DESCRIPTION

V_{DS}=30V

V_{GS}=±20V

ID(A)=0.56A

$R_{DS(ON)}$, V_{GS}@4.0V, I_{DS}@10mA = 1Ω

$R_{DS(ON)}$, V_{GS}@2.5V, I_{DS}@10mA = 1.5Ω

FEATURES

- Low gate voltage threshold($V_{GS(th)}$)to facilitate drive circuit design
- Low gate charge for fast switching
- ESD protected gate
- Minimum breakdown voltage rating of 30V
- Available in SOT-23S package

The AM4003 is available in SOT-23S package.

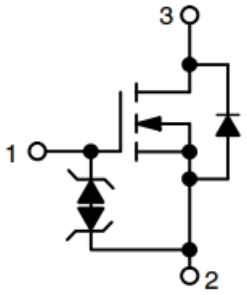
ORDERING INFORMATION

Package Type	Part Number	
SOT-23S SPQ: 3,000pcs/Reel	E3S	AM4003E3SR
		AM4003E3SVR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

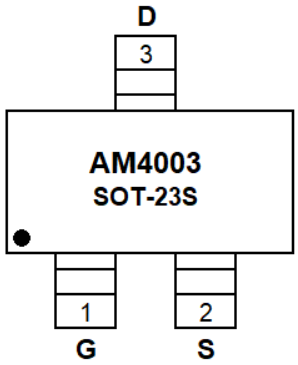
APPLICATION

- Level shifters
- Level switches
- Low side load switches
- Portable applications

N CHANNEL MOSFET



PIN DESCRIPTION



Top View

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

ABSOLUTE MAXIMUM RATINGS

T_A=25℃

V_{DSS}, Drain–to–Source Voltage		30V
V_{GS}, Gate–to–Source Voltage – Continuous		±20V
I_D, Continuous Drain Current[NOTE1] Steady State	T_A = 25°C	0.5A
	T_A = 85°C	0.37A
I_D, Continuous Drain Current[NOTE1] t<10s	T_A = 25°C	0.56A
	T_A = 85°C	0.4A
I_{DM}, Pulsed Drain Current(tp=10μs)		1.7A
I_S, Continuous Source Current (Body Diode)		1A
P_D, Maximum Power Dissipation[NOTE1]	Steady State	0.69W
	t<5s	0.83W
T_J, T_{STG}, Junction and Storage Temperature		−55 ~ +150°C
T_L, Maximum Temperature for Soldering Purposes		260°C

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.

THERMAL CHARACTERISTICS

Parameter		Symbol	Limit	Units
Thermal Resistance, Junction–to–Ambient[NOTE1]	Steady State	$R_{\theta JA}$	180	°C/W
	t < 10s		150	

ELECTRICAL CHARACTERISTICS

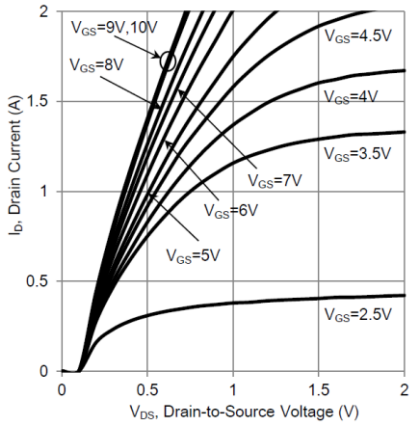
T_A=25℃

Parameter	Symbol	Conditions	Min	Typ.	Max	Units
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=100μA	30	-	-	V
Drain−to−Source Breakdown Voltage Temperature Coefficient	$V_{(BR)DSS}$ /T_J		-	40	-	mV/°C
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V	-	-	1.0	μA
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±10V	-	-	±1.0	nA
ON CHARACTERISTICS[NOTE2]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.8	-	1.6	V
Negative Threshold Temperature Coefficient	$V_{GS(TH)}$/ T_J		-	3.4	-	mV/°C
Static Drain–Source On–State Resistance	$R_{DS(ON)}$	V_{GS}=4.0V, I_D=10mA	-	1	1.5	Ω
		V_{GS}=2.5V, I_D=10mA	-	1.5	2	
Forward Transconductance	g_{FS}	V_{DS}=3.0V, I_D=10mA	-	0.33	-	S
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{lss}	V_{GS}=0V, f=1.0MHz, V_{DS}=5V	-	41	-	pF
Output Capacitance	C_{oss}		-	12	-	
Reverse Transfer Capacitance	C_{rss}		-	8.1	-	
SWITCHING CHARACTERISTICS						
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=4.5V, V_{DD}=5.0V, I_D=0.1A, R_G=50Ω	-	16.7	-	ns
Rise Time	t_r		-	47.9	-	
Turn-Off Delay Time	$t_{d(off)}$		-	65.1	-	
Fall Time	t_f		-	64.2	-	
SOURCE–DRAIN DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	V_{GS}=0V, I_{SD}=10mA	-	0.65	0.7	V
Reverse Recovery Time	t_{rr}	V_{GS}=0V, dIS/dt=8A/μs, I_S=10mA	-	14	-	ns

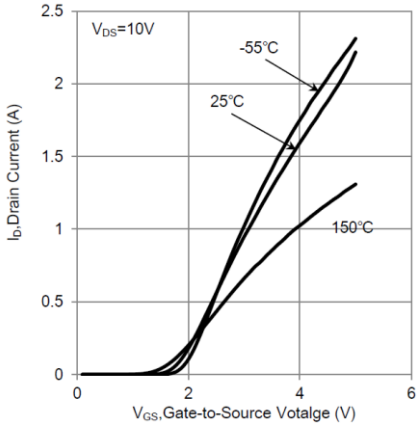
NOTE1: Surface−mounted on FR4 board using 1 in sq pad size (Cu area = 1.127 in sq [1 oz] including traces).
NOTE2: Pulse Test: Pulse Width ≤300μs, Duty Cycle ≤2.0%.

TYPICAL PERFORMANCE CHARACTERISTICS

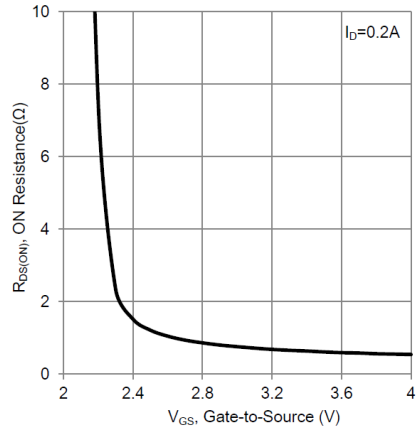
1. On-Region Characteristics



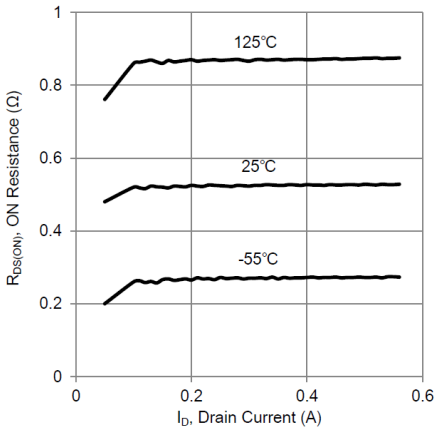
2. Transfer Characteristics



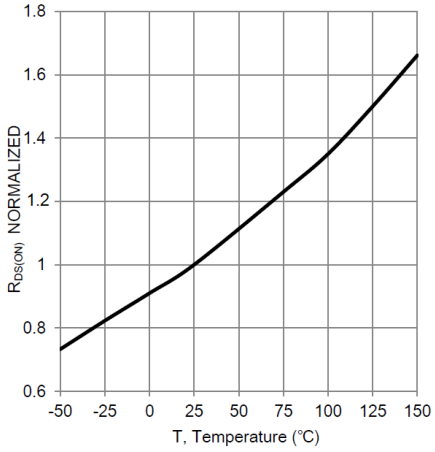
3. $R_{DS(ON)}$ vs. V_{GS}



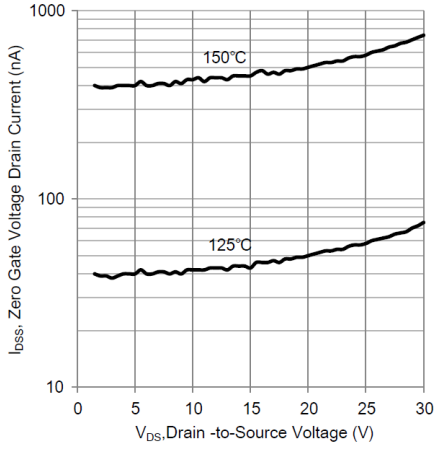
4. $R_{DS(ON)}$ vs. I_D



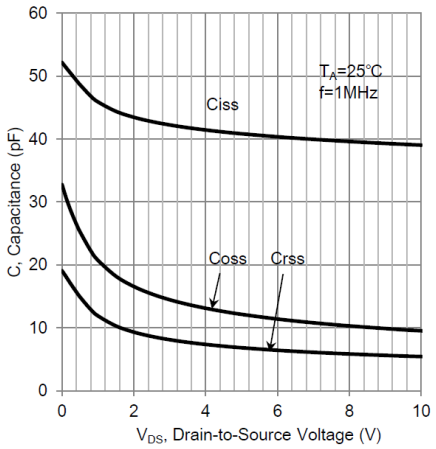
5. $R_{DS(ON)}$ vs. Temperature



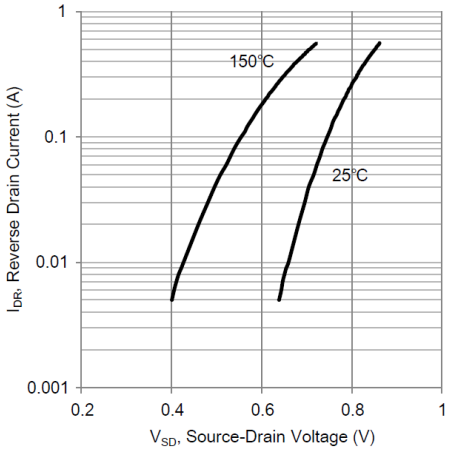
6. I_{DSS} vs. V_{DS}



7. Capacitance Variation

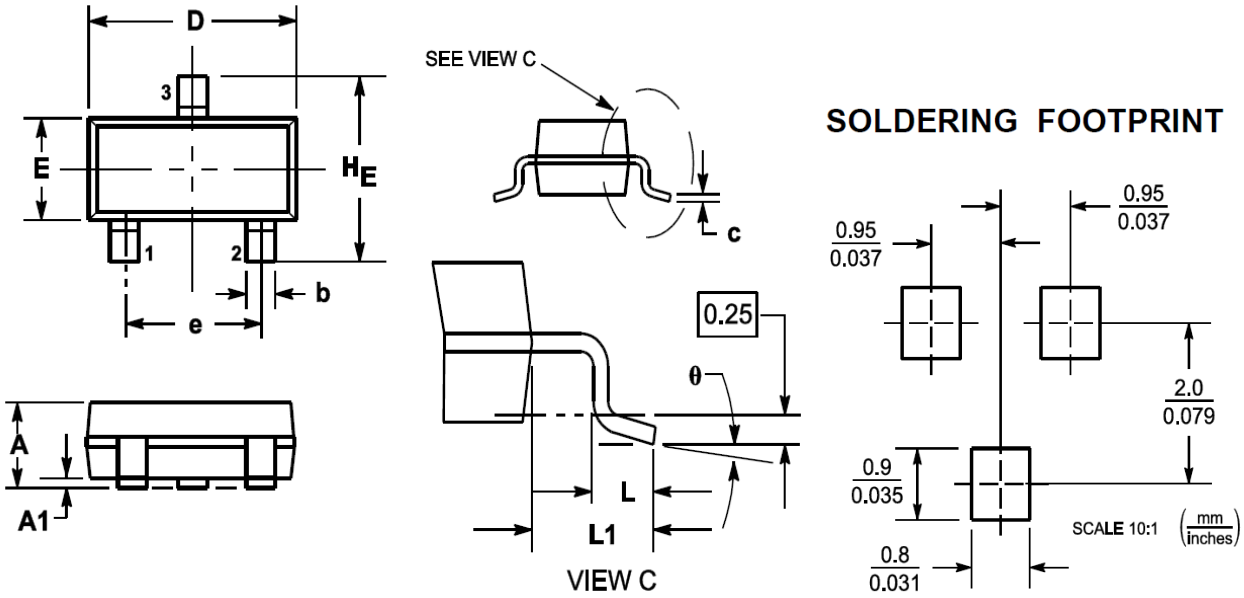


8. Diode Forward Characteristics



PACKAGE INFORMATION

Dimension in SOT-23S Package (Unit: mm)



DIM	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.89	1.11	0.035	0.044
A1	0.01	0.10	0.001	0.004
b	0.37	0.50	0.015	0.02
c	0.09	0.18	0.003	0.007
D	2.80	3.04	0.11	0.12
E	1.20	1.40	0.047	0.055
e	1.78	2.04	0.07	0.081
L	0.10	0.30	0.004	0.012
L1	0.35	0.69	0.014	0.029
H_E	2.10	2.64	0.083	0.104
θ	0°	10°	0°	10°

IMPORTANT NOTICE

AiT Semiconductor Inc. (AiT) reserves the right to make changes to any its product, specifications, to discontinue any integrated circuit product or service without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is current.

AiT Semiconductor Inc.'s integrated circuit products are not designed, intended, authorized, or warranted to be suitable for use in life support applications, devices or systems or other critical applications. Use of AiT products in such applications is understood to be fully at the risk of the customer. As used herein may involve potential risks of death, personal injury, or servere property, or environmental damage. In order to minimize risks associated with the customer's applications, the customer should provide adequate design and operating safeguards.

AiT Semiconductor Inc. assumes to no liability to customer product design or application support. AiT warrants the performance of its products of the specifications applicable at the time of sale.