



DESCRIPTION

The AM100N03PJ is available in PDFN8(5x6) package.

BVDSS	RDSON	ID
30V	2.8mΩ	100A

Application

- Motor Control
- Battery Management System
- Power Management
- Full bridge control

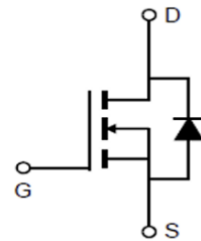
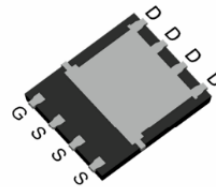
ORDERING INFORMATION

Package Type	Part Number	
PDFN8(5x6) SPQ:4,000pcs/Reel	PJ8	AM100N03PJ8R
Note	R: Tape & Reel	
AiT provides all RoHS products		

FEATURES

- $V_{DS} = 30V, I_D = 100A$
- $R_{DS(ON)} Typ = 2.8m\Omega @ V_{GS} = 10V$
- $R_{DS(ON)} Typ = 4.3m\Omega @ V_{GS} = 4.5V$
- Low reverse transfer capacitances
- ΔV_{DS} test
- 100% single pulse avalanche energy test

PIN DESCRIPTION



Pin#	Symbol	Function
1, 2, 3	S	Source
4	G	Gate
5,6,7,8	D	Drain

ABSOLUTE MAXIMUM RATINGS

TC= 25°C, unless otherwise specified.

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	$T_A = 25^\circ C$	100
		$T_A = 100^\circ C$	63
Pulsed Drain Current	I_{DM}	401	A
Single Pulse Avalanche Energy	E_{AS}	306	mJ
Power Dissipation	P_D	58	W
Operation Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ 150	°C
Thermal Resistance, Junction-to-case ¹	$R_{\theta JC}$	2.2	°C/W

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.



ELECTRICAL CHARACTERISTICS

T_J = 25°C, unless otherwise specified.

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Off Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250uA	30	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V,	-	-	1.0	μA
Gate to Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	1.2	-	2.1	V
Static Drain-Source On-Resistance note3	R _{Ds(on)}	V _{GS} =10V, I _D =60A	-	2.8	3.4	mΩ
		V _{GS} =4.5V, I _D =60A	-	4.3	5.5	
Transconductance	G _{fs}	V _{DS} =5V, I _D =60A	-	106	-	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1.0MHz	-	3488	-	pF
Output Capacitance	C _{oss}		-	365	-	pF
Reverse Transfer Capacitance	C _{rss}		-	323	-	pF
Total Gate Charge	Q _g	V _{DS} =15V, I _D =60A, V _{GS} =10V	-	67	-	nC
Gate-Source Charge	Q _{gs}		-	15	-	nC
Gate-Drain("Miller") Charge	Q _{gd}		-	11	-	nC
Gate plateau voltage	V _{plateau}		-	3.7	-	V
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{GS} =10V, V _{DD} =15V, I _D =60A, R _{G_ext} =3Ω	-	17	-	ns
Turn-on Rise Time	t _r		-	38	-	ns
Turn-off Delay Time	t _{d(off)}		-	35	-	ns
Turn-off Fall Time	t _f		-	18	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain to Source Diode Forward Current	I _S	-	-	-	100	A
Drain to Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =60A	-	-	1.2	V
Body Diode Reverse Recovery Time	T _{rr}	I _F =15A, dI/dt=100A/μs	-	21	-	ns
Body Diode Reverse Recovery Charge	Q _{rr}		-	14	-	nC



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Maximum Continuous Drain Current vs. Drain-Source Voltage

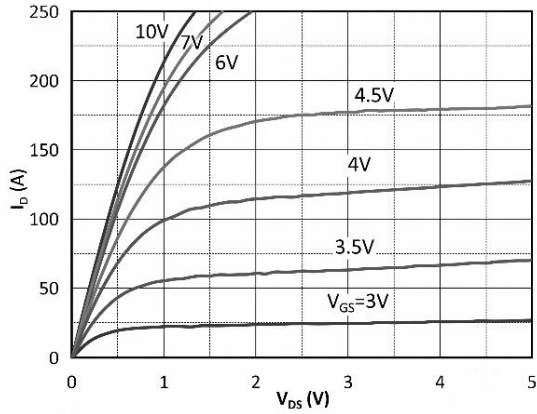


Fig 2. Maximum Continuous Drain Current vs. Gate-Source Voltage

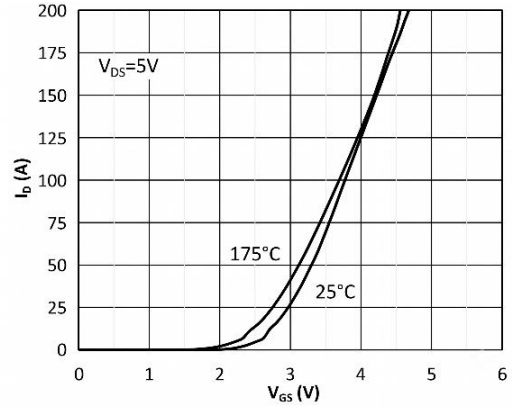


Fig 3. Static Drain-Source On-Resistance vs. Continuous Drain Current

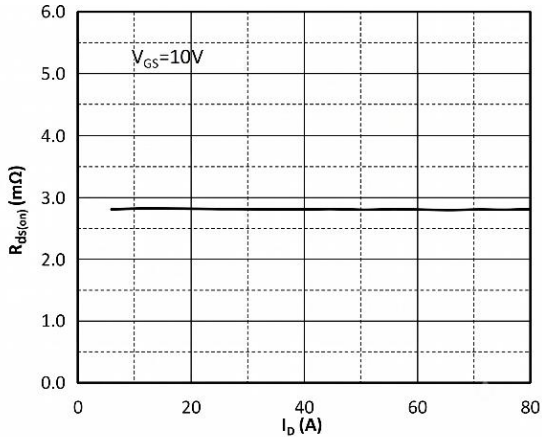


Fig 4. Static Drain-Source On-Resistance vs. Gate-Source Voltage

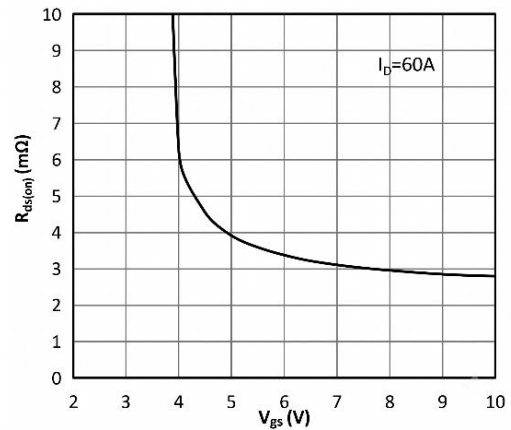


Fig 5. Static Drain-Source On-Resistance vs. Junction Temperature

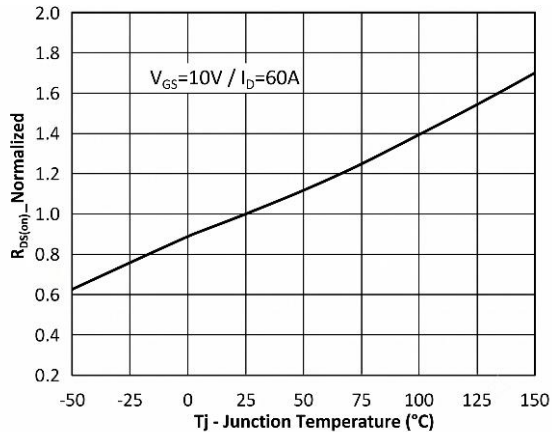


Fig 6. Capacitance vs. Drain-Source Voltage

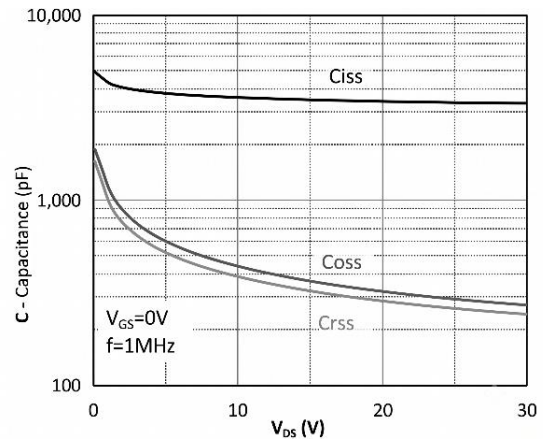




Fig 7. Gate-Source Voltage vs Total Gate Charge

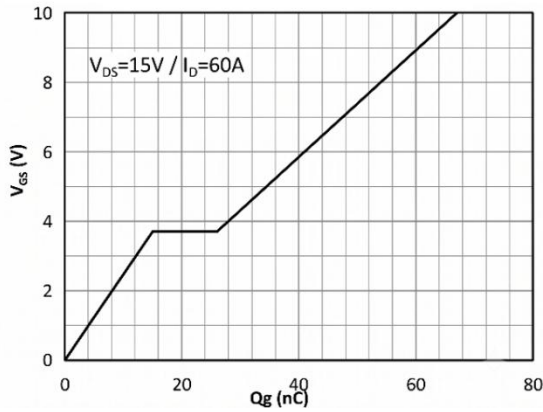


Fig 8. Diode Forward Current vs. Drain to Source Diode Forward Voltage

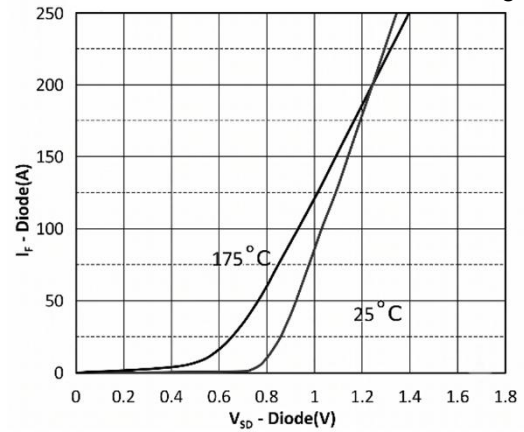


Fig 9. Total Power Dissipation vs. Case Temperature

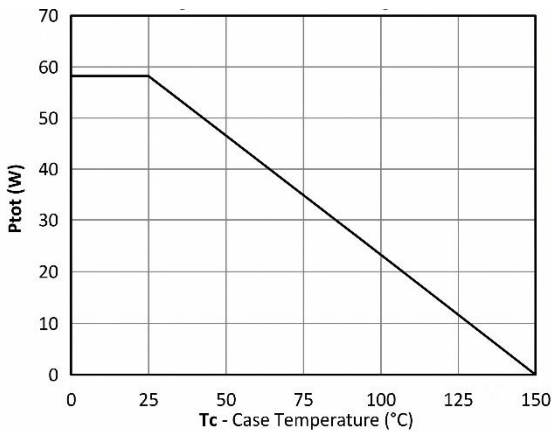


Fig 10. Maximum Continuous Drain Current vs. Case Temperature

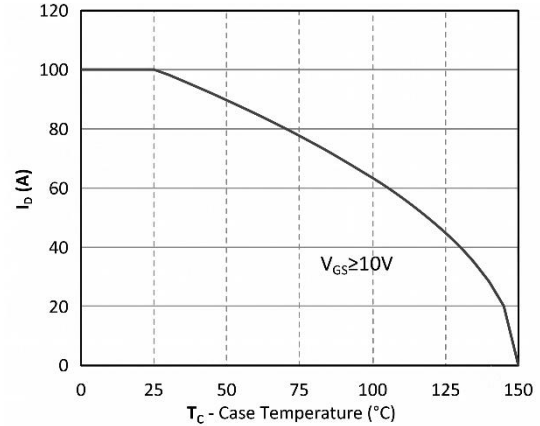


Fig 11. Maximum Continuous Drain Current vs. Drain-Source Voltage

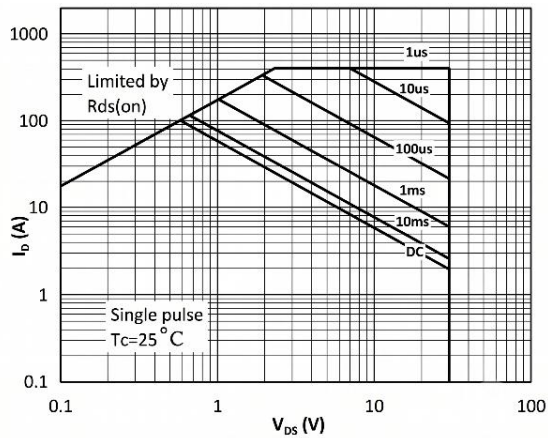
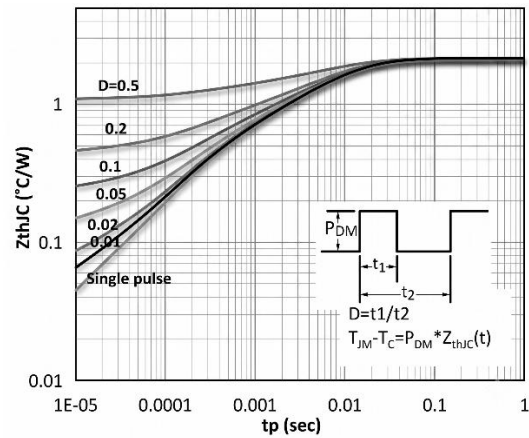


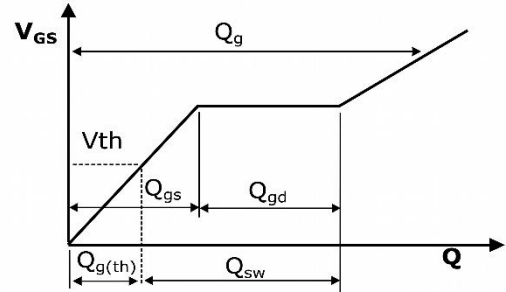
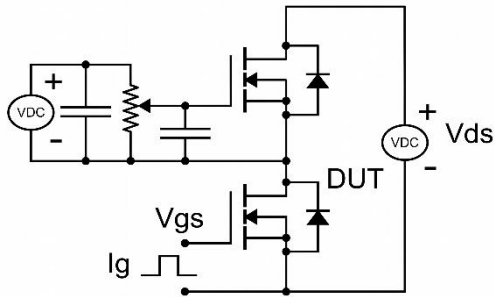
Fig 12. Transient Thermal Impedance vs. Pulse Time(sec)



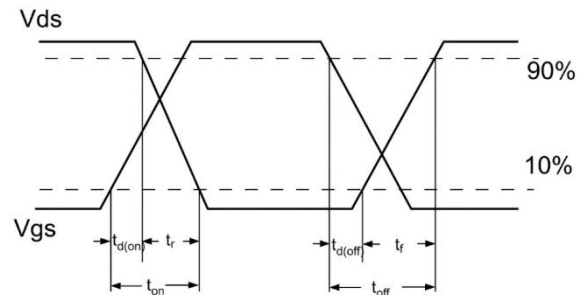
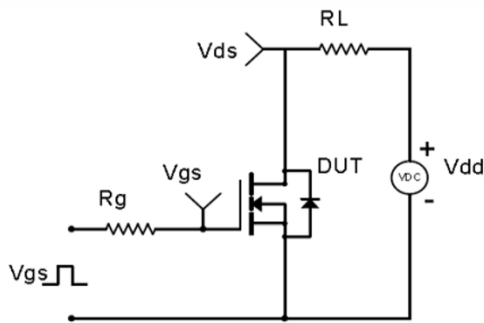


Test Circuit & Waveform

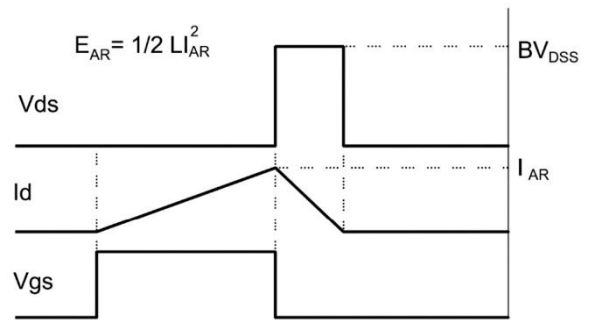
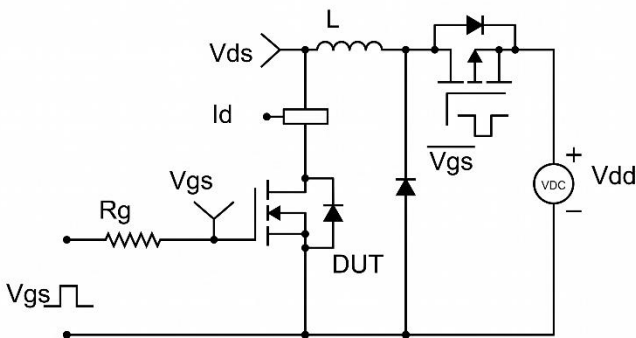
Gate Charge Test Circuit & Waveform



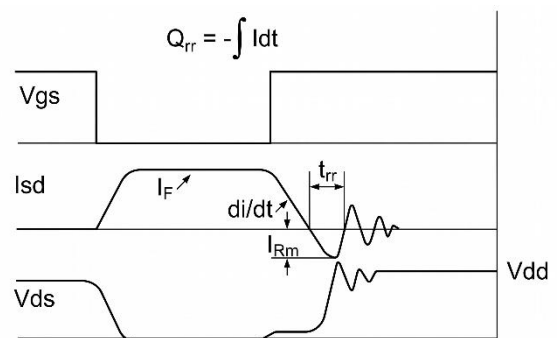
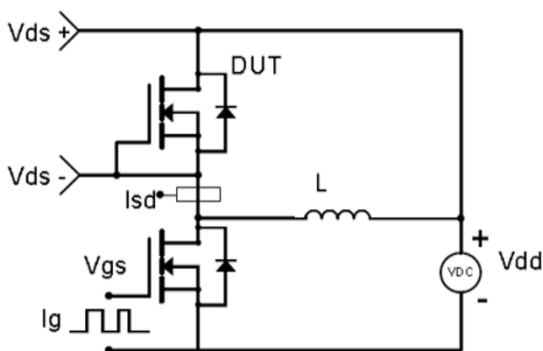
MOSFET Switching Test Circuit & Waveform



EAS Test Circuit & Waveform



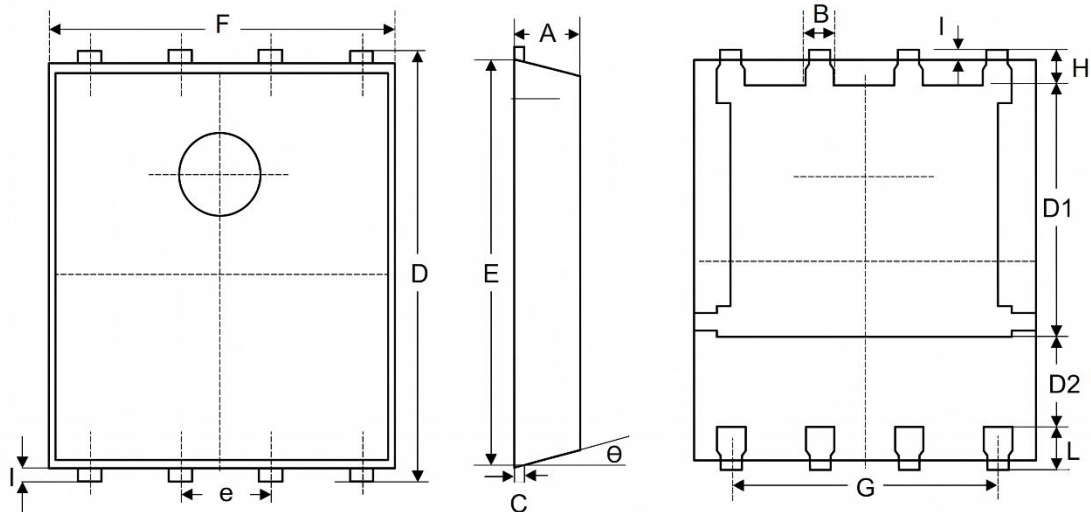
Diode Recovery Test Circuit & Waveform





PACKAGE INFORMATION

Dimension in PDFN8(5x6) (Unit: mm):



Symbol	Millimeters	
	Min	Max
A	0.900	1.100
B	0.330	0.510
C	0.200	0.300
D	5.900	6.100
D1	3.380	3.780
D2	1.100	-
E	5.700	5.800
e	1.270 BSC	
F	4.800	5.000
G	0.361	0.396
H	0.410	0.610
I	0.060	0.200
L	0.510	0.710
θ	0°	12°



IMPORTANT NOTICE

AiT Semiconductor Inc. (AiT) reserves the right to make changes to any its product, specifications, to discontinue any integrated circuit product or service without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is current.

AiT Semiconductor Inc. integrated circuit products are not designed, intended, authorized, or warranted to be suitable for use in life support applications, devices or systems or other critical applications. Use of AiT products in such applications is understood to be fully at the risk of the customer. As used herein may involve potential risks of death, personal injury, or server property, or environmental damage. In order to minimize risks associated with the customer's applications, the customer should provide adequate design and operating safeguards.

AiT Semiconductor Inc. assumes to no liability to customer product design or application support. AiT warrants the performance of its products of the specifications applicable at the time of sale.