DESCRIPTION

The AM3415 is the P-Channel logic enhancement mode power field effect transistor is produced using high cell density. Advanced trench technology to provide excellent R_{DS} (ON) low gate charge and operation with gate voltage as 1.5V.

This device is suitable for use as a load switch or in applications.

The AM3415 is available in SOT-23 Package

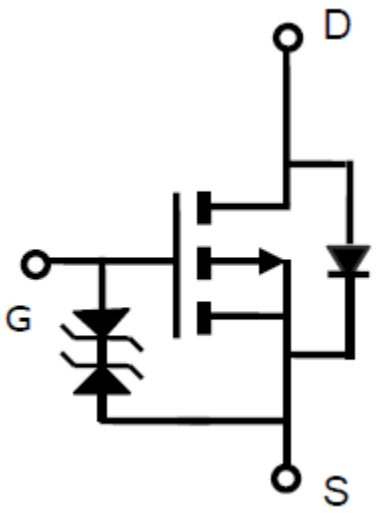
FEATURES

- -20V/-4.0A, $R_{DS(ON)}$ =45mΩ(typ.)@V_{GS} =-4.5V
- -20V/-4.0A, $R_{DS(ON)}$ =54mΩ(typ.)@V_{GS} =-2.5V
- -20V/-2.0A, $R_{DS(ON)}$ =68mΩ(typ.)@V_{GS} =-1.8V
- -20V/-1.0A, $R_{DS(ON)}$ =92mΩ(typ.)@V_{GS} =-1.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and Maximum DC current capability
- ESD Protected : 3KV
- RoHs Compliant
- Available in SOT-23 package

APPLICATIONS

- Cellular/Portable
- Load Switch

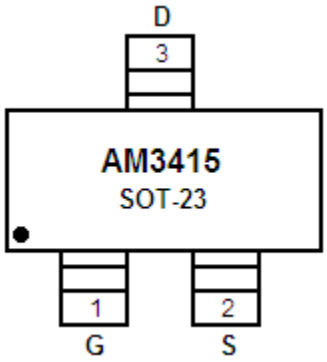
P-CHANNEL MOSFET



ORDERING INFORMATION

Package Type	Part Number	
SOT-23	E3	AM3415E3R
		AM3415E3VR
Note	V: Green Package R : Tape & Reel	
AiT provides all Pb free products Suffix " V " means Green Package		

PIN DESCRIPTION



Top View

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

ABSOLUTE MAXIMUM RATINGS

T_A = 25℃ Unless otherwise noted

V_{DSS}, Drain-Source Voltage				-20 V
V_{GSS}, Gate-Source Voltage				±8 V
I_D	Continuous Drain Current	T_A=25°C[Note1]	V_{GS}=-8V	-4.0 A
	Continuous Drain Current	T_A=70°C[Note1]		-3.5 A
I_{DM}, Pulsed Drain Current[Note2]				-20 A
P_D, Power Dissipation		T_A=25°C		1.5 W
		T_A=70°C		0.9 W
T_J, Operation Junction Temperature				-55 ℃ to 150℃
T_{STG}, Storage Temperature Range				55 ℃ to 150℃

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.

NOTE1: The value of $R_{\theta JA}$ is measured with the device mounted on 1in 2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C.

NOTE2: The data tested by pulsed , pulse width ≦ 300uS , duty cycle ≦ 2%

THERMAL INFORMATION

Symbol	Parameter	Typ.	Max	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient Steady-State	-	140	°C/W
$R_{\theta JL}$	Thermal Resistance Junction to Lead Steady-State	-	80	°C/W

ELECTRICAL CHARACTERISTICS

T_J = 25℃ Unless otherwise specified

Parameter	Symbol	Conditions	Min	Type	Max	Units
Static Parameters						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=-250μA	-20	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	-0.3	-	-1.0	V
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±8V	-	-	±10	μA
Zero Gate Voltage, Drain-Source Leakage Current	I_{DSS}	V_{DS}=-20V,V_{GS}=0V T_J=25°C	-	-	-1	μA
		V_{DS}=-20V,V_{GS}=0V T_J=55°C			-5	
Drain-source On-Resistance[Note2]	$R_{DS(ON)}$	V_{GS}=-4.5V,I_D=-4.0A		44	54	mΩ
		V_{GS}=-2.5V,I_D=-4.0A		53	62	
		V_{GS}=-1.8V,I_D=-2.0A		66	75	
		V_{GS}=-1.5V,I_D=-1.0A		85	110	
Forward Transconductance	G_{fs}	V_{DS}=-5V,I_D=-4.0A		22		S
Source-Drain Diode						
Diode Forward Voltage	V_{SD}	I_S=-1.0A,V_{GS}=0V		-0.67	-1.0	V
Continuous Source Current[Note1 Note3]	I_S				-6	A
Dynamic Parameters						
Total Gate Charge	Q_g (-4.5V)	V_{DS}=-10V		11.1		nC
Gate-Source Charge	Q_{gs}	V_{GS}=-4.5V		3.1		
Gate-Drain Charge	Q_{gd}	I_D≡-4.0A		2.4		
Input Capacitance	C_{iss}	V_{DS}=-10V		989		pF
Output Capacitance	C_{oss}	V_{GS}=0V		167		
Reverse Transfer Capacitance	C_{rss}	f=1MHz		75.5		
Turn-On Time	$t_{d(on)}$	V_{DD}=-10V		712		nS
	t_r	I_D=-1A		1386		
Turn-Off Time	$t_{d(off)}$	V_{GEN}=-4.5V		9.1		μA
	t_f	R_G=2.5Ω		4		

NOTE1: The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C.

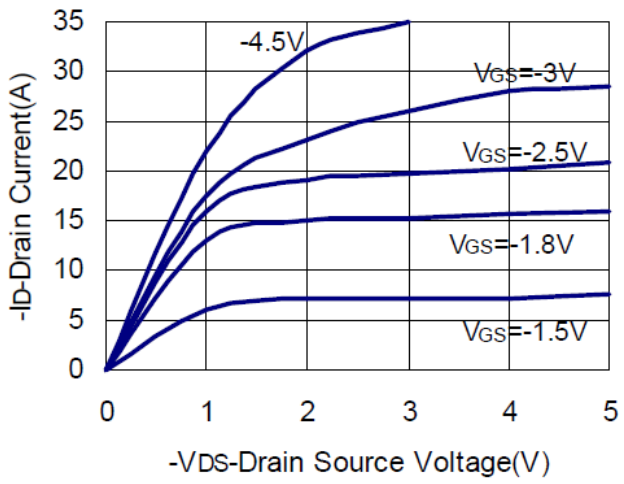
NOTE2: The data tested by pulsed , pulse width ≦ 300uS , duty cycle ≦ 2%

NOTE3: The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

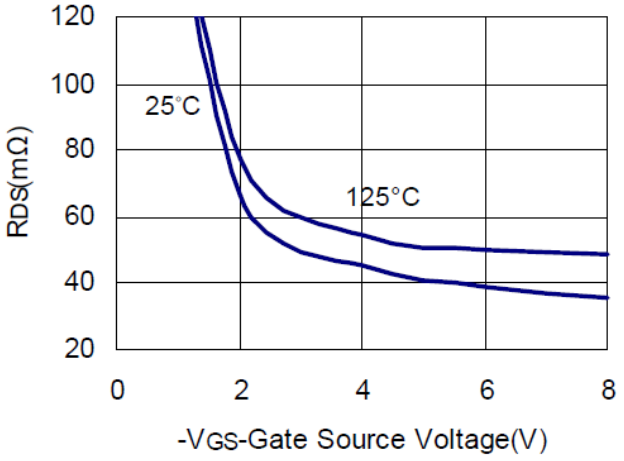
TYPICAL PERFORMANCE CHARACTERISTICS

T_A=25℃ Unless Specified

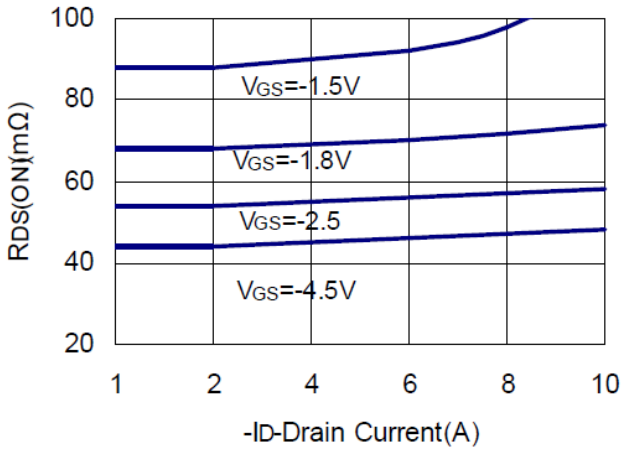
1. Output Characteristics



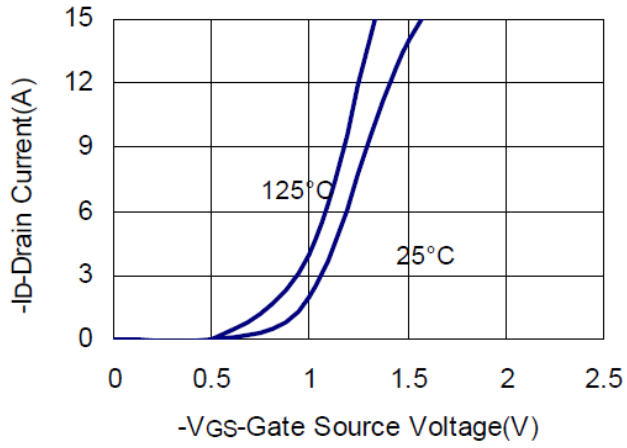
2. Drain-Source On Resistance



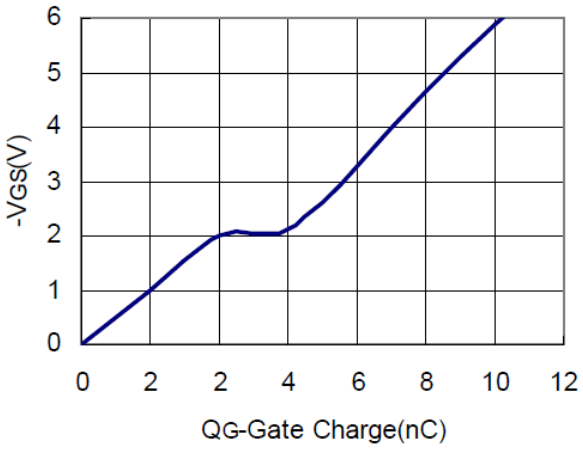
3. Drain Source On Resistance



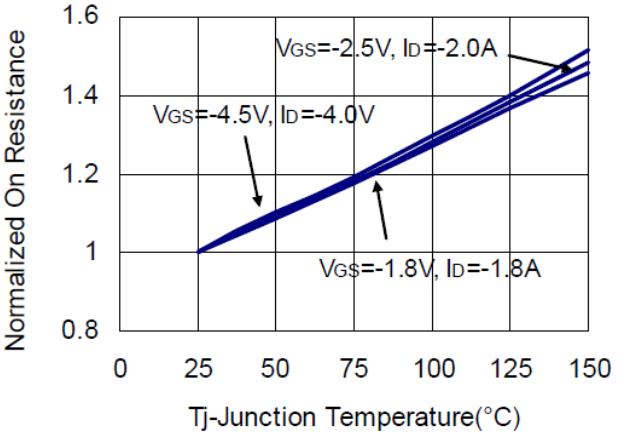
4. Transfer Characteristics



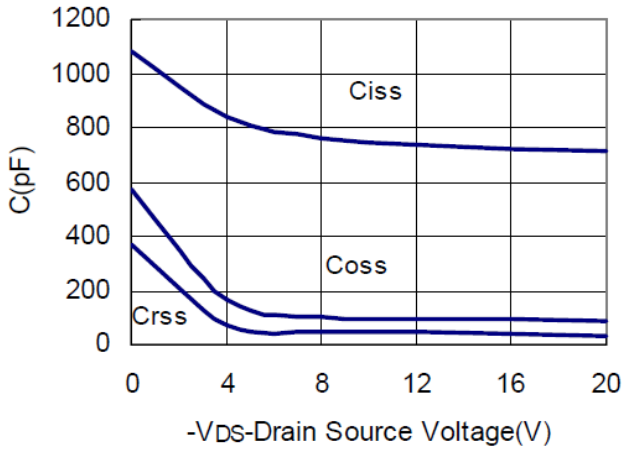
5. Gate Charge



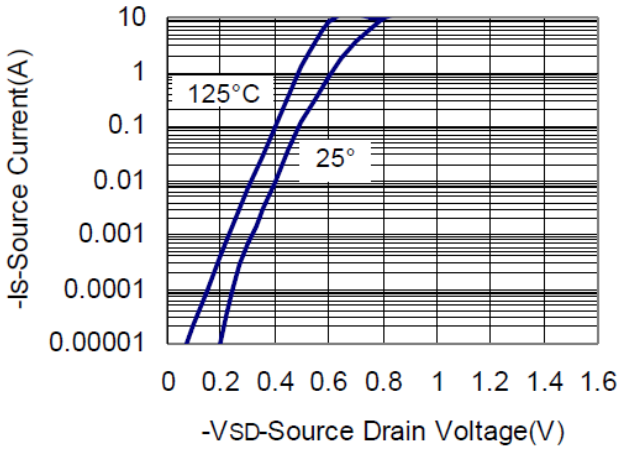
6. Drain Source Resistance



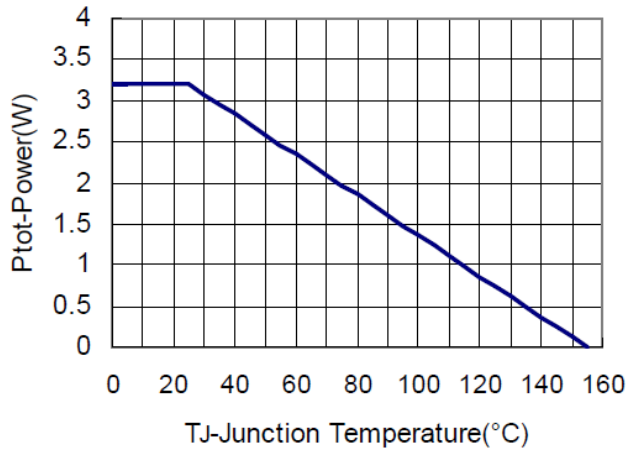
7. Capacitance



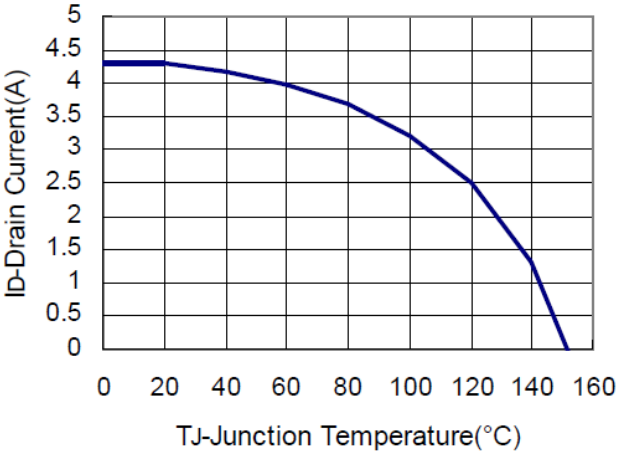
8. Source Drain Diode Forward



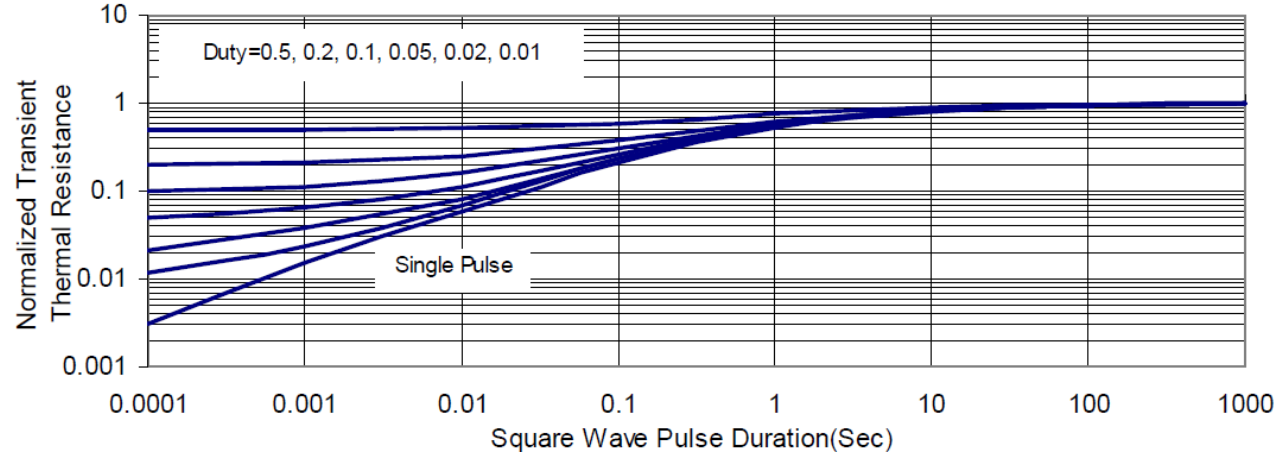
9. Power Dissipation



10. Drain Current

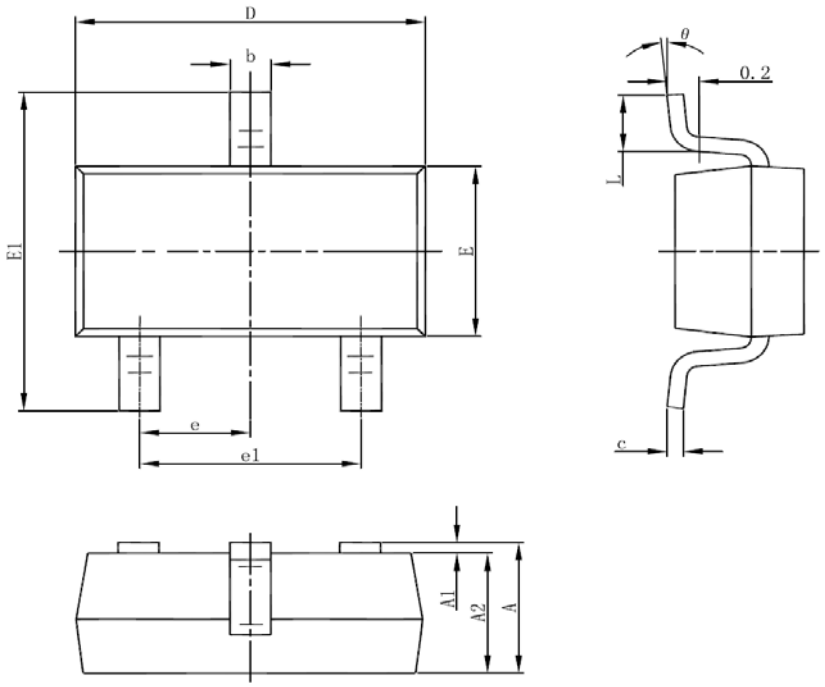


11. Thermal Transient Impedance



PACKAGE INFORMATION

Dimension in SOT-23 Package (Unit: mm)



SYMBOL	MIN	MAX
A	1.050	1.250
A1	0.000	0.100
A2	1.050	1.150
b	0.300	0.500
c	0.100	0.200
D	2.820	3.020
E	1.500	1.700
E1	2.650	2.950
e	0.950(BSC)	
e1	1.800	2.000
L	0.300	0.600
θ	0°	8°

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