

**DESCRIPTION**

The AM12N03J6 is available in DFN6 (2x2) Package.

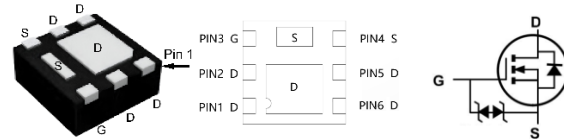
V _{DSS}	R _{DS(ON)}	I _D
30V	17mΩ	12A

APPLICATIONS

- Interfacing Switching
- Load Switch
- PWM applications

FEATURE

- 30V, 12A
- R_{DS(ON)} Typ.= 17mΩ @ V_{GS} = 10V
- R_{DS(ON)} Typ.= 19mΩ @ V_{GS} = 4.5V
- Advanced Trench Technology
- ESD > 2KV

PIN DESCRIPTION**ORDERING INFORMATION**

Package Type	Part Number	
DFN6(2x2) 5000pcs/Reels	J6	AM12N03J6R
Note	R: Tape & Reel	
AiT provides all RoHS products		

Pin #	Symbol	Function
1	D	Source
2	D	Source
3	G	Source
4	S	Gate
5	D	Drain
6	D	Drain
Small Pad	S	Drain
Large Pad	D	Drain

ABSOLUTE MAXIMUM RATINGS

T_J = 25°C, unless otherwise specified.

V _{DS} , Drain-to-Source Voltage		30V
V _{GS} , Gate Source Voltage		±12V
I _D , Continuous Drain Current	T _C = 25°C	12A
	T _C = 100°C	7.5A
I _{DM} , Pulsed Drain Current ⁽¹⁾		48A
E _{AS} , Avalanche Energy, Single Pulse ⁽²⁾		25mJ
P _D , Power Dissipation	T _C = 25°C	19.2W
R _{θJA} , Thermal Resistance, Junction-to-Ambient		45°C/W
R _{θJC} , Thermal Resistance, Junction-to-Case ⁽³⁾		6.5°C/W
T _{STG} , Storage Temperature Range		-55°C ~ +150°C
T _J , Junction Temperature Range		-55°C ~ +150°C

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

2. E_{AS} condition: Starting T_J=25°C, V_{DD}=15V, V_G=10V, R_G=25Ω, L=0.5mH, I_{AS}=10A

3. The value of R_{θJA} Mounted on FR4 Board (25.4mm*25.4mm*t1.6mm) With 2oz Copper TA=25°C

**ELECTRICAL CHARACTERISTICS**T_J = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	30	33	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	-	-	1.0	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±12V, V _{DS} =0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} = V _{GS} , I _D = 250μA	0.4	1.0	1.5	V
Forward transconductance	R _G	V _{GS} = 0V, V _{DS} = 0V, f=1.0MHz	-	1.9	-	Ω
Static Drain-Source ON-Resistance ⁽¹⁾	R _{DS(ON)}	V _{GS} = 10V, I _D = 3A	-	17	25	mΩ
		V _{GS} = 4.5V, I _D = 2A	-	19	26	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 15V, V _{GS} =0V, f=1.0MHZ	-	700	-	pF
Output Capacitance	C _{oss}		-	66	-	
Reverse Transfer Capacitance	C _{rss}		-	52	-	
Total Gate Charge	Q _g	V _{DS} = 20V , I _D =2A V _{GS} = 10V	-	18	-	nC
Gate-Source Charge	Q _{gs}		-	1.46	-	
Gate Drain("Miller") Charge	Q _{gd}		-	2.06	-	
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	V _{DD} =10V, I _D = 3A R _{GEN} =3Ω, V _{GS} = 10V	-	12	-	ns
Turn-On Rise Time	t _r		-	52	-	
Turn-Off Delay Time	t _{d(off)}		-	17	-	
Turn-Off Fall Time	t _f		-	10	-	
Drain-Source Diode Characteristics and Max Ratings						
Maximum Continuous Drain to Source Diode Forward Current	I _S	-	-	-	12	A
Drain to Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S = 30A	-	0.8	1.1	V
Reverse recovery time	t _{rr}	I _F = 3A, T _J =25°C,	-	8.5	-	ns
Reverse recovery charge	Q _{rr}	V _D =20V, di/dt=100A/μs	-	2.2	-	nC

Notes:

1. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Output Characteristics

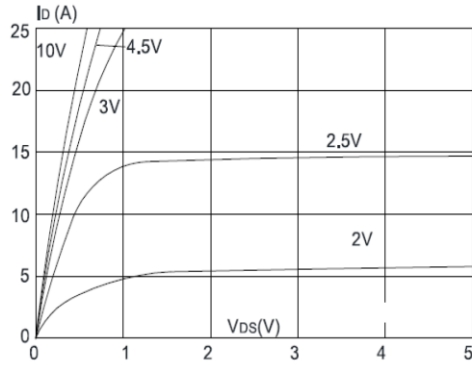


Fig 2. Typical Transfer Characteristics

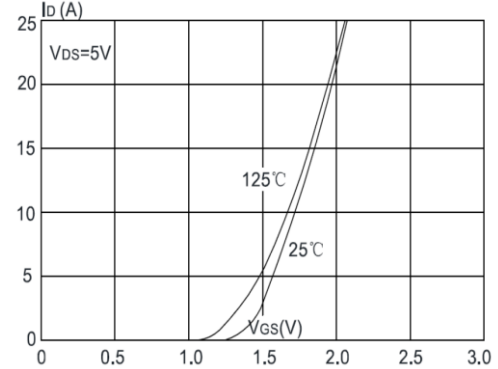


Fig 3. On-Resistance vs. Drain Current and Gate Voltage

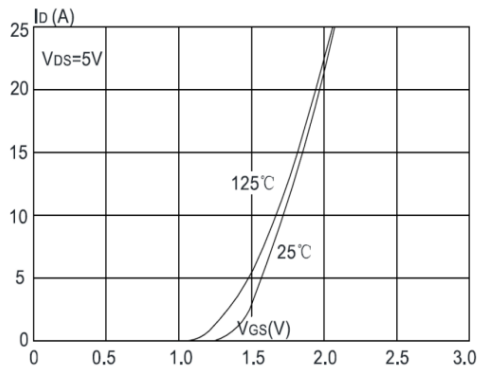


Fig 4. On-Resistance vs. Gate-Source Voltage

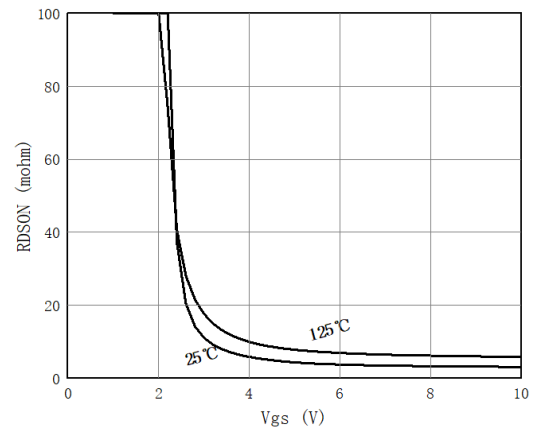


Fig 5. Gate Charge Characteristics

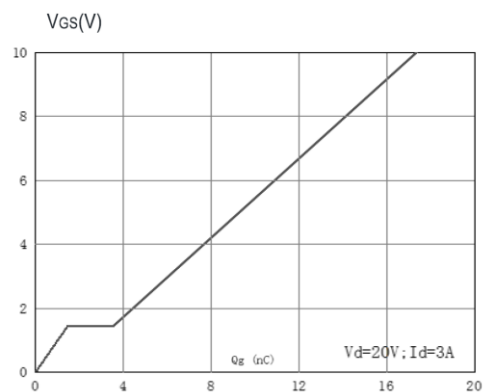
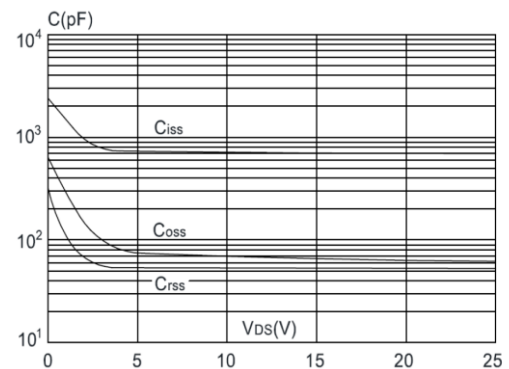


Fig 6. Capacitance Characteristics





MOSFET



Fig13. Normalized Maximum Transient Thermal Impedance

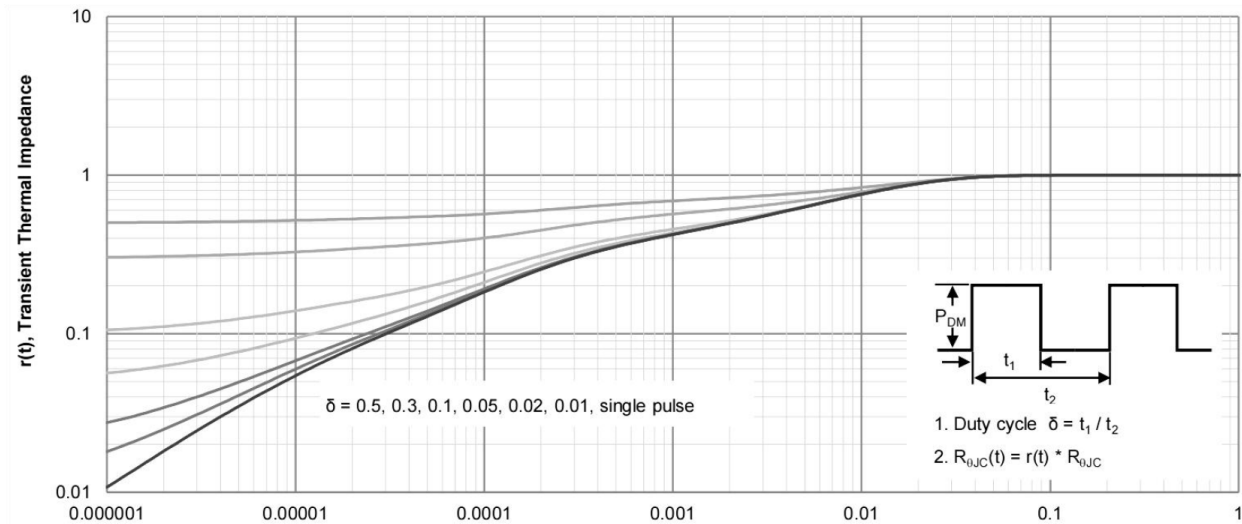


Fig 14. Gate Charge Test Circuit

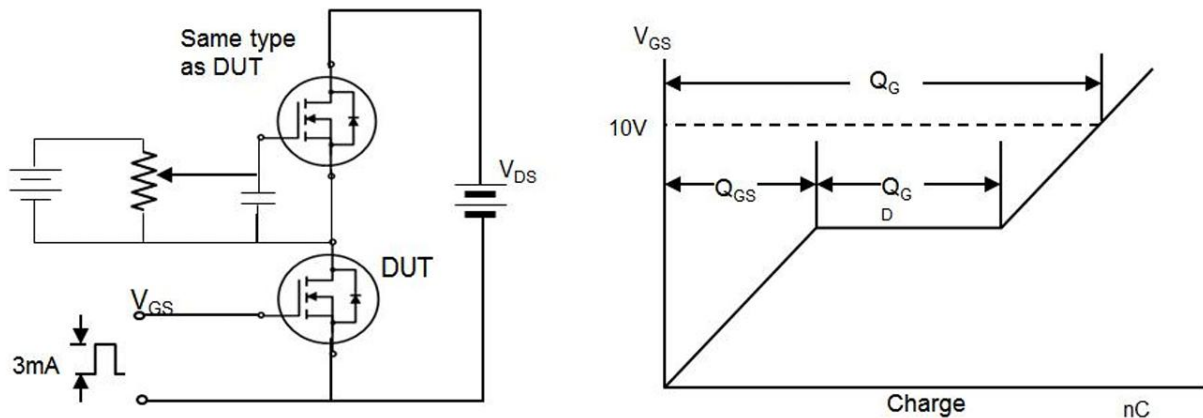


Fig 15. Resistive Switching Test Circuit & Waveform

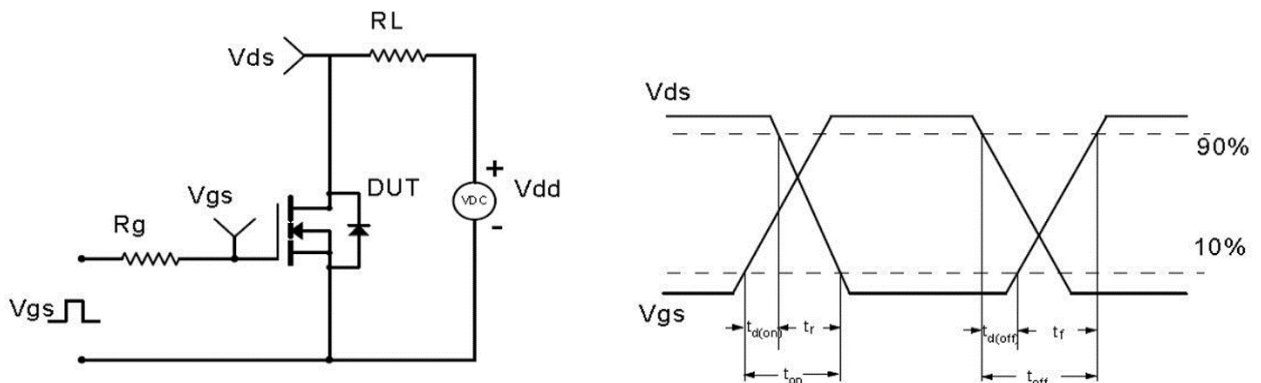




Fig 16. Unclamped Inductive Switching Test Circuit & Waveform

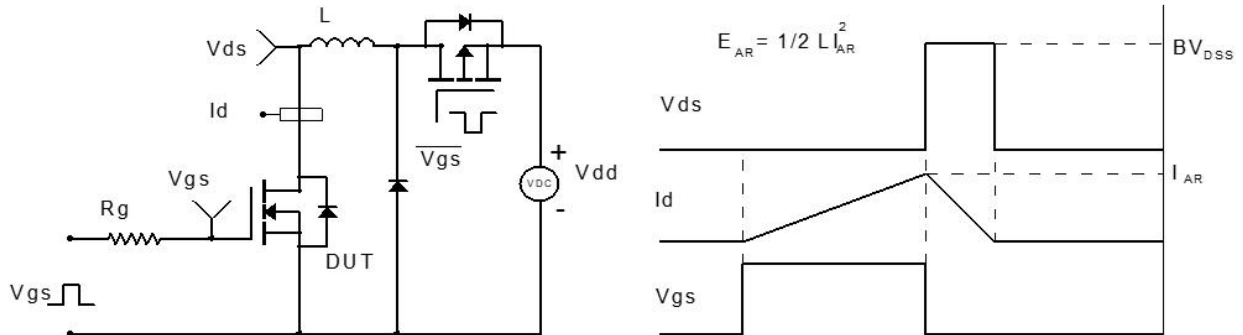
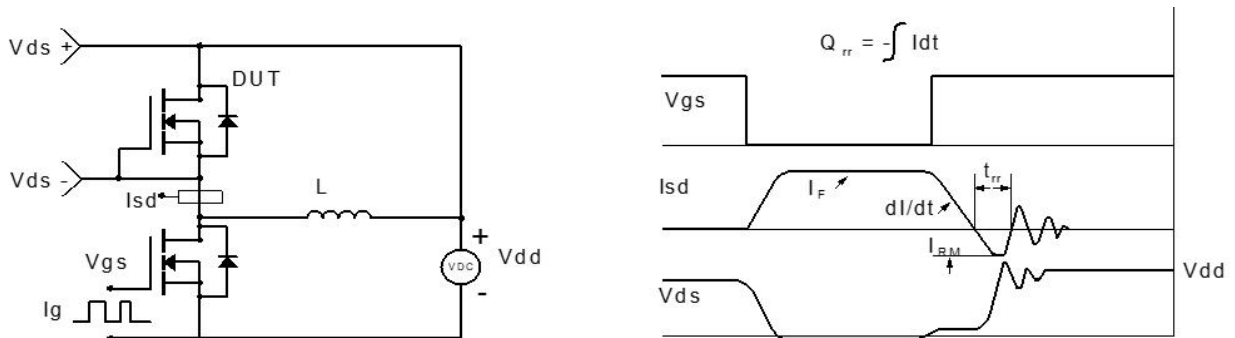


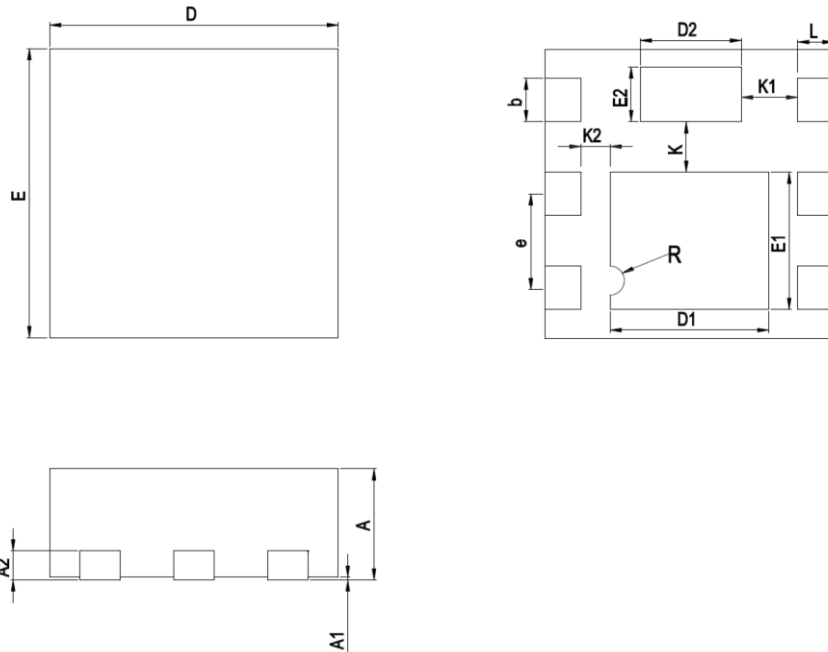
Fig 17. Diode Recovery Test Circuit & Waveform





PACKAGE INFORMATION

Dimension in DFN6(2x2) (Unit: mm)



Symbol	Millimeters	
	Min.	Max.
A	0.70	0.80
A1	0.00	0.05
A2	0.203 BSC	
b	0.25	0.35
D	1.90	2.10
D1	1.10	1.20
D2	0.65	0.75
E	1.90	2.10
E1	0.90	1.00
E2	0.33	0.43
e	0.65 REF	
K	0.30	0.40
K1	0.30	0.45
K2	0.18	0.22
L	0.22	0.27

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