DESCRIPTION

The AM05N10 is available in SOT-223 packages.

V_{DSS}	$R_{DS(ON)}$@10(typ)	I_D
100V	125mΩ	5A

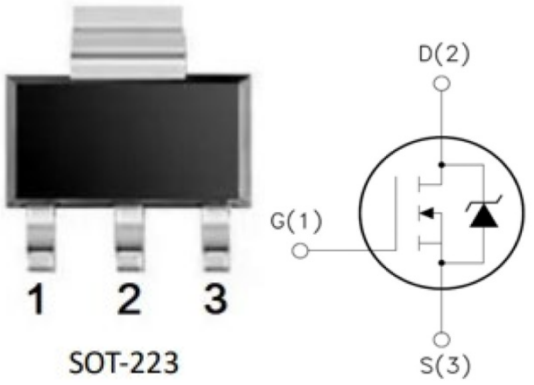
FEATURE

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

APPLICATION

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply
- Motor control

PIN DESCRIPTION



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

ORDERING INFORMATION

Package Type	Part Number	
SOT-223 SPQ:2,500pcs/Reel	N	AM05N10NR
		AM05N10NVR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

ABSOLUTE MAXIMUM RATINGS

T_A=25°C , unless otherwise noted

V_{DS}, Drain-Source Voltage	100V
V_{GS}, Gate-Source Voltage	±20V
I_D, Drain Current Continuous	5A
I_{DM}, Drain Current-Pulsed Drain (1)	21A
P_D, Maximum Power Dissipation	5W
T_J, T_{STG}, Operation Junction and Storage Temperature Range	-55℃~+150℃
$R_{\theta JA}$, Thermal Resistance, Junction-Ambient	41.7℃/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

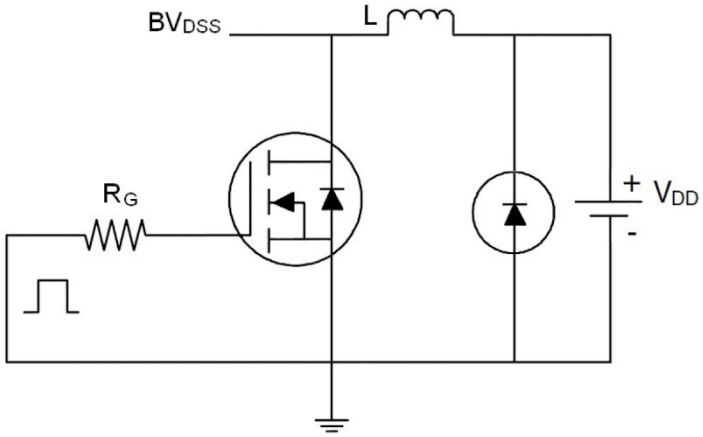
T_A = 25°C, unless otherwise noted.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	100	110	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=80V, V_{GS}=0V	-	-	800	nA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
On Characteristics(3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1	1.8	3	V
Drain-Source On-State Resistance	$R_{DS\ (on)}$	V_{GS}=10V, I_D=3A	-	125	145	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=2.9A	-	8	-	S
Dynamic Characteristics(4)						
Input Capacitance	C_{iss}	V_{DS}=25V,	-	210	-	PF
Output Capacitance	C_{oss}	V_{GS}=0V,	-	30	-	
Reverse Transfer Capacitance	C_{rss}	F=1.0MHz	-	14	-	
Switching Characteristics(4)						
Turn-on Delay Time	$t_{d(ON)}$	V_{DD}=50V,	-	15	-	nS
Turn-on Rise Time	t_r	I_D=5A,	-	3.4	-	
Turn-Off Delay Time	$t_{d(OFF)}$	V_{GS}=10V,	-	21	-	
Turn-Off Fall Time	t_f	R_G=2.5Ω, R_L=15Ω	-	3.1	-	
Total Gate Charge	Q_g	V_{DS}=50V,	-	4.5	-	nC
Gate-Source Charge	Q_{gs}	I_D=5A,	-	1.5	-	
Gate-Drain Charge	Q_{gd}	V_{GS}=10V	-	1.2	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage(3)	V_{SD}	V_{GS}=0V, I_S=6A	-	-	1.2	V
Diode Forward Current(2)	I_S		-	-	5	A

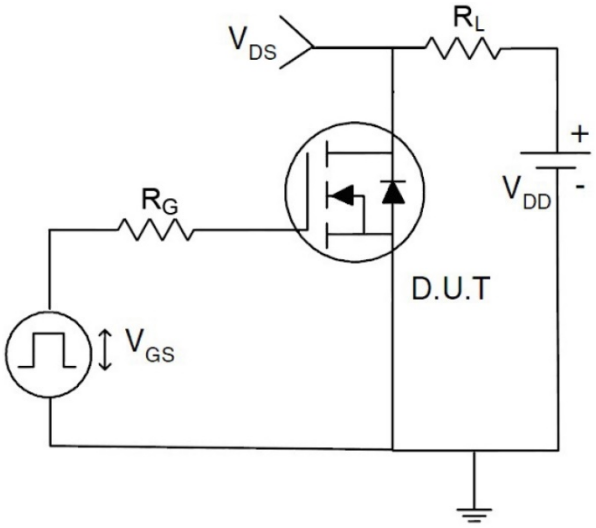
(1) Repetitive Rating: Pulse width limited by maximum junction temperature.
(2) Surface Mounted on FR4 Board, t ≤ 10 sec.
(3) Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
(4) Guaranteed by design, not subject to production

TEST CIRCUIT

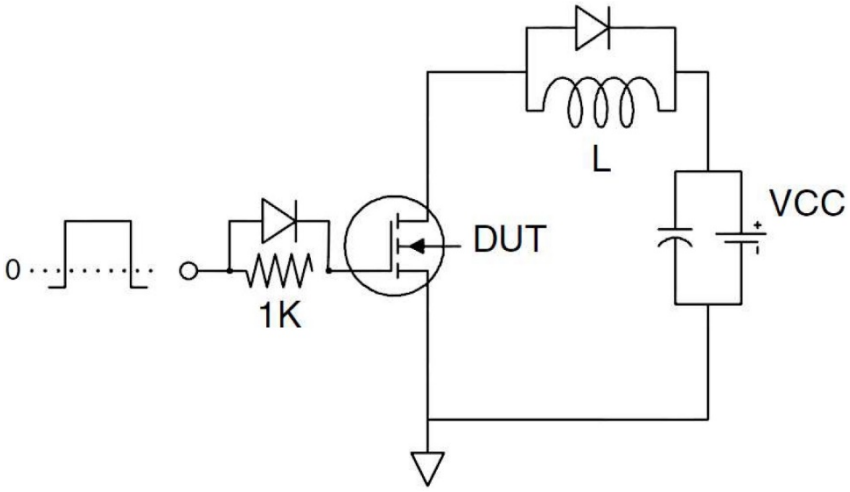
(1) EAS test circuit



(2) Gate charge test circuit



(3) Switch Time Test Circuit



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Power Dissipation

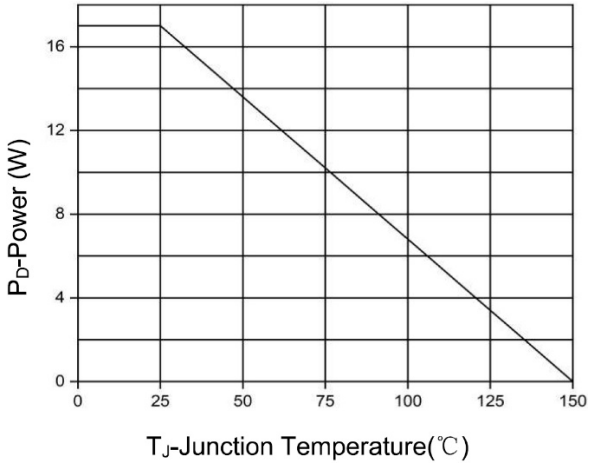


Fig 2. Drain Current

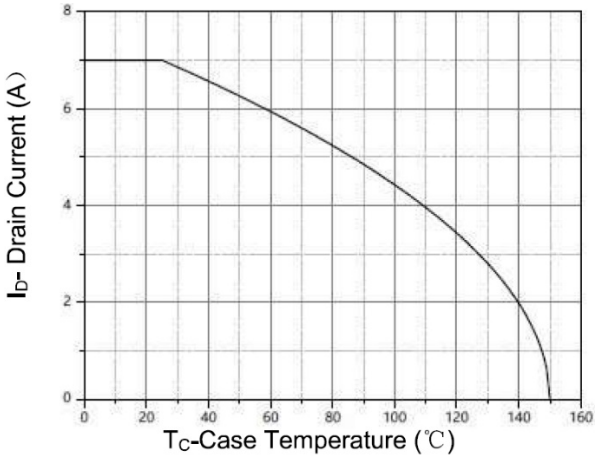


Fig 3. Output characteristics

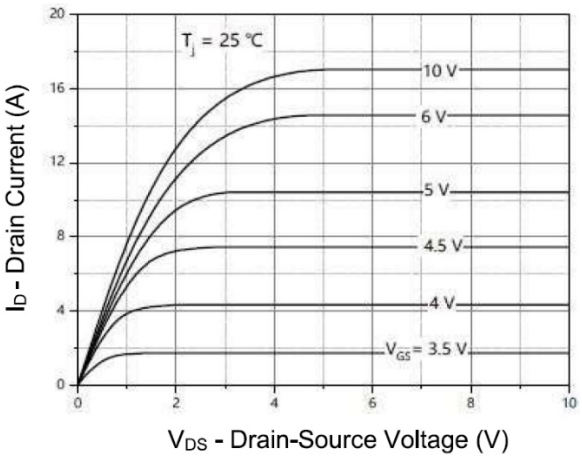


Fig 4. Drain-Source On-state resistance

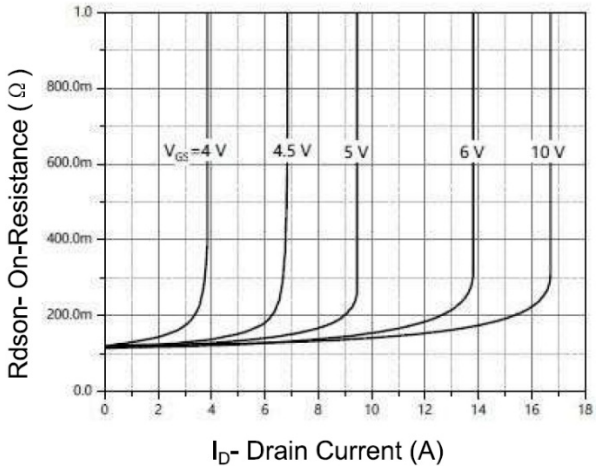


Fig 5. Drain-source breakdown voltage

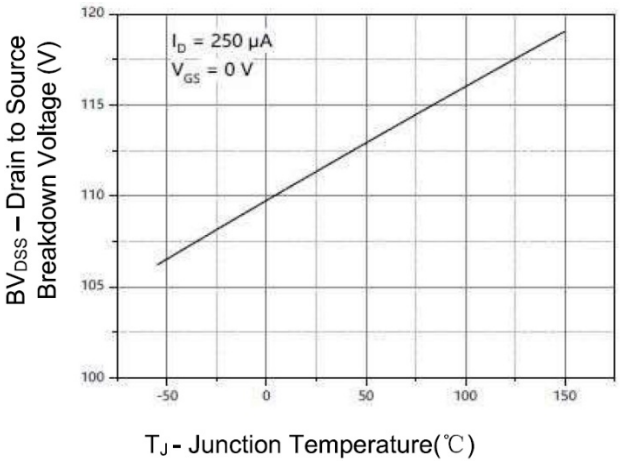


Fig 6. Transfer Characteristics

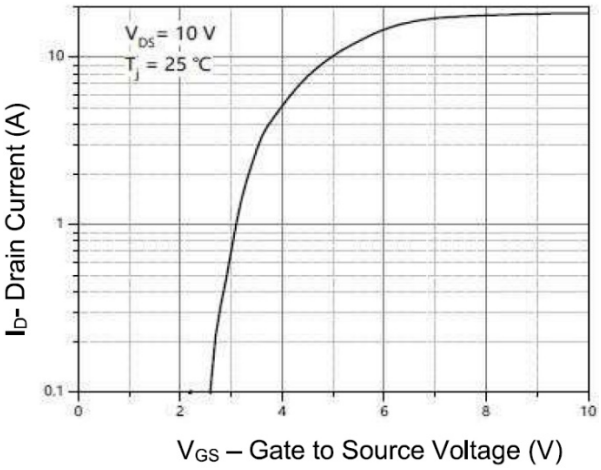


Fig 7. Drain-Source On-State Resistance

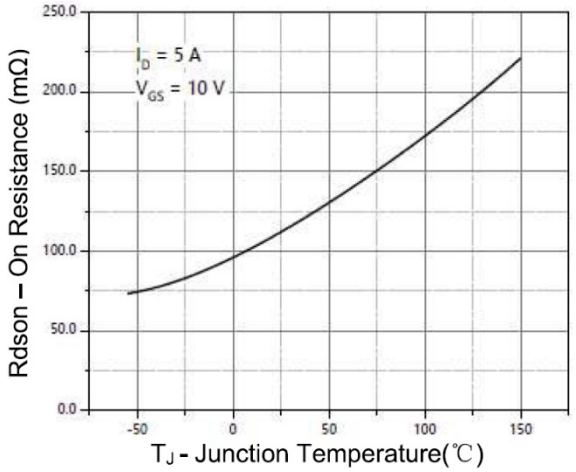


Fig 8. Gate Charge

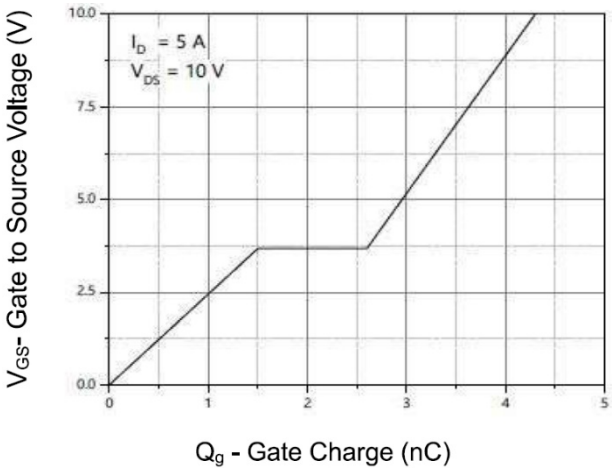


Fig 9. Capacitance vs Vds

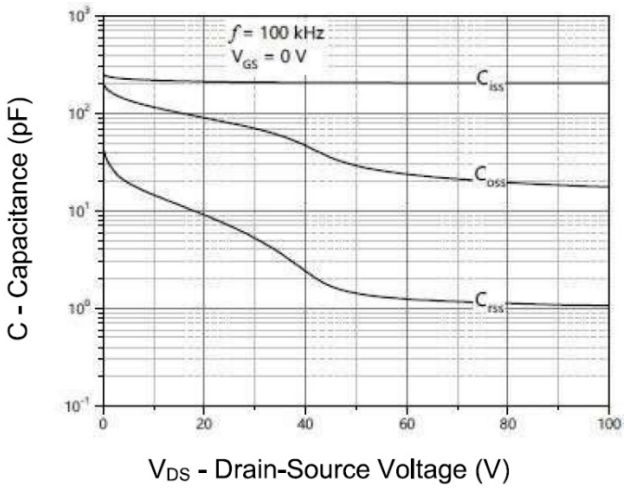


Fig 10. Safe Operation Area

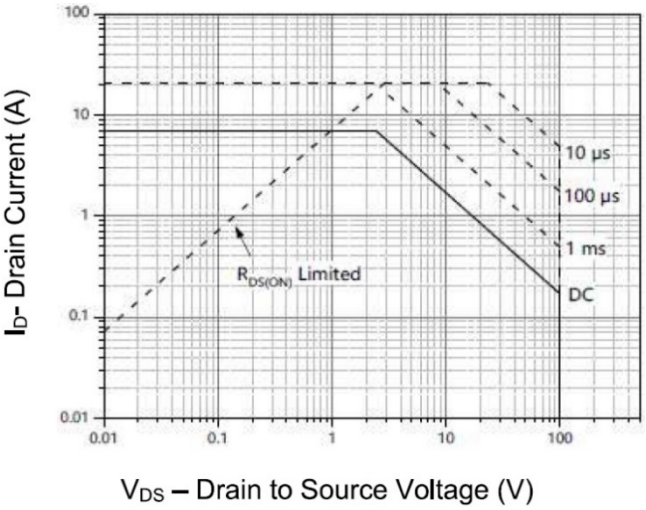
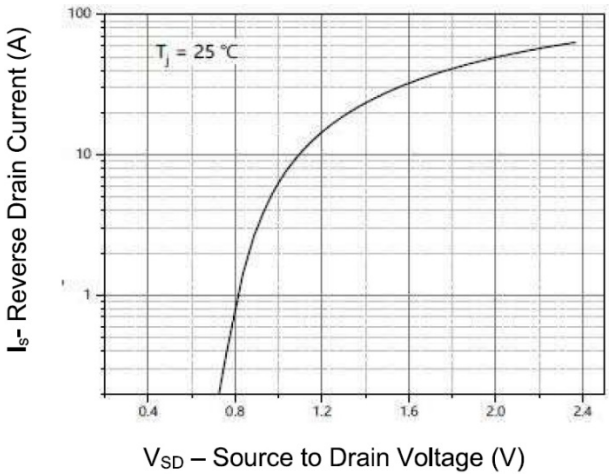
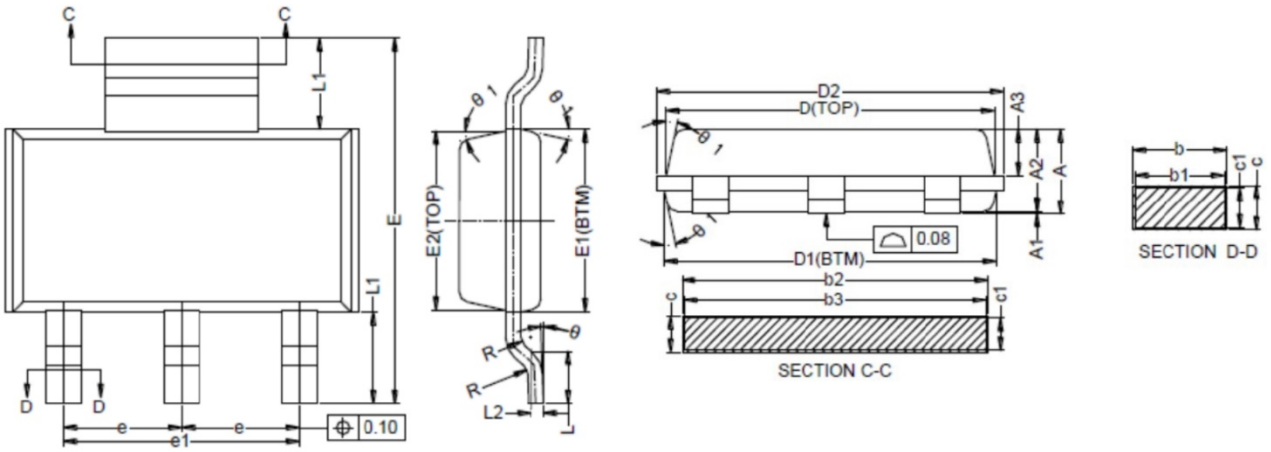


Fig 11. Source-Drain Diode Forward



PACKAGE INFORMATION

Dimension in SOT-223 (Unit: mm)



Symbol	Min.	Max.	Symbol	Min.	Max.
A	-	1.800	E	6.800	7.200
A1	0.020	0.100	E1	3.400	3.600
A2	1.500	1.700	E2	3.330	3.530
A3	0.800	1.000	e	2.300(BSC)	
B	0.670	0.800	e1	4.600(BSC)	
b1	0.660	0.760	L	0.800	1.200
b2	2.960	3.090	L1	1.750(BSC)	
b3	2.950	3.050	L2	0.250(BSC)	
c	0.300	0.350	R	0.100	-
c1	0.290	0.310	R1	0.100	-
D	6.480	6.580	θ	0°	8°
D1	6.550	6.650	θ1	10°	14°
D2	-	7.050			

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