

**DESCRIPTION**

The AM100P04D is available in TO-252 Package.

VDSS	RDSON	ID
-40V	5.2mΩ	-100A

APPLICATIONS

- Load Switch
- PWM Application
- Power Management

ORDERING INFORMATION

Package Type	Part Number	
TO-252 SPQ: 2500pcs/Reel	D	AM100P04DR
Note	R: Tape & Reel	
AiT provides all RoHS products		

ABSOLUTE MAXIMUM RATINGS

T_J = 25°C, unless otherwise specified.

V _{DS} , Drain-to-Source Voltage	-40V	
V _{GS} , Gate Source Voltage	±20V	
I _D , Continuous Drain Current	T _C = 25°C	-100A
	T _C = 100°C	-70A
I _{DM} , Pulsed Drain Current ⁽¹⁾	-400A	
E _{AS} , Single Pulsed Avalanche Energy ⁽²⁾	576mJ	
P _D , Power Dissipation	89W	
R _{θJC} , Thermal Resistance, Junction to case	1.4°C/W	
R _{θJA} , Thermal Resistance from Junction to Ambient	56°C/W	
T _{STG} , Storage Temperature Range	-55°C ~ +150°C	
T _J , Junction Temperature Range	-55°C ~ +150°C	

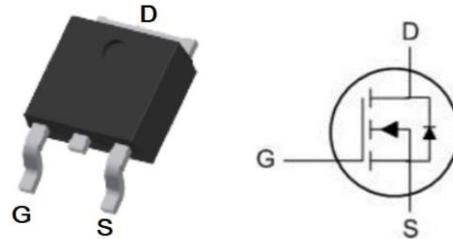
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

2. EAS condition: T_J=25°C, V_{DD}=-15V, V_G=-10V, I_{AS}=-48A R_G=25Ω, L=0.5mH

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.

FEATURE

- -40V, -100A
- R_{DS(ON)} Typ=5.2mΩ @ V_{GS} = -10V
- R_{DS(ON)} Typ=6.7mΩ @ V_{GS} = -4.5V
- Advanced Trench Technology
- High Power and current handing capability

PIN DESCRIPTION

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



ELECTRICAL CHARACTERISTICS

T_J = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-40	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-40V, V _{GS} =0V	-	-	-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V	-	-	±100	μA
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} = V _{GS} , I _D = -250μA	-1.0	-1.7	-2.5	V
Static Drain-Source ON-Resistance ⁽¹⁾	R _{DS(ON)}	V _{GS} = -10V, I _D = -20A	-	5.2	6.0	mΩ
		V _{GS} = -4.5V, I _D = -20A	-	6.7	8.3	
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = -20V, V _{GS} =0V, f=1MHZ	-	6638	-	pF
Output Capacitance	C _{oss}		-	545	-	
Reverse Transfer Capacitance	C _{rss}		-	345	-	
Gate resistance	R _g	V _{DS} = 0V, V _{GS} =0V, f=1MHZ	-	2.2	-	Ω
Switching Characteristic						
Turn-On Delay Time	t _{d(on)}	V _{DS} =-20V, I _D =-20A R _G =3Ω, V _G =-10V	-	16	-	ns
Turn-On Rise Time	t _r		-	17	-	
Turn-Off Delay Time	t _{d(off)}		-	68	-	
Turn-Off Fall Time	t _f		-	31	-	
Total Gate Charge	Q _g	V _{DS} = -20V , I _D =-20A V _{GS} =-10V	-	118	-	nC
Gate-Source Charge	Q _{gs}		-	13	-	
Gate-Drain Charge	Q _{gd}		-	22	-	
Drain-Source Diode Characteristics and Max Ratings						
Drain to Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =-20A, T _J = 25°C	-	-	-1.2	V
Diode Forward current	I _S	T _C = 25°C	-	-	-100	A
Body Diode Reverse Recovery Time	T _{rr}	IF = -20A, T _J = 25°C	-	24	-	ns
Body Diode Reverse Recovery Charge	Q _{rr}	di/dt = 100A/us	-	140	-	nC

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: T_J=25oC, V_{DD}=-15V, V_G=-10V, I_{AS}=-48A, R_G = 25Ω, L=0.5mH
3. Pulse Test: Pulse Width ≤ 300us, Duty Cycle ≤ 0.5%.



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Output Characteristics

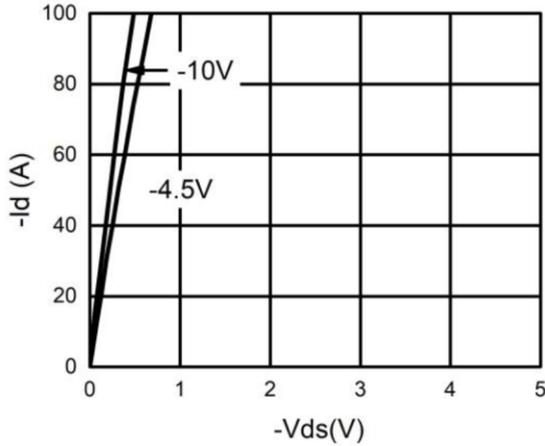


Fig 2. Transfer Characteristics

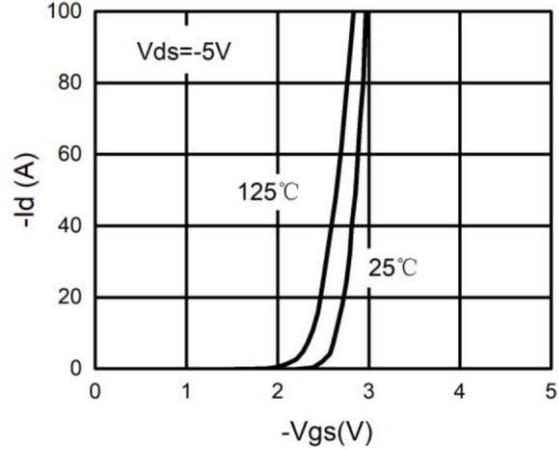


Fig 3. Power Dissipation

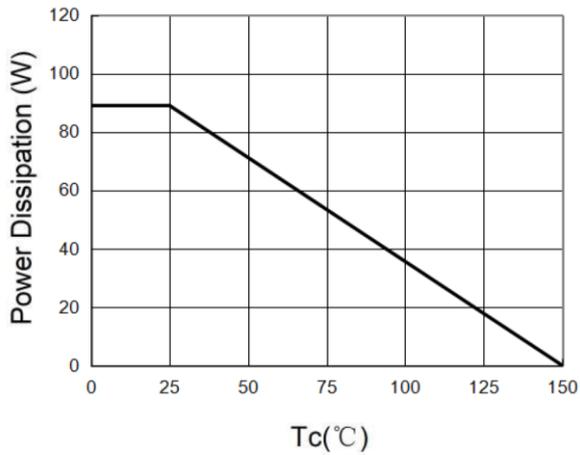


Fig 4. Drain Current

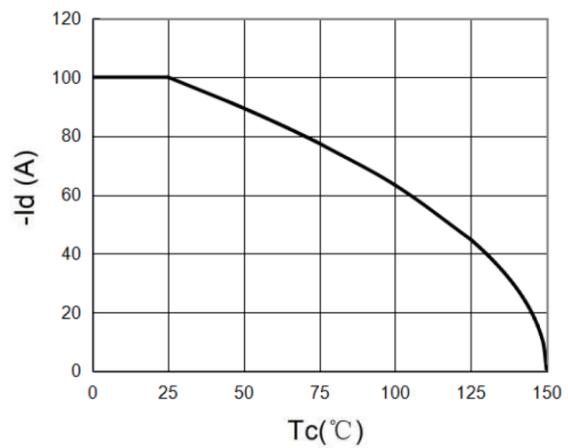


Fig 5. BV_{DSS} vs Junction Temperature

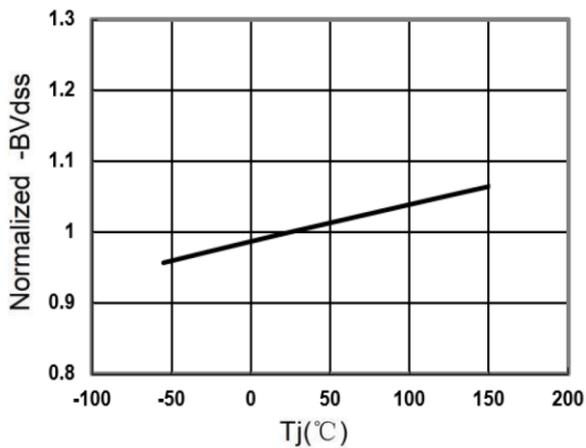


Fig 6. $R_{DS(on)}$ vs Junction Temperature

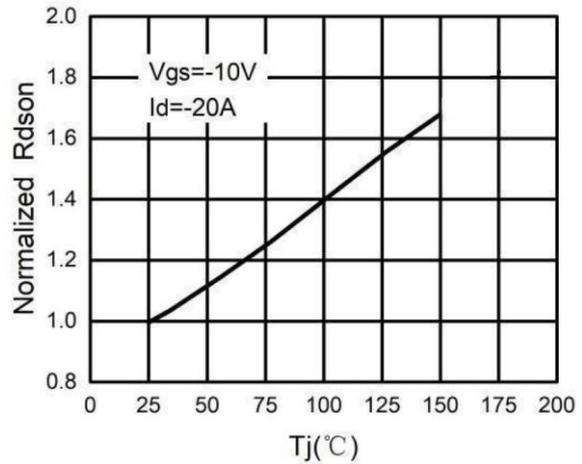




Fig 7. Gate-Charge Characteristics

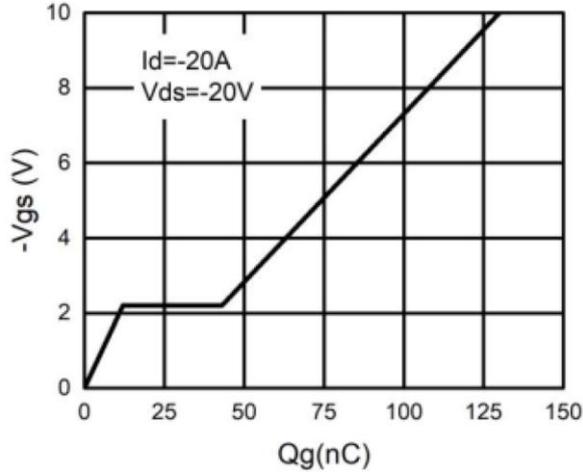


Fig 8. Capacitance

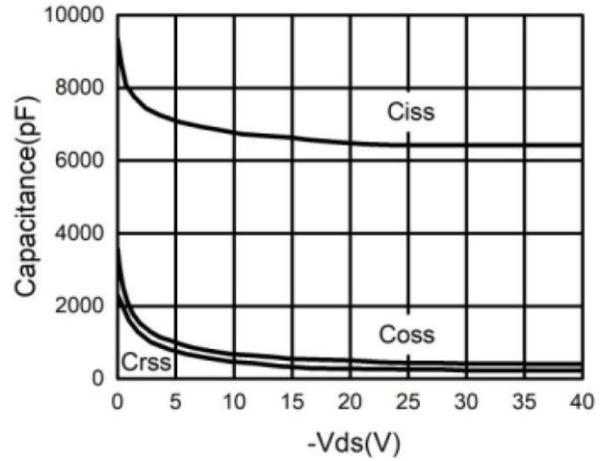


Fig 9. Body-Diode Characteristics

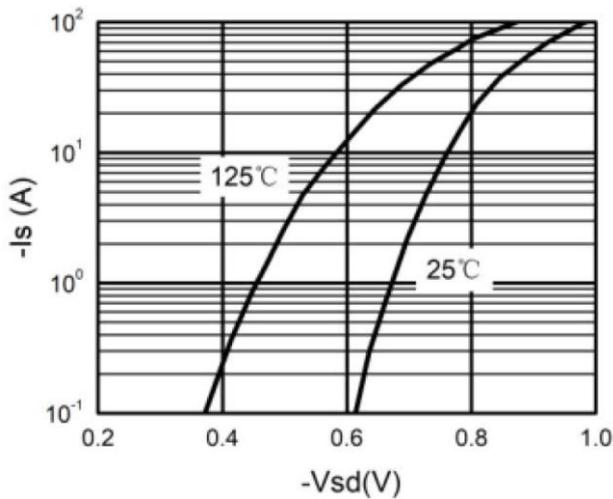


Fig 10. Maximum Safe Operating Area

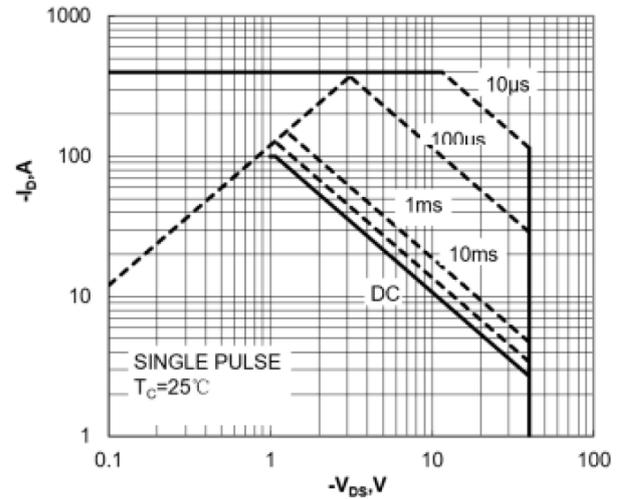


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case

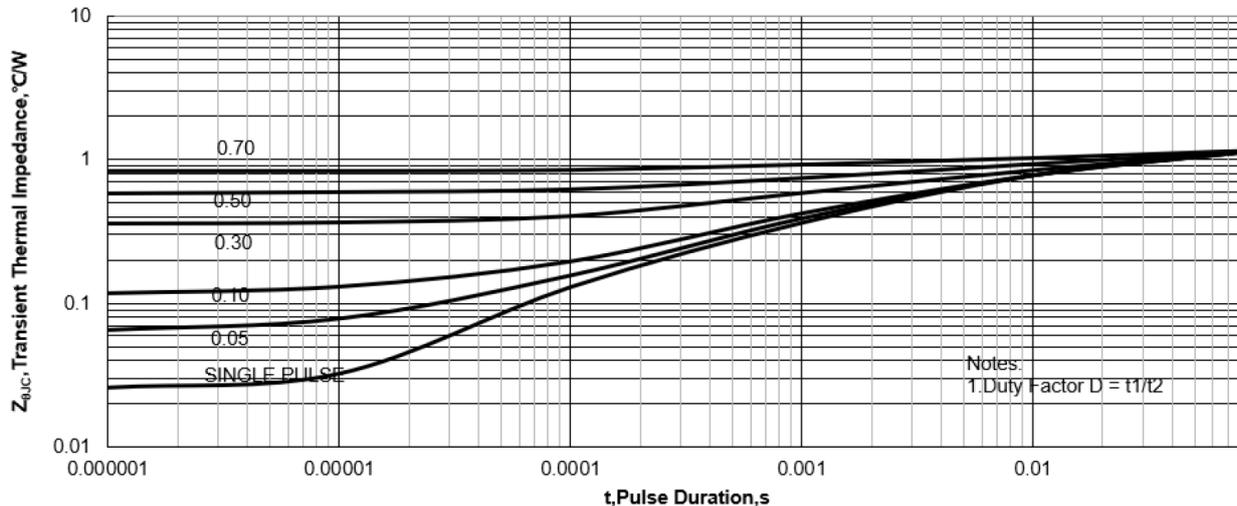




Fig 12. E_{AS} Test Circuit

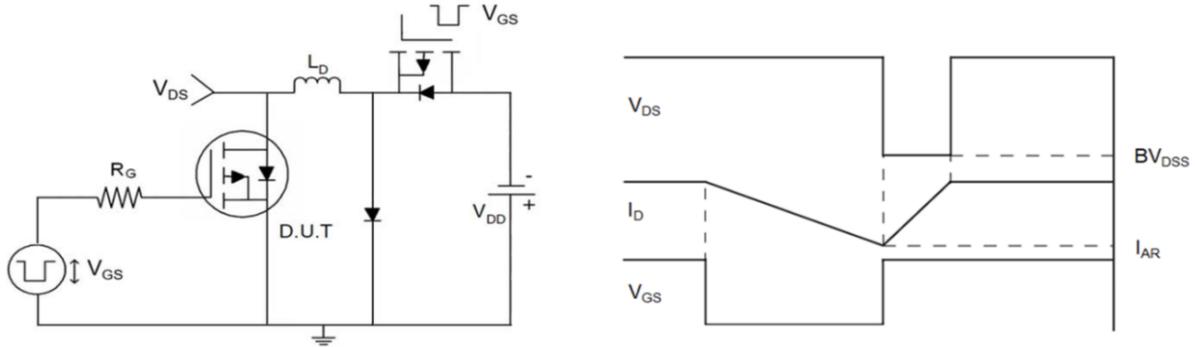


Fig 13. Gate Charge Test Circuit

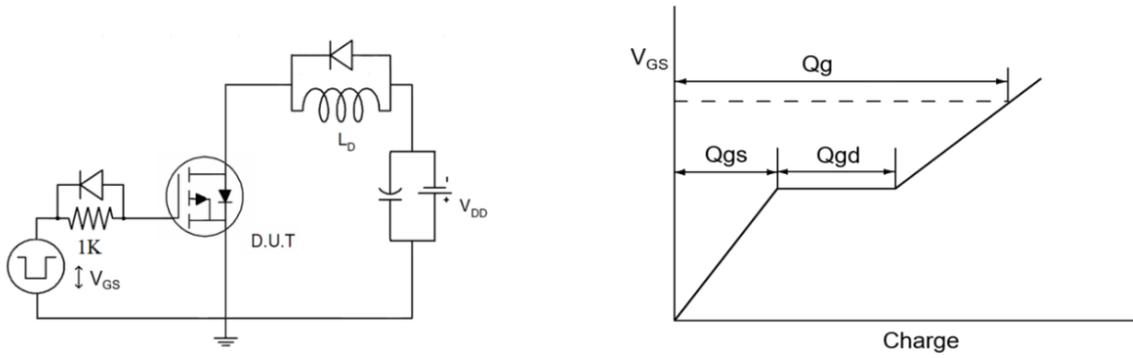
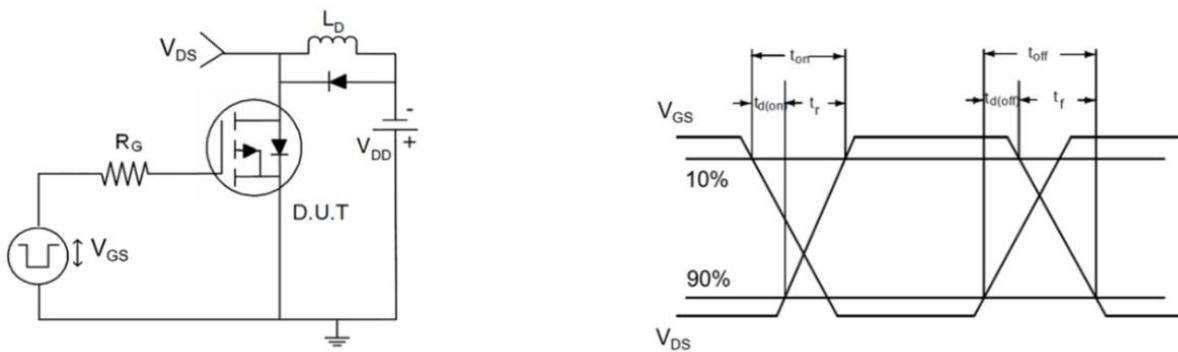


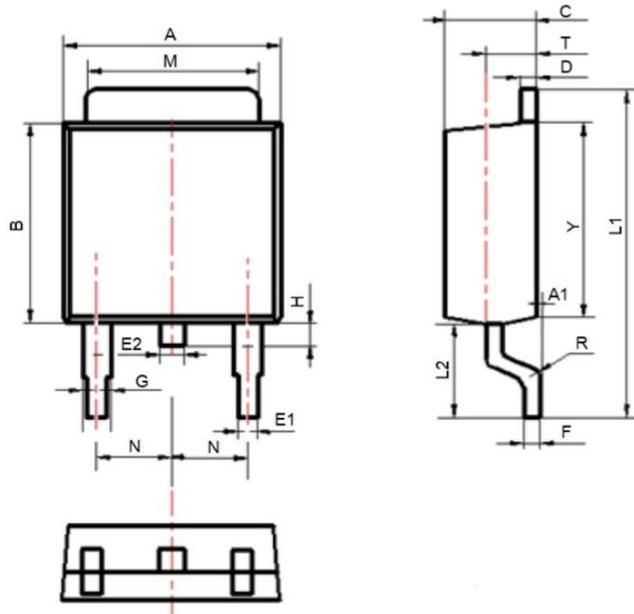
Fig 14. Switch Time Test Circuit





PACKAGE INFORMATION

Dimension in TO-252 (Unit: mm)



SYMBOL	MIN	MAX
A	6.300	6.900
A1	0	0.130
B	5.700	6.300
C	2.100	2.500
D	0.300	0.600
E1	0.600	0.900
E2	0.700	1.000
F	0.300	0.600
G	0.700	1.200
L1	9.600	10.50
L2	2.700	3.100
H	0.600	1.000
M	5.100	5.500
N	2.090	2.490
R	0.300	0.300
T	1.400	1.600
Y	5.100	6.300



IMPORTANT NOTICE

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