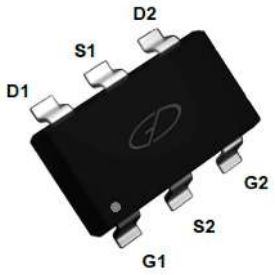
GOOD-ARK SEMICONDUCTOR

SSF2215

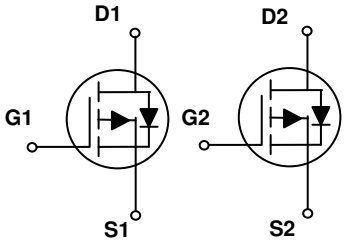
20V Dual P-Channel MOSFETs

Main Product Characteristics

$V_{(BR)DSS}$	-20V
$R_{DS(ON)}$	85mΩ
I_D	-3A



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 SSF2215 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°C unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±10	V
Drain Current – Continuous (T_A=25°C)	I_D	-3	A
Drain Current – Continuous (T_A=70°C)		-2.4	A
Drain Current – Pulsed[1]	I_{DM}	-12	A
Power Dissipation (T_A=25°C)	P_D	1.25	W
Power Dissipation – Derate above 25°C		0.01	W/°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	---	100	°C/W

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V , I_D=-250uA	-20	---	---	V
BV_{DSS} Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C , I_D=-1mA	---	0.01	---	V/°C
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-20V , V_{GS}=0V , T_J=25°C	---	---	-1	uA
		V_{DS}=-16V , V_{GS}=0V , T_J=125°C	---	---	-10	
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±10V , V_{DS}=0V	---	---	±100	nA
On Characteristics						
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V , I_D=-3A	---	70	85	mΩ
		V_{GS}=-2.5V, I_D =-2A	---	95	120	
		V_{DS}=-1.8V , I_D=-1A	---	130	170	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=0V, I_D=-250uA	-0.3	-0.6	-1.0	V
VGS(th) Temperature Coefficient	$\Delta V_{GS(th)}$		---	3	---	mV/°C
Forward Transconductance	gfs	V_{DS}=10V , I_S=-1A	---	2.2	---	S
Dynamic and Switching Characteristics						
Total Gate Charge[3, 4]	Q_g	V_{DS}=-10V , V_{GS}=-4.5V , I_D=-3A	---	4.8	8	nC
Gate-Source Charge[3, 4]	Q_{gs}		---	0.5	1	
Gate-Drain Charge[3, 4]	Q_{gd}		---	1.9	4	
Turn-On Delay Time[3, 4]	$T_{d(on)}$	V_{DD}=-10V , V_{GS}=-4.5V , R_G=25Ω, I_D=-1A	---	3.5	7	nS
Rise Time[3, 4]	T_r		---	12.6	24	
Turn-Off Delay Time[3, 4]	$T_{d(off)}$		---	32.6	62	
Fall Time[3, 4]	T_f		---	8.4	16	
Input Capacitance	C_{iss}	V_{DS}=-15V , V_{GS}=0V , F=1MHz	---	350	510	pF
Output Capacitance	C_{oss}		---	65	95	
Reverse Transfer Capacitance	C_{rss}		---	50	75	
Drain-Source Diode Characteristics and Maximum Ratings						
Parameter	**Symbol**	**Conditions**	**Min.**	**Typ.**	**Max.**	**Unit**
Continuous Source Current	I_S	V_G=V_D=0V , Force Current	---	---	-3	A
Pulsed Source Current	I_{SM}		---	---	-6	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V , I_S=-1A , T_J=25°C	---	---	-1	V

Note:
1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width ≦ 300uS, duty cycle ≦ 2%.
3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristics

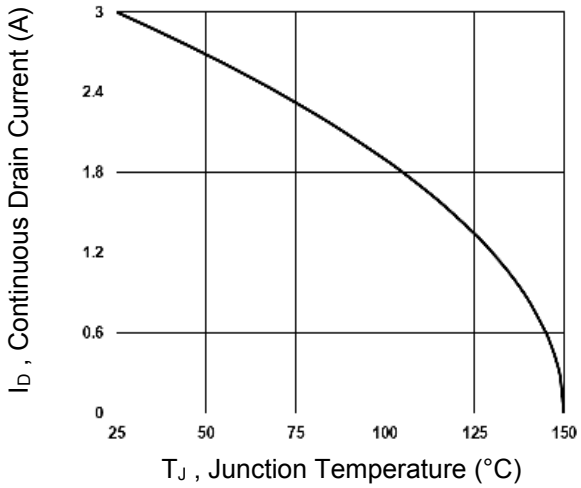


Fig.1 Continuous Drain Current vs. T_J

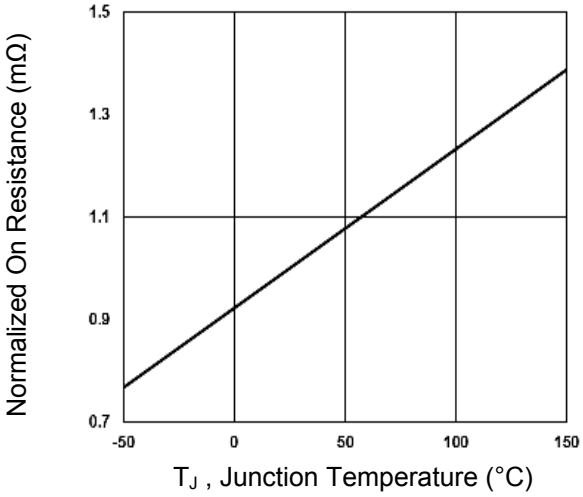


Fig.2 Normalized $R_{DS(ON)}$ vs. T_J

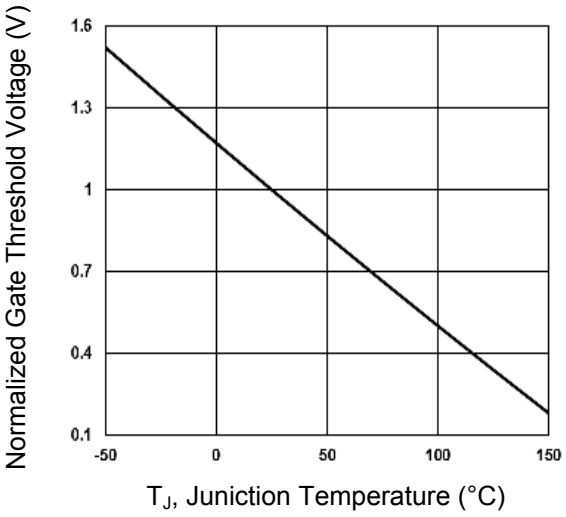


Fig.3 Normalized V_{th} vs. T_J

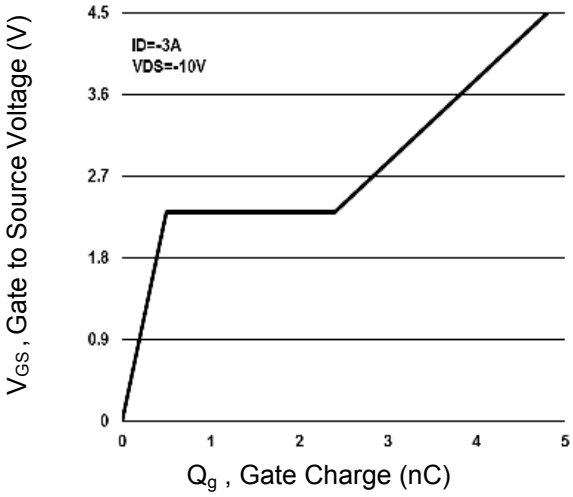


Fig.4 Gate Charge Waveform

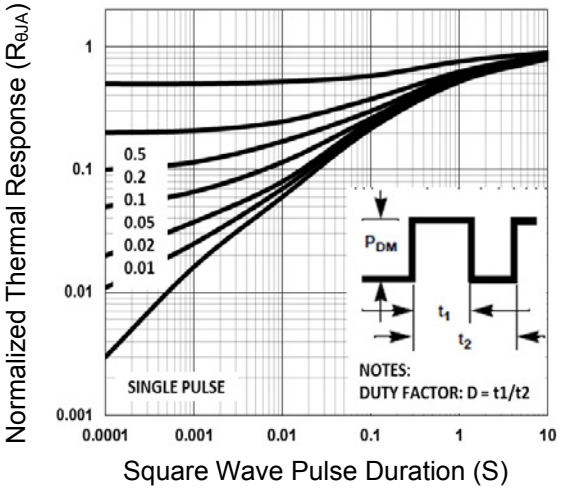


Fig.5 Normalized Transient Impedance

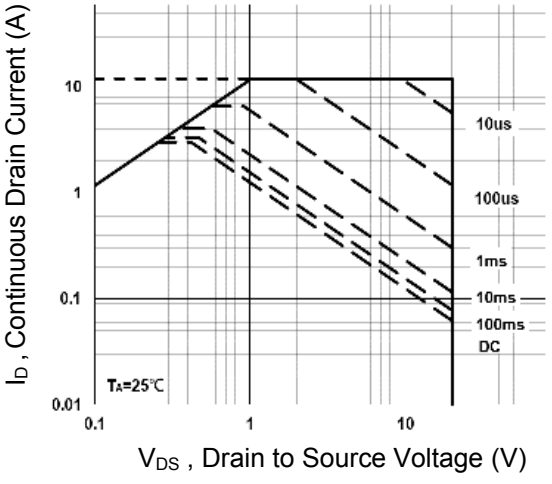


Fig.6 Maximum Safe Operation Area

Typical Electrical and Thermal Characteristics

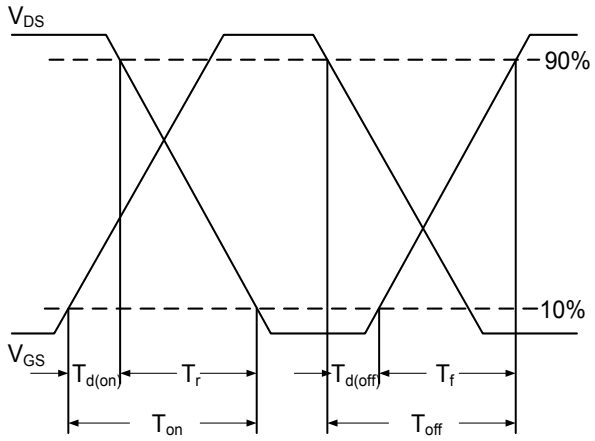


Fig.7 Switching Time Waveform

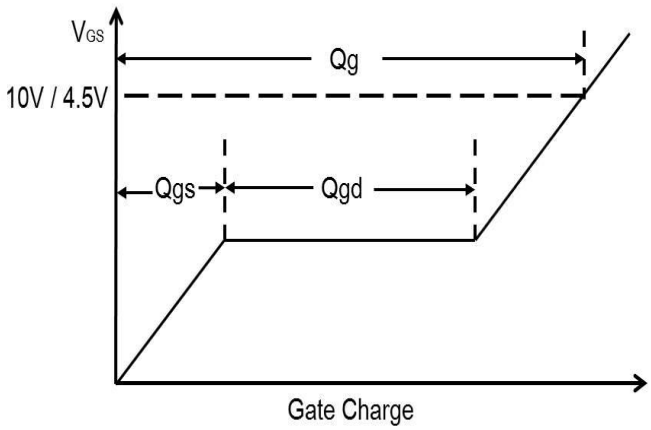
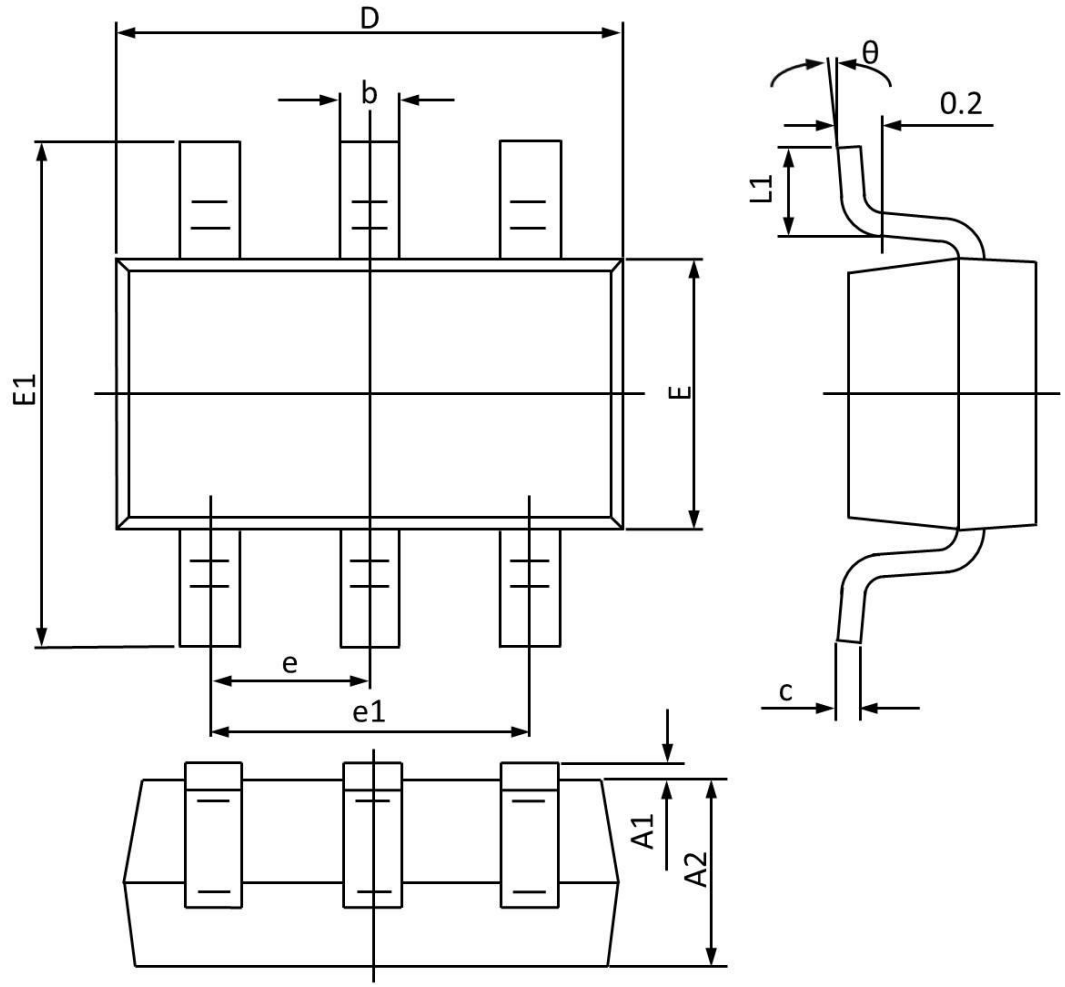


Fig.8 Gate Charge Waveform

Package Outline Dimensions SOT-23-6L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A1	0.000	0.100	0.000	0.004
A2	1.000	1.200	0.040	0.047
b	0.300	0.500	0.012	0.019
c	0.047	0.207	0.002	0.008
D	2.800	3.000	0.110	0.118
E	1.500	1.800	0.059	0.070
E1	2.600	3.000	0.103	0.118
e	0.950 TYP		0.037 TYP	
e1	1.900 TYP		0.075 TYP	
L1	0.250	0.550	0.010	0.021
θ	0°	8°	0°	8°