

**DESCRIPTION**

The AM3415E is available in SOT-23S Package.

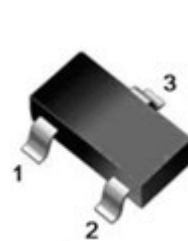
BVDSS	RDSON	ID
-20V	28mΩ	-5A

APPLICATION

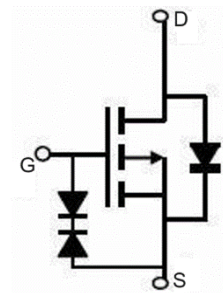
- Super Low Gate Charge.
- Green Device Available.
- Excellent CdV/dt effect decline.
- Advanced High Cell Density Trench Technology
- ESD Rating: 2000V.

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°C	-5.0A
	T _A =70°C	-3.0A
I _{DM} ⁽²⁾ , Pulsed Drain Current		-16A
P _D , Total Power Dissipation	T _A =25°C	1.31W
	T _A =70°C	0.84W
T _{STG} , Storage Temperature Range		-55°C~+150°C
T _J , operating Junction Temperature Range		-55°C~+150°C
R _{θJA} , Thermal Resistance Junction-Ambient		125°C/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 ≤ 300μs, duty cycle ≤ 2%



ELECTRICAL CHARACTERISTICS

T_J=25°C, 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

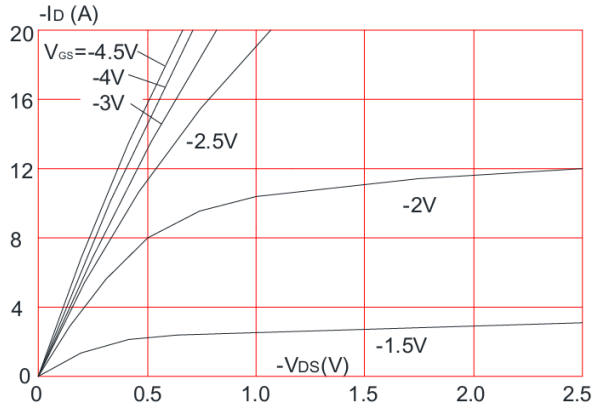


Fig 2. Typical Transfer Characteristics

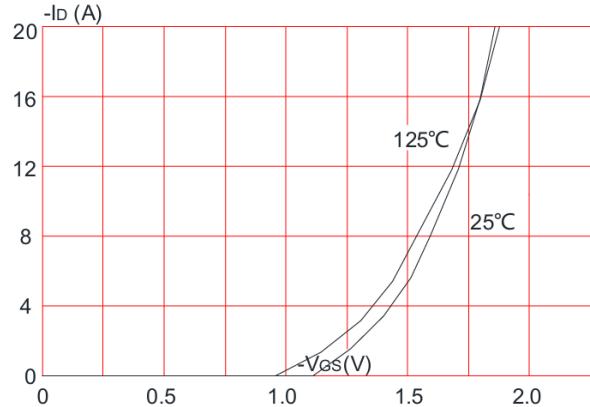


Fig 3. On-Resistance vs. Drain Current

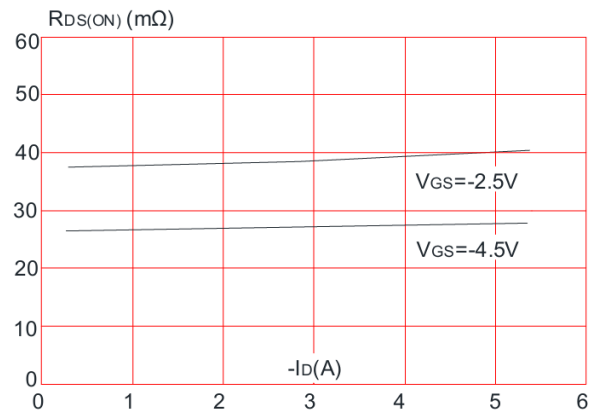


Fig 4. Body Diode Characteristics

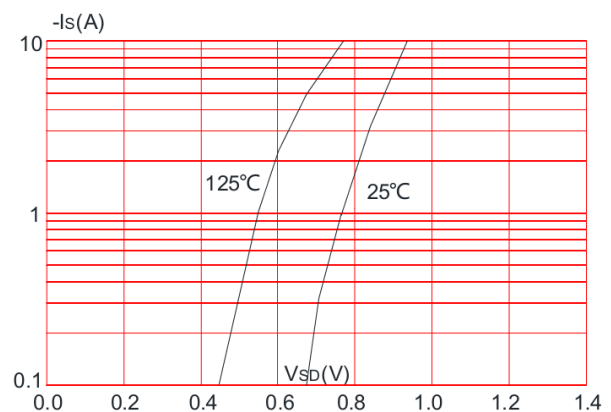


Fig 5. Gate Charge Characteristics

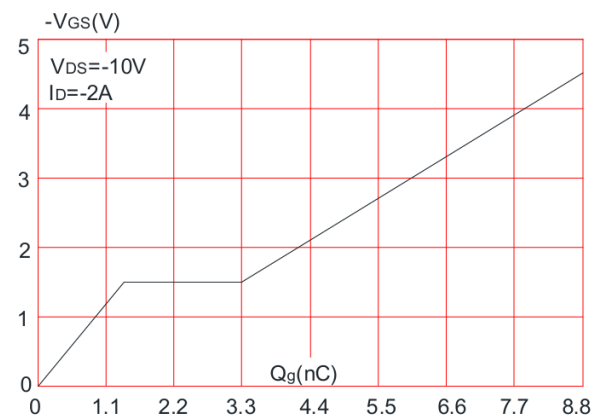


Fig 6. Capacitance Characteristics

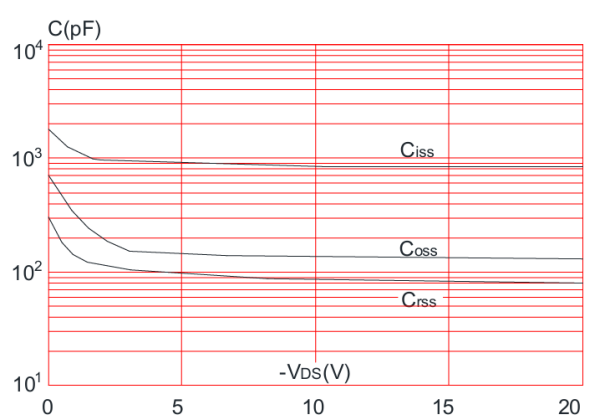




Fig 7. Normalized Breakdown Voltage
vs. Junction Temperature

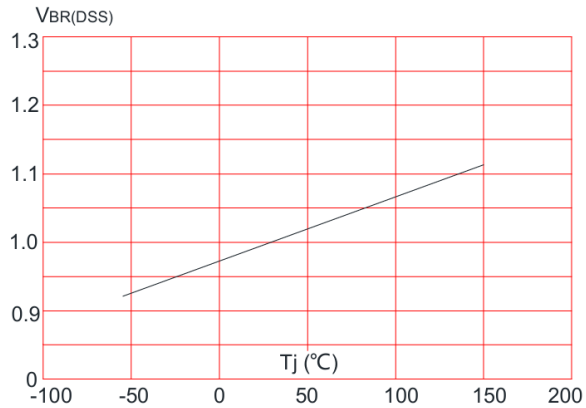


Fig 9. Maximum Safe Operating Area

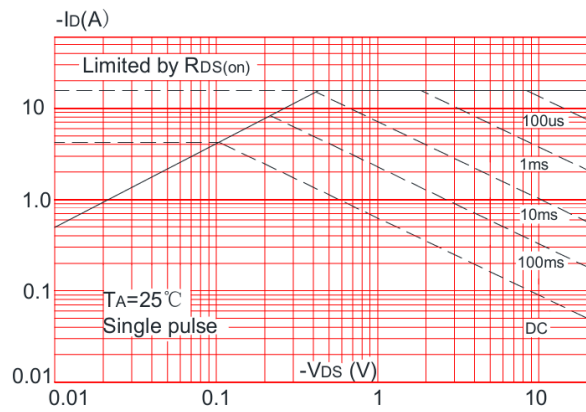


Fig 8. Normalized on Resistance
vs. Junction Temperature

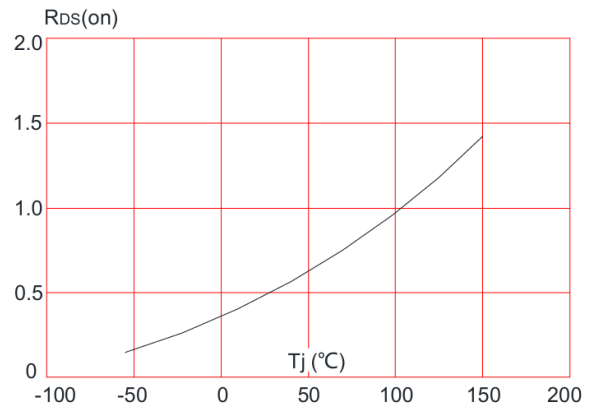


Fig 10. Maximum Continuous Drain Current
vs. Ambient Temperature

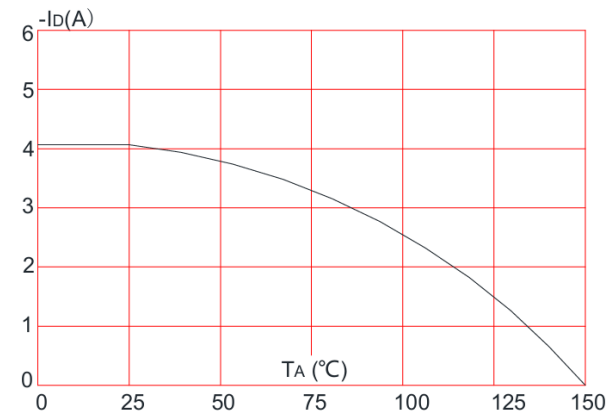
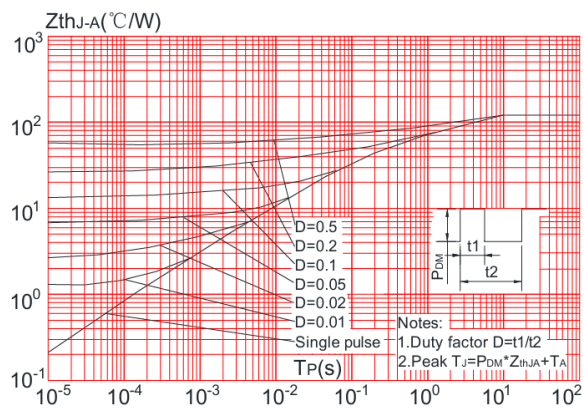


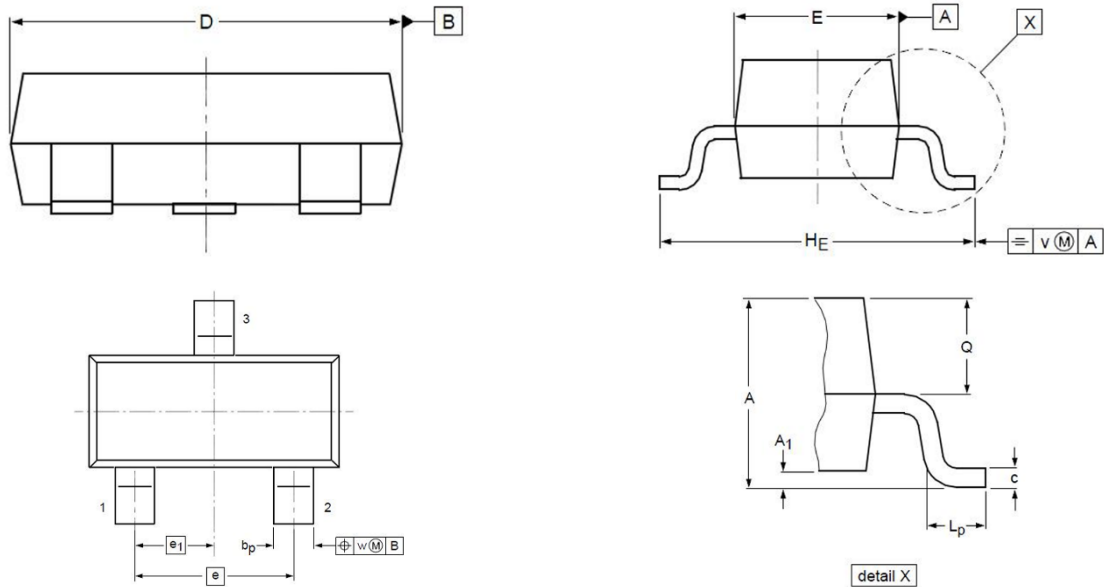
Fig 11. Maximum Effective Transient, Thermal Impedance, Junction-to-Ambient





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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