



DESCRIPTION

The AM2333 is available in SOT-23 package.

ORDERING INFORMATION

Package Type		Part Number	
SOT-23 SPQ: 3,000pcs/Reel	E3	AM2333E3R	
		AM2333E3VR	
Note	V: Halogen free Package R: Tape & Reel		
AiT provides all RoHS products			

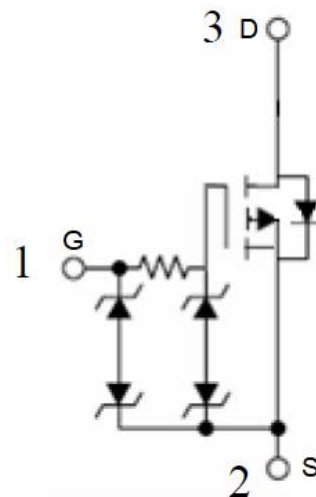
FEATURES

- Ultra Low $R_{DS(ON)}$
- ESD Diode. Protected Gate
- Available in SOT-23 package

APPLICATIONS

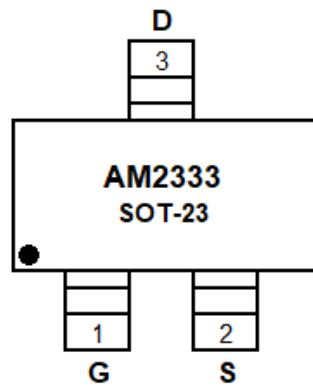
- Battery Switch
- High Side Load Switch

TYPICAL APPLICATION





PIN DESCRIPTION



Top View

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



ABSOLUTE MAXIMUM RATINGS

T_A=25°C, unless otherwise noted

V _{DSS} , Drain-to-Source Voltage	-12V
V _{GS} , Gate-to-Source Voltage	±8V
I _D , Drain Current ^{NOTE1} Steady State	-6A
I _{DM} , Pulsed Drain Current (tp = 10μs)	-21A
P _D , Power Dissipation ^{NOTE1}	
Steady State	1.1W
t < 7s	1.8W
R _{θJA} , Thermal Resistance, Junction-to-Ambient	140°C/W
T _J , T _{STG} , Operating Junction and 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.

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



ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-12	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{GS}=0V, V_{DS}=-12V, T_J = 25^\circ C$	-	-	-1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 8V$	-	-	± 10	μA
Gate Threshold Voltage ^{NOTE2}	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-	-	-1	V
Drain-Source On-Resistance ^{NOTE2}	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-1A$	-	27	32	m Ω
		$V_{GS}=-2.5V, I_D=-1A$	-	32	40	
		$V_{GS}=-1.8V, I_D=-1A$	-	45	71	
Forward Transconductance ^{NOTE2}	g_{fs}	$V_{DS}=-5V, I_D=-3A$	-	11	-	S
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V$ $f=1.0MHz$	-	1571	-	pF
Output Capacitance	C_{oss}		-	214	-	
Reverse Transfer Capacitance	C_{rss}		-	230	-	
Threshold Gate Charge	$Q_{g(th)}$	$V_{DS}=-15V, V_{GS}=-0.7V, I_D=-4.0A$	-	1.2	-	nC
Total Gate Charge	$Q_{g(TOT)}$	$V_{GS}=-4.5V, V_{DS}=-15V, I_D=-4A$	-	19.2	-	
Gate-Source Charge	Q_{gs}		-	2.5	-	
Gate-Drain Charge	Q_{gd}		-	7.1	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=-4.5V, V_{DD}=-15V, I_D=-4A, R_G=1\Omega$	-	8.6	-	ns
Rise Time	t_r		-	15	-	
Turn-Off Delay Time	$t_{d(off)}$		-	150	-	
Fall Time	t_f		-	88	-	
Diode Forward Voltage	V_{SD}	$I_S=-1A, V_{GS}=0V, T_J=25^\circ C$	-	-	-1.5	V

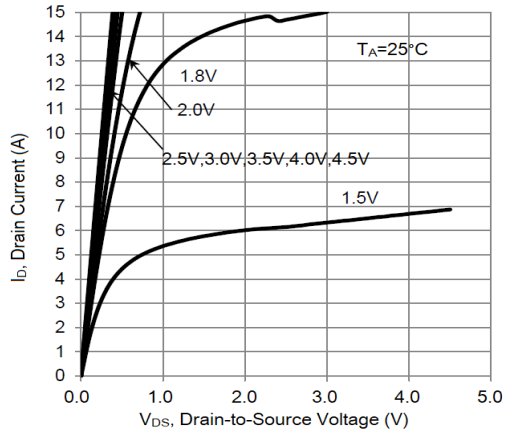
NOTE2: pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

NOTE3: Switching characteristics are independent of operating junction temperatures

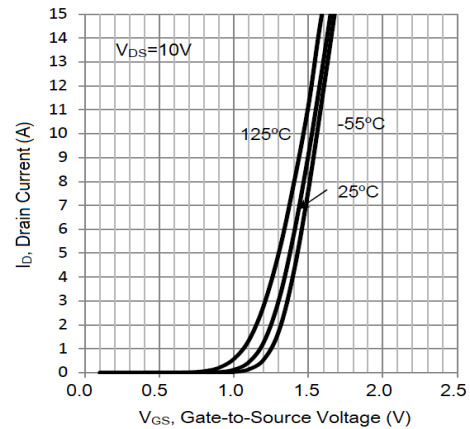


TYPICAL ELECTRICAL CHARACTERISTICS

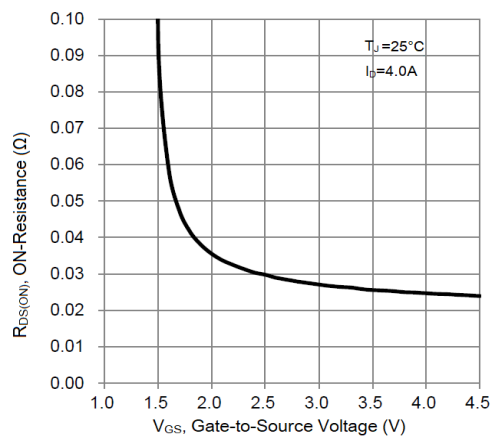
1. On-Region Characteristics



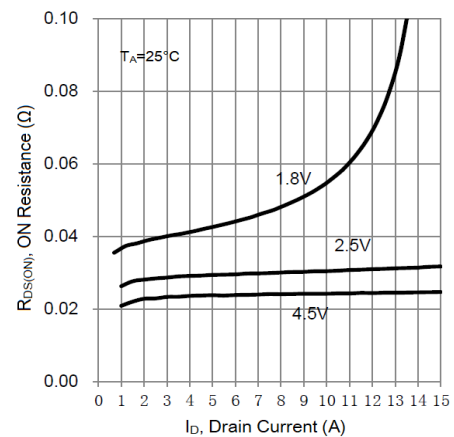
2. Transfer Characteristics



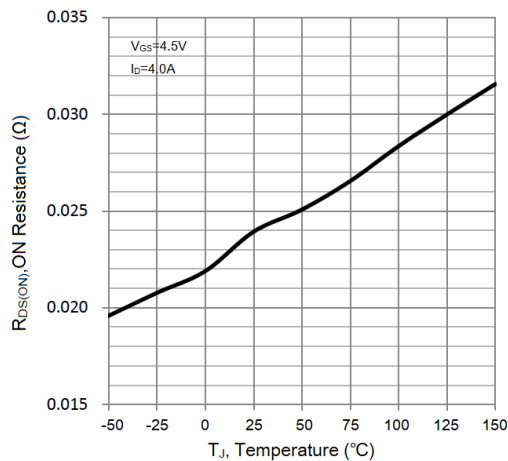
3. On-Resistance vs. Gate-to-Source Voltage



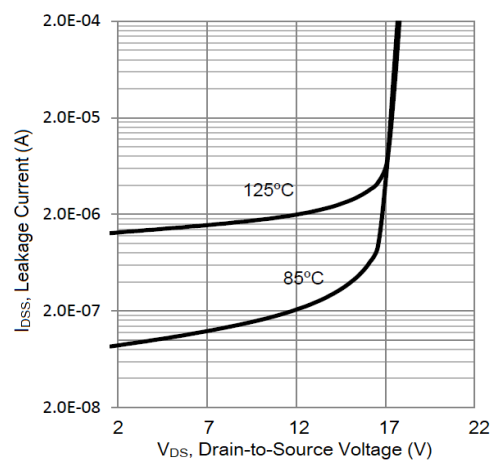
4. On-Resistance vs. Drain Current and Gate Voltage



5. On-Resistance Variation with Temperature

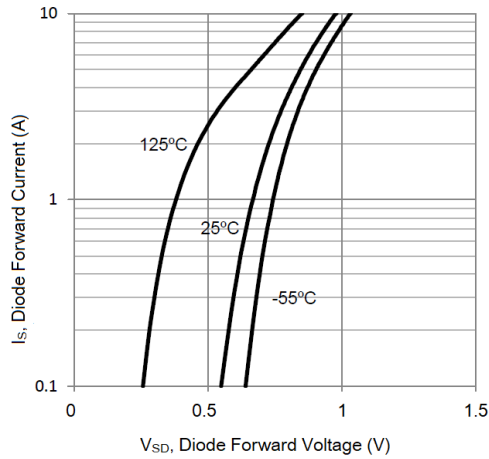


6. Drain-to-Source Leakage Current vs. Voltage

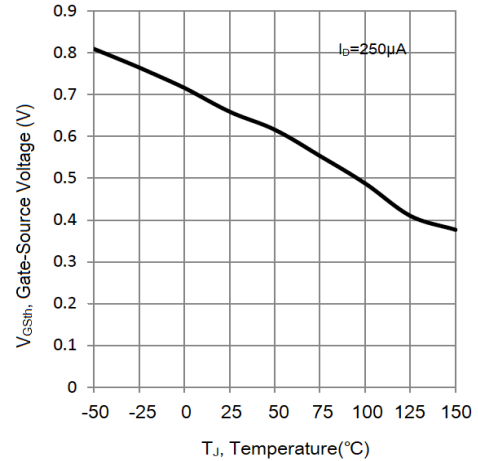




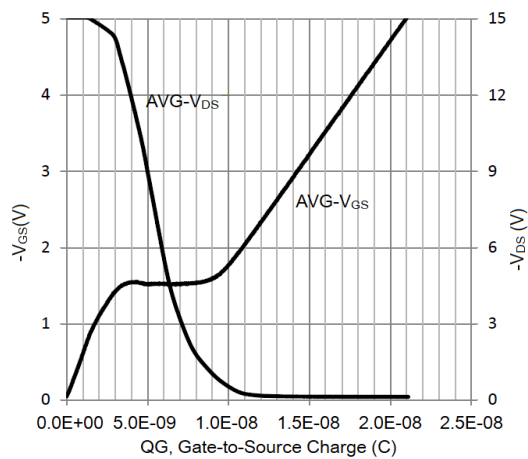
7. Diode Forward Voltage vs. Current



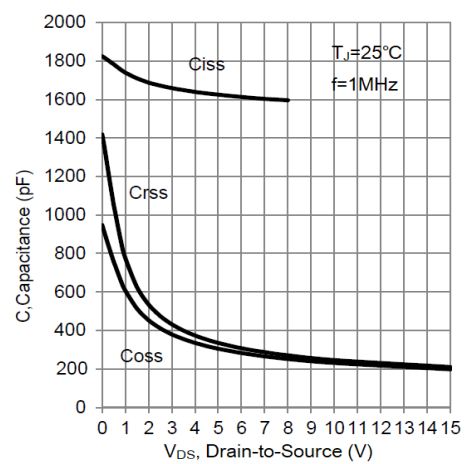
8. Threshold Voltage



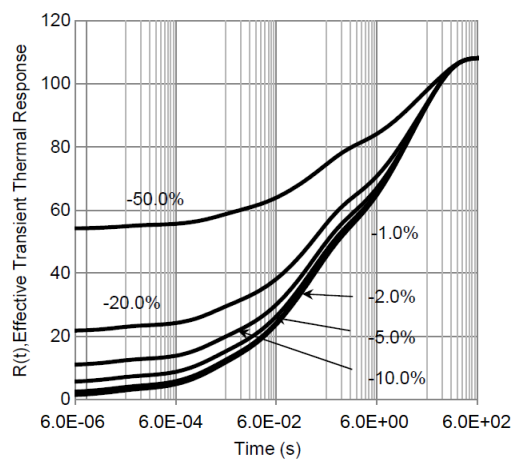
9. Gate-to-Source and Drain-to-Source Voltage vs. Total Charge



10. Capacitance variation



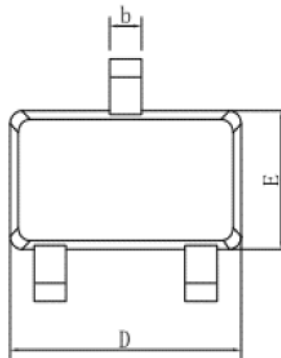
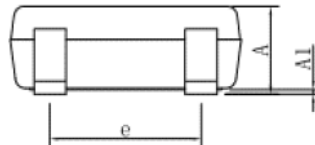
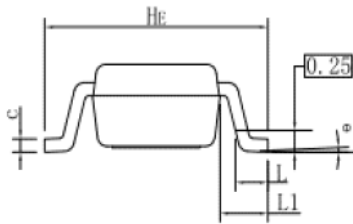
11. FET Thermal Response



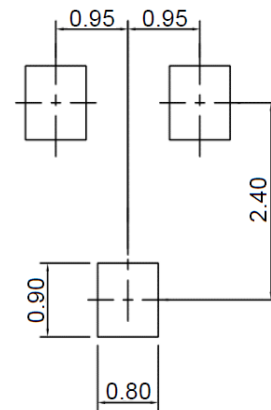


PACKAGE INFORMATION

Dimension in SOT-23 Package (Unit: mm)



SOLDERING FOOTPRINT



Symbol	Min.	Max.
A	0.90	1.10
A1	0.01	0.10
b	0.30	0.50
c	0.10	0.20
D	2.80	3.00
E	1.50	1.70
e	1.80	2.00
L	0.20	0.60
L1	0.60REF	
H _E	2.60	3.00
θ	0°	10°



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