

**DESCRIPTION**

The AM60N03 is available in TO-252 package.

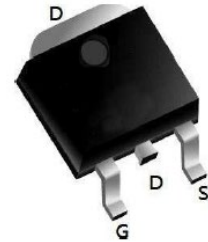
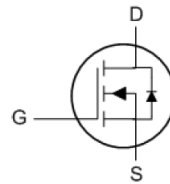
BVDSS	RDSON	ID
30V	6.5mΩ	60A

ORDERING INFORMATION

Package Type	Part Number	
TO-252 SPQ: 2,500pcs/Tube	D	AM60N03DR
		AM60N03DVR
Note	V: Halogen free Package R: Tape & Tube	
AiT provides all RoHS products		

FEATURE

- Super Low Gate Charge
- $R_{DS(ON), typ.} = 6.5m\Omega @ V_{GS} = 10V$
- Excellent Cdv/dt effect decline

PIN DESCRIPTION

TO-252

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

ABSOLUTE MAXIMUM RATINGS

V_{DS} , Drain-Source Voltage	30V
V_{GS} , Gate-Source Voltage	±20V
$I_D @ T_C = 25^\circ C$, Continuous Drain Current, $V_{GS} @ 10V^{(1)}$	60A
$I_D @ T_C = 100^\circ C$, Continuous Drain Current, $V_{GS} @ 10V^{(1)}$	33A
I_{DM} , Pulsed Drain Current ⁽²⁾	198A
EAS, Single Pulse Avalanche Energy ⁽³⁾	36mJ
I_{AS} , Avalanche Current	53.8A
$P_D @ T_C = 25^\circ C$, Total Power Dissipation	32.5W
T_{STG} , Storage Temperature Range	-55°C~+175°C
T_J , Operating Junction Temperature Range	-55°C~+175°C
$R_{\theta JC}$, Thermal Resistance Junction-Case ⁽¹⁾	3.56°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) Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

(2) EAS condition: $T_J = 25^\circ C$, $V_{DD} = 15V$, $V_G = 10V$, $R_G = 25\Omega$, $L = 0.5mH$, $I_{AS} = 12A$

(3) Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 0.5%

**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	30	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	-	-	1.0	μA
Gate to Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
Static Drain-Source On-Resistance ⁽³⁾	R _{DS(on)}	V _{GS} =10V, I _D =25A	-	6.5	7.5	mΩ
		V _{GS} =4.5V, I _D =15A	-	10	14	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.0	1.5	2.5	V
Total Gate Charge	Q _g	V _{DS} =15V, V _{GS} =10V, I _D =25A	-	13.3	-	nC
Gate-Source Charge	Q _{gs}		-	3.1	-	
Gate-Drain("Miller") Charge	Q _{gd}		-	5	-	
Turn-On Delay Time	T _{d(on)}	V _{DS} =15V, V _{GS} =10V, R _{GEN} =3Ω, I _D =25A	-	15	-	ns
Rise Time	T _r		-	19	-	
Turn-Off Delay Time	T _{d(off)}		-	35	-	
Fall Time	T _f		-	21	-	
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1.0MHz	-	1140	-	pF
Output Capacitance	C _{oss}		-	175	-	
Reverse Transfer Capacitance	C _{rss}		-	151	-	
Diode Characteristics						
Continuous Source Current	I _S		-	-	50	A
Pulsed Source Current	I _{SM}		-	-	200	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =30A	-	-	1.2	V
Reverse Recovery Time	t _{rr}	I _F =30A, di/dt=100A/μs	-	25	-	nS
Reverse Recovery Charge	Q _{rr}		-	26	-	nC

(1) Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

(2) EAS condition: T_J=25°C, V_{DD}=15V, V_G=10V, R_G=25Ω, L=0.5mH, I_{AS}=12A

(3) Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Output Characteristics

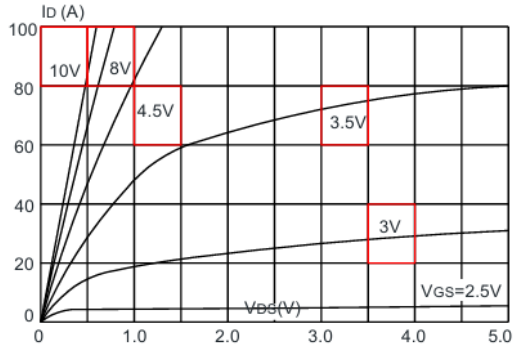


Fig 2. Typical Transfer Characteristics

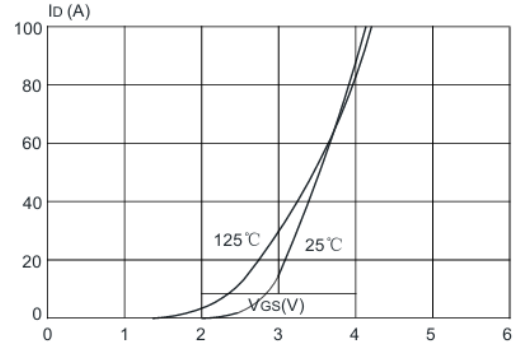


Fig 3. On-resistance vs. Drain Current

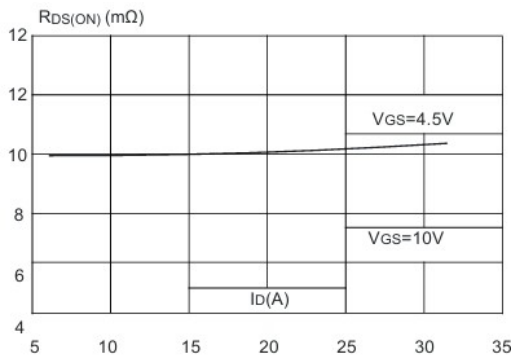


Fig 4. Body Diode Characteristics

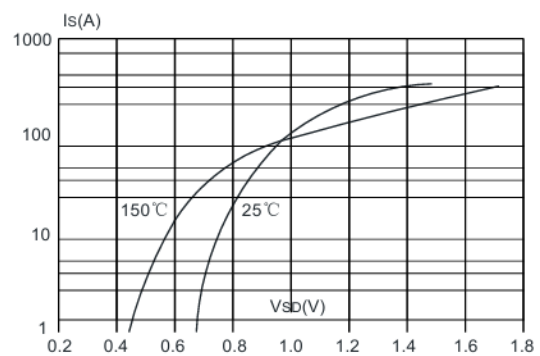


Fig 5. Gate Charge Characteristics

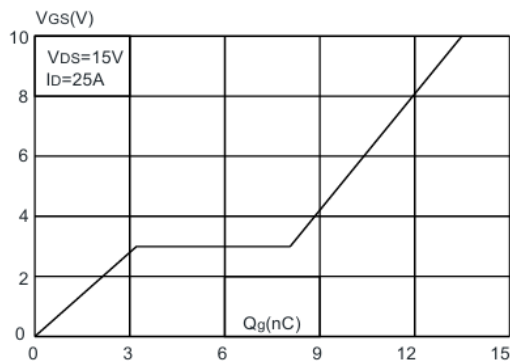


Fig 6. Capacitance Characteristics

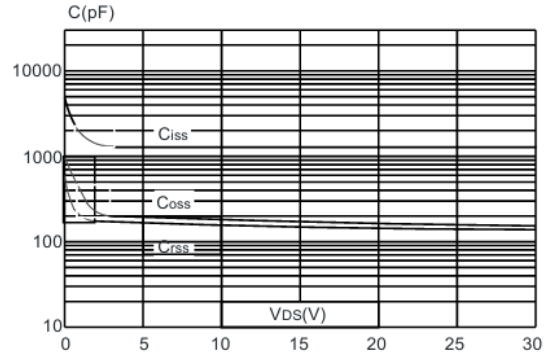




Fig 7. Normalized Breakdown Voltage vs. Junction Temperature

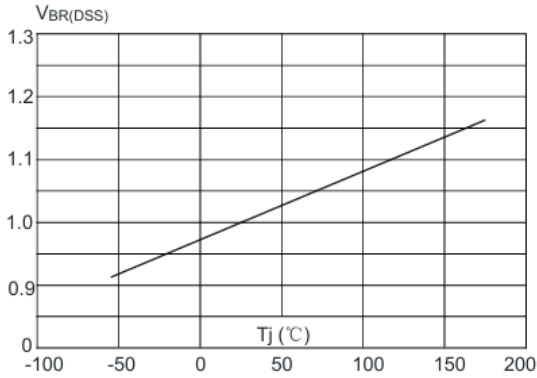


Fig 8. Normalized on Resistance vs. Junction Temperature

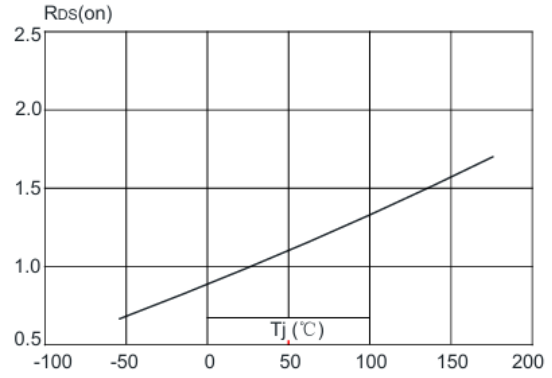


Fig 9. Maximum Safe Operating Area

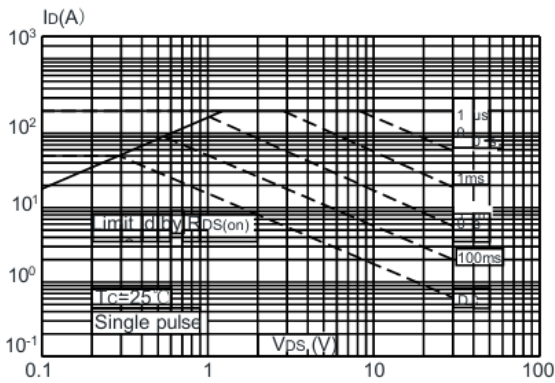


Fig 10. Maximum Continuous Drain Current vs. Case Temperature

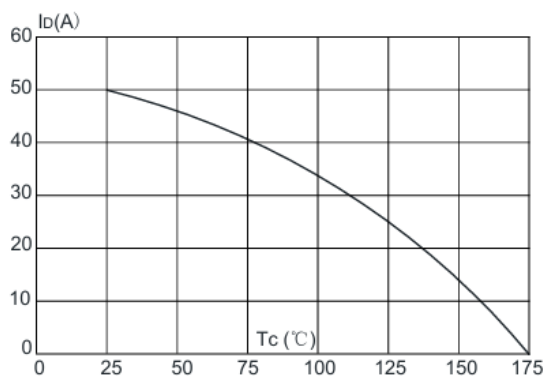
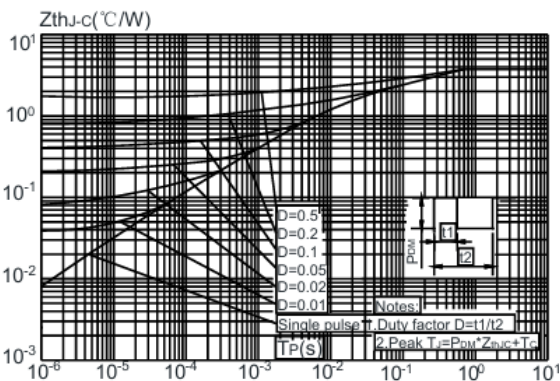


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case





TEST CIRCUIT

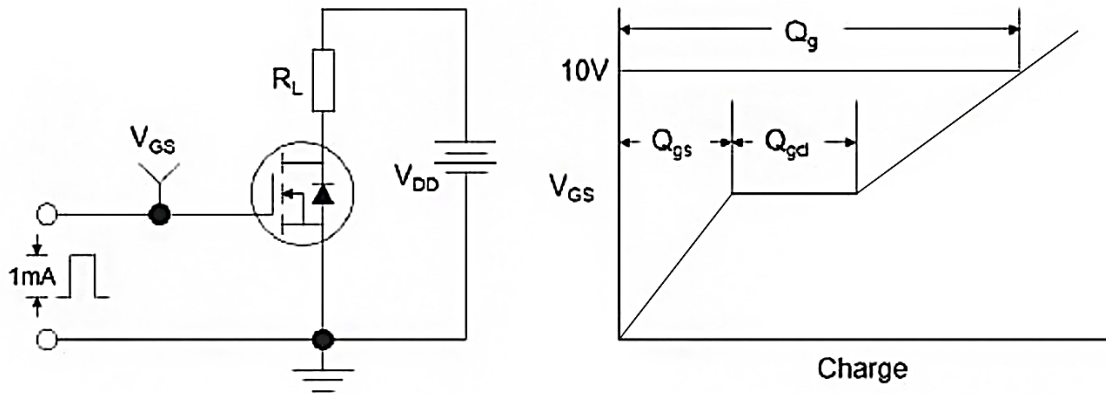


Fig 12. Gate Charge Test Circuit & Waveform

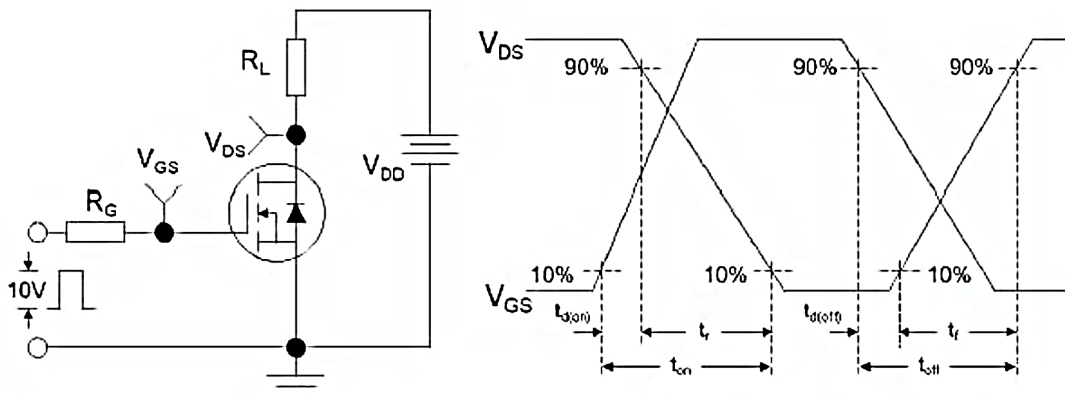


Fig 13. Resistive Switching Test Circuit & Waveforms

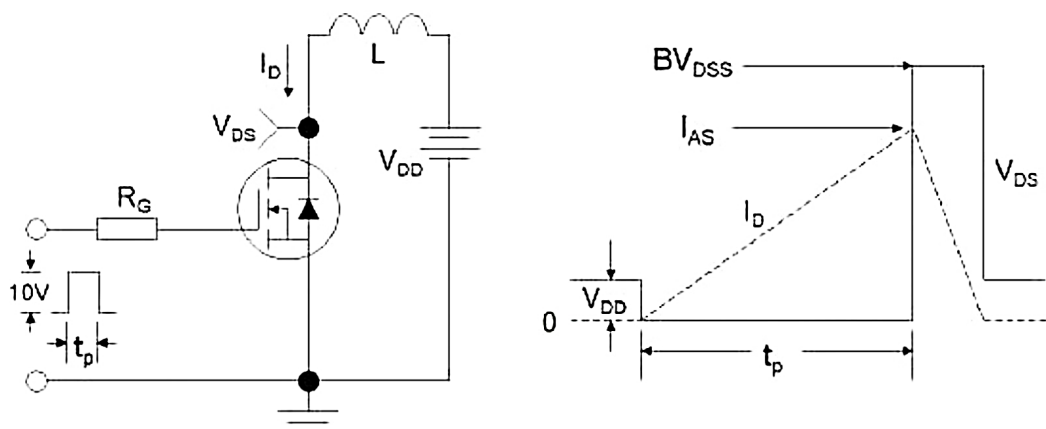
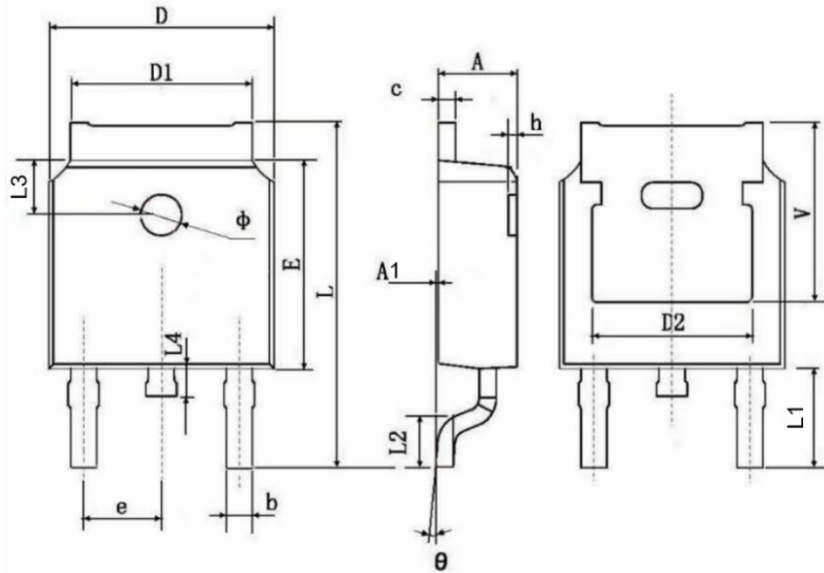


Fig 14. Unclamped Inductive Switching Test Circuit & Waveforms



PACKAGE INFORMATION

Dimension in TO-252 (Unit: mm)



Symbol	Min.	Max.
A	2.200	2.400
A1	0.000	0.127
b	0.660	0.860
c	0.460	0.580
D	6.500	6.700
D1	5.100	5.460
D2	0.483TYP	
E	6.000	6.200
e	2.186	2.386
L	9.800	10.400
L1	2.900TYP	
L2	1.400	1.700
L3	1.600 TYP	
L4	0.600	1.000
Φ	1.100	1.300
θ	0°	8°
h	0.000	0.300
V	5.350TYP	



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