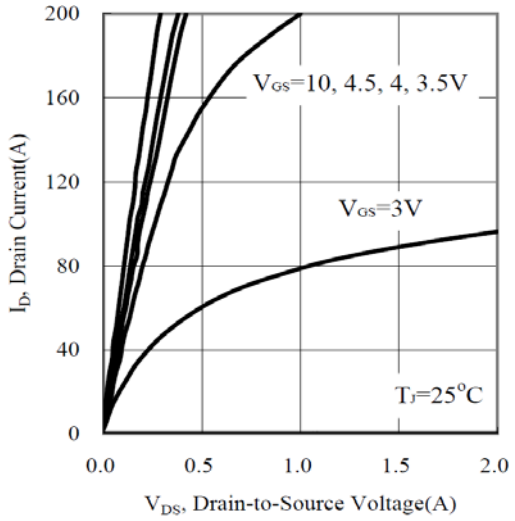


Figure 2: Power Dissipation

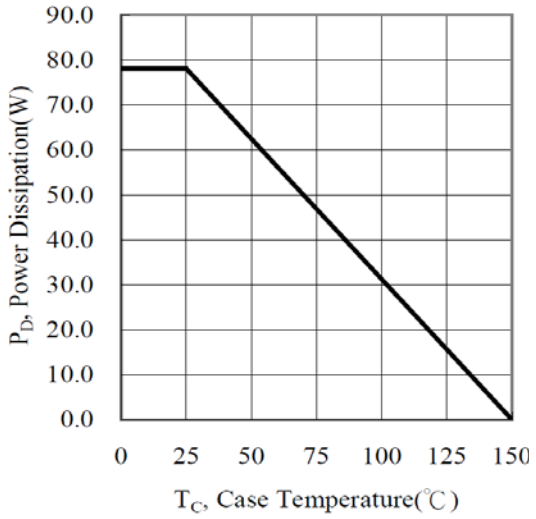


Figure 3: Drain Current

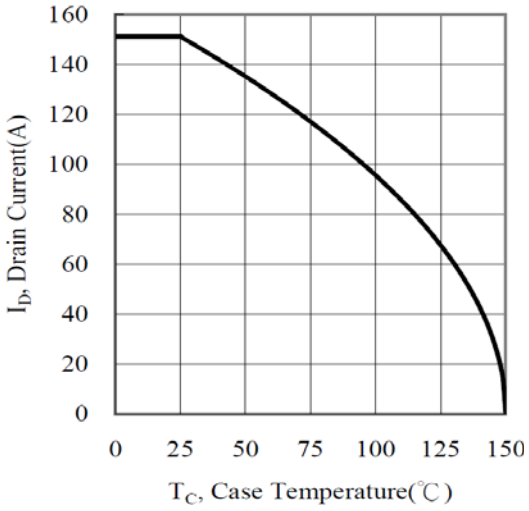


Figure 4: Drain-to-Source Breakdown Voltage

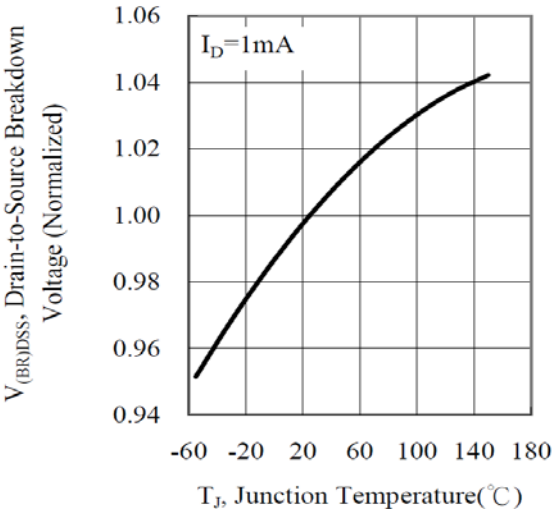


Figure 5: Capacitance Characteristics

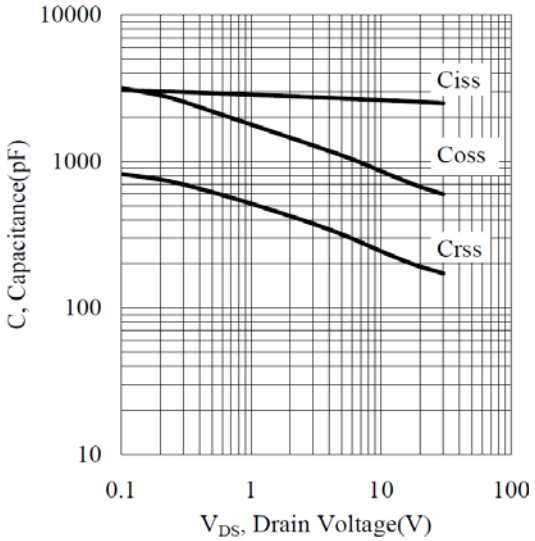


Figure 6: Gate Charge Characteristics

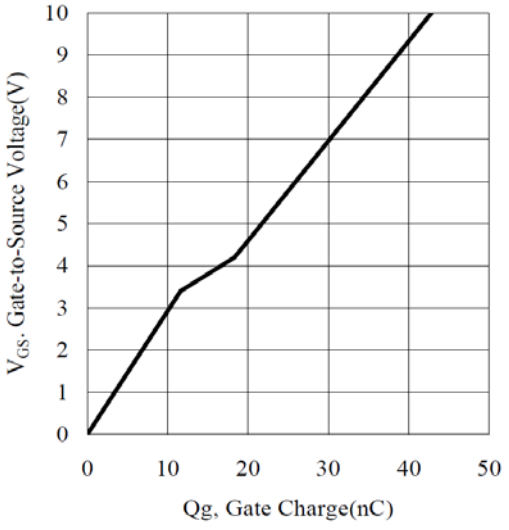


Figure 7: Gate Threshold Voltage

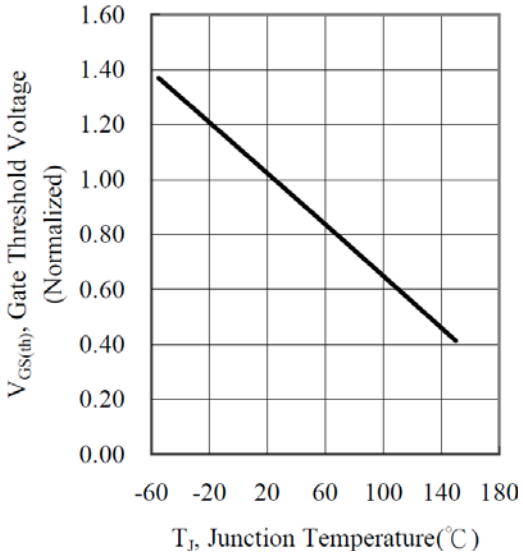
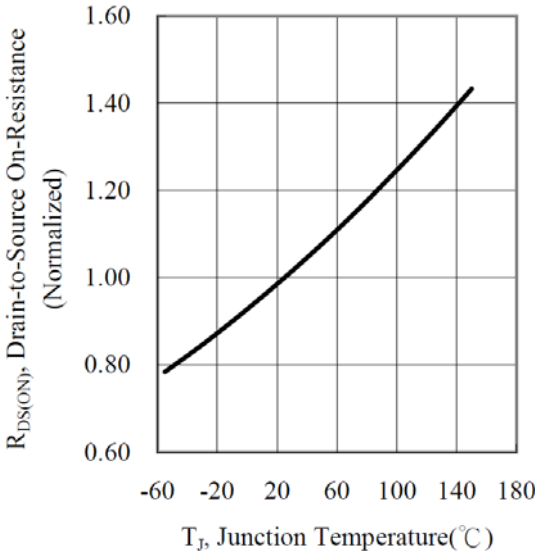


Figure 8: Drain-to-Source On-Resistance



PACKAGE MECHANICAL DATA

PDFN（5X6） Package Dimension（UNIT：mm）