



DESCRIPTION

Available in SOT-23 and SC70-3 packages.

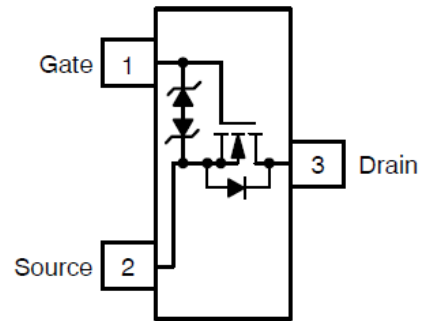
FEATURES

- ESD Protected: 1000V
- Available in SOT-23 and SC70-3 packages

ORDERING INFORMATION

Package Type	Part Number	
SOT-23	E3	AM2N7002E3R
		AM2N7002E3VR
SC70-3 (SOT-323)	C3	AM2N7002C3R
		AM2N7002C3VR
Note	V: Halogen free Package R: Tape & Reel SPQ: 3,000pcs/Reel	
AiT provides all RoHS products Suffix " V " means Halogen free Package		

N CHANNEL MOSFET



(Top View)

Simplified Schematic



PIN DESCRIPTION

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



ABSOLUTE MAXIMUM RATINGS

V_{DSS} , Drain-Source Voltage	60Vdc
V_{DGR} , Drain-Gate Voltage ($R_{GS} = 1.0M\Omega$)	60Vdc
Drain Current	
I_D , Continuous $T_C = 25^\circ C$ ^{NOTE1}	$\pm 115mA_{dc}$
$T_C = 100^\circ C$ ^{NOTE1}	$\pm 75mA_{dc}$
I_{DM} , Pulsed ^{NOTE2}	$\pm 800mA_{dc}$
Gate-Source Voltage	
V_{GS} , Continuous	$\pm 20V_{dc}$
V_{GSM} , Non-repetitive ($t_p \leq 50\mu s$)	$\pm 40V_{pk}$

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.

NOTE1: The Power Dissipation of the package may result in a lower continuous drain current.

NOTE2: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2.0\%$.

THERMAL CHARACTERISTICS

Parameter	Symbol	Max.	Unit
Total Device Dissipation FR-5 Board ^{NOTE3}			
$T_A = 25^\circ C$	P_D	225	mW
Derate above $25^\circ C$		1.8	mW/ $^\circ C$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	$^\circ C/W$
Total Device Dissipation Alumina Substrate ^{NOTE4}			
$T_A = 25^\circ C$	P_D	300	mW
Derate above $25^\circ C$		2.4	mW/ $^\circ C$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	$^\circ C/W$
Junction and Storage Temperature	T_J, T_{stg}	-55 to + 150	$^\circ C$

NOTE3: FR-5 = 1.0 x 0.75 x 0.062 in.

NOTE4: Alumina = 0.4 x 0.3 x 0.025 in 99.5% alumina.



ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise specified

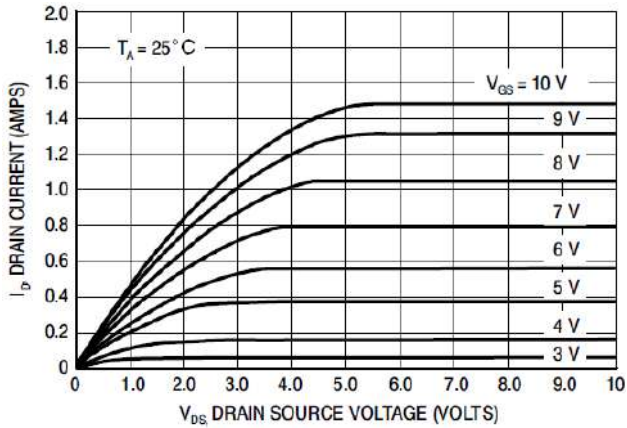
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0, I _D = 10μAdc	60	-	-	Vdc	
Zero Gate Voltage Drain Current	I _{DSS}	V _{GS} = 0, V _{DS} = 60Vdc	T _J = 25°C	-	-	1.0	μAdc
			T _J = 125°C	-	-	500	
Gate-Body Leakage Current, Forward	I _{GSSF}	V _{GS} = 20Vdc	-	-	1	μAdc	
Gate-Body Leakage Current, Reverse	I _{GSSR}	V _{GS} = -20Vdc	-	-	-1	μAdc	
ON CHARACTERISTICS NOTE2							
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μAdc	1.0	1.6	2	Vdc	
On-State Drain Current	I _{D(on)}	V _{DS} ≥ 2.0V _{DS(on)} , V _{GS} = 10Vdc	500	-	-	mA	
Static Drain-Source On-State Voltage	V _{DS(on)}	V _{GS} = 10Vdc, I _D = 500mAdc	-	-	3.75	Vdc	
		V _{GS} = 5.0Vdc, I _D = 50mAdc	-	-	0.375		
Static Drain-Source On- State Resistance	r _{DS(on)}	V _{GS} = 10V, I _D = 500mAdc	T _J = 25°C	-	1.4	7.5	Ohms
			T _J = 125°C	-	-	13.5	
		V _{GS} = 5.0Vdc, I _D = 50mAdc	T _J = 25°C	-	1.8	7.5	
			T _J = 125°C	-	-	13.5	
Forward Transconductance	g _{FS}	V _{DS} ≥ 2.0V _{DS(on)} , I _D = 200mAdc	80	-	-	mmhos	
DYNAMIC CHARACTERISTICS							
Input Capacitance	C _{iSS}	V _{DS} = 25Vdc, V _{GS} = 0, f = 1.0MHz	-	17	50	pF	
Output Capacitance	C _{oSS}		-	10	25		
Reverse Transfer Capacitance	C _{rSS}		-	2.5	5.0		
SWITCHING CHARACTERISTICS NOTE5							
Turn-On Delay Time	t _{d(on)}	V _{DD} = 25Vdc, I _D ≅ 500mAdc, R _G = 25Ω, R _L = 50Ω, V _{gen} = 10V	-	7	20	ns	
Turn-Off Delay Time	t _{d(off)}		-	11	40		
BODY-DRAIN DIODE RATINGS							
Diode Forward On-Voltage	V _{SD}	I _S = 115mAdc, V _{GS} = 0V	-	-	-1.5	Vdc	
Source Current Continuous	I _S	Body Diode	-	-	-115	mAdc	
Source Current Pulsed	I _{SM}		-	-	-800	mAdc	

NOTE5: Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%.

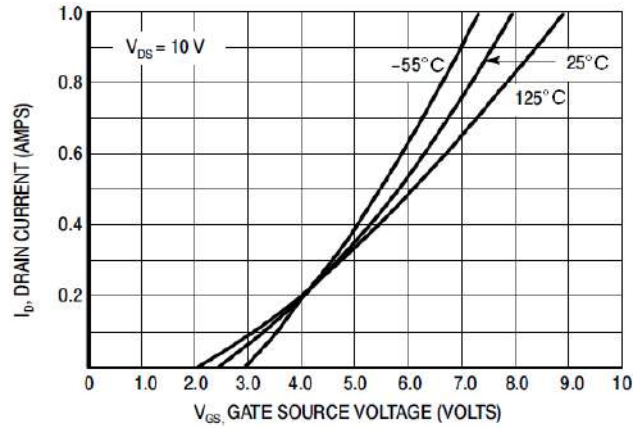


TYPICAL PERFORMANCE CHARACTERISTICS

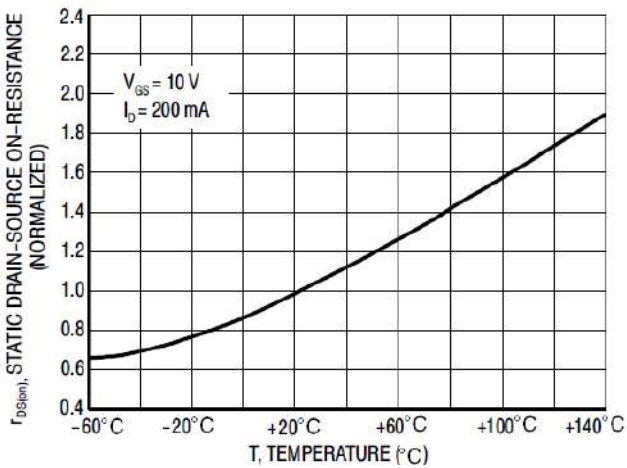
1. Ohmic Region



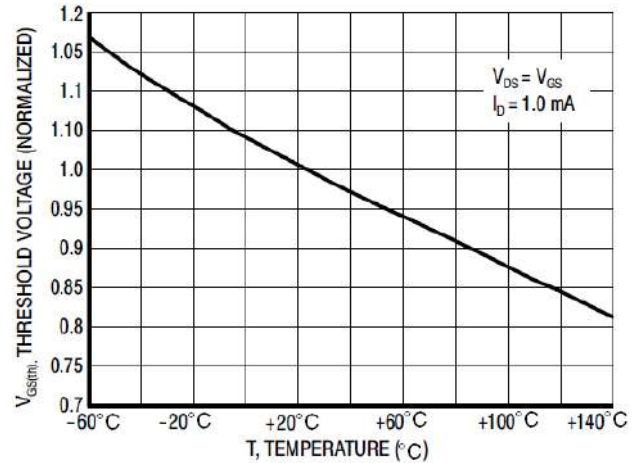
2. Transfer Characteristics



3. Temperature vs. Static Drain-Source On-Resistance



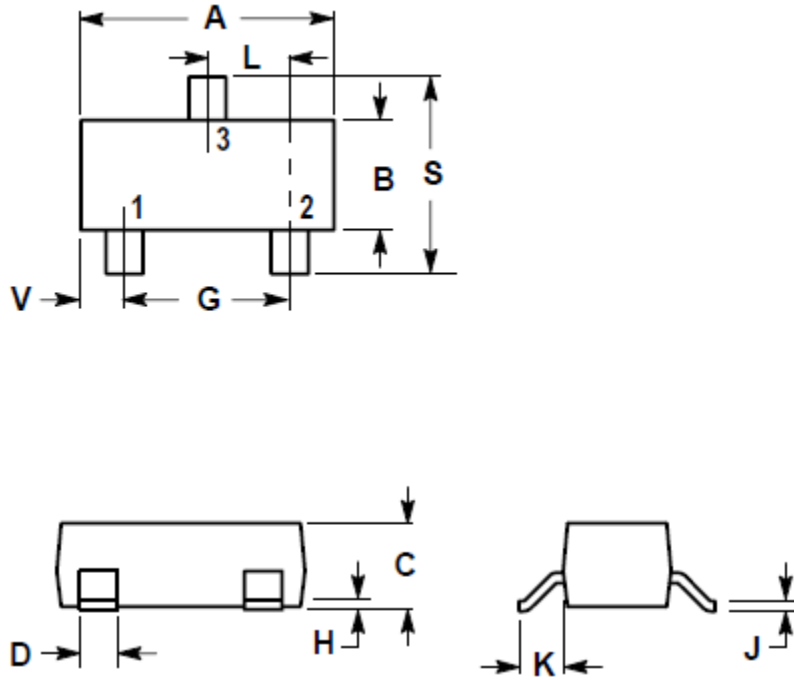
4. Temperature vs. Gate Threshold Voltage





PACKAGE INFORMATION

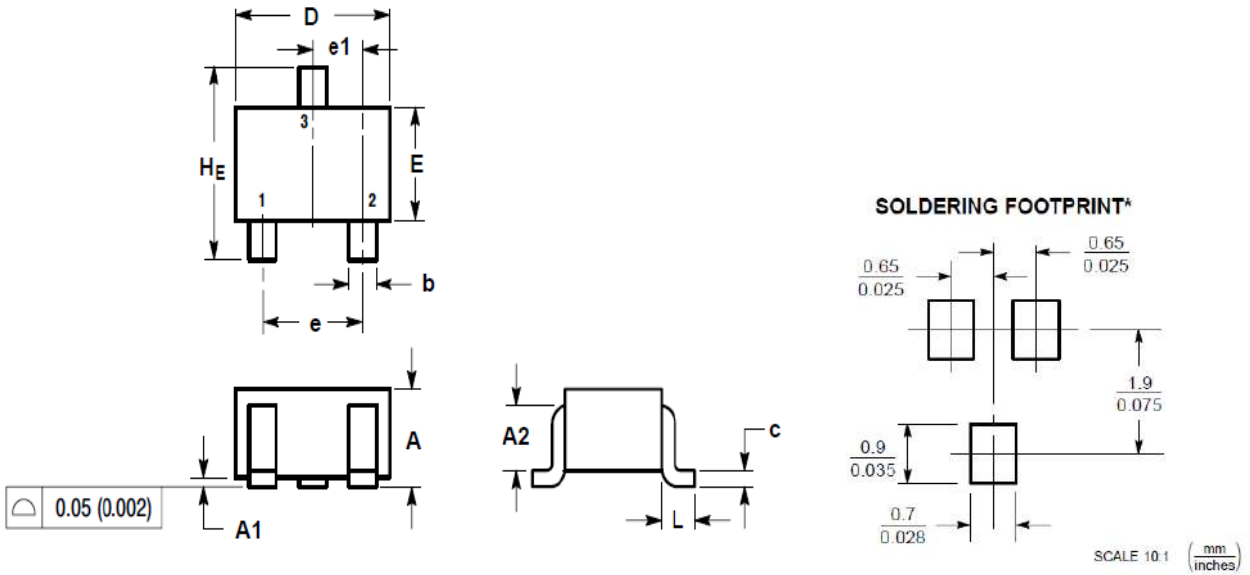
Dimension in SOT-23 Package (Unit: mm)



SYMBOL	MIN	MAX
A	2.800	3.040
B	1.200	1.400
C	0.890	1.110
D	0.370	0.500
G	1.780	2.040
H	0.013	0.100
J	0.085	0.177
K	0.350	0.690
L	0.890	1.020
S	2.100	2.640
V	0.450	0.600



Dimension in SC70-3 (SOT-323) (Unit: mm)



Symbol	Min	Max
A	0.800	1.000
A1	0.000	0.100
A2	0.700REF	
b	0.300	0.400
c	0.100	0.250
D	1.800	2.200
E	1.150	1.350
e	1.200	1.400
e1	0.650 BSC	
L	0.425 REF	
H _E	2.000	2.400



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