

-20V P-Channel MOSFET

MOSFET Product Summary

V_{DS}	$R_{DS(ON)}$ (Typ.)	I_D
-20V	30m Ω @ $V_{GS}=-4.5V$	-7.5A
	38m Ω @ $V_{GS}=-2.5V$	

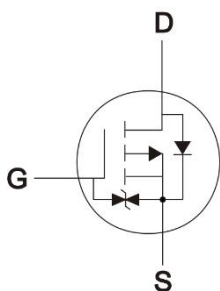
Description

The PM3415AL uses advanced Trench technology and designs to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications. The package form is SOT-23, which accords with the RoHS standard and Halogen Free standard.

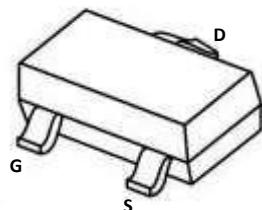
Features

- Low Gate Charge and $R_{DS(ON)}$
- Lead free product is acquired
- High Power and current handling capability
- ESD protected

Dimensions and Pin Configuration



Circuit diagram



SOT-23

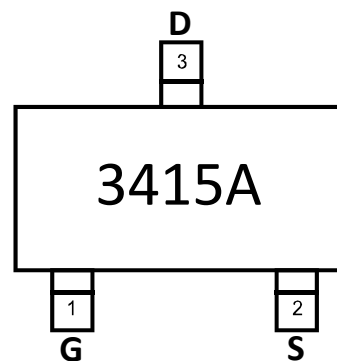
Mechanical Characteristics

- Package: SOT-23
- Case Material: "Green" Molding Compound
- Marking Information: See Below

Applications

- DC-DC converter
- Apply for high-frequency switching and synchronous rectification

Marking Information



3415A = Device Marking Code

Ordering Information

Part Number	Shipping	Reel Size
PM3415AL	3000/Tape & Reel	7 inch

Absolute Maximum Ratings ($T_A=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 10	V
Continuous Drain Current	I_D	-7.5	A

Pulsed Drain Current _(note1)	I_{DM}	-30	A
Power Dissipation	P_D	1.6	W
Thermal Resistance from Junction to Ambient _(note1)	$R_{\theta JA}$	80	°C/W
Junction Temperature	T_J	-55~ +150	°C
Storage Temperature	T_{STG}	-55~ +150	°C

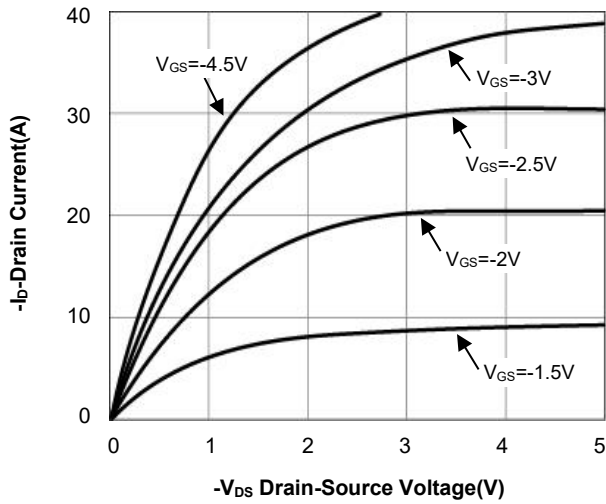
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static 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-body leakage current	I _{GSS}	V _{GS} =±10V, V _{DS} = 0V	-	-	±10	μA
Gate threshold voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =-250μA	-0.5	-0.8	-1.0	V
Drain-source on-resistance	R _{DS(ON)}	V _{GS} =-4.5V, I _D =-3.5A	-	30	39	mΩ
		V _{GS} =-2.5V, I _D =-1A	-	38	50	
Diode Forward voltage _(note1)	V _{SD}	I _S =-4A, V _{GS} = 0V	-	-	-1	V
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, f=1MHz	-	310	-	pF
Output Capacitance	C _{oss}		-	81	-	
Reverse Transfer Capacitance	C _{rss}		-	28	-	
Switching Characteristics						
Turn-on delay time	t _{d(on)}	V _{GS} =-4.5V, V _{DS} =-10V, R _L =1Ω, R _{GEN} =3Ω	-	13	-	ns
Turn-on rise time	t _r		-	11	-	
Turn-off delay time	t _{d(off)}		-	20	-	
Turn-off fall time	t _f		-	31	-	
Total Gate Charge	Q _g	V _{GS} =-4.5V, V _{DS} =-10V, I _D =-4A		10		nC
Gate Source Charge	Q _{gs}			1.1		
Gate Drain Charge	Q _{gd}			2.4		

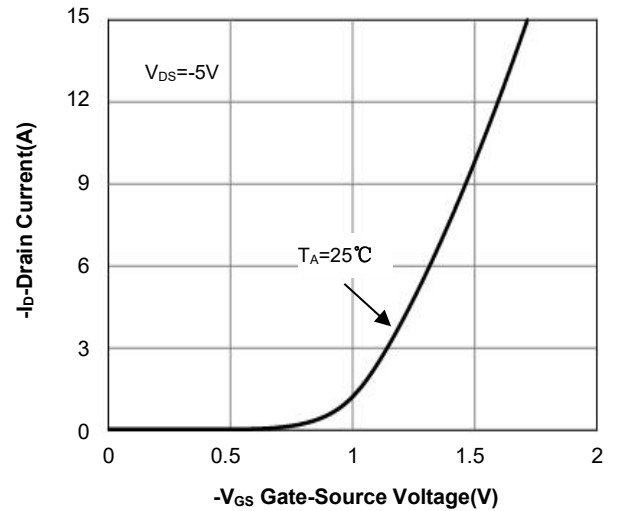
Notes:

1. Repetitive rating; pulse width limited by maximum junction temperature.
2. EAS condition: $T_J = 25^{\circ}\text{C}$, $V_{DD} = -20V$, $V_G = 10V$, $R_g = 25\Omega$, $L = 0.5mH$.

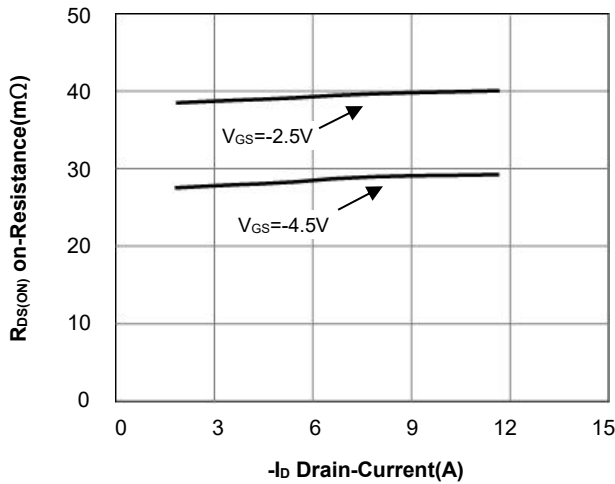
Typical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified)



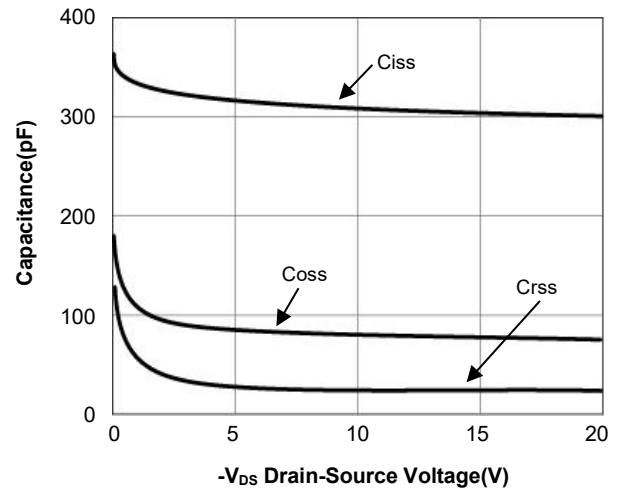
Drain Current vs. Drain-Source Voltage



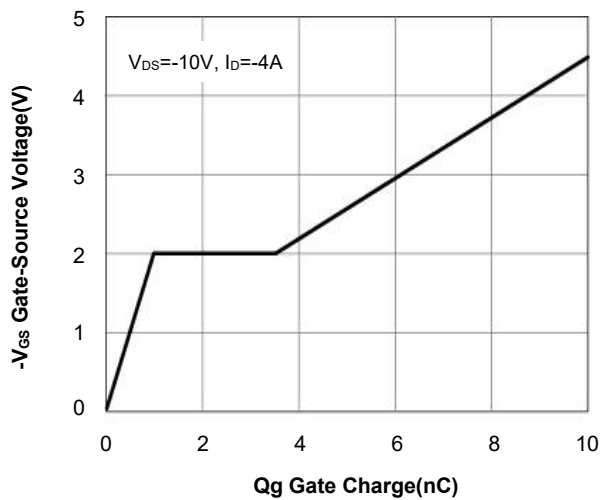
Drain Current vs. Gate-Source Voltage



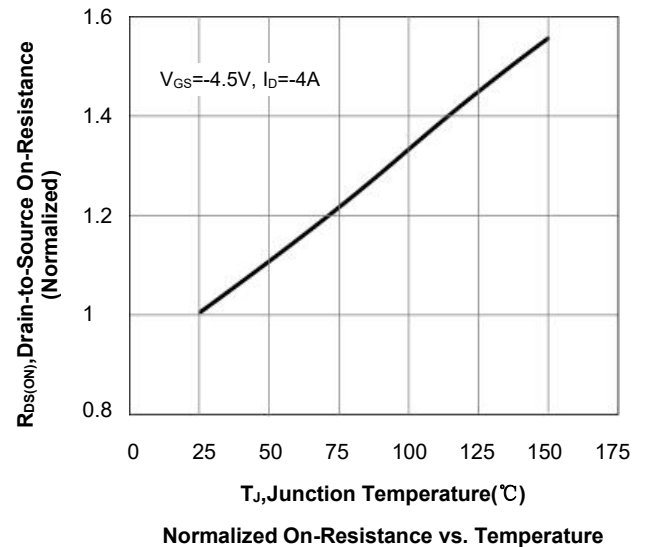
$R_{DS(ON)}$ On-Resistance vs. Drain-Current



Capacitance vs. Drain-Source Voltage

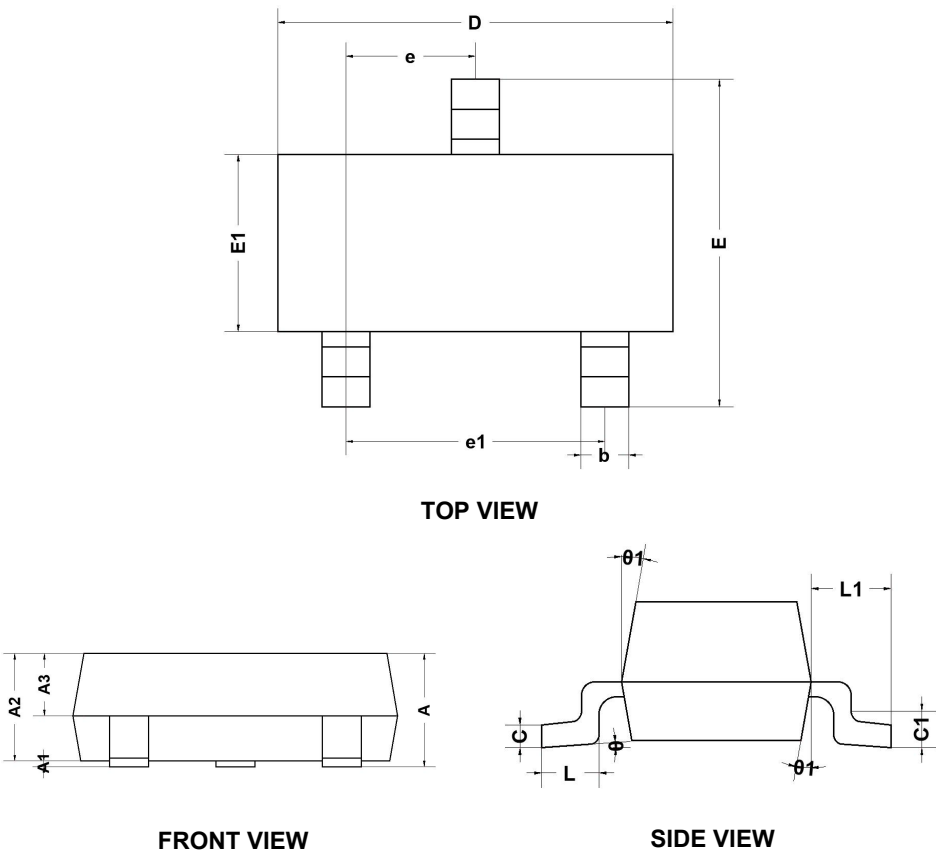


Drain Current vs. Drain-Source Voltage



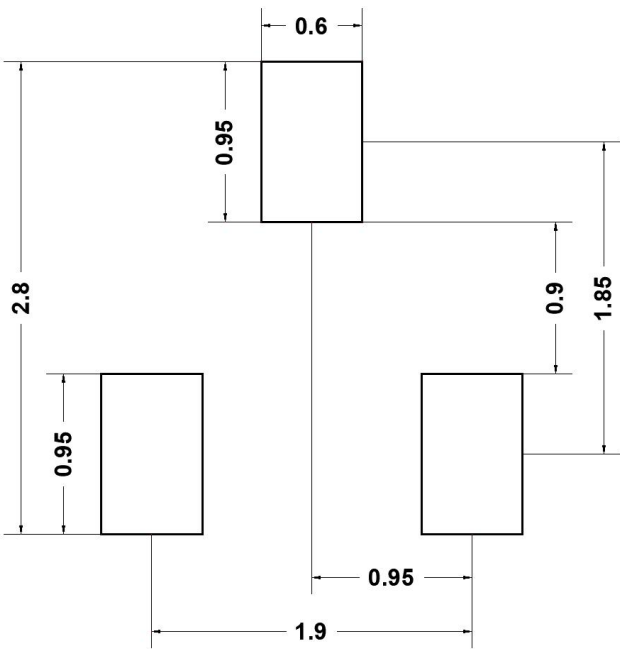
Normalized On-Resistance vs. Temperature

SOT-23 Package Outline Drawing



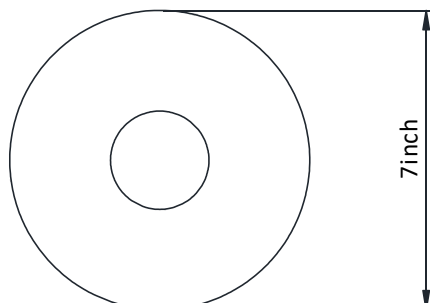
SYM	MILLIMETERS		
	MIN	NOM	MAX
A	-	-	1.30
A1	0.00	-	0.10
A2	0.85	-	1.05
A3	0.55REF		
b	0.30	-	0.50
C	0.10	-	0.25
C1	0.25REF		
D	2.80	2.90	3.00
E	2.25	2.40	2.55
E1	1.20	1.30	1.40
e	0.95BSC		
e1	1.80	-	2.00
L	0.30	-	0.50
L1	0.55REF		
θ	0°	-	-
θ1	-	10°	-

Suggested Land Pattern (Unit: mm)

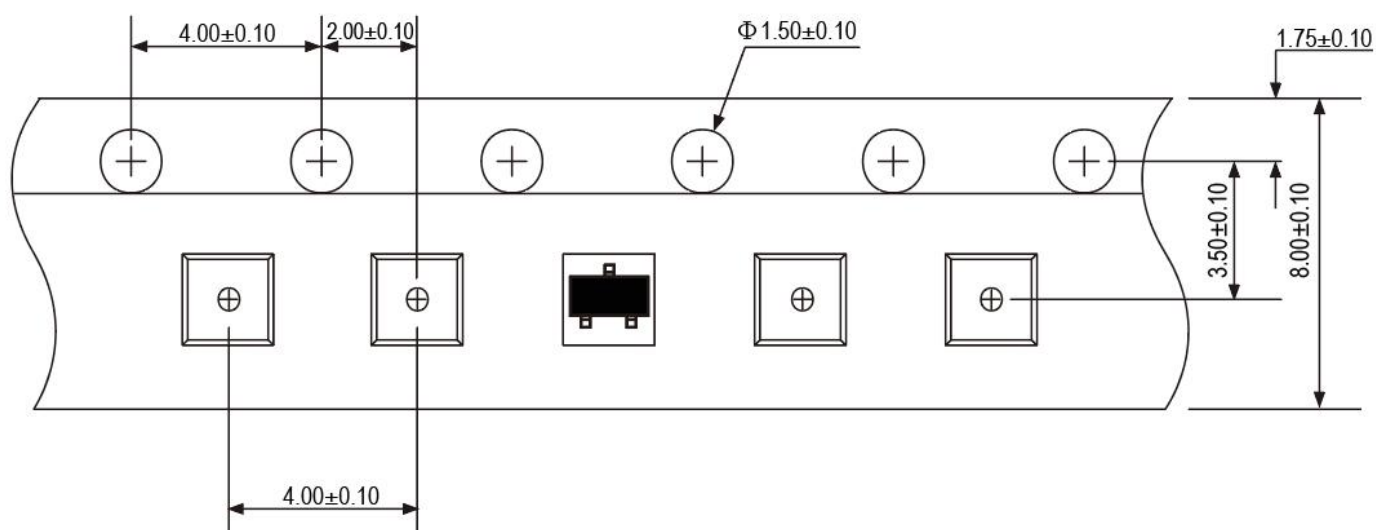


TAPE AND REEL INFORMATION

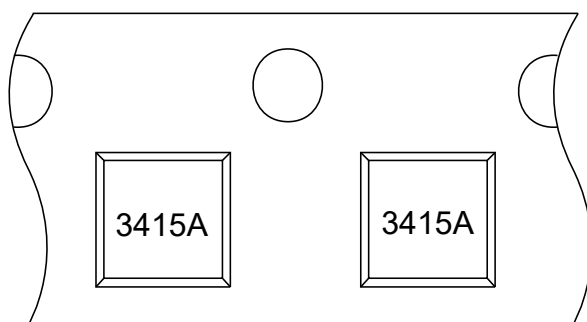
Reel Dimensions



Tape Dimensions



Unit:mm



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User Direction of Feed

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