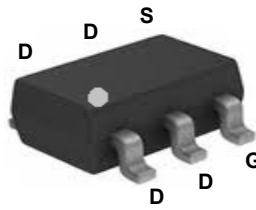
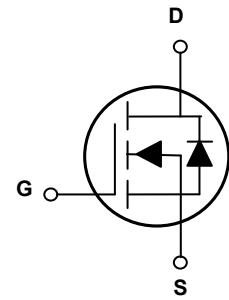


Main Product Characteristics

$BV_{(BR)DSS}$	150V
$R_{DS(ON)}$	480mΩ
I_D	1.4A



SOT-23-6L



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for hand-held devices, battery protection and load switch
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



Description

The SSF02N15 utilizes the latest techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in high efficiency switch mode power supply and a wide variety of other applications.

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	150	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current – Continuous ($T_C=25^{\circ}\text{C}$)	I_D	1.4	A
Drain Current – Continuous ($T_C=100^{\circ}\text{C}$)		0.88	A
Drain Current – Pulsed ¹	I_{DM}	5.6	A
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	1.56	W
Power Dissipation – Derate above 25°C		0.012	W/ $^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-50 to +150	$^{\circ}\text{C}$
Operating Junction Temperature Range	T_J	-50 to +150	$^{\circ}\text{C}$

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	---	80	$^{\circ}\text{C}/\text{W}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_b=250\mu A$	150	---	---	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=150V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	---	---	1	μA
		$V_{DS}=120V, V_{GS}=0V, T_J=125^{\circ}\text{C}$	---	---	10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
On Characteristics						
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=1A$	---	380	480	m Ω
		$V_{GS}=6V, I_D=0.5A$	---	410	520	m Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	2	3	4	V
Forward Transconductance	g_{fs}	$V_{DS}=10V, I_D=1A$	---	1.7	---	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q_g	$V_{DS}=75V, V_{GS}=10V, I_D=1A$	---	8.1	16	nC
Gate-Source Charge ^{2,3}	Q_{GS}		---	2	4	
Gate-Drain Charge ^{2,3}	Q_{GD}		---	2.7	5.4	
Turn-On Delay Time ^{2,3}	$T_{d(on)}$	$V_{DD}=75V, V_{GS}=10V, R_G=10\Omega, I_D=1A$	---	8.2	16	nS
Rise Time ^{2,3}	T_r		---	5.8	12	
Turn-Off Delay Time ^{2,3}	$T_{d(off)}$		---	14.8	28	
Fall Time ^{2,3}	T_f		---	8	16	
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, F=1\text{MHz}$	---	350	700	pF
Output Capacitance	C_{oss}		---	34	68	
Reverse Transfer Capacitance	C_{rss}		---	26	52	
Gate Resistance	R_g	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$	---	2	4	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	I_S	$V_G=V_D=0V, \text{Force Current}$	---	---	1.4	A
Pulsed Source Current	I_{SM}		---	---	2.8	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=1A, T_J=25^{\circ}\text{C}$	---	---	1	V
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_S=1A,$	---	43	---	nS
Reverse Recovery Charge	Q_{rr}	$di/dt=100A/\mu S, T_J=25^{\circ}\text{C}$	---	37	---	nC

Note:

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width $\leq 300\mu S$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

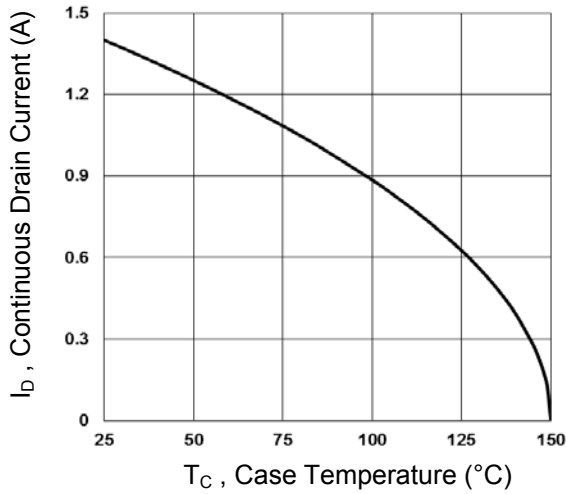


Fig.1 Continuous Drain Current vs. T_C

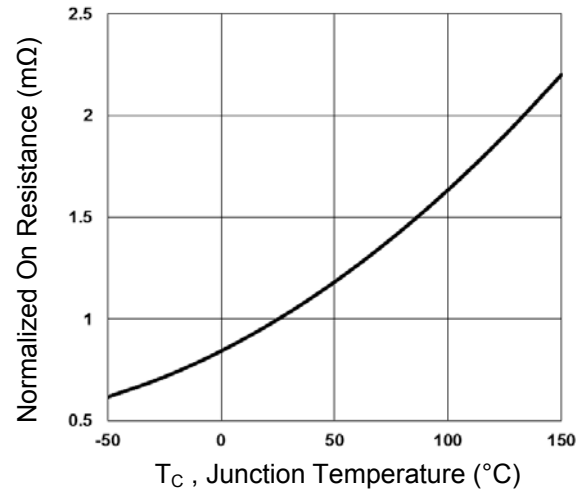


Fig.2 Continuous Drain Current vs. T_C

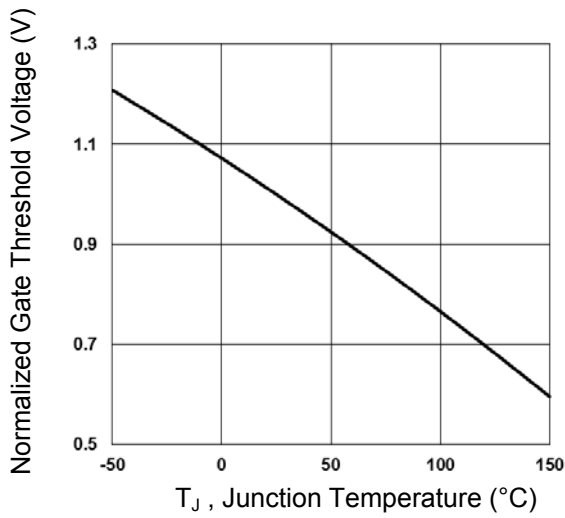


Fig.3 Normalized V_{th} vs. T_J

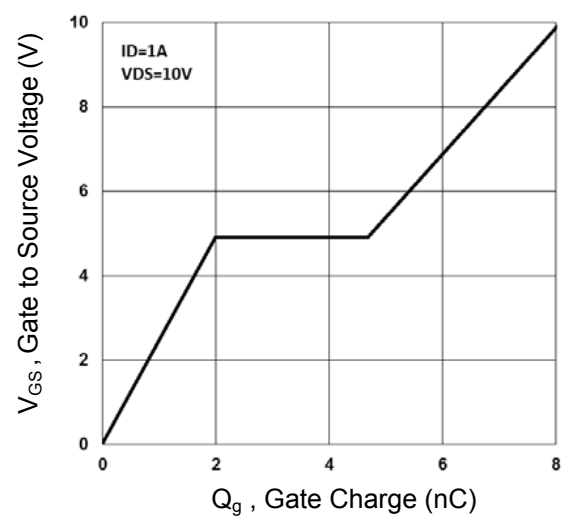


Fig.4 Gate Charge Waveform

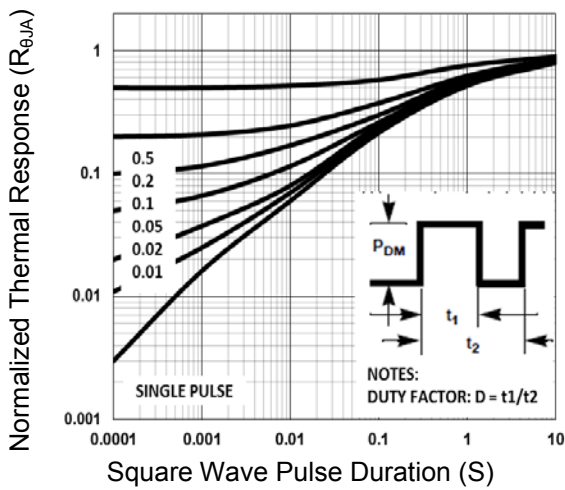


Fig.5 Normalized Transient Impedance

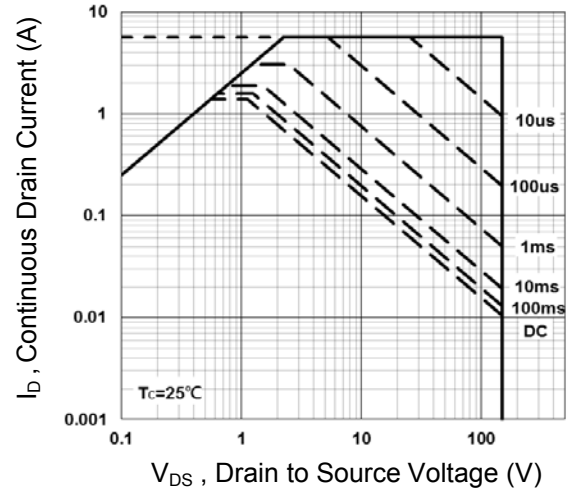


Fig.6 Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

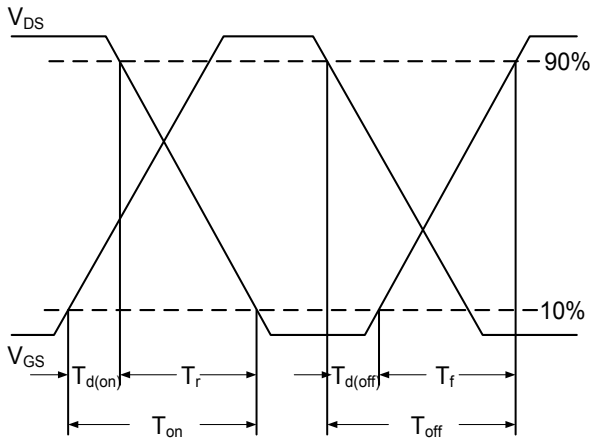


Fig.7 Switching Time Waveform

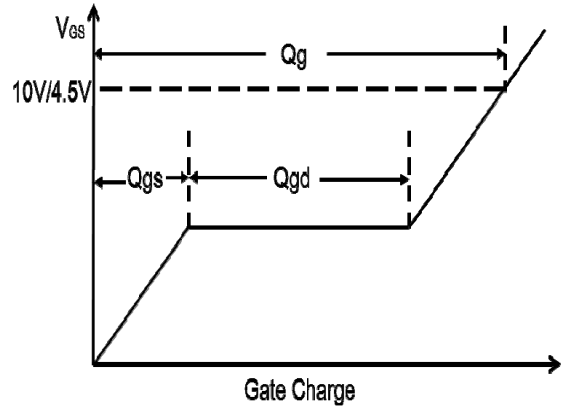
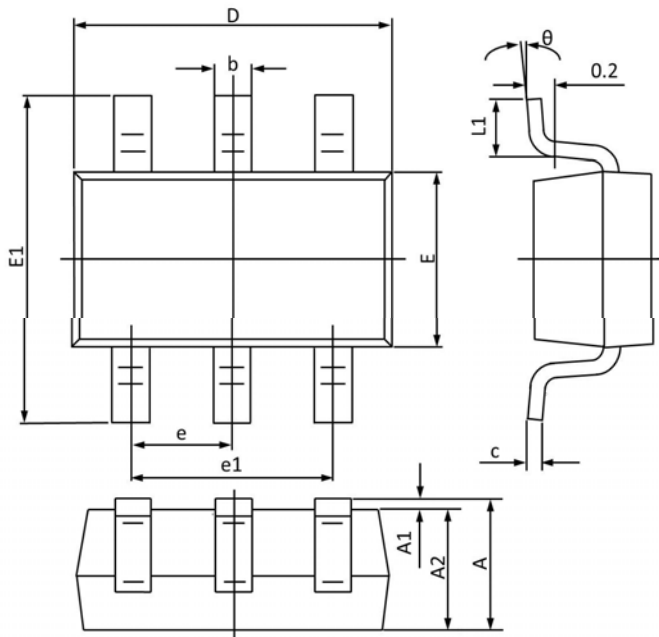


Fig.8 E_{AS} Waveform

Package Outline Dimensions

SOT-23-6L



Symbol	Dimensions In MM		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.450	-	0.057	-
A1	0.100	0.000	0.004	0.000
A2	1.300	1.050	0.051	0.041
b	0.500	0.300	0.020	0.012
c	0.200	0.100	0.008	0.004
D	3.100	2.700	0.122	0.106
E	1.800	1.400	0.071	0.055
E1	3.000	2.600	0.118	0.102
e	0.95BSC		0.037BSC	
e1	2.000	1.800	0.079	0.071
L1	0.600	0.300	0.024	0.012
θ	10°	0°	10°	0°

Order Information

Device	Package	Marking Code	Carrier	Quantity	HSF Status
SSF02N15	SOT-23-6L	2	Tape & Reel	3000/Reel	RoHS Compliant