DESCRIPTION

The AM3415E is available in SOT-23S Package.

BVDSS	RDSON	ID
-20V	28mΩ	-5A

APPLICATION

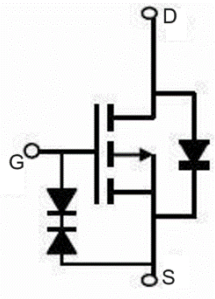
- Super Low Gate Charge.
- Green Device Available.
- Excellent CdV/dt effect decline.
- Advanced High Cell Density Trench Technology
- ESD Rating: 2000V.

ORDERING INFORMATION

Package Type	Part Number	
SOT-23S SPQ: 3,000pcs/Reel	E3	AM3415EE3SR
		AM3415EE3VSR
Note	R: Tape & Reel V: Halogen free Package	
AiT provides all RoHS products		

PIN DESCRIPTION

SOT-23S



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

ABSOLUTE MAXIMUM RATINGS

V_{DS}, Drain-Source Voltage		-20V
V_{GS}, Gate-Source Voltage		±12V
I_D (1), Continuous Drain Current @-4.5V	T_A=25℃	-5.0A
	T_A=70℃	-3.0A
I_{DM} (2), Pulsed Drain Current		-16A
P_D , Total Power Dissipation	T_A=25℃	1.31W
	T_A=70℃	0.84W
T_{STG}, Storage Temperature Range		-55℃~+150℃
T_J, operating Junction Temperature Range		-55℃~+150℃
$R_{\theta JA}$, Thermal Resistance Junction-Ambient		125℃/W

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.

(1) Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

(2) Pulse width≦300us, duty cycle≦2%

ELECTRICAL CHARACTERISTICS

T_J=25℃,unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D= -250μA	-20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= -20V, V_{GS}=0V	-	-	-1	μA
Gate to Body Leakage Current	I_{GSS}	V_{DS}= 0V, V_{GS} =±12V	-	-	±100	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS\ (th)}$	V_{DS}=V_{GS}, I_D= -250μA	-0.4	-0.7	-1.0	V
Static Drain–Source On–State Resistance	$R_{DS\ (on)}$	V_{GS}= -4.5V, I_D= -4.1A	-	27	35	mΩ
		V_{GS}= -2.5V, I_D=-3A	-	38	53	
Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%						
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	V_{DS}= -10V, V_{GS}=0V, f=1.0MHz	-	830	-	pF
Output Capacitance	C_{oss}		-	132	-	
Reverse Transfer Capacitance	C_{rss}		-	85	-	
Total Gate Charge	Q_g	V_{DS}= -10V, I_D= -2A V_{GS}= -4.5V	-	8.80	-	nC
Gate-Source Charge	Q_{gs}		-	1.40	-	
Gate-Drain (“Miller”) Charge	Q_{gd}		-	1.90	-	
SWITCHING CHARACTERISTICS						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= -10V, $I_{D=}$ -3.3A R_G= 1Ω, V_{GEN}= -4.5V	-	10	-	ns
Turn-on Rise Time	t_r		-	32	-	
Turn-Off Delay Time	$t_{d(off)}$		-	50	-	
Turn-Off Fall Time	t_f		-	51	-	
Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%						
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Maximum Continuous Drain to Source Diode Forward Current	I_S	-	-	-	-5.0	A
Maximum Pulsed Drain to Source Diode Forward Current	I_{SM}	-	-	-	-16	A
Drain to Source Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S= -4.1A	-	-	-1.20	V

TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Output Characteristics

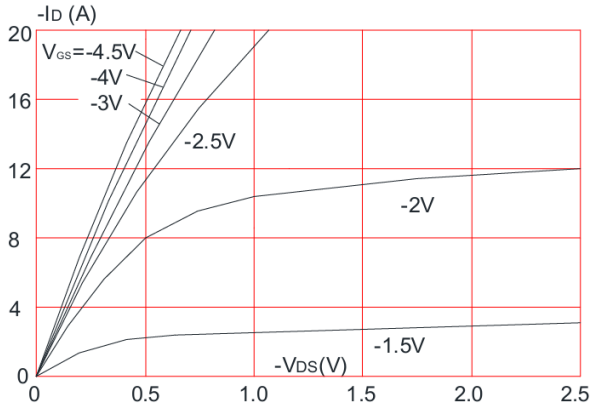


Fig 2. Typical Transfer Characteristics

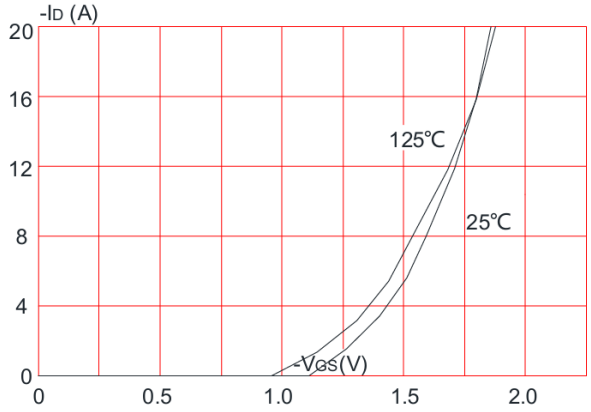


Fig 3. On–Resistance vs. Drain Current

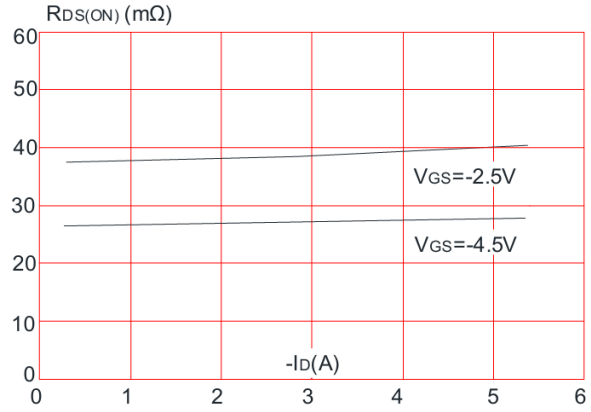


Fig 4. Body Diode Characteristics

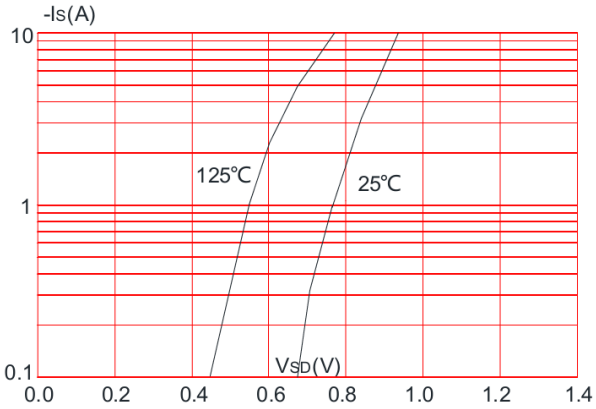


Fig 5. Gate Charge Characteristics

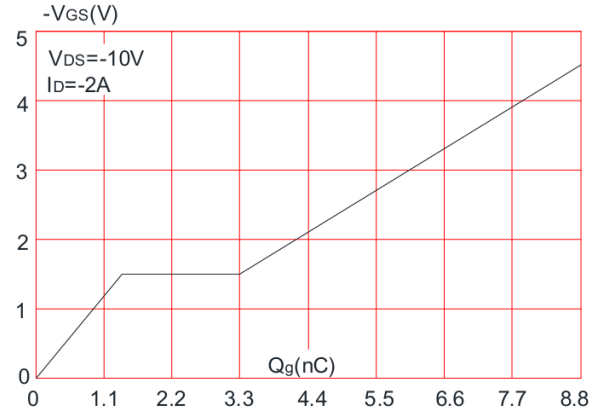


Fig 6. Capacitance Characteristics

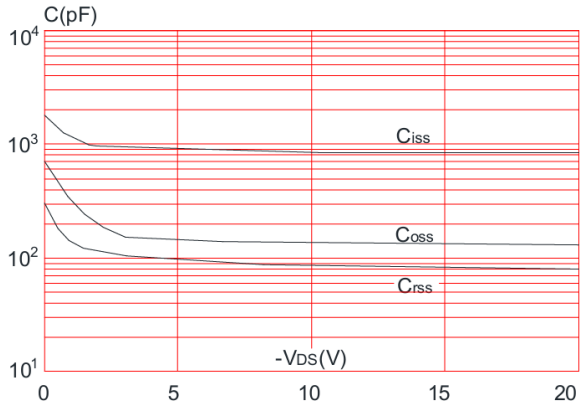


Fig 7. Normalized Breakdown Voltage vs. Junction Temperature

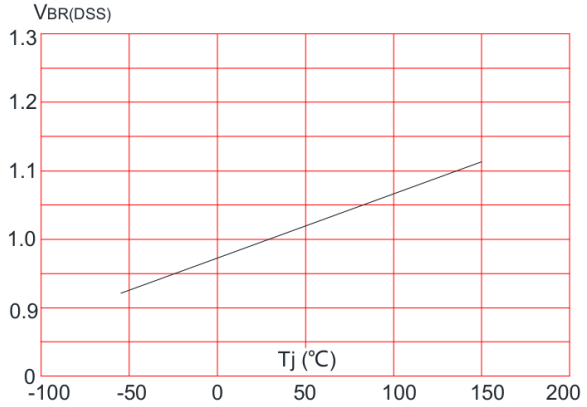


Fig 8. Normalized on Resistance vs. Junction Temperature

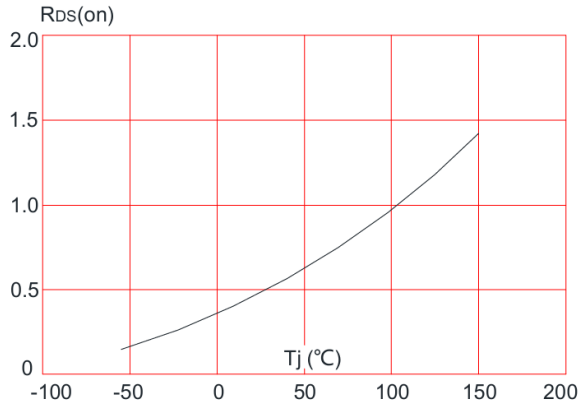


Fig 9. Maximum Safe Operating Area

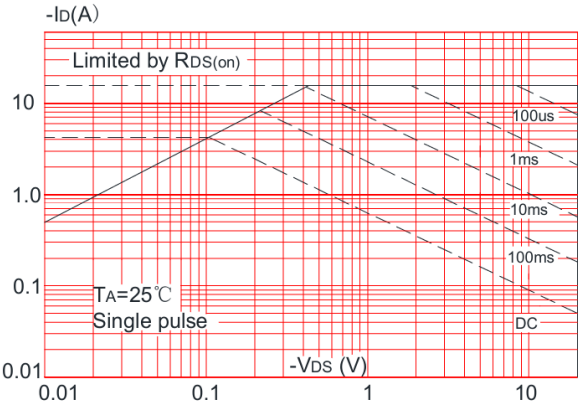


Fig 10. Maximum Continuous Drain Current vs. Ambient Temperature

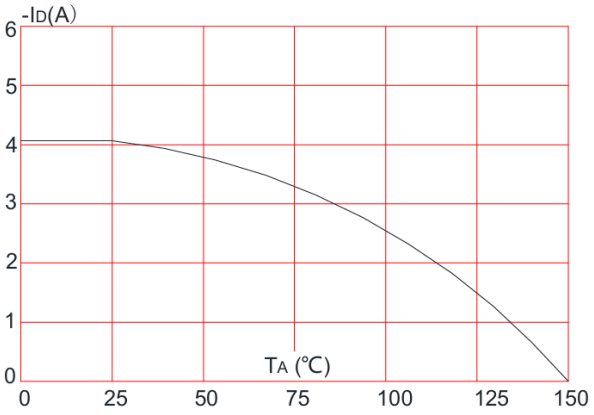
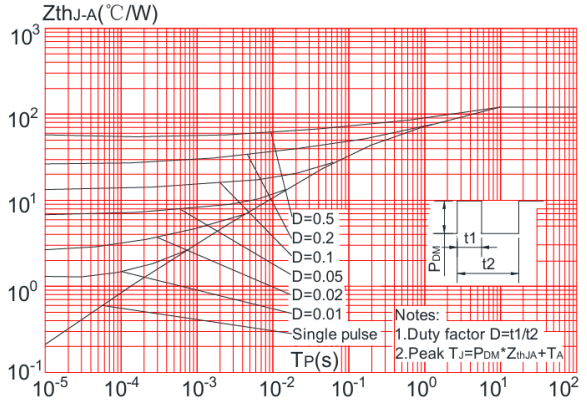
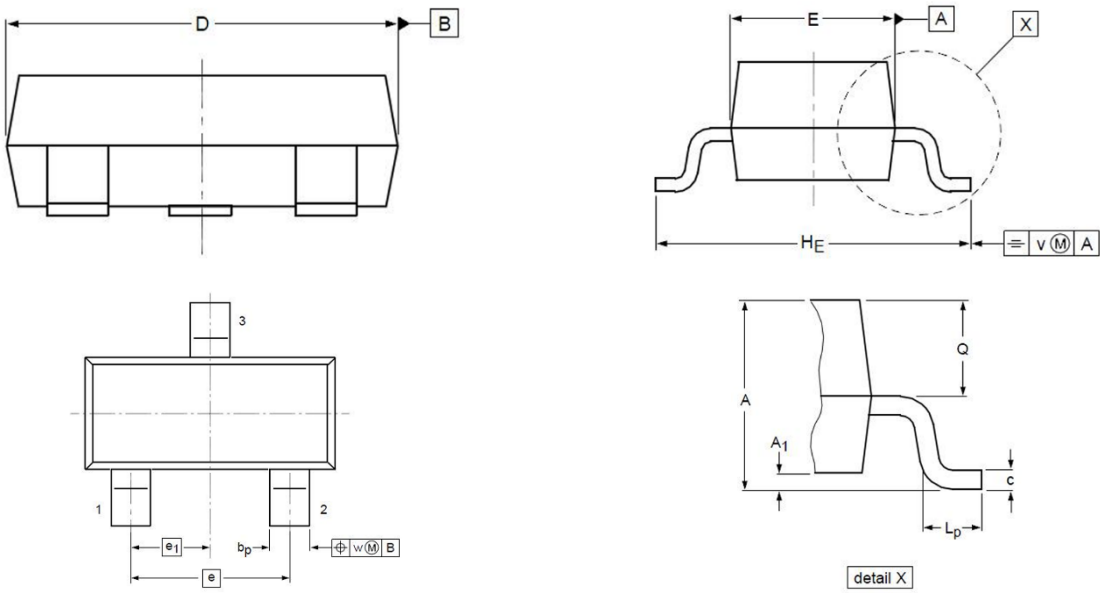


Fig 11. Maximum Effective Transient, Thermal Impedance, Junction-to-Ambient



PACKAGE INFORMATION

Dimension in SOT-23S (Unit: mm)



Symbol	Millimeters (mm)	
	Min.	Max.
A	0.900	1.150
A1	0.010	0.100
b_p	0.300	0.500
c	0.800	0.150
D	2.800	3.000
E	1.200	1.400
e	1.900 TYP.	
e1	0.950 TYP.	
H_E	2.250	2.550
L_P	0.300	0.500
Q	0.450	0.550
v	0.200 TYP.	
w	0.100 TYP.	

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