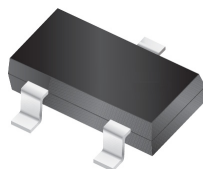
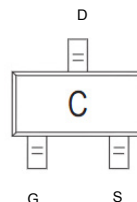


Main Product Characteristics

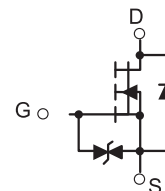
$V_{(BR)DSS}$	20V
$R_{DS(on)MAX}$	700mΩ@4.5V
	850mΩ@2.5V
I_D	500mA



SOT-523



Marking and Pin Assignment



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for battery operated systems, load switching, power converters and other general purpose applications
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



Description

The SSF1012 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_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source voltage	V _{DSS}	20	V
Gate-Source Voltage	V _{GS}	±12	
Drain Current-Continuous	I _{D(DC)}	500	mA
Drain Current -Pulsed (note 1)	I _{DM(pulse)}	1000	
Power Dissipation (note 2 , T _A =25°C)	P _D	150	mW
Maximum Power Dissipation (note 3 , T _C =25°C)		275	
Thermal Resistance from Junction to Ambient	R _{θJA}	833	°C /W
Thermal Resistance from Junction to Case	R _{θJC}	455	
Storage Temperature	T _j	150	°C
Junction Temperature	T _{STG}	-55 to +150	

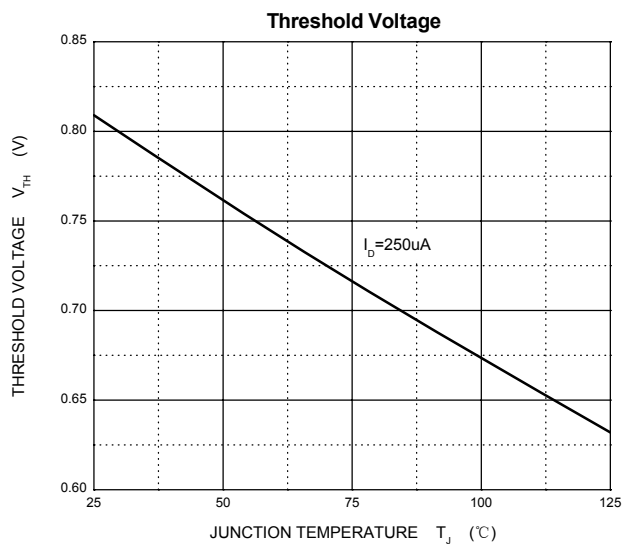
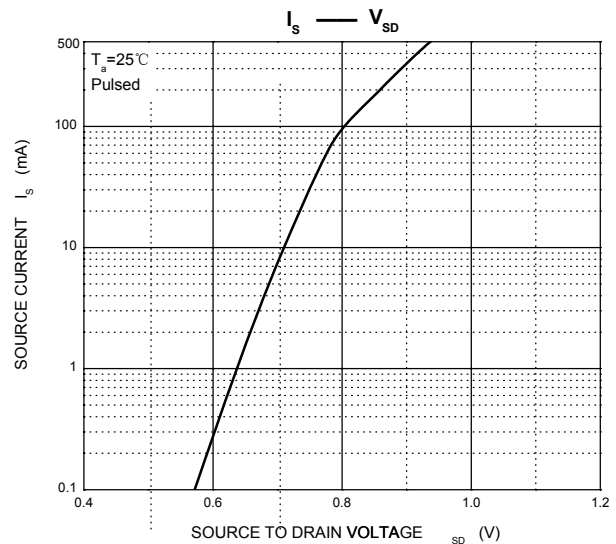
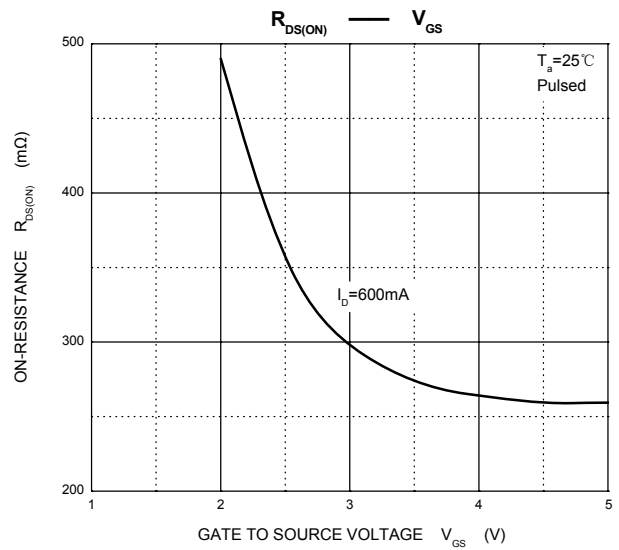
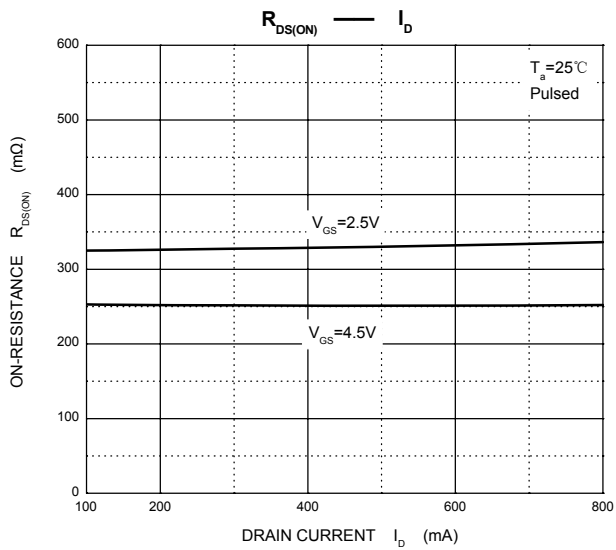
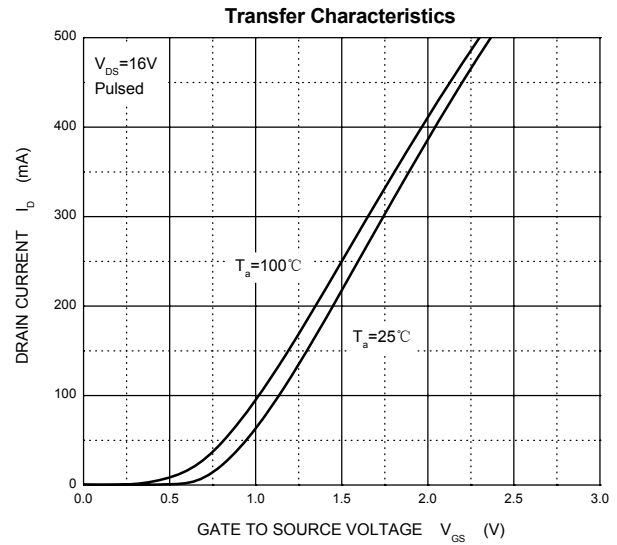
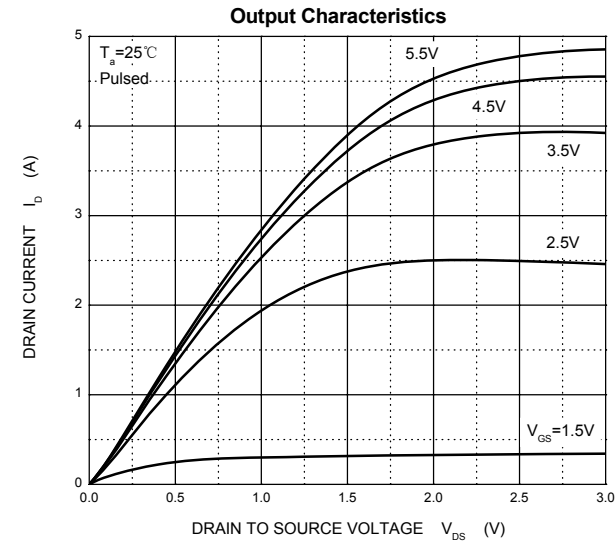
Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
On/Off States						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20	---	---	V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.45	0.8	1.2	
Gate-Body Leakage Current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 4.5V$	---	---	± 1	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 16V, V_{GS} = 0V$	---	---	100	nA
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 600mA$	---	250	700	m Ω
		$V_{GS} = 2.5V, I_D = 500mA$	---	330	850	
Forward Transconductance	g_{fs}	$V_{DS} = 10V, I_D = 400mA$	---	1	---	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 16V, V_{GS} = 0V, f = 1MHz$	---	100	---	pF
Output Capacitance	C_{oss}		---	16	---	
Reverse Transfer Capacitance	C_{rss}		---	12	---	
Total Gate Charge	Q_g	$V_{DS} = 10V, V_{GS} = 4.5V, I_D = 250mA$	---	750	---	nC
Gate-Source Charge	Q_{gs}		---	75	---	
Gate-Drain Charge	Q_{gd}		---	225	---	
Switching Times						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 10V, R_L = 47\Omega, I_D = 200mA, V_{GS} = 4.5V, R_G = 10\Omega$	---	5	---	nS
Rise Time	t_r		---	5	---	
Turn-Off Delay Time	$t_{d(off)}$		---	25	---	
Fall Time	t_f		---	11	---	
Drain-Source Diode Characteristics						
Drain-Source Diode Forward Voltage (note 4)	V_{SD}	$I_S = 0.15A, V_{GS} = 0V$	---	---	1.2	V

Notes:

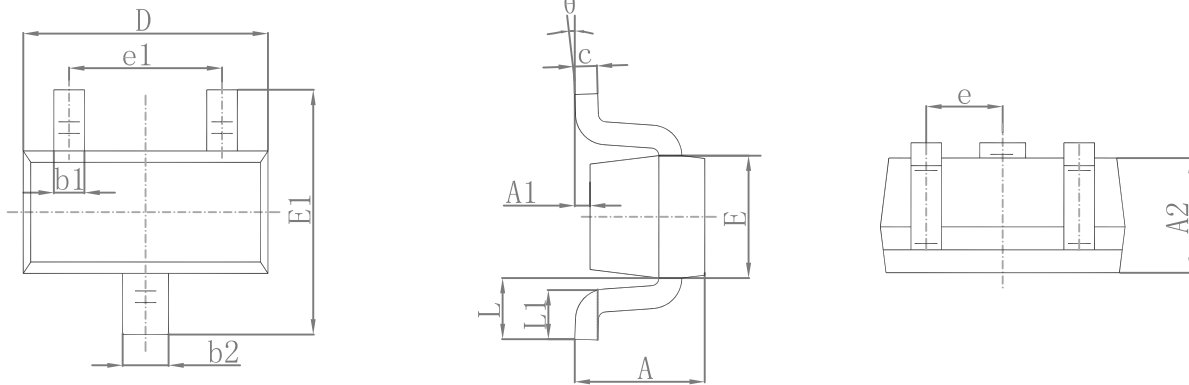
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. This test is performed with no heat sink at $T_a=25^\circ\text{C}$.
3. This test is performed with infinite heat sink at $T_c=25^\circ\text{C}$.
4. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$.

Typical Electrical and Thermal Characteristic Curves



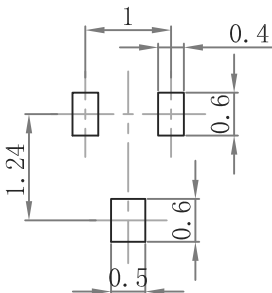
Package Outline Dimensions

SOT-523



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
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.