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		

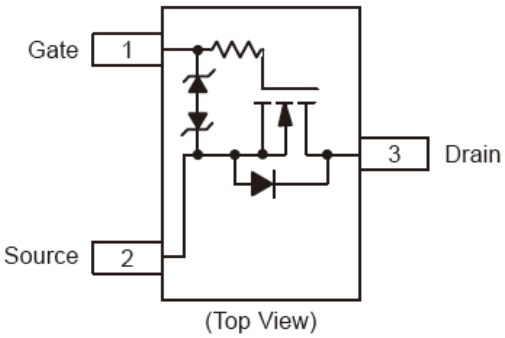
FEATURES

- Low Gate Charge for Fast Switching
- Small 1.6 X 1.6 mm Footprint
- ESD Protected Gate
- We declare that the material of product is ROHS compliant and halogen free.
- 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

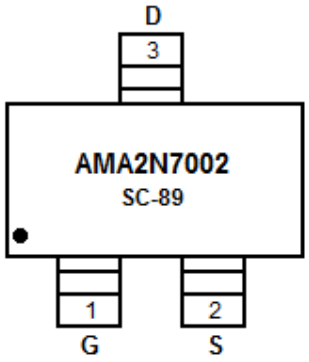
- Power Management Load Switch
- Level Shift
- Portable Applications such as Cell Phones, Media Players, Digital Cameras, PDA's, Video Games, Hand Held Computers, etc.

TYPICAL APPLICATION



(Top View)

PIN DESCRIPTION



Top View

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

ABSOLUTE MAXIMUM RATINGS

V_{DSS}, Drain−to−Source Voltage		30V
V_{GS}, Gate−to−Source Voltage		±10V
I_D, Continuous Drain Current NOTE1	Steady State=25°C	154mA
P_D, Power Dissipation NOTE1	Steady State=25°C	300mW
I_{DM}, Pulsed Drain Current	t_P ≤10μs	618mA
T_J, T_{STG}, Operating Junction and Storage Temperature		−55°C~150°C
I_{SD}, Continuous Source Current (Body Diode)		154mA
T_L, Lead Temperature for Soldering Purposes (1/8″ from case for 10s)		260°C
THERMAL RESISTANCE RATINGS		
$R_{\theta JA}$, Junction−to−Ambient – Steady State NOTE1		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_J = 25°C, unless otherwise specified

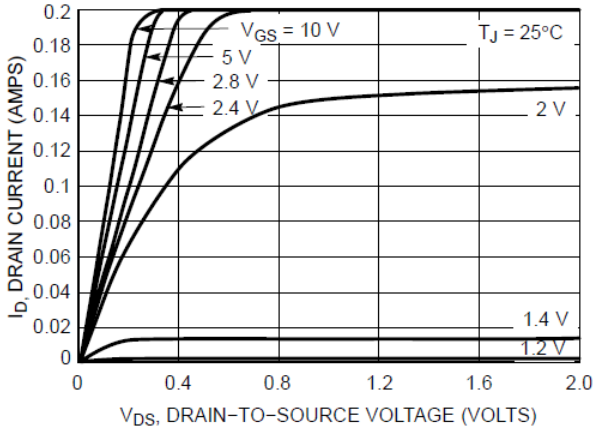
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0, I_D = 10μA	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS} = 0V, V_{DS} = 30V			1.0	μA
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS} = 0V, V_{DS} = 20V, T = 85°C			1.0	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±10V			±25	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±5V			±1.0	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±5V T = 85°C			±1.0	μA
ON CHARACTERISTICS NOTE2						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS} = V_{GS}, I_D = 100μA	0.5	1.0	1.5	V
Drain-to-Source On Resistance	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D=154mA		1.4	7.0	Ω
		V_{GS} = 2.5V, I_D=154mA		2.3	7.5	
Forward Transconductance	g_{FS}	V_{DS} = 3V, I_D = 154mA		80		mS
CAPACITANCES						
Input Capacitance	C_{ISS}	V_{DS} = 50V, f = 1MHz, V_{GS} =0V		11.5		pF
Output Capacitance	C_{OSS}			10		
Reverse Transfer Capacitance	C_{RSS}			3.5		
SWITCHING CHARACTERISTICS NOTE3						
Turn-On Delay Time	$t_{d(ON)}$	V_{GS} = 4.5V, V_{DS}=5.0V, I_D = 75mA, R_G = 10Ω		13		ns
Rise Time	t_r			15		
Turn-Off Delay Time	$t_{d(OFF)}$			98		
Fall Time	t_f			60		
Drain-Source Diode Characteristics						
Forward Diode Voltage	V_{SD}	V_{GS} = 0V, I_S=0.154mA		0.77	0.9	V

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

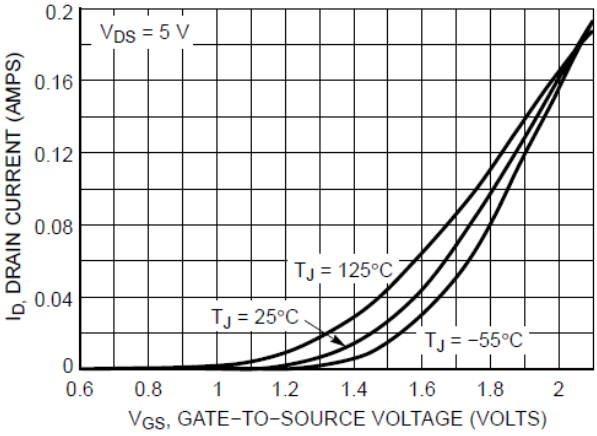
NOTE3: Switching characteristics are independent of operating junction temperatures.

TYPICAL PERFORMANCE CHARACTERISTICS

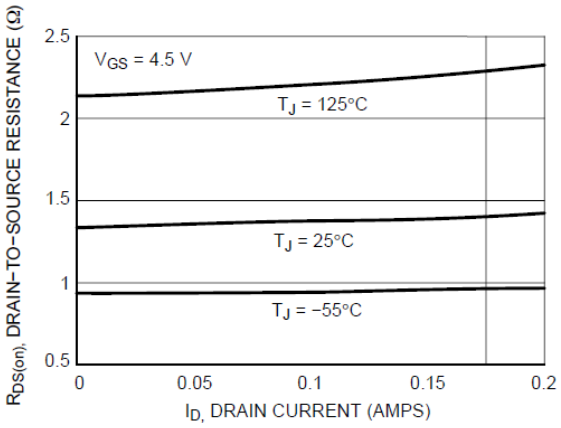
1. On-Region Characteristics



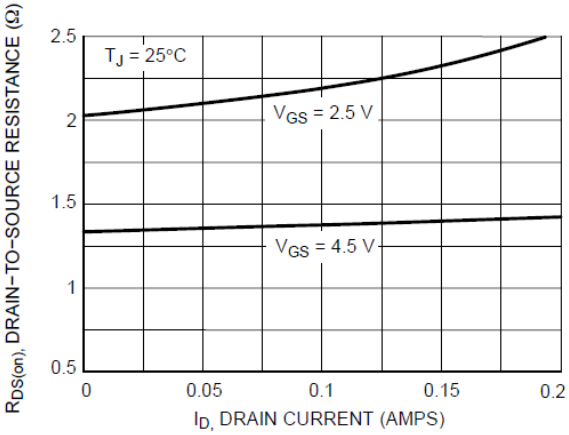
2. Transfer Characteristics



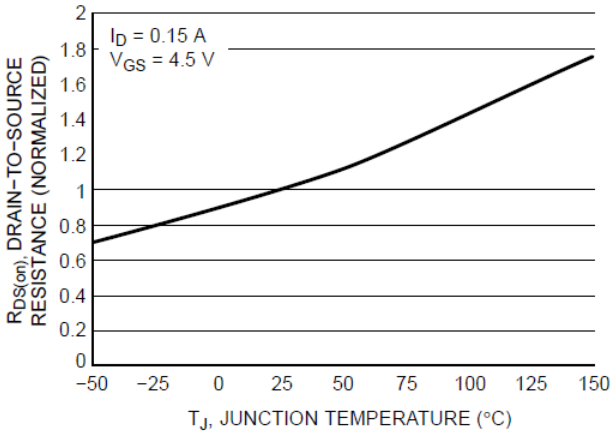
3. On-Resistance vs. Drain Current and Temperature



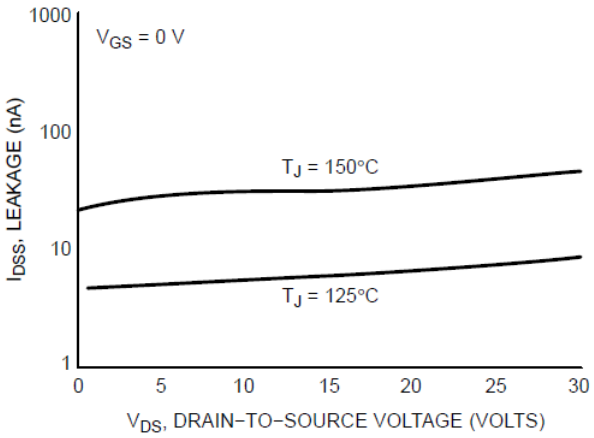
4. On-Resistance vs. Drain Current and Gate Voltage



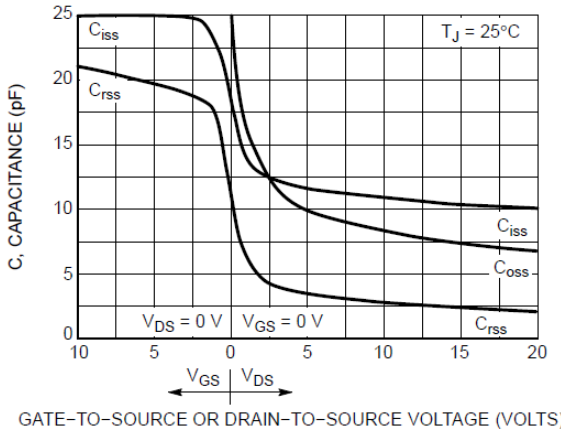
5. On-Resistance Variation with Temperature



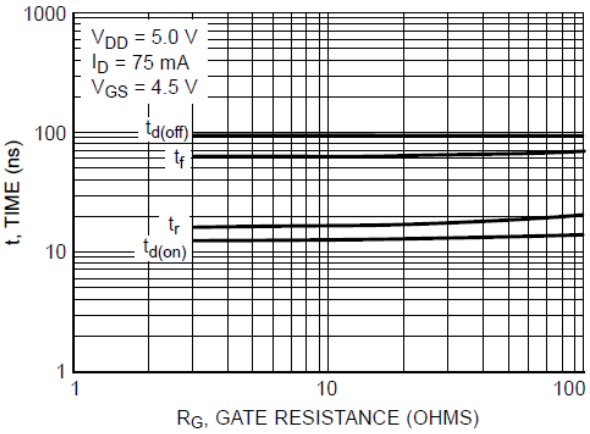
6. Drain-to-Source Leakage Current vs. Voltage



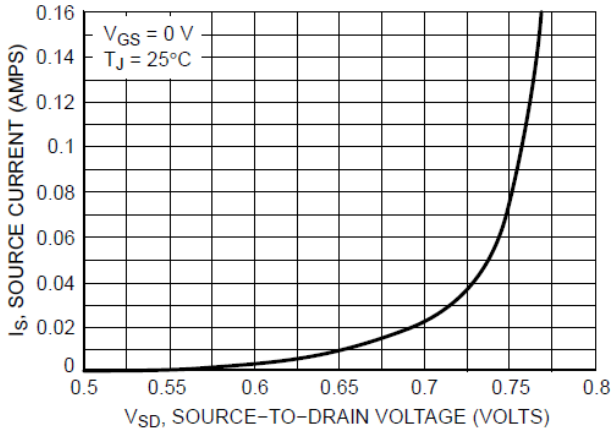
7. Capacitance Variation



8. Resistive Switching Time Variation vs. Gate Resistance

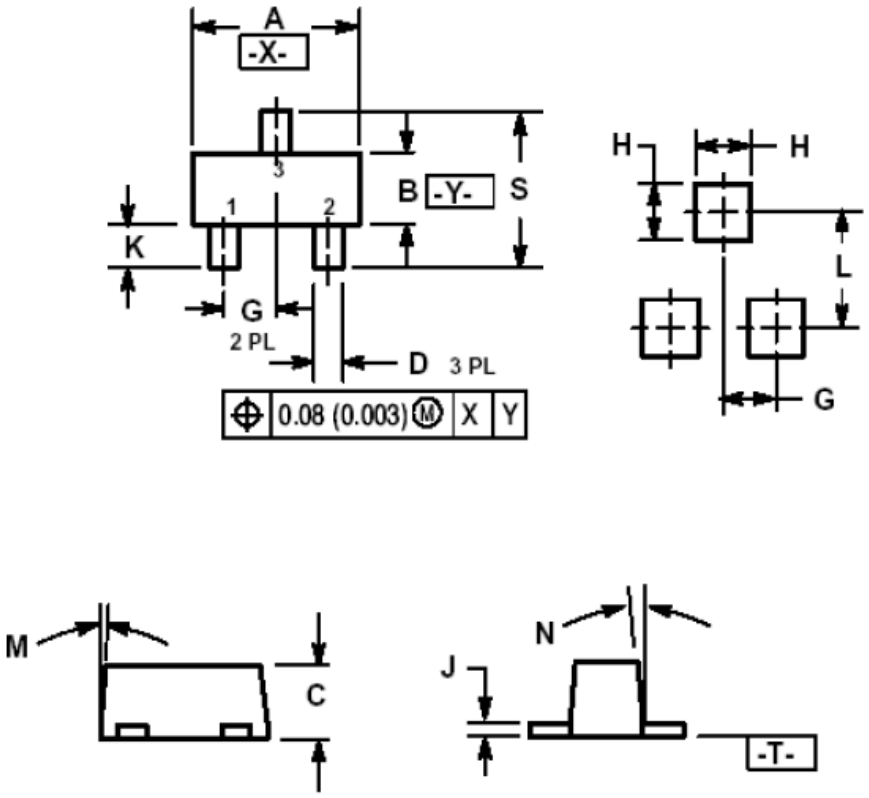


9. Diode Forward Voltage vs. Current



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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