DESCRIPTION

The AM10P06 is available in TO-252 Package

BVDSS	RDSON	ID
-60V	100mΩ	-10A

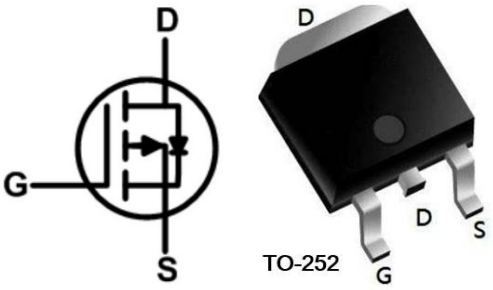
FEATURE

- Advanced high cell density Trench Technology
- $R_{DS(ON)typ.}$=100mΩ @ V_{GS}=-10V
- Excellent dv/dt effect decline
- Super Low Gate Charge

ORDERING INFORMATION

Package Type	Part Number	
TO-252 SPQ: 2,500pcs/Reel	D	AM10P06DR
		AM10P06DVR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

PIN DESCRIPTION



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

ABSOLUTE MAXIMUM RATINGS

T_A= 25°C, unless otherwise specified.

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current, V_{GS}@ -10V[1]	I_D@T_A = 25℃	I_D	-12	A
	I_D@T_C = 100℃		-7.8	
	I_D@T_A = 25℃		-3.5	
	I_D@T_A=70℃		-2.8	
Pulsed Drain Current (2)		I_{DM}	-25	A
Single Pulsed Avalanche Energy (3)		E_{AS}	20	mJ
Avalanche Current		I_{AS}	-20	A
Total Power Dissipation (4)	T_C=25℃	P_D	25	W
Total Power Dissipation (4)	T_A=25℃		2	W
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{STG}	-55 to 150	℃
THERMAL DATA				
Thermal Resistance Junction-ambient (1)		$R_{\theta JA}$	62	℃/W
Thermal Resistance Junction-Case (1)		$R_{\theta JC}$	5	℃/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 EAS data shows Max. rating. The test condition is V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-15A
(4) The power dissipation is limited by 150℃ junction temperature

ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = -250μA	-60	-	-	V
BV_{DSS} Temperature Coefficient	$\triangle BV_{DSS}$ /$\triangle T_J$	Reference to 25℃ , I_D=-1mA	-	-0.049	-	V/℃
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-48V, V_{GS}=0V	-	-	1	μA
		V_{DS}=-48V, V_{GS}=0V, T_J=150℃	-	-	5	
Gate-Source Leakage Current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
Gate-Threshold Voltage	$V_{GS\ (th)}$	V_{GS}=V_{DS}, I_D =-250uA	-1.0	-	-2.5	V
$V_{GS\ (th)}$ Temperature Coefficient	$\triangle V_{GS(th)}$		-	5.42	-	mV/℃
Static Drain-Source On-Resistance (2)	$R_{DS(ON)}$	V_{GS} = -10V, I_D = -8A	-	100	140	mΩ
		V_{GS} = -4.5V, I_D = -6A	-	115	190	
Forward Transconductance	g_{fs}	V_{DS}=-5V, I_D=-5A	-	5.8	-	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = -15V, V_{GS} =0V, f =1MHz	-	715	-	pF
Output Capacitance	C_{oss}		-	51	-	
Reverse Transfer Capacitance	C_{rss}		-	34	-	
Switching Characteristics						
Total Gate Charge (-4.5V)	Q_g	V_{DS} = -20V, V_{GS} = -4.5V, I_D= -5A	-	5.85	-	nC
Gate-Source Charge	Q_{gs}		-	2.9	-	
Gate-Drain Charge	Q_{gd}		-	1.8	-	
Turn-on Delay Time	$t_{d\ (ON)}$	V_{DD}=-12V, I_D=-5A, R_G=3.3Ω V_{GS}=-10V	-	10	-	nS
Turn-on Rise Time	t_r		-	17	-	
Turn-Off Delay Time	$t_{d\ (OFF)}$		-	22	-	
Turn-Off Fall Time	t_f		-	21	-	
Diode Characteristics						
Continuous Source Current (1)(5)	I_S	V_G=V_D=0V, Force Current	-	-	-9.5	A
Pulsed Source Current (2)(5)	I_{SM}		-	-	-24	A
Diode Forward Voltage (2)	V_{SD}	V_{GS}=0V , I_S=-1A , T_J=25℃	-	-	-1.2	V
Reverse Recovery Time	t_{rr}	I_F=-8A , dI/dt=100A/μs , T_J=25℃	-	10.2	-	nS
Reverse Recovery Charge	Q_{rr}		-	5.4	-	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%

(5) The data is theoretically the same as ID and IDM, in real applications, should be limited by total power dissipation.

TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Typical Output Characteristics

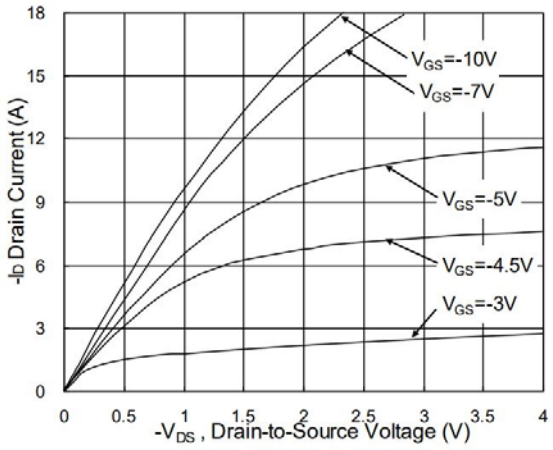


Fig 2. On-Resistance vs G-S Voltage

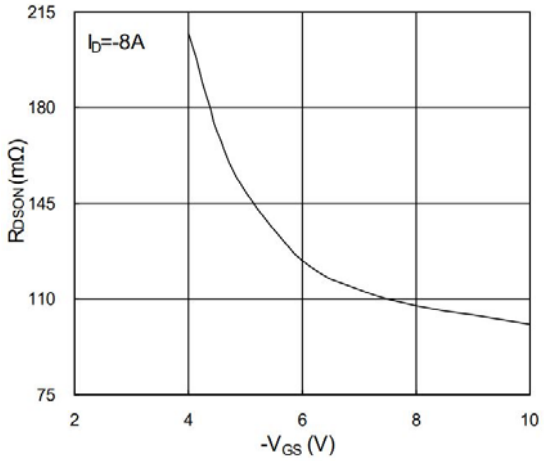


Fig 3. Forward Characteristics of Reverse

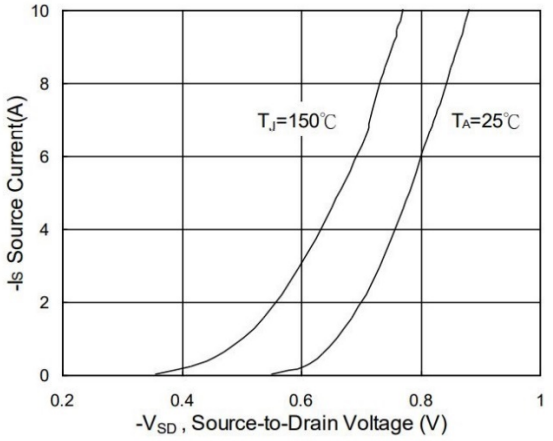


Fig 4. Gate-Charge Characteristics

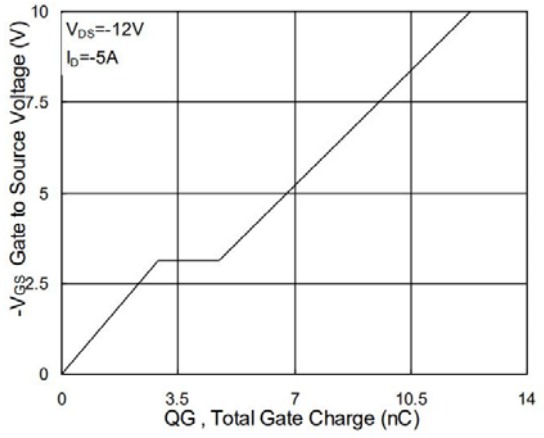


Fig 5. Normalized $V_{GS\,(th)}$ vs T_J

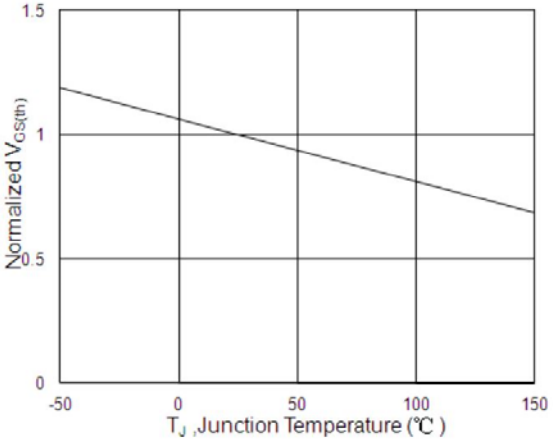


Fig 6. Normalized R_{DSON} vs T_J

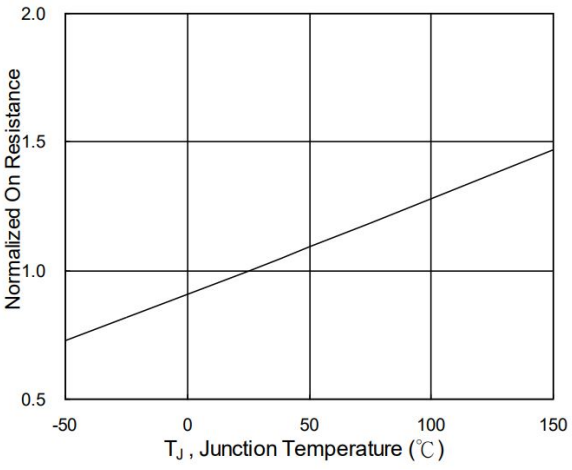


Fig 7. Capacitance

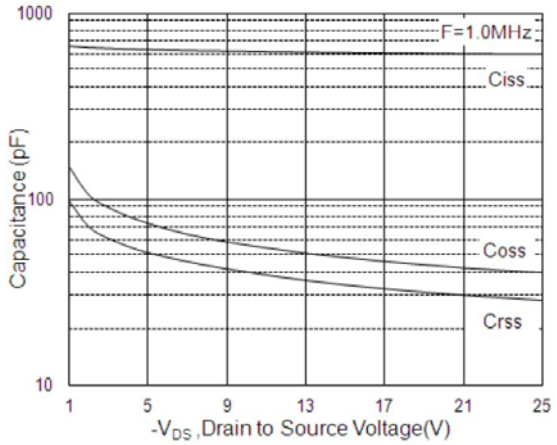


Fig 8. Safe Operating Area

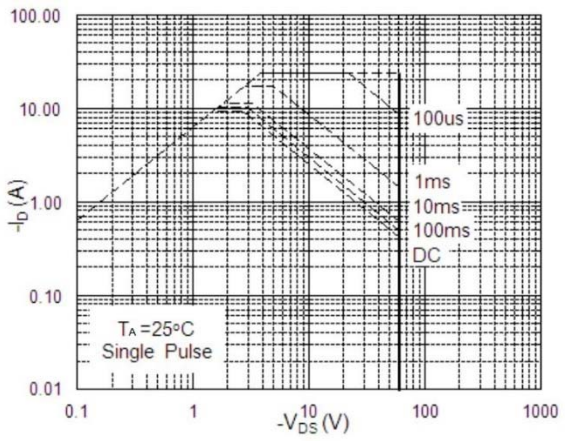


Fig 9. Normalized Maximum Transient Thermal Impedance

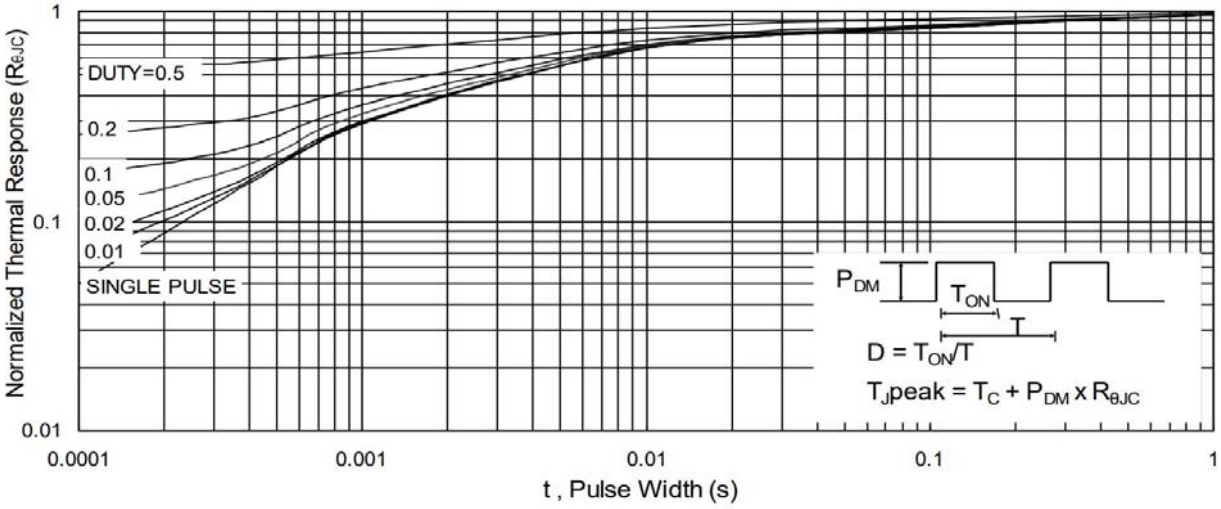


Fig 10. Switching Time Waveform

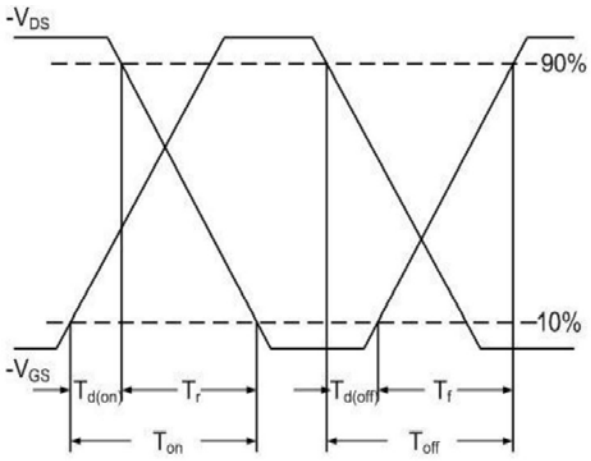
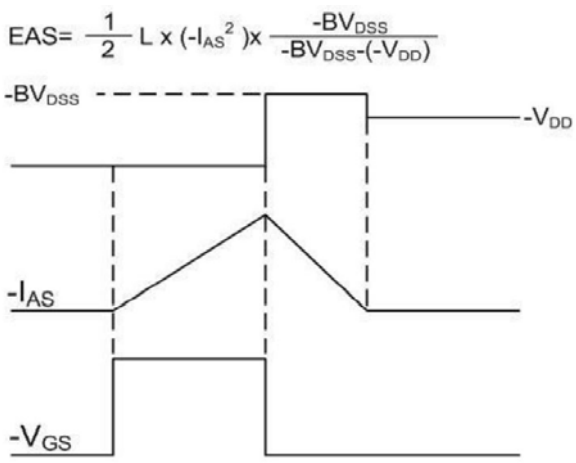
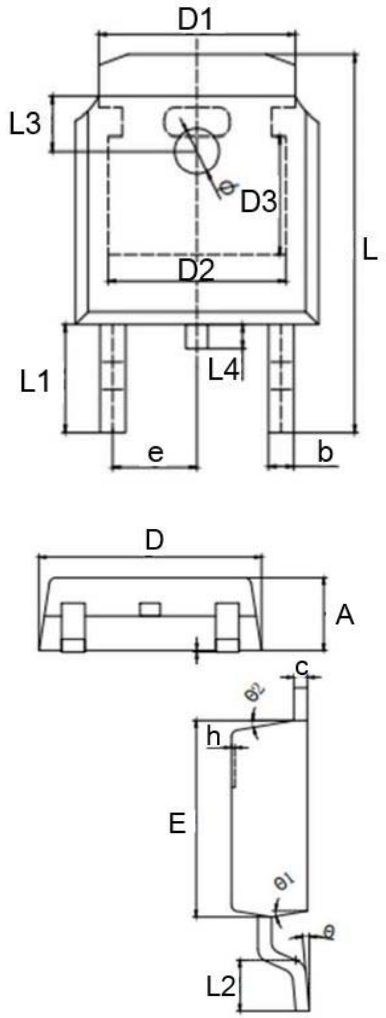


Fig 11. Unclamped Inductive Switching Waveform



PACKAGE INFORMATION

Dimension in TO-252 (Unit: mm)



Symbol	Min.	Max.
A	2.200	2.400
A1	0.000	0.127
b	0.640	0.740
c	0.460	0.580
D	6.500	6.700
D1	5.334REF	
D2	4.826REF	
D3	3.166REF	
E	6.000	6.200
e	2.286TYP	
h	0.000	0.200
L	9.900	10.30
L1	2.888REF	
L2	1.400	1.700
L3	1.600REF	
L4	0.600	1.000
Φ	1.100	1.300
θ	0°	8°
θ1	9°	
θ2	9°	

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