

**DESCRIPTION**

The AM700R500D is available in TO-252 Package.

VDSS	RDSON	ID
700V	500mΩ	8A

APPLICATIONS

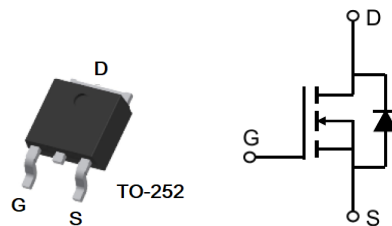
- SMPS
- Adapter
- LED lighting
- TV Power Supply
- Solar Inverter

ORDERING INFORMATION

Package Type	Part Number	
TO-252 SPQ: 2,500pcs/Reel	D	AM70R500DVR
Note	R: Tape & Reel V: Halogen free Package	
AiT provides all RoHS products		

FEATURE

- 700V, 8A
- $R_{DS(ON)}$ Typ.= 500mΩ @ $V_{GS} = 10V$
- Low FOM $R_{DS(ON)} \times Q_G$
- Extremely Low Losses Due to Very Low E_{on} and E_{off}
- Qualified for Industrial Grade Applications According to JEDEC
- Excellent Stability and Uniformity

PIN DESCRIPTION

Pin #	Symbol	Function
1	G	Gate
2,4	D	Drain
3	S	Source

ABSOLUTE MAXIMUM RATINGS

$T_J = 25^\circ\text{C}$, unless otherwise specified.

V_{DS} , Drain-to-Source Voltage		700V
V_{GS} , Gate Source Voltage		$\pm 30V$
I_D , Continuous Drain Current ⁽¹⁾	$T_C = 25^\circ\text{C}$	8A
	$T_C = 100^\circ\text{C}$	5A
I_{DM} , Pulsed Drain Current ⁽²⁾		18A
E_{AS} , Avalanche Energy, Single Pulse ⁽³⁾		61.25mJ
P_D , Power Dissipation	$T_C = 25^\circ\text{C}$	80W
$R_{\theta JC}$, Thermal Resistance, Junction-to-Case		1.6°C/W
$R_{\theta JA}$, Thermal Resistance, Junction-to-Ambient		60°C/W
T_{STG} , Storage Temperature Range		$-55^\circ\text{C} \sim +150^\circ\text{C}$
T_J , Junction Temperature Range		$-55^\circ\text{C} \sim +150^\circ\text{C}$

**ELECTRICAL CHARACTERISTICS**T_J = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	700	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 650V, V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±30V, V _{DS} =0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} = V _{GS} , I _D = 250μA	3	3.5	4	V
Static Drain-Source ON-Resistance *	R _{DS(ON)}	V _{GS} = 10V, I _D = 2.5A	-	500	600	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 50V, V _{GS} =0V, f=1.0MHZ	-	368	-	pF
Output Capacitance	C _{oss}		-	85	-	
Reverse Transfer Capacitance	C _{rss}		-	4.5	-	
Total Gate Charge	Q _g	V _{DD} = 400V , I _D =3A V _{GS} =0V ~ -10V	-	12	-	nC
Gate-Source Charge	Q _{gs}		-	3.5	-	
Gate-Drain Charge	Q _{gd}		-	2.5	-	
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	V _{DD} = 400V, I _D = 3A R _G =10Ω, V _{GS} = 15V,	-	23	-	ns
Turn-On Rise Time	t _r		-	5.9	-	
Turn-Off Delay Time	t _{d(off)}		-	43	-	
Turn-Off Fall Time	t _f		-	6.5	-	
Diode Recovery Characteristics						
Peak Reverse Recovery Current	I _{rrm}	-	-	15.8	-	A
Drain to Source Diode Forward Voltage	V _{SD}	V _R =400V	-	-	1.3	V
Body Diode Reverse Recovery Time	trr	I _F = 3A	-	21.5	-	ns
Body Diode Reverse Recovery Charge	Q _{rr}	diF/dt = 100A/μs	-	1.6	-	μC

Notes:

1. The max drain current rating is junction temperature limited
2. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
3. EAS condition: Starting T_J=25°C, V_{DD}=100V, V_G=10V, R_G=25ohm, L=10mH, I_{AS}=3.5A
4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Typical Output Characteristics

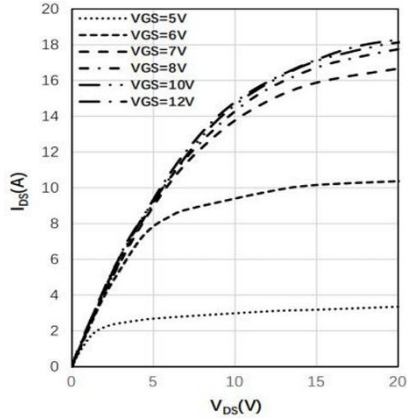


Fig 2. Typical Transfer Characteristics

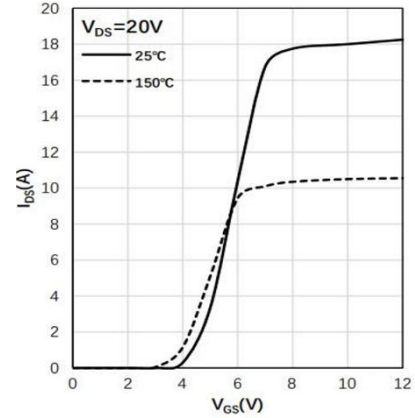


Fig 3. Typical Diode V_{SD} vs. I_{SD} Characteristics

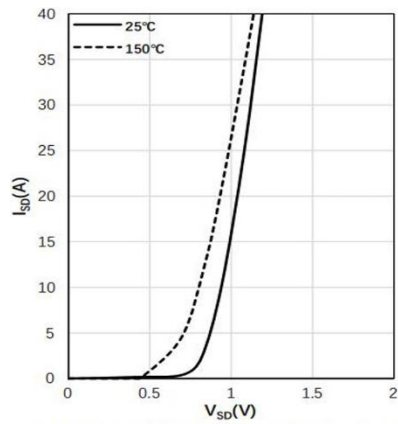


Fig 4. Body Diode Characteristics

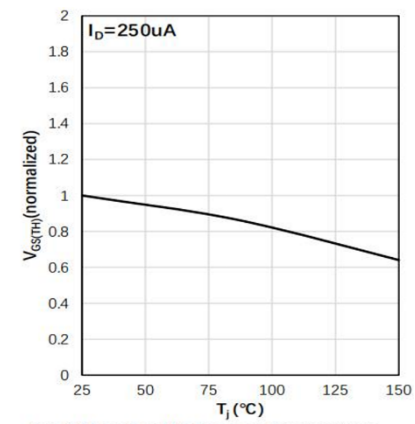


Fig 5. Gate Charge Characteristics

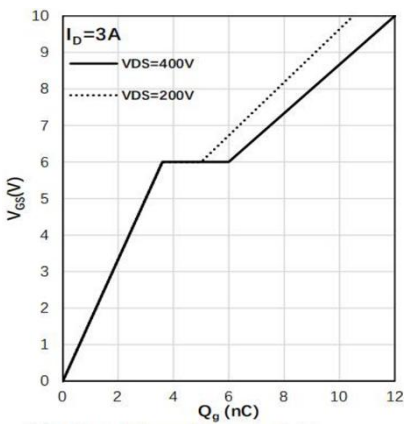


Fig 6. Typical Capacitance

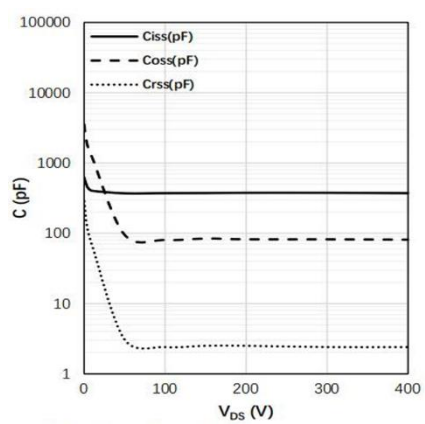




Fig 7. Breakdown Voltage vs. Temperature Characteristics

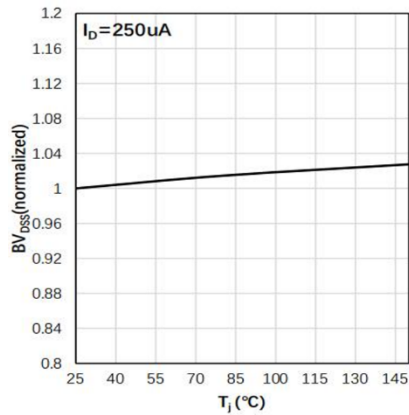


Fig 8. On-Resistance vs. Temperature Characteristics

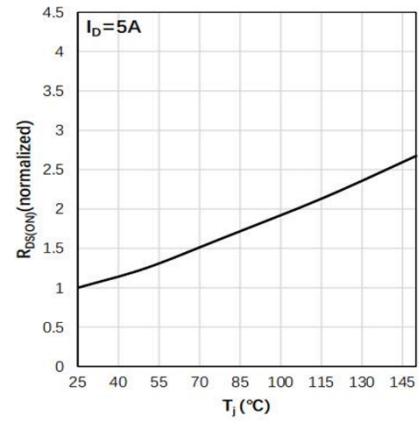


Fig 9. Power Dissipation Characteristics

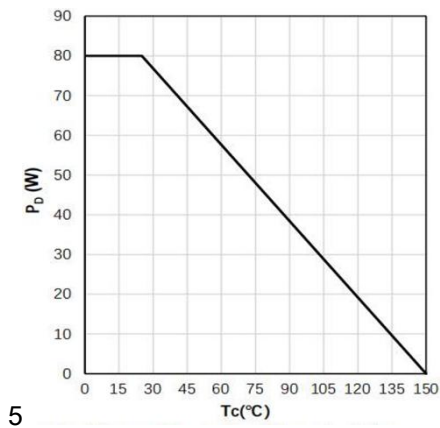


Fig 10. Drain Current vs. Temperature Characteristics

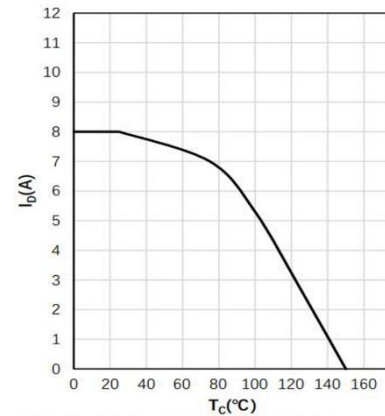


Fig 11. Safe Operating Area

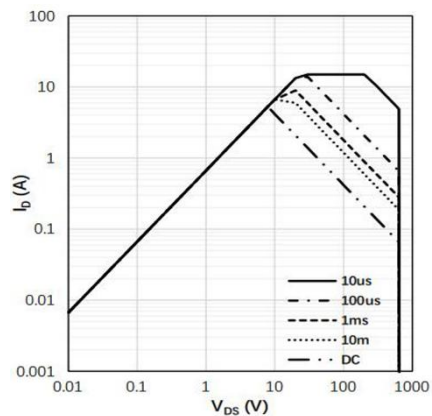


Fig 12. Transient Thermal Impedance

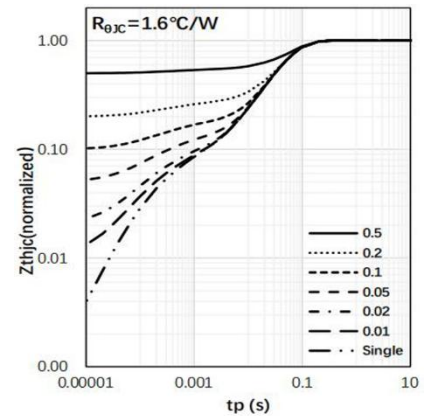




Fig 13. Gate Charge Test Circuit

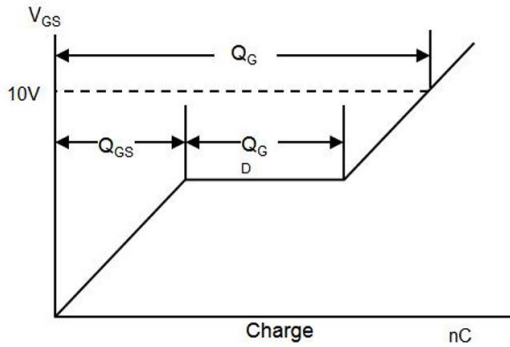
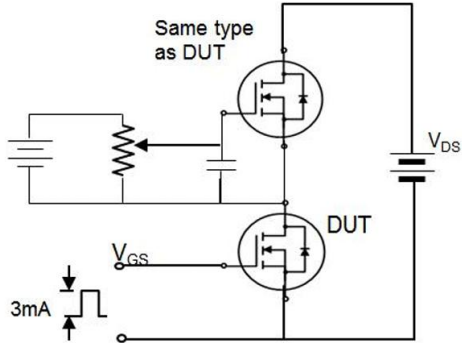


Fig 14. Resistive Switching Test Circuit & Waveform

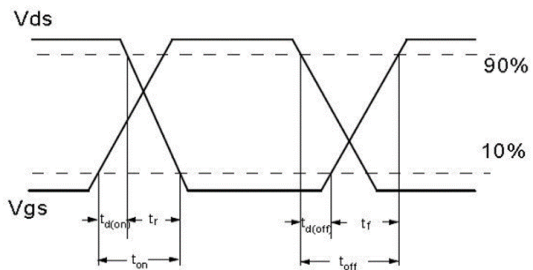
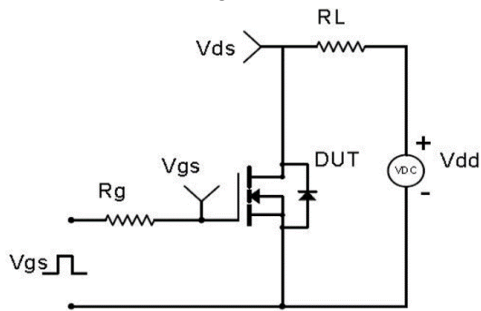


Fig 15. Unclamped Inductive Switching Test Circuit & Waveform

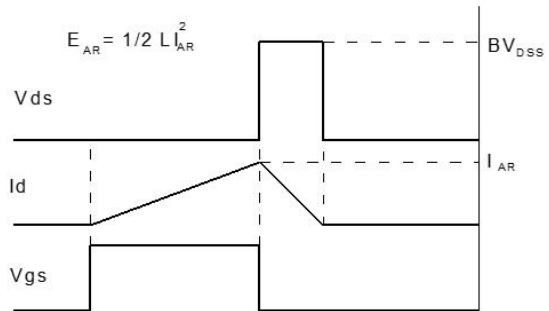
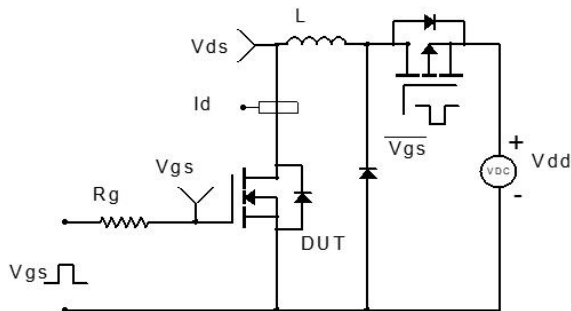
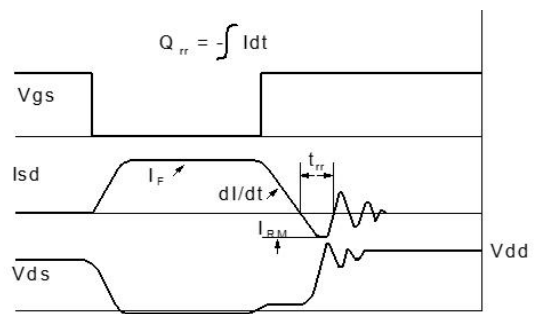
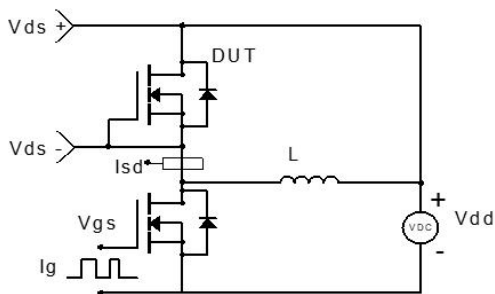
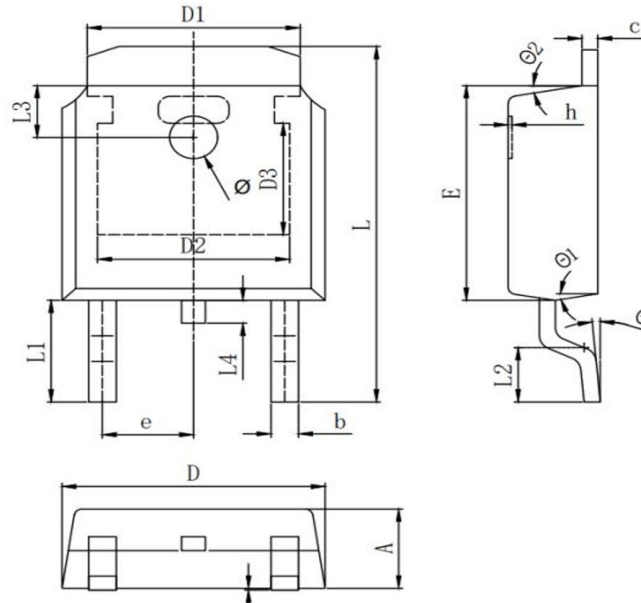


Fig 16. Diode Recovery Test Circuit & Waveform



**PACKAGE INFORMATION**

Dimension in TO-252 (Unit: mm)



Symbol	Millimeters	
	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	5.334 REF.	
D2	4.826 REF.	
D3	3.166 REF.	
E	6.000	6.200
e	2.286 TYP.	
h	0.000	0.200
L	9.900	10.300
L1	2.888 REF.	
L2	1.400	1.700
L3	1.600 REF.	
L4	0.600	1.000
Φ	1.100	1.300
θ	0°	8°
θ1	9° TYP.	
θ2	9° TYP.	

**IMPORTANT NOTICE**

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