DESCRIPTION

The AM05N06 is available in SOT-223 Package

BVDSS	RDSON	ID
60V	66mΩ	5A

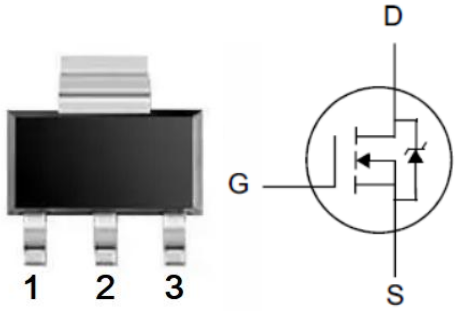
FEATURE

- Advanced high cell density Trench Technology
- $R_{DS(ON)typ.}$=66mΩ @ V_{GS}=10V
- Excellent dv/dt effect decline
- Super Low Gate Charge

ORDERING INFORMATION

Package Type	Part Number	
SOT-223 SPQ: 2,500pcs/Reel	N3	AM05N06N3R
		AM05N06N3VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

PIN DESCRIPTION



SOT-223

Pin#	Symbol	Function
1	G	Gate
2	D	Drain
3	S	Source

ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless otherwise specified.

V_{DS}, Drain-Source Voltage		60V
V_{GS}, Gate-Source Voltage		±20V
I_D, Continuous Drain Current, V_{GS}@10V (1)	T_A = 25℃	5.0A
	T_A = 70℃	1.8A
I_{DM}, Pulsed Drain Current (2)		9.2A
P_D, Total Power Dissipation (3)	T_A = 25℃	1W
T_J, Operating Junction Temperature Range		-55℃~+150℃
T_{STG}, Storage Temperature Range		-55℃~+150℃
$R_{\theta JA}$, Thermal Resistance Junction-Ambient (1)		125℃/W
$R_{\theta JC}$, Thermal Resistance Junction-Case (1)		80℃/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.

(1) The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

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

(3) The power dissipation is limited by 150℃ junction temperature.

ELECTRICAL CHARACTERISTICS

T_J = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	60	-	-	V
BV_{DSS} Temperature Coefficient	ΔBV_{DSS} / ΔT_J	I_D=1mA Reference 25℃	-	0.054	-	V/℃
Static Drain-Source On-Resistance (2)	$R_{DS(ON)}$	V_{GS}=10V, I_D=2A	-	66	105	mΩ
		V_{GS}=4.5V, I_D=1A	-	85	110	
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}= V_{GS}, I_D=250μA	1.2	-	2.5	V
$V_{GS(TH)}$ Temperature Coefficient	$\Delta V_{GS(TH)}$		-	-4.96	-	mV/℃
Drain-Source Leakage Current	I_{DSS}	V_{DS}=48V, V_{GS}=0V, T_J=25℃	-	-	1	μA
		V_{DS}=48V, V_{GS}=0V, T_J=55℃	-	-	5	
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V,	-	-	±100	nA
Forward Transconductance	gfs	V_{DS}=5V, I_D=2A	-	13	-	S
Total Gate Charge (4.5V)	Q_g	V_{DS}=48V, V_{GS}=4.5V, I_D=2A	-	5.0	7.0	nC
Gate-Source Charge	Q_{gs}		-	1.68	2.4	
Gate-Drain Charge	Q_{gd}		-	1.9	2.7	
Turn-on Delay Time	$t_{d(ON)}$	I_D=2A, V_{DD}=30V, V_{GS}=10V, R_G=3.3Ω	-	1.6	3.2	ns
Rise Time	t_r		-	7.2	13	
Turn-Off Delay Time	$t_{d(OFF)}$		-	25	50	
Fall Time	t_f		-	14.4	28.8	
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=15V, f=1.0MHz	-	511	715	pF
Output Capacitance	C_{oss}		-	38	53	
Reverse Transfer Capacitance	C_{rss}		-	25	35	
Diode Characteristics						
Continuous Source Current (1)(3)	I_S	V_G=V_D=0V, Force Current	-	-	2.3	A
Maximum Pulsed Current (2)(3)	I_{SM}		-	-	9.2	A
Diode Forward Voltage (2)	V_{SD}	V_{GS}=0V , I_S=1A , T_J=25 °C	-	-	1.2	V
Reverse Recovery Time	T_{rr}	I_F=2A , dI/dt=100A/μs , T_J=25℃	-	9.7	-	ns
Reverse Recovery Charge	Q_{rr}		-	5.8	-	nC

(1) The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

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

(3) The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation

TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Typical Output Characteristics

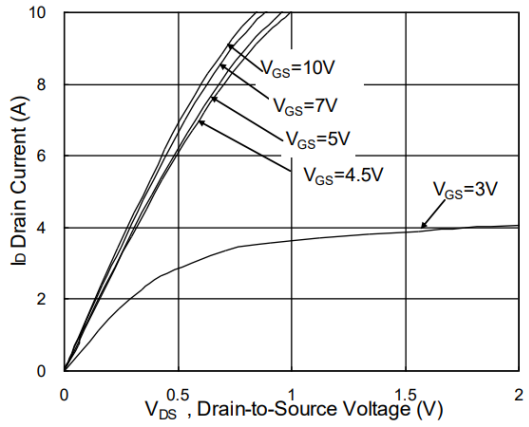


Fig 2. On-Resistance vs. Gate-Source

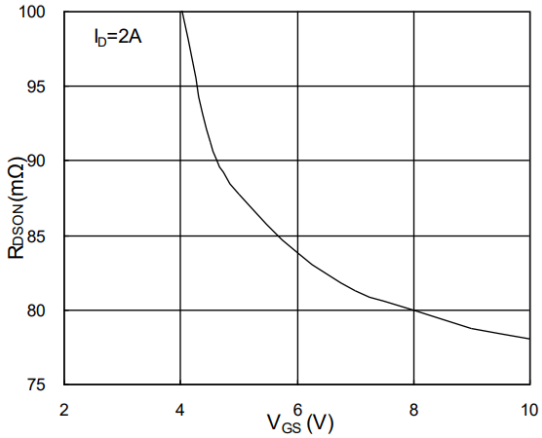


Fig 3. Forward Characteristics of Reverse

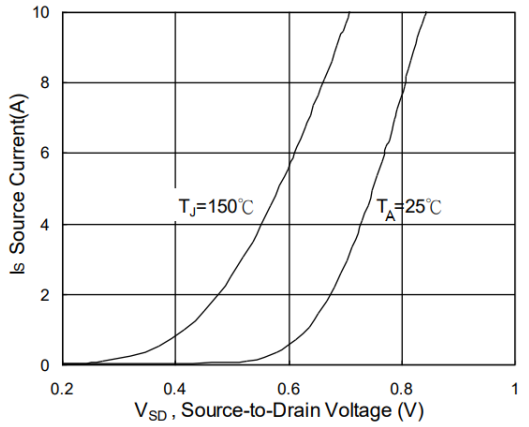


Fig 4. Gate-Charge Characteristics

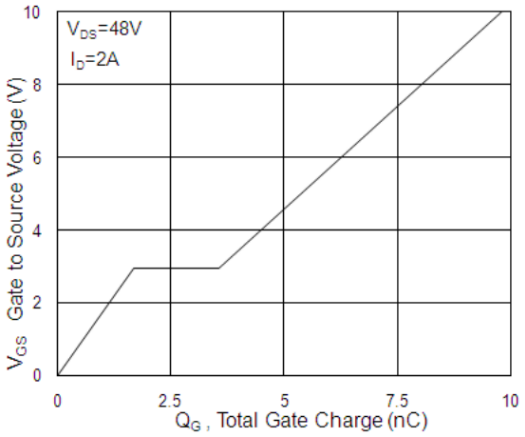


Fig 5. Normalized $V_{GS\,(TH)}$ vs. T_J

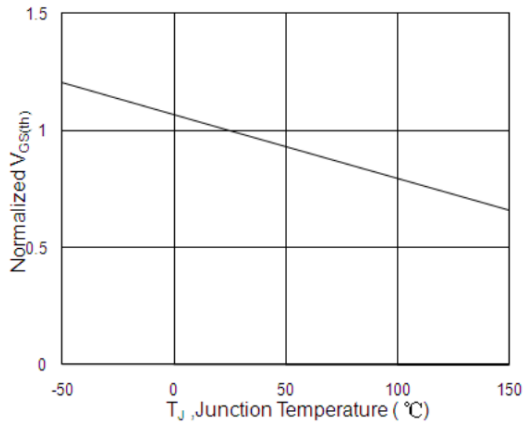


Fig 6. Normalized R_{DSON} vs. T_J

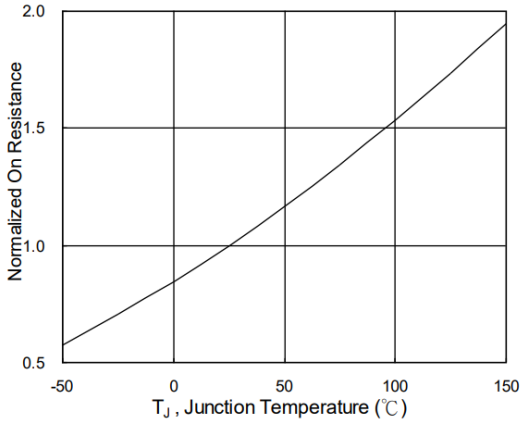


Fig 7. Capacitance

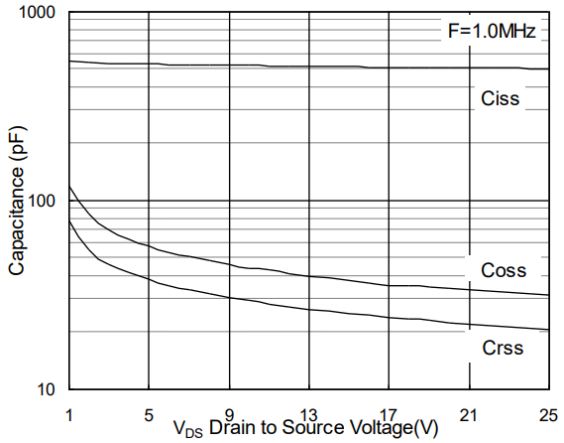


Fig 8. Safe Operating Area

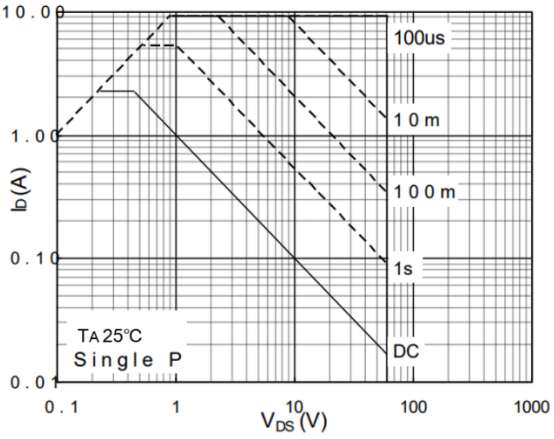


Fig 9. Normalized Maximum Transient Thermal Impedance

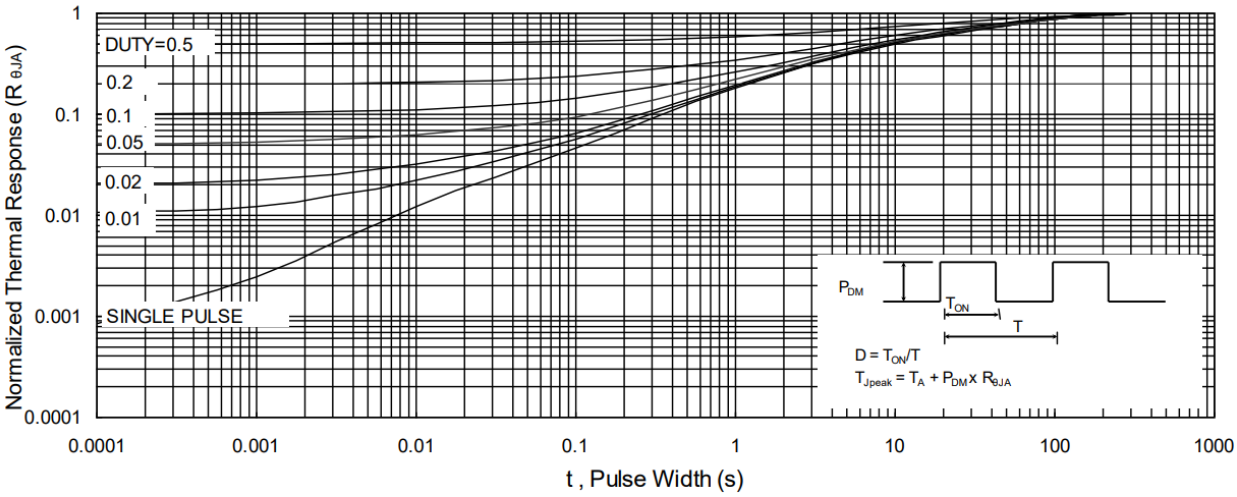


Fig 10. Switching Time Waveform

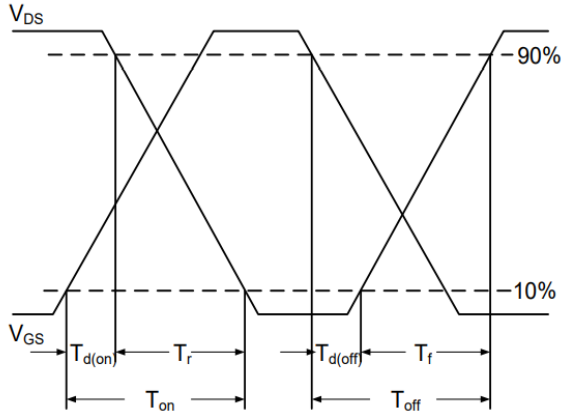
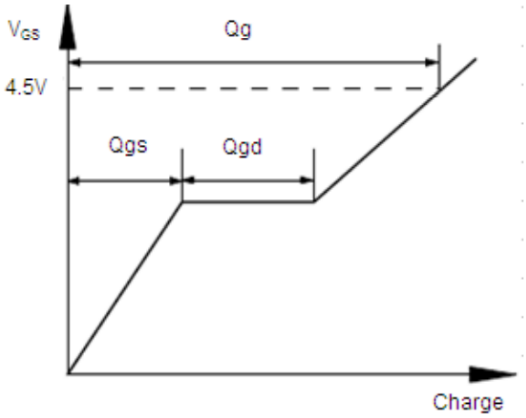
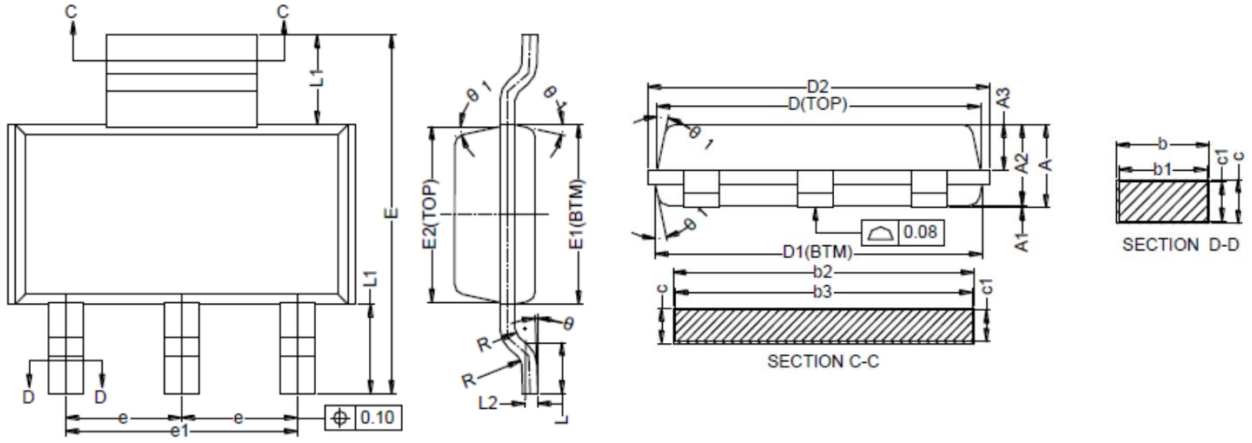


Fig 11. Gate Charge Waveform



PACKAGE INFORMATION

Dimension in SOT-223 (Unit: mm)



Symbol	Min.	Max.
A	-	1.80
A1	0.02	0.10
A2	1.50	1.70
A3	0.80	1.00
b	0.67	0.80
b1	0.66	0.76
b2	2.96	3.09
b3	2.95	3.05
c	0.30	0.35
c1	0.29	0.31
D	6.48	6.58
D1	6.55	6.65
D2	-	7.05
E	6.80	7.20
E1	3.40	3.60
E2	3.33	3.53
e	2.30(BSC)	
e1	4.60(BSC)	
L	0.80	1.20
L1	1.750(REF)	
L2	0.250(BSC)	
R	0.10	-
R1	0.10	-
θ	0°	8°
θ1	10°	14°

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