DESCRIPTION

V_{DS}=20V

V_{GS}=±8V

ID(A)=0.83A

$R_{DS(ON)}$=200mΩ(Typ.)@V_{GS}=4.5V

$R_{DS(ON)}$=245mΩ(Typ.)@V_{GS}=2.5V

$R_{DS(ON)}$=310mΩ(Typ.)@V_{GS}=1.8V

$R_{DS(ON)}$=380mΩ(Typ.)@V_{GS}=1.5V

$R_{DS(ON)}$=680mΩ(Typ.)@V_{GS}=1.2V

The AM4452 is available in SC89-3 package.

ORDERING INFORMATION

Package Type	Part Number	
SC89-3 SPQ:3,000pcs/Reel	CK3	AM4452CK3R
		AM4452CK3VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

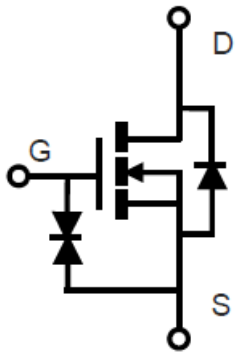
FEATURES

- High-speed switching, Low On-resistance
- 1.2V Low gate drive
- ESD protected
- Available in SC89-3 package

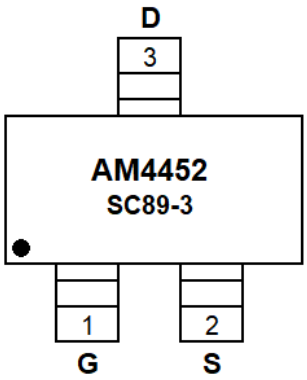
APPLICATIONS

- Hand-Held Instruments
- Switching application

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°C

V_{DSS}, Drain-Source Voltage		20V
V_{GSS}, Gate-Source Voltage		±8V
I_D, Continuous Drain Current	T_A = 25°C	0.83A
	T_A = 70°C	0.67A
I_{DM}, Pulsed Drain Current[NOTE2]		1.8A
P_D, Power Dissipation[NOTE1]	T_A = 25°C	0.3W
	T_A = 70°C	0.19W
T_J, Operation Junction Temperature		-55°C ~ 150°C
T_{STG}, Storage Temperature Range		-55°C ~ 150°C

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.

THERMAL CHARACTERISTICS

Parameter		Symbol	Typ	Max	Unit
Thermal Resistance Junction to Ambient[NOTE1, 3]	Steady-State	$R_{\theta JA}$	-	415	°C/W

NOTE1: Surface mounted on FR4 board using 1 in^2 pad size.

NOTE2: Pulsed width limited by maximum junction temperature, $T_{J(MAX)}$=150°C (initial temperature T_J=25°C).

NOTE3: Using ≤ 10s junction-to-ambient thermal resistance is base on $T_{J(MAX)}$=150°C.

ELECTRICAL CHARACTERISTICS

T_A=25°C, unless otherwise noted

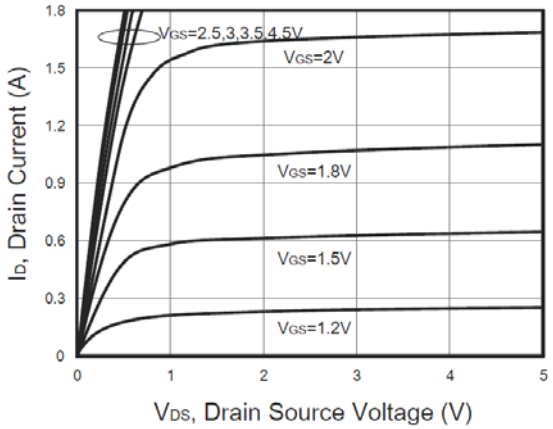
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Parameters						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	20	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.3	0.6	1	V
Gate Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±8V	-	-	±10	μA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, V_{GS}=0V, T_J=25°C	-	-	1	μA
		V_{DS}=12V, V_{GS}=0V, T_J=85°C	-	-	10	
Drain-source On-Resistance[NOTE4]	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=0.83A	-	200	270	mΩ
		V_{GS}=2.5V, I_D=0.5A	-	245	380	
		V_{GS}=1.8V, I_D=0.3A	-	310	500	
		V_{GS}=1.5V, I_D=0.2A	-	380	600	
		V_{GS}=1.2V, I_D=0.1A	-	680	1000	
Forward Transconductance	Gfs	V_{DS}=5V, I_D=0.5A	-	1.7	-	S
Diode Characteristics						
Diode Forward Voltage[NOTE4]	V_{SD}	I_S=0.2A, V_{GS}=0V	-	-	1	V
Diode Continuous Forward Current	I_S		-	-	0.42	A
Reverse Recovery Time	t_{rr}	I_S=0.5A,dI/dt=100A/μs	-	8.8	-	ns
Reverse Recovery Charge	Q_{rr}		-	0.8	-	nC
Dynamic and Switching Parameters[NOTE5]						
Total Gate Charge	Q_g	V_{DS}=10V, V_{GS}=4.5V, I_D=0.5A	-	0.97	-	nC
Gate-Source Charge	Q_{gs}		-	0.28	-	
Gate-Drain Charge	Q_{gd}		-	0.12	-	
Input Capacitance	C_{iss}	V_{DS}=10V, V_{GS}=0V, f=1MHz	-	42	-	pF
Output Capacitance	C_{oss}		-	9	-	
Reverse Transfer Capacitance	C_{rss}		-	6	-	
Turn-On Time	$t_{d(on)}$	V_{DD}=10V, V_{GS}=4.5V R_G=6Ω, I_D=0.5A	-	6	11	ns
	t_r		-	3.8	7	
Turn-Off Time	$t_{d(off)}$		-	14	23	
	t_f		-	15	29	

NOTE4: Pulse test width ≤300μs and duty cycle ≤ 2%.

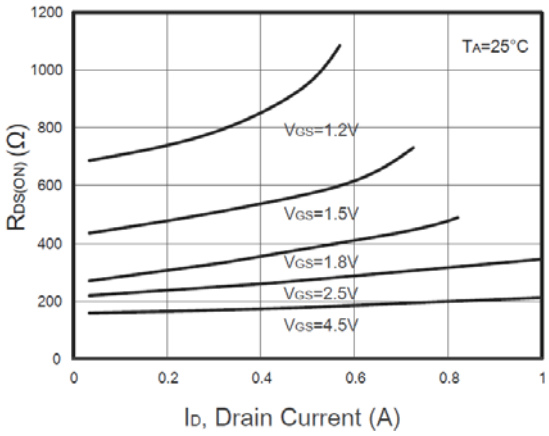
NOTE5: Guaranteed by design, not subject to production testing.

TYPICAL ELECTRICAL CHARACTERISTICS

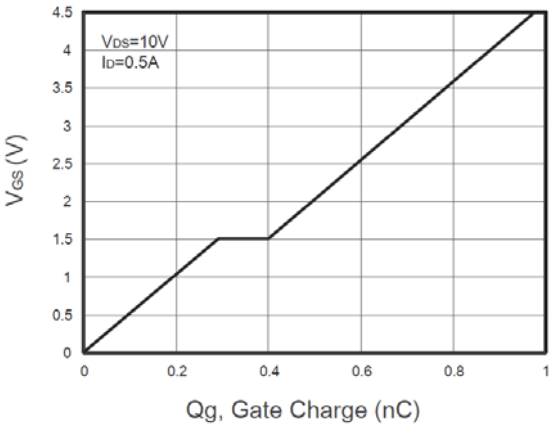
1. Output Characteristics



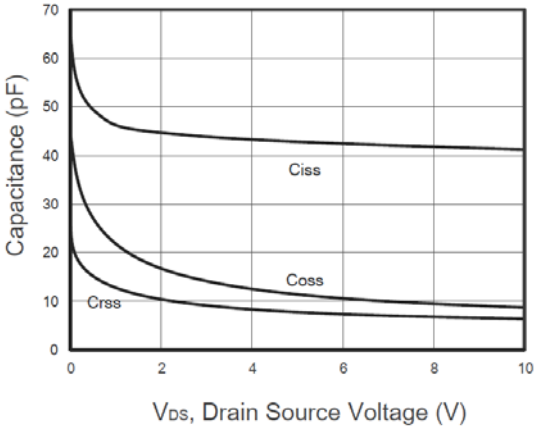
2. Drain-Source On Resistance



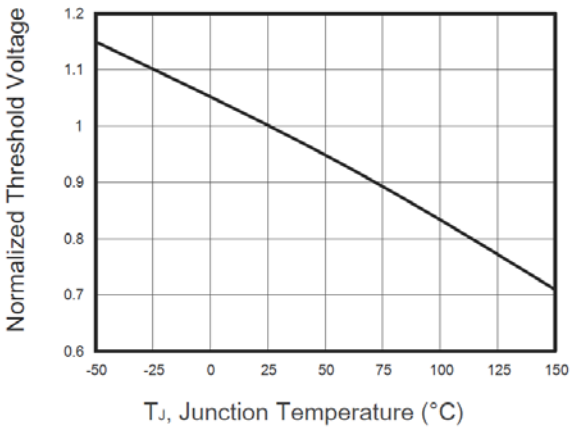
3. Gate Charge



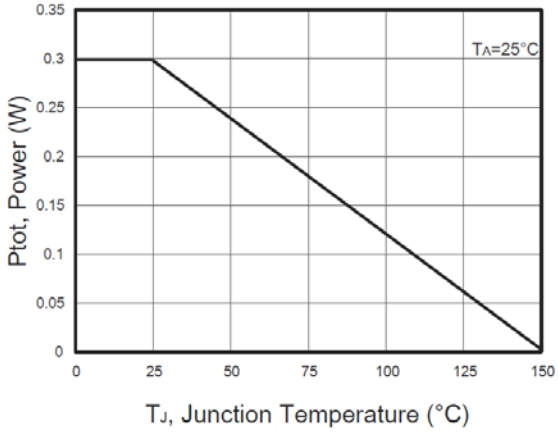
4. Capacitance



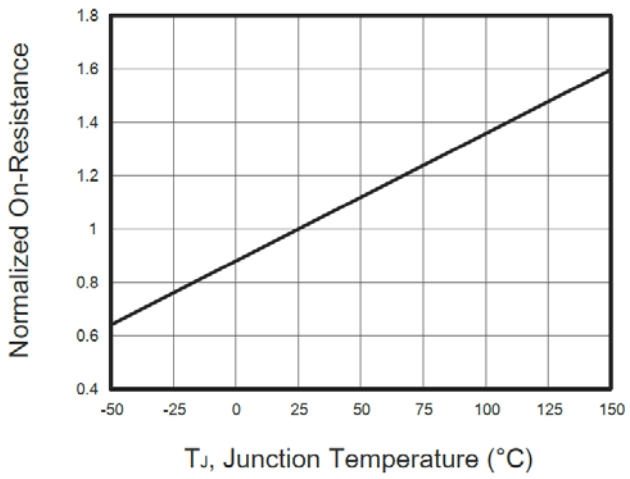
5. Gate Threshold Voltage



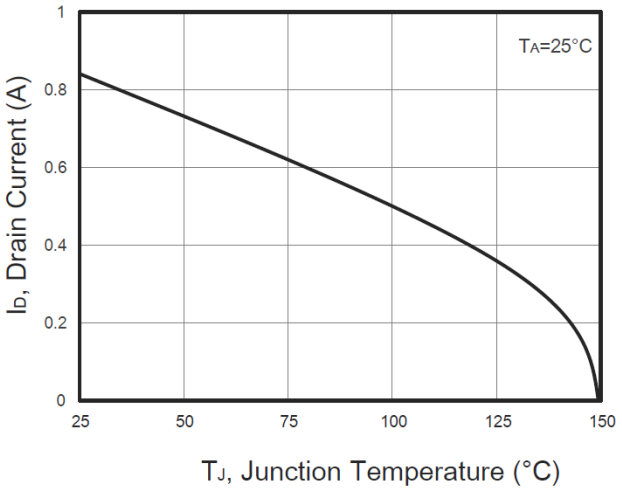
6. Power Dissipation



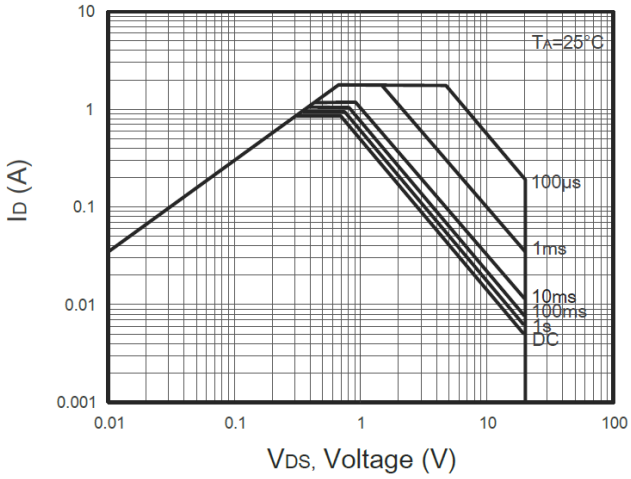
7. Drain-Source On Resistance



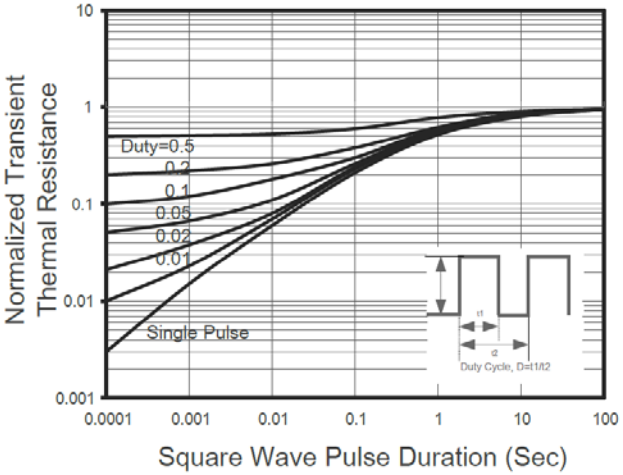
8. Drain Current vs T_J



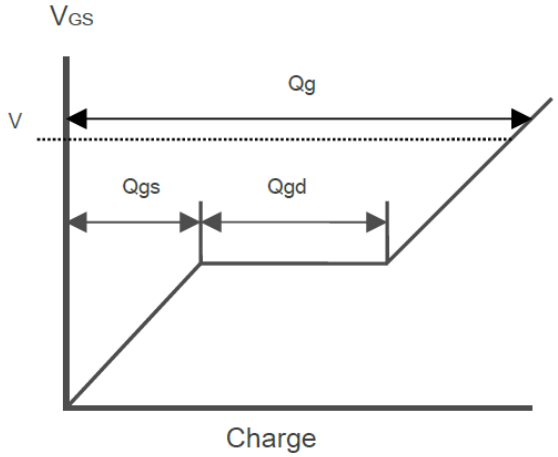
9. Maximum Safe Operation Area



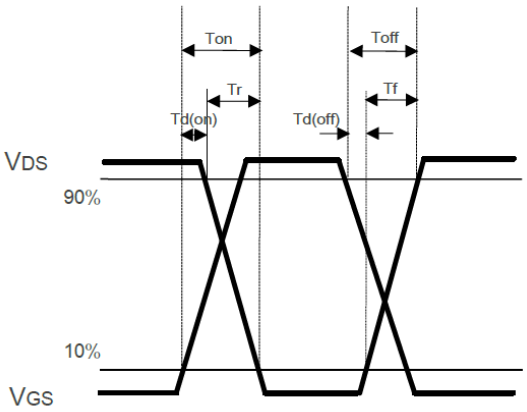
10. Thermal Transient Impedance



11. Gate Charge Waveform

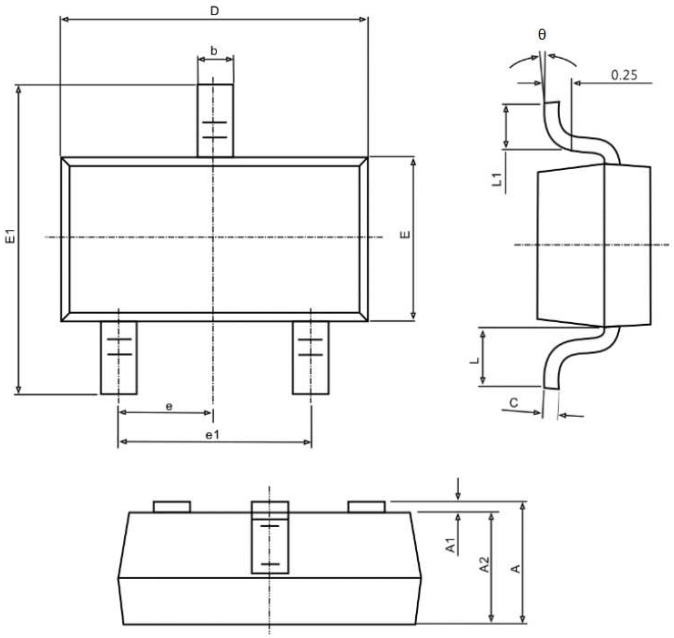


12. Switching Time Waveform

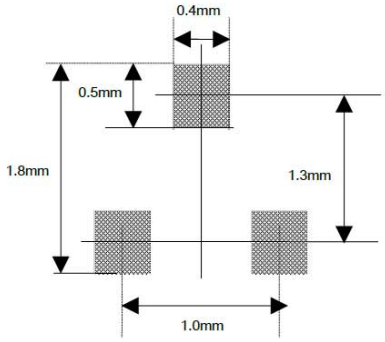


PACKAGE INFORMATION

Dimension in SC89-3 Package (Unit: mm)



Recommended Land Pattern



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b	0.250	0.350	0.100	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.750	0.059	0.069
E	0.700	0.900	0.028	0.035
E1	1.400	1.750	0.055	0.069
e	0.500 TYP		0.020 TYP	
e1	0.900	1.100	0.035	0.043
L	0.300	0.460	0.012	0.018
L1	0.260	0.460	0.010	0.018
θ	0°	8	0°	8

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.