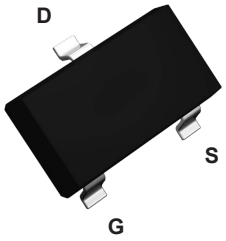
GOOD-ARK SEMICONDUCTOR

SSF6092G1

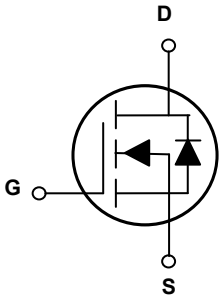
60V N-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	60V
$R_{DS(ON)}$	90mΩ (max.)
I_D	3.0A



SOT-23



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switched mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery

RoHS Compliant

Description

The SSF6092G1 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 supplies and a wide variety of other applications.

Absolute Maximum Ratings (T_C=25°C unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous (T_A=25°C)	I_D	3.0	A
Drain Current-Continuous (T_A=70°C)		2.4	
Drain Current-Pulsed[1]	I_{DM}	12	A
Single Pulse Avalanche Energy[2]	E_{AS}	8	mJ
Single Pulse Avalanche Current[2]	I_{AS}	12.8	A
Power Dissipation (T_A=25°C)	P_D	1.31	W
Power Dissipation-Derate above 25°C		0.011	W/°C
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	92	°C/W
Operating Junction Temperature Range	T_J	-55 To +150	°C
Storage Temperature Range	T_{STG}	-55 To +150	°C

Electrical Characteristics (T_J=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	60	-	-	V
BV_{DSS} Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C, I_D=1mA	-	0.05	-	V/°C
Drain-Source Leakage Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V, T_J=25°C	-	-	1	μA
		V_{DS}=48V, V_{GS}=0V, T_J=125°C	-	-	10	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=3A	-	73	90	mΩ
		V_{GS}=4.5V, I_D=2A	-	86	118	
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250μA	1.2	1.8	2.5	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		-	-5	-	mV/°C
Forward Transconductance	g_{fs}	V_{DS}=10V, I_D=3A	-	7	-	S
Dynamic and Switching Characteristics						
Total Gate Charge[2,3]	Q_g	V_{DS}=30V, I_D=3A, V_{GS}=10V	-	4.6	8	nC
Gate-Source Charge[2,3]	Q_{gs}		-	0.4	3	
Gate-Drain Charge[2,3]	Q_{gd}		-	2	4	
Turn-On Delay Time[2,3]	$t_{d(on)}$	V_{DD}=30V, R_G=6Ω, V_{GS}=10V, I_D=3A	-	2.9	6	nS
Rise Time[2,3]	t_r		-	9.5	18	
Turn-Off Delay Time[2,3]	$t_{d(off)}$		-	18.4	35	
Fall Time[2,3]	t_f		-	5.3	10	
Input Capacitance	C_{iss}	V_{DS}=30V, V_{GS}=0V, F=1MHz	-	360	540	pF
Output Capacitance	C_{oss}		-	30	45	
Reverse Transfer Capacitance	C_{rss}		-	20	30	
Gate Resistance	R_g	V_{GS}=0V, V_{DS}=0V, F=1MHz	-	2	4	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_S	V_G=V_D=0V, Force Current	-	-	5	A
Pulsed Source Current	I_{SM}		-	-	20	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=1A, T_J=25°C	-	-	1	V
Reverse Recovery Time[2]	t_{rr}	V_R=50V, I_S=3A, di/dt=100A/μs, T_J=25°C	-	25	-	nS
Reverse Recovery Charge[2]	Q_{rr}		-	15	-	nC

Note:
1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=12.8A, R_G=25Ω, starting T_J=25°C.
3. Pulse test: pulse width ≤300us,duty cycle ≤2%.

Typical Electrical and Thermal Characteristic Curves

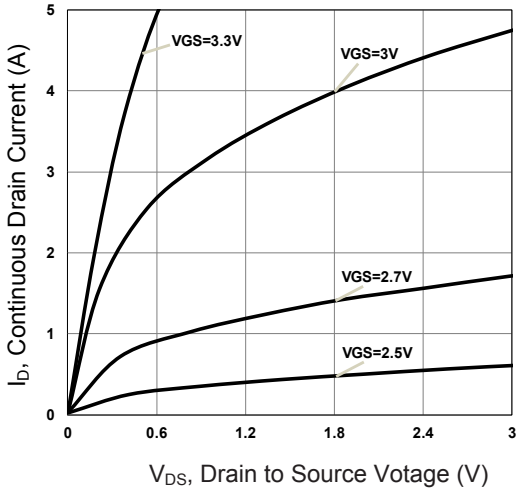


Figure 1. Typical Output Characteristics

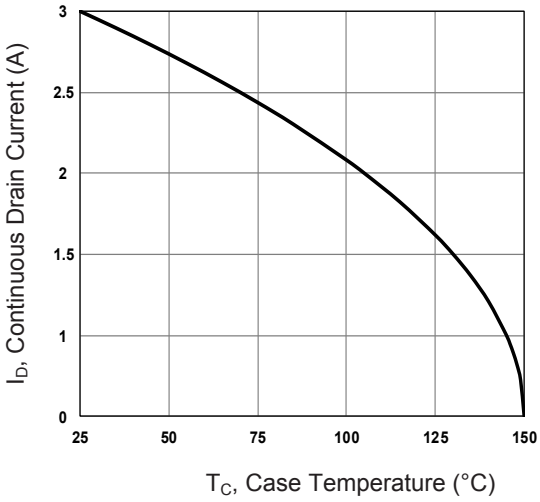


Figure 2. Continuous Drain Current vs. T_C

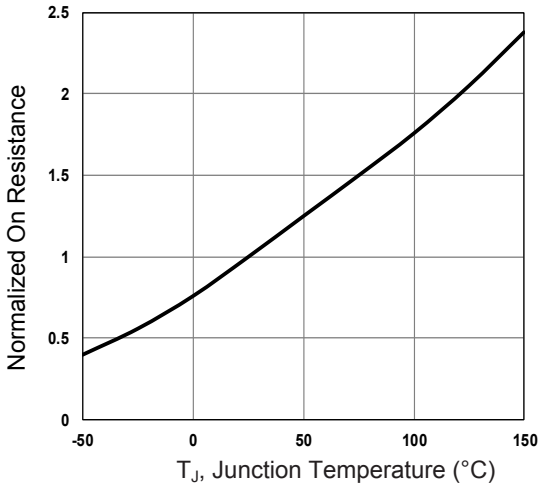


Figure 3. Normalized R_{DSON} vs. T_J

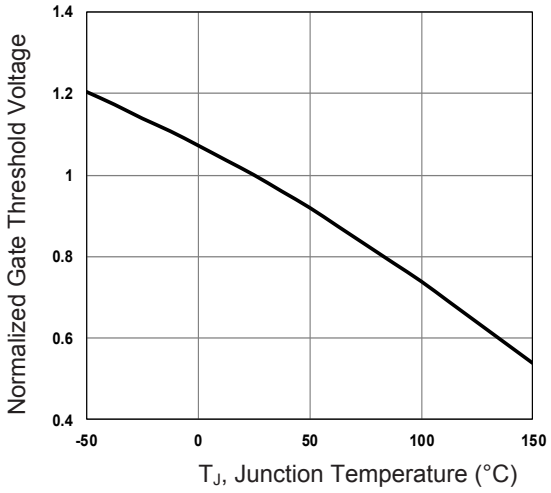


Figure 4. Normalized V_{th} vs. T_J

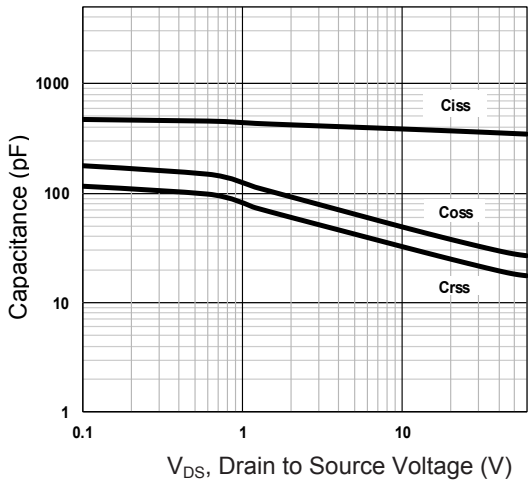


Figure 5. Capacitance Characteristics

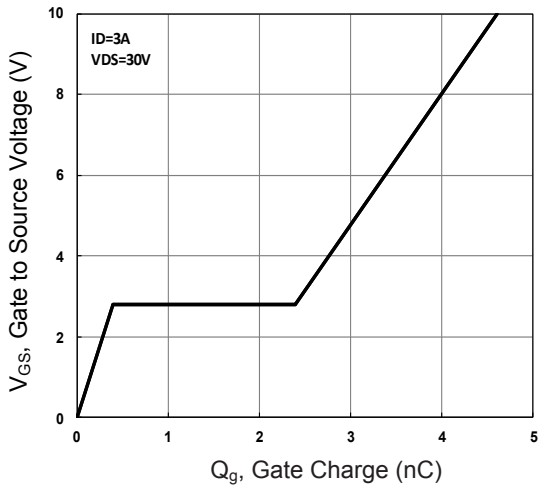
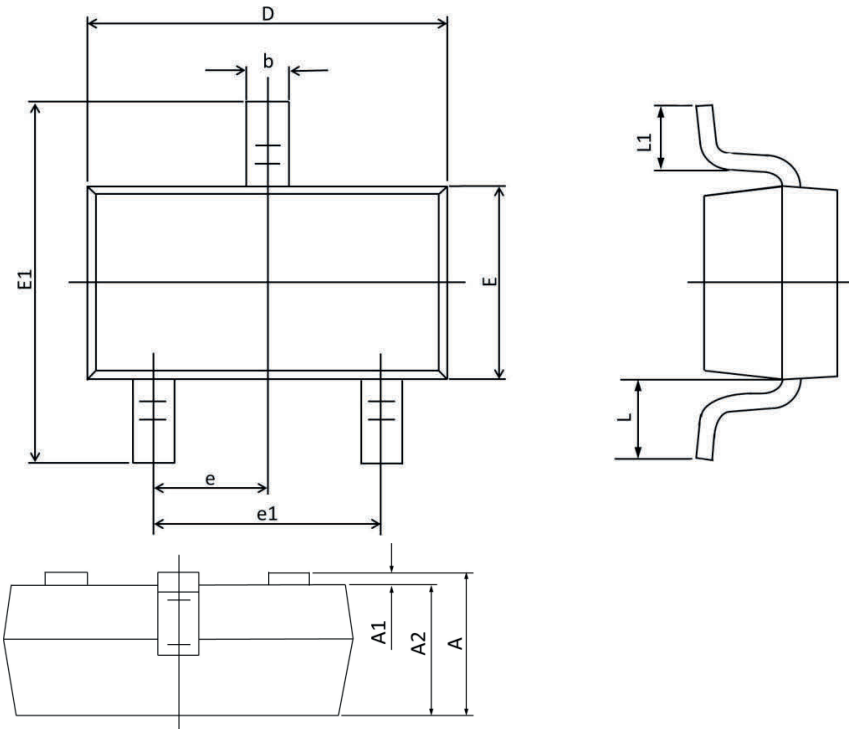


Figure 6. Gate Charge Characteristics

Package Outline Dimensions (SOT-23)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.200	0.035	0.047
A1	0.000	0.100	0.000	0.004
A2	0.900	1.150	0.035	0.045
b	0.300	0.500	0.012	0.020
D	2.800	3.040	0.110	0.120
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.95 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.55 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020

Order Information

Device	Package	Marking	Carrier	Quantity
SSF6092G1	SOT-23	6092	Tape & Reel	3,000pcs / Reel