



DESCRIPTION

The AM10P06 is available in TO-252 Package

BVDSS	RDS(ON)	ID
-60V	100mΩ	-10A

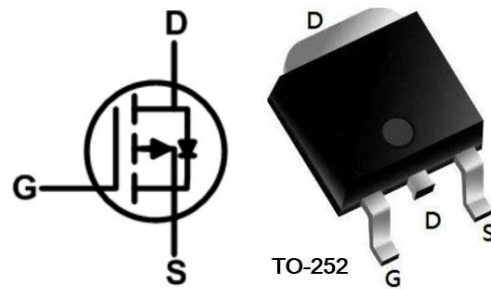
FEATURE

- Advanced high cell density Trench Technology
- $R_{DS(ON)typ.}=100m\Omega @ V_{GS}=-10V$
- 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°C	I _D	-12	A
	I _D @T _C = 100°C		-7.8	
	I _D @T _A = 25°C		-3.5	
	I _D @T _A = 70°C		-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°C	P _D	25	W
Total Power Dissipation ⁽⁴⁾	T _A =25°C		2	W
Junction Temperature		T _J	150	°C
Storage Temperature Range		T _{STG}	-55 to 150	°C
THERMAL DATA				
Thermal Resistance Junction-ambient ⁽¹⁾		R _{θJA}	62	°C/W
Thermal Resistance Junction-Case ⁽¹⁾		R _{θJC}	5	°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.

- (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°C 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	ΔBV _{DSS} / ΔT _J	Reference to 25°C , I _D =-1mA	-	-0.049	-	V/°C
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-48V, V _{GS} =0V	-	-	1	μA
		V _{DS} =-48V, V _{GS} =0V, T _J =150°C	-	-	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	ΔV _{GS(th)}		-	5.42	-	mV/°C
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°C	-	-	-1.2	V
Reverse Recovery Time	t _{rr}	I _F =-8A, di/dt=100A/μs, T _J =25°C	-	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 I_D and I_{DM}, in real applications, should be limited by total power dissipation.



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Typical Output Characteristics

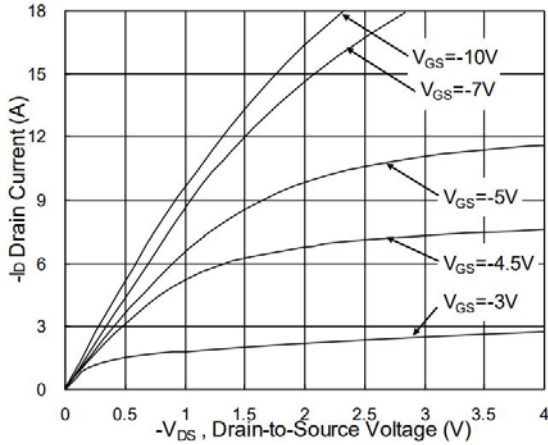


Fig 2. On-Resistance vs G-S Voltage

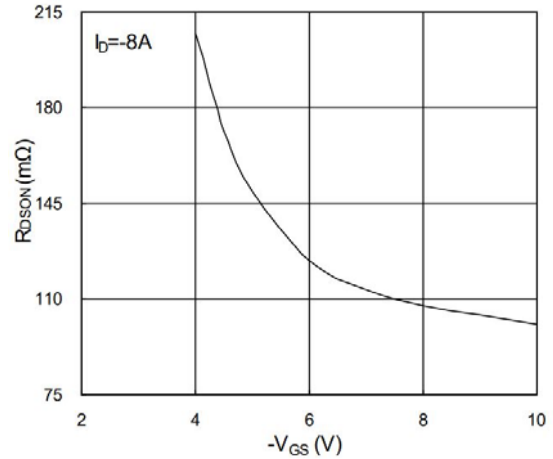


Fig 3. Forward Characteristics of Reverse

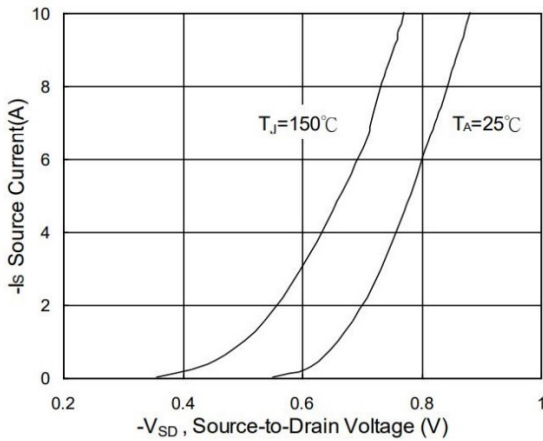


Fig 4. Gate-Charge Characteristics

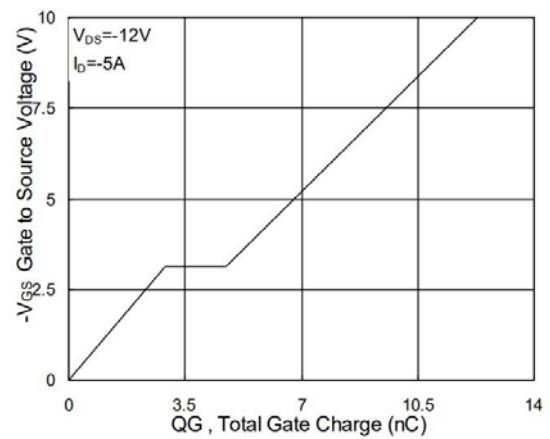


Fig 5. Normalized $V_{GS(th)}$ vs T_J

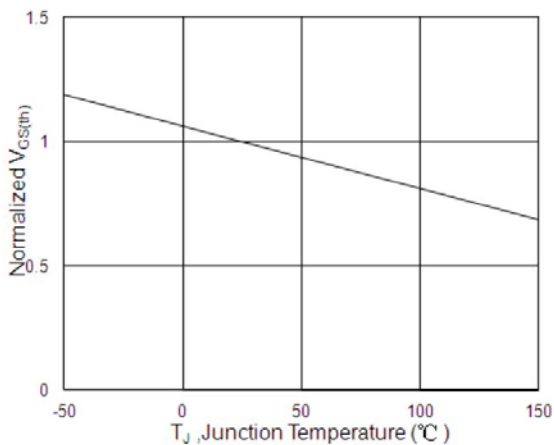


Fig 6. Normalized $R_{DS(on)}$ vs T_J

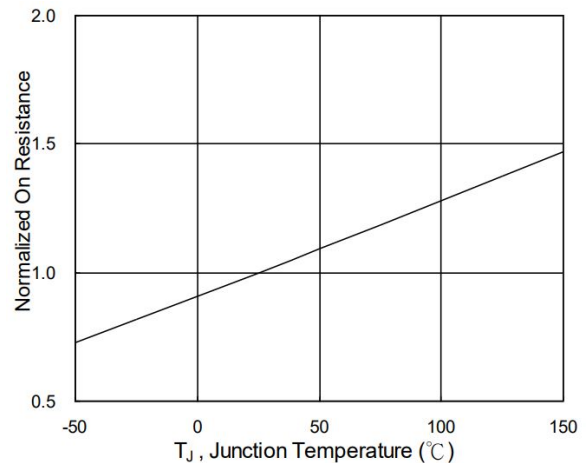




Fig 7. Capacitance

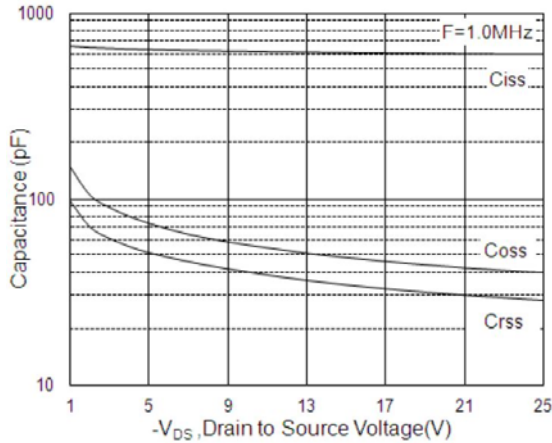


Fig 8. Safe Operating Area

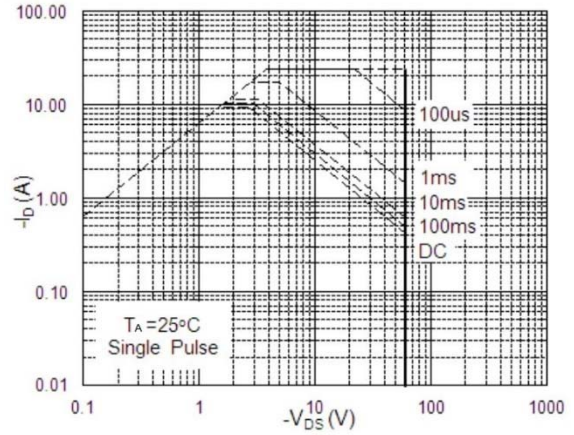


Fig 9. Normalized Maximum Transient Thermal Impedance

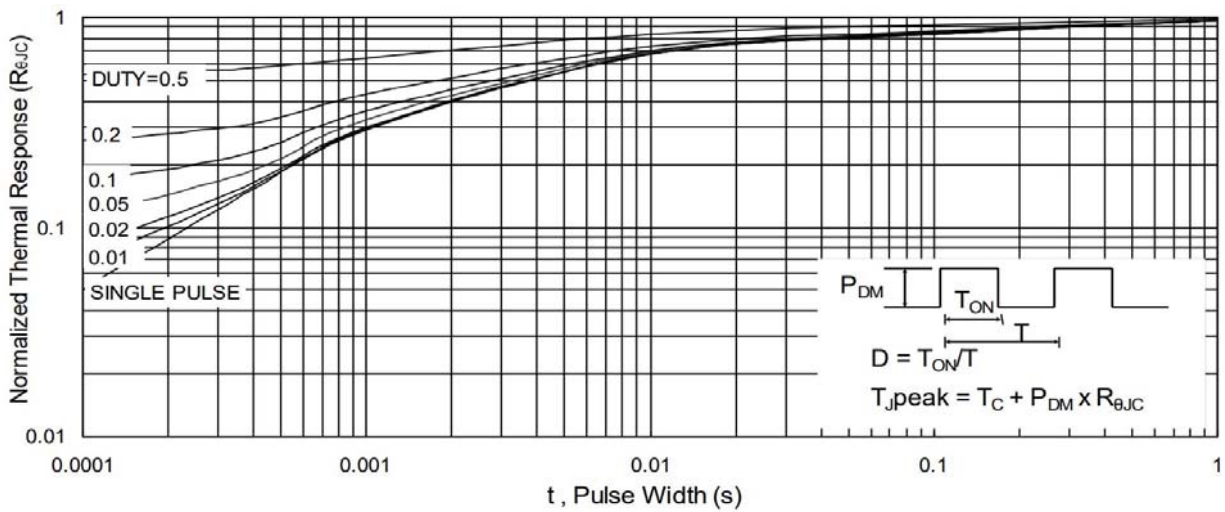


Fig 10. Switching Time Waveform

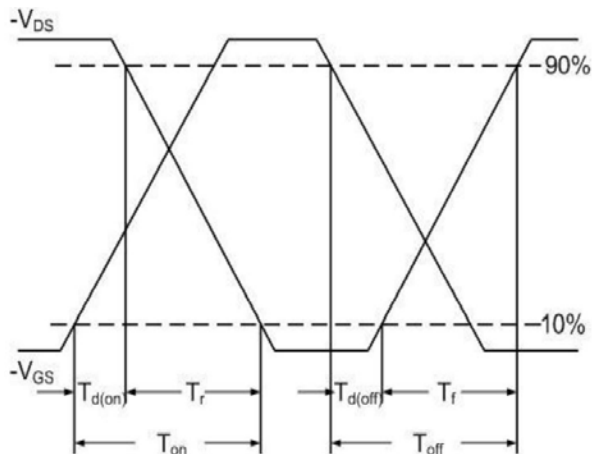
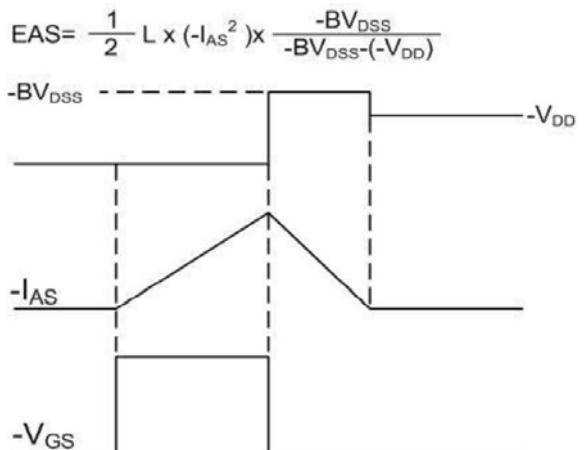


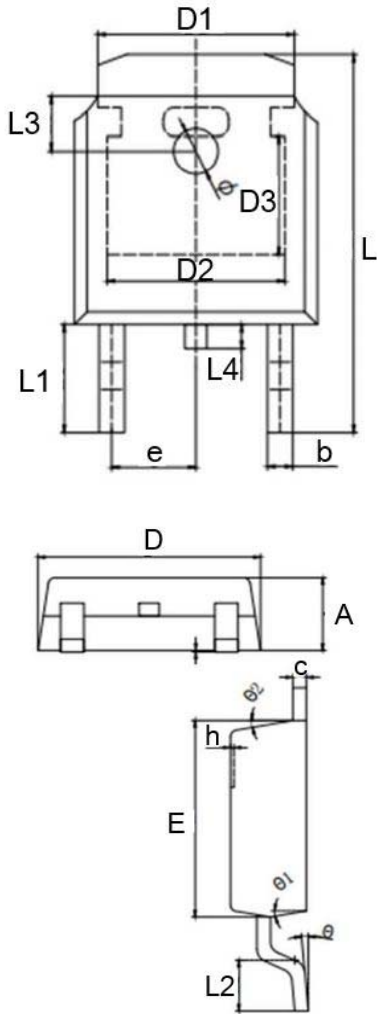
Fig 11. Unclamped Inductive Switching Waveform





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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