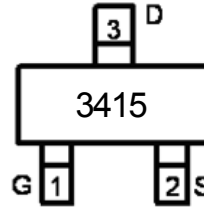


### Main Product Characteristics

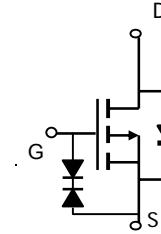
$V_{(BR)DSS}$	-20V
$R_{DS(on)MAX}$	50mΩ@-4.5V
	60mΩ@-2.5V
	73mΩ@-1.8V
$I_D$	-4 A



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Marking and Pin Assignment



Schematic Diagram

### Features and Benefits

- Advanced MOSFET process technology
- Ideal for DC-DC converter, power management in portable battery, computer, printer, cellular and general purpose applications
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



### Description

The SSF3415 utilizes the latest processing techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in DC-DC converter, power management in portable battery, computer, printer, cellular and general purpose applications.

### 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	$V_{GS}$	±8	
Continuous Drain Current ( $t \leq 10s$ )	$I_D$	-4.0	A
Maximum Power Dissipation ( $t \leq 10s$ )	$P_D$	0.35	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	$^{\circ}C/W$
Operating Junction Temperature	$T_J$	150	$^{\circ}C$
Storage Temperature	$T_{STG}$	-55 to +150	$^{\circ}C$

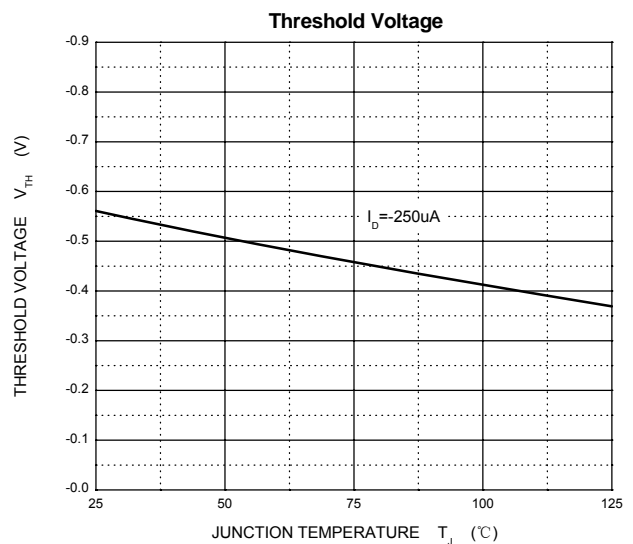
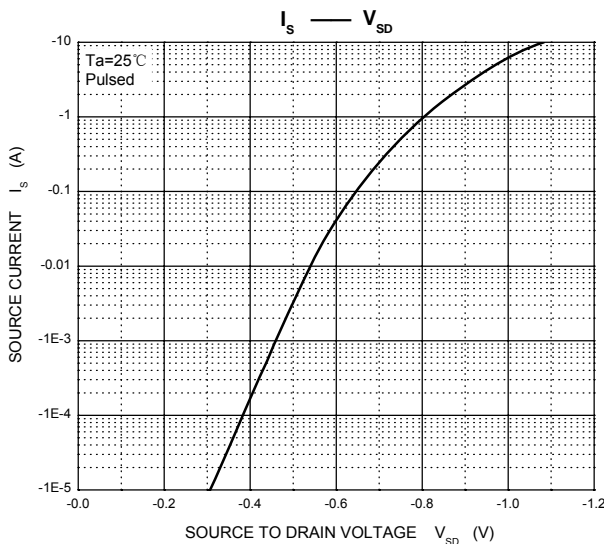
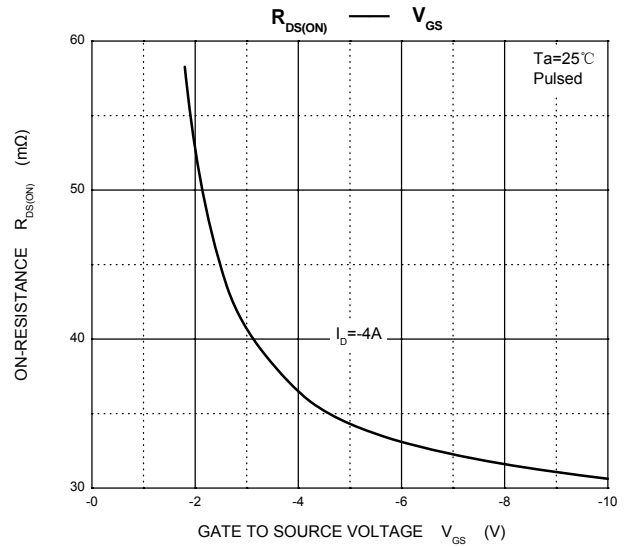
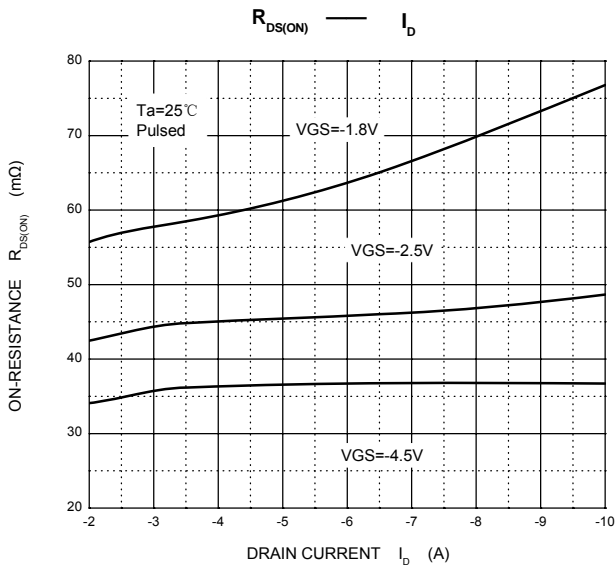
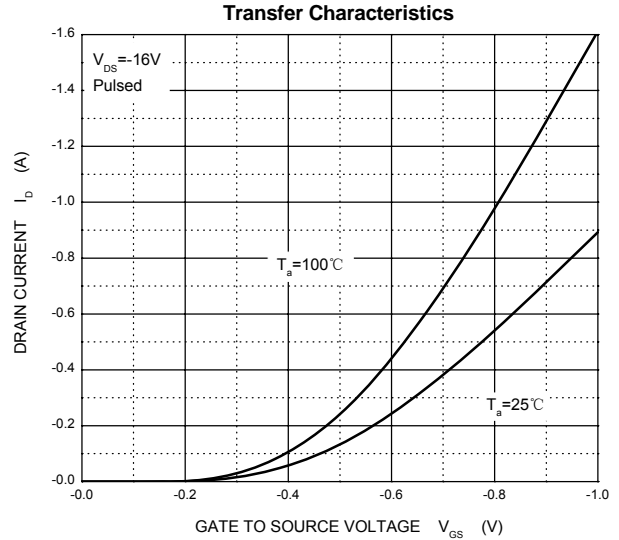
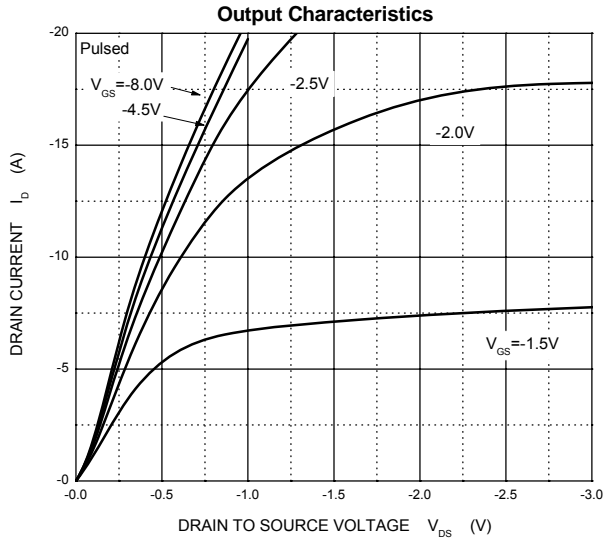
### Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
<b>Static Parameters</b>						
Drain-source breakdown voltage	V <sub>(BR) DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-20			V
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	-0.3	-0.56	-1	
Gate-body leakage current	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±8V			±10	μA
		V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±4.5V			±1	
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = -16V, V <sub>GS</sub> = 0V			-1	
Drain-source on-state resistance(note1)	R <sub>DS(on)</sub>	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -4A		0.037	0.050	Ω
		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -4A		0.045	0.060	
		V <sub>GS</sub> = -1.8V, I <sub>D</sub> = -2A		0.056	0.073	
Forward transconductance(note2)	g <sub>FS</sub>	V <sub>DS</sub> = -5V, I <sub>D</sub> = -4A	8			S
Body diode voltage(note2)	V <sub>SD</sub>	I <sub>S</sub> = -1A, V <sub>GS</sub> = 0V			-1	V
<b>Dynamic Parameters</b>						
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = 0V, f = 1MHz		1450		pF
Output capacitance	C <sub>oss</sub>			205		
Reverse transfer capacitance	C <sub>rss</sub>			160		
Gate resistance	R <sub>g</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz		6.5		Ω
<b>Switching Parameters</b>						
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -4A		17.2		nC
Gate-Source charge	Q <sub>gs</sub>			1.3		
Gate-drain charge	Q <sub>gd</sub>			4.5		
Turn-on delay time (note3)	t <sub>d(on)</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = -4.5V R <sub>GEN</sub> = 3Ω, R <sub>L</sub> = 2.5Ω,		9.5		ns
Turn-on rise time(note3)	t <sub>r</sub>			17		
Turn-off delay time(note3)	t <sub>d(off)</sub>			94		
Turn-off fall time(note3)	t <sub>f</sub>			35		

**Notes:**

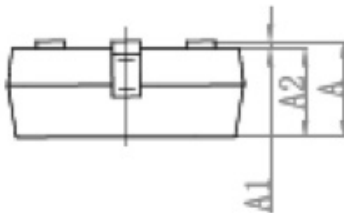
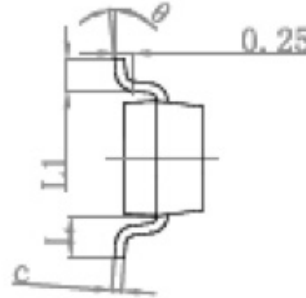
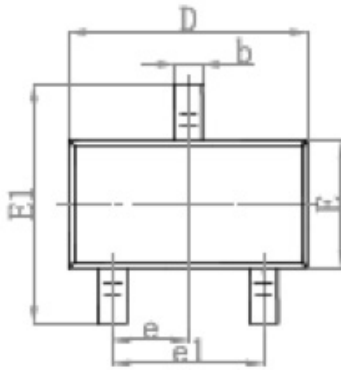
1. Repetitive rating, pulse width limited by junction temperature.
2. Pulse Test : Pulse width ≤ 300μs, duty cycle ≤ 2%.

**Typical Electrical and Thermal Characteristics**



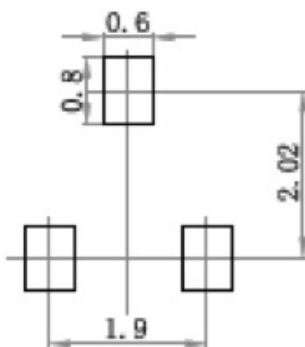
### Package Outline Dimensions

SOT-23



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

### Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05mm.
3. The pad layout is for reference purposes only.