



## DESCRIPTION

The AMA2N7002 is available in SC-89 package.

## ORDERING INFORMATION

Package Type	Part Number	
SC-89	CK3	AMA2N7002CK3R
		AMA2N7002CK3VR
Note	V: Halogen free Package R: Tape & Reel SPQ: 3,000pcs/Reel	
AiT provides all RoHS products Suffix " V " means Halogen free Package		

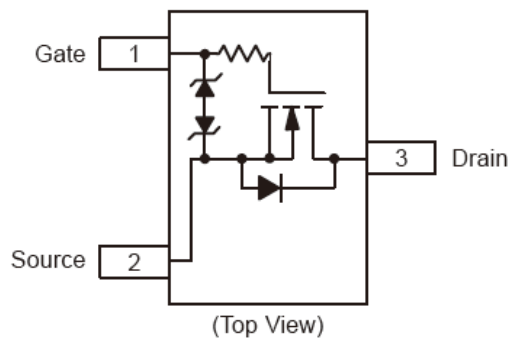
## FEATURES

- Low Gate Charge for Fast Switching
- Small 1.6 X 1.6 mm Footprint
- ESD Protected Gate
- ESD Protected: 2000V
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.
- Available in SC-89 Package

## APPLICATION

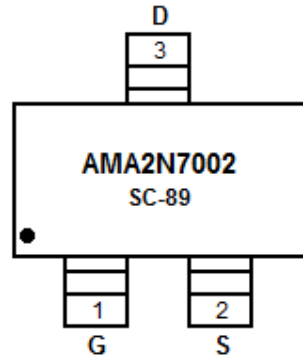
- Power Management Load Switch
- Level Shift
- Portable Applications such as Cell Phones, Media Players, Digital Cameras, PDA's, Video Games, Hand Held Computers, etc.

## TYPICAL APPLICATION





**PIN DESCRIPTION**



Top View

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



## ABSOLUTE MAXIMUM RATINGS

V <sub>DSS</sub> , Drain-to-Source Voltage		30V
V <sub>GS</sub> , Gate-to-Source Voltage		±10V
I <sub>D</sub> , Continuous Drain Current <sup>NOTE1</sup>	Steady State=25°C	154mA
P <sub>D</sub> , Power Dissipation <sup>NOTE1</sup>	Steady State=25°C	300mW
I <sub>DM</sub> , Pulsed Drain Current	t <sub>P</sub> ≤10μs	618mA
T <sub>J</sub> , T <sub>STG</sub> , Operating Junction and Storage Temperature		-55°C~150°C
I <sub>SD</sub> , Continuous Source Current (Body Diode)		154mA
T <sub>L</sub> , Lead Temperature for Soldering Purposes (1/8" from case for 10s)		260°C
<b>THERMAL RESISTANCE RATINGS</b>		
R <sub>θJA</sub> , Junction-to-Ambient – Steady State <sup>NOTE1</sup>		416°C/W

Stress beyond above listed "Absolute Maximum Ratings" may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

NOTE1: Surface-mounted on FR4 board using 1 in sq pad size (Cu area = 1.127 in sq [1 oz] including traces).



## ELECTRICAL CHARACTERISTICS

T<sub>J</sub> = 25°C, unless otherwise specified

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-to-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0, I <sub>D</sub> = 10μA	30			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 30V			1.0	μA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 20V, T = 85°C			1.0	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±10V			±25	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±5V			±1.0	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±5V T = 85°C			±1.0	μA
<b>ON CHARACTERISTICS</b> NOTE2						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 100μA	0.5	1.0	1.5	V
Drain-to-Source On Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 154mA		1.4	7.0	Ω
		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 154mA		2.3	7.5	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> = 3V, I <sub>D</sub> = 154mA		80		mS
<b>CAPACITANCES</b>						
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> = 50V, f = 1MHz, V <sub>GS</sub> = 0V		11.5		pF
Output Capacitance	C <sub>OSS</sub>			10		
Reverse Transfer Capacitance	C <sub>RSS</sub>			3.5		
<b>SWITCHING CHARACTERISTICS</b> NOTE3						
Turn-On Delay Time	t <sub>d(ON)</sub>	V <sub>GS</sub> = 4.5V, V <sub>DS</sub> = 5.0V, I <sub>D</sub> = 75mA, R <sub>G</sub> = 10Ω		13		ns
Rise Time	t <sub>r</sub>			15		
Turn-Off Delay Time	t <sub>d(OFF)</sub>			98		
Fall Time	t <sub>f</sub>			60		
<b>Drain-Source Diode Characteristics</b>						
Forward Diode Voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = 0.154mA		0.77	0.9	V

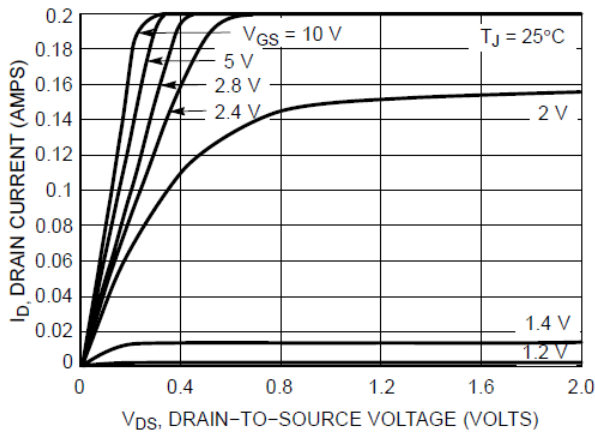
NOTE2: Pulse Test: pulse width ≤ 300μs, duty cycle ≤ 2%.

NOTE3: Switching characteristics are independent of operating junction temperatures.

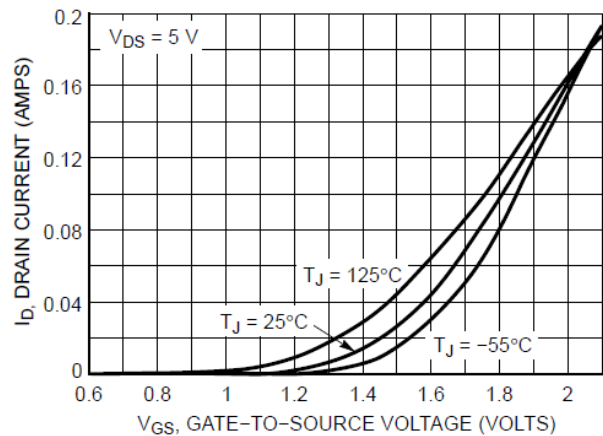


## TYPICAL PERFORMANCE CHARACTERISTICS

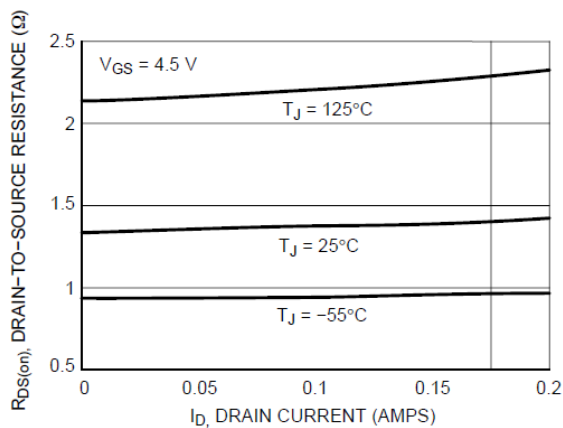
### 1. On-Region Characteristics



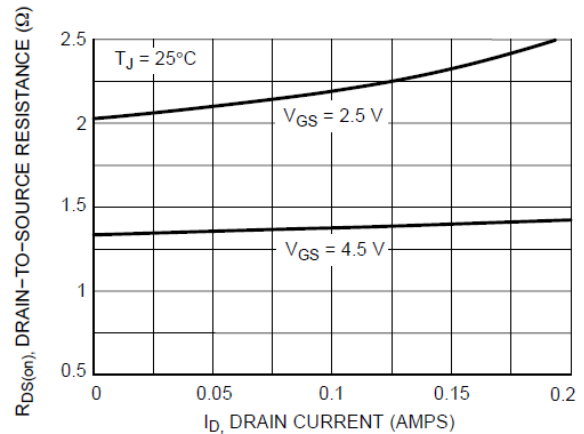
### 2. Transfer Characteristics



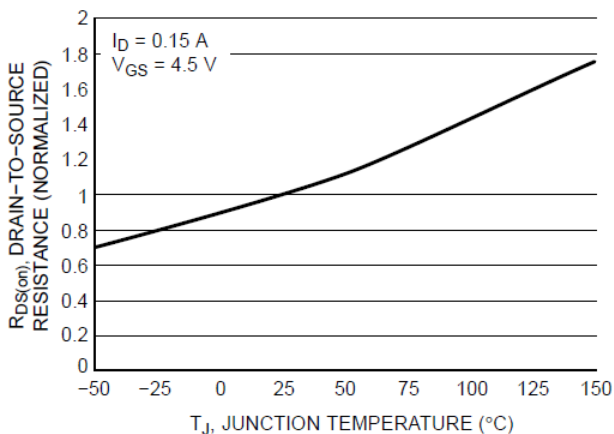
### 3. On-Resistance vs. Drain Current and Temperature



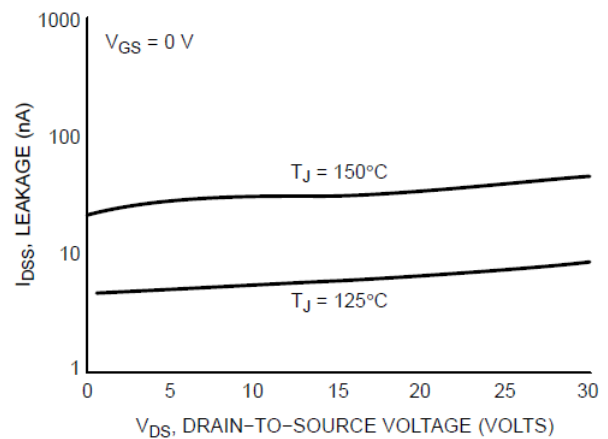
### 4. On-Resistance vs. Drain Current and Gate Voltage



### 5. On-Resistance Variation with Temperature

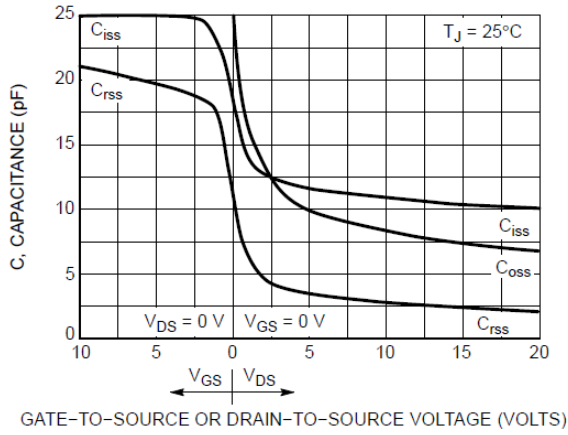


### 6. Drain-to-Source Leakage Current vs. Voltage

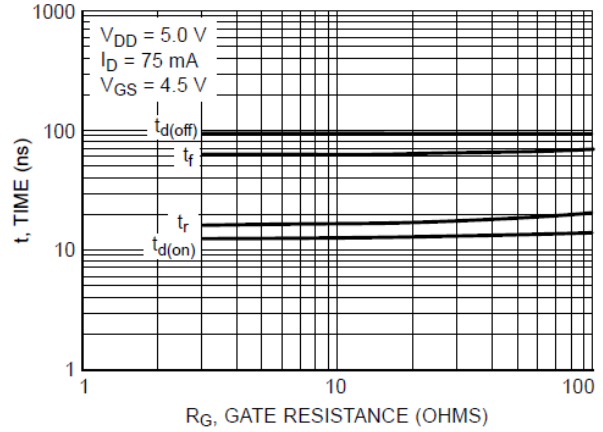




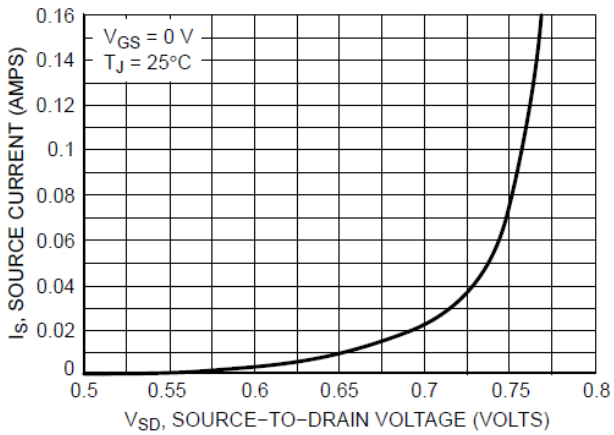
7. Capacitance Variation



8. Resistive Switching Time Variation vs. Gate Resistance



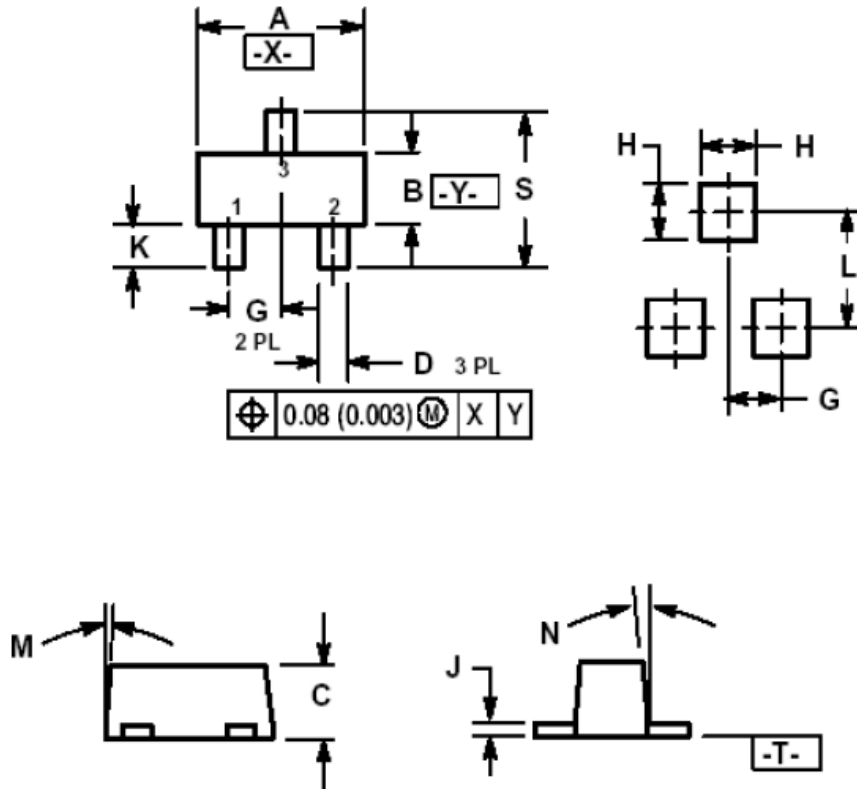
9. Diode Forward Voltage vs. Current





**PACKAGE INFORMATION**

Dimension in SC-89 Package (Unit: mm)



SYMBOL	MIN	MAX
A	1.500	1.700
B	0.750	0.950
C	0.600	0.800
D	0.230	0.330
G	0.500 BSC	
H	0.530 REF	
J	0.100	0.200
K	0.300	0.500
L	1.100 REF	
M	-	10°
N	-	10°
S	1.500	1.700



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