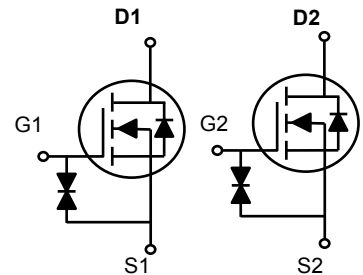


Main Product Characteristics

$V_{(BR)DSS}$	20V
$R_{DS(ON)}$	300m Ω
I_D	800mA



SOT-563



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
- ESD protection up to 2KV



Description

The SSF2220Y 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	Max.	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 8	V
Drain Current-Continuous ($T_C=25^{\circ}\text{C}$)	I_D	800	mA
Drain Current-Continuous ($T_C=100^{\circ}\text{C}$)		510	
Drain Current-Pulsed ¹	I_{DM}	3.2	A
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	312	mW
Power Dissipation-Derate above 25°C		2.5	mW/ $^{\circ}\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	400	$^{\circ}\text{C}/\text{W}$
Operating Junction Temperature Range	T_J	-55 To +150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 To +150	$^{\circ}\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On/Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
BV_{DSS} Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C , $I_D=1\text{mA}$	-	0.01	-	$V/^\circ\text{C}$
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V,$ $T_J=25^\circ\text{C}$	-	-	1	μA
		$V_{DS}=16V, V_{GS}=0V,$ $T_J=125^\circ\text{C}$	-	-	10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 4.5V, V_{DS}=0V$	-	-	± 1	μA
		$V_{GS}=\pm 8V, V_{DS}=0V$	-	-	± 10	μA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=0.5A$	-	200	300	m Ω
		$V_{GS}=2.5V, I_D=0.4A$	-	235	400	
		$V_{GS}=1.8V, I_D=0.2A$	-	295	550	
		$V_{GS}=1.5V, I_D=0.1A$	-	365	800	
		$V_{GS}=1.2V, I_D=0.1A$	-	600	1500	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	0.3	0.6	1.0	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		-	3	-	mV/ $^\circ\text{C}$
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q_g	$V_{DS}=10V, I_D=0.5A$ $V_{GS}=4.5V$	-	1	2	nC
Gate-Source Charge ^{2,3}	Q_{gs}		-	0.26	0.5	
Gate-Drain Charge ^{2,3}	Q_{gd}		-	0.2	0.4	
Turn-On Delay Time ^{2,3}	$t_{d(on)}$	$V_{DD}=10V, R_G=10\Omega$ $V_{GS}=4.5V, I_D=0.5A$	-	5	10	nS
Rise Time ^{2,3}	t_r		-	3.5	7	
Turn-Off Delay Time ^{2,3}	$t_{d(off)}$		-	14	28	
Fall Time ^{2,3}	t_f		-	6	12	
Input Capacitance	C_{iss}	$V_{DS}=10V, V_{GS}=0V,$ $F=1\text{MHz}$	-	38.2	75	pF
Output Capacitance	C_{oss}		-	14.4	28	
Reverse Transfer Capacitance	C_{rss}		-	6	12	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_S	$V_G=V_D=0V,$ Force Current	-	-	0.8	A
Pulsed Source Current	I_{SM}		-	-	1.6	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=0.3A,$ $T_J=25^\circ\text{C}$	-	-	1.2	V

Note:

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

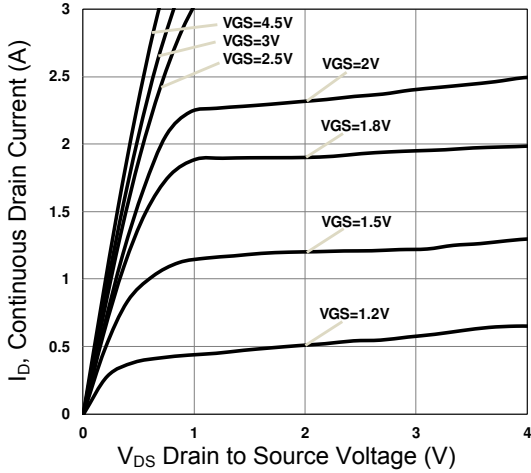


Figure 1. Typical Output Characteristics

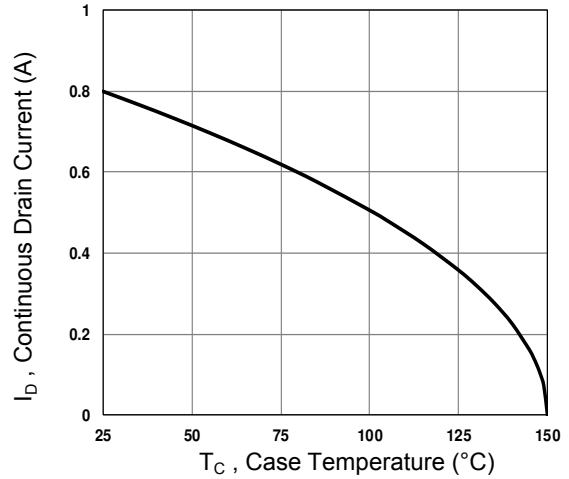


Figure 2. Continuous Drain Current vs. T_C

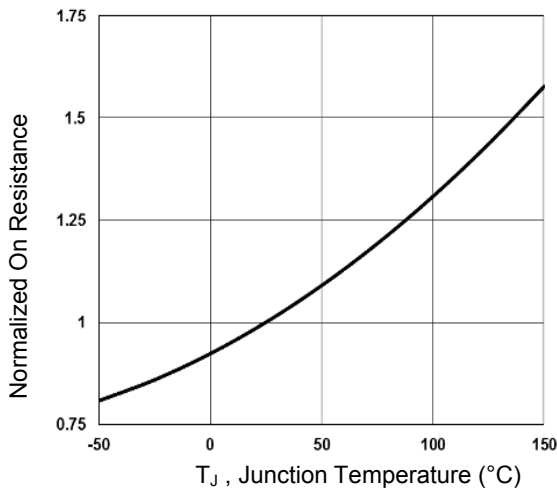


Figure 3. Normalized $R_{DS(ON)}$ vs. T_J

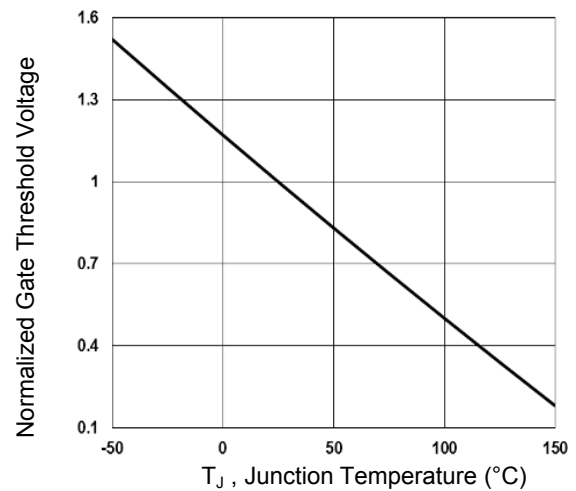


Figure 4. Normalized V_{th} vs. T_J

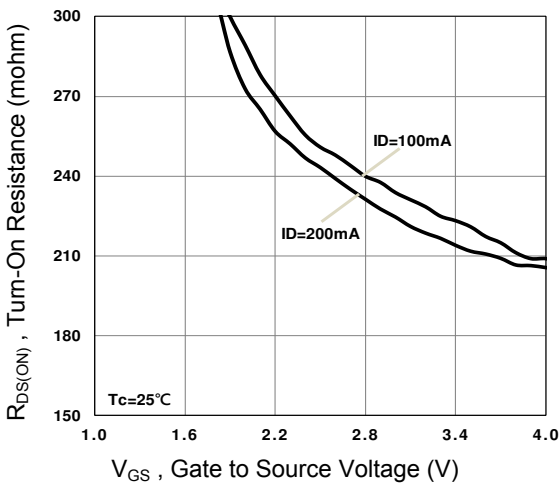


Figure 5. Turn-On Resistance vs. V_{GS}

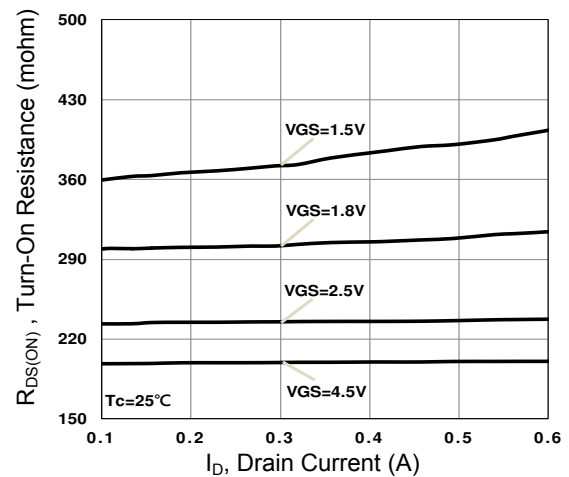


Figure 6. Turn-On Resistance vs. I_D

Typical Electrical and Thermal Characteristic Curves

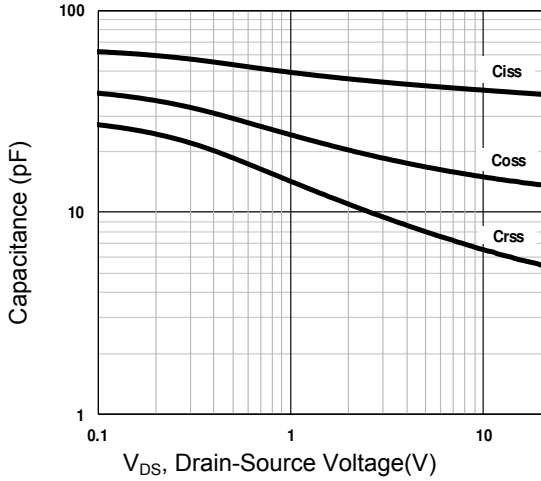


Figure 7. Capacitance Characteristics

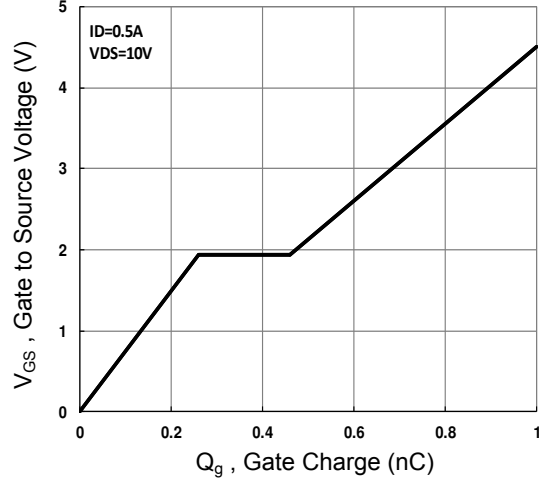


Figure 8. Gate Charge Characteristics

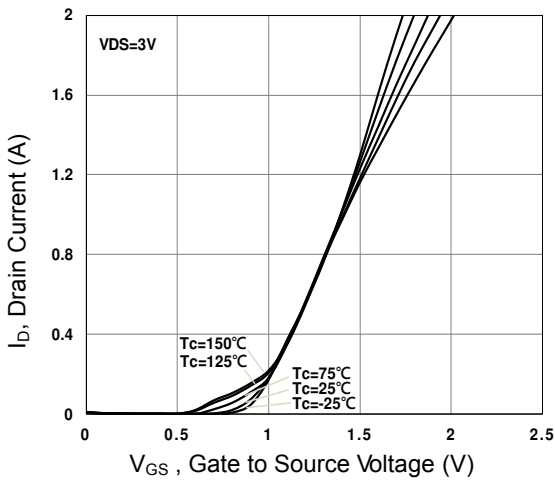


Figure 9. Transfer Characteristics

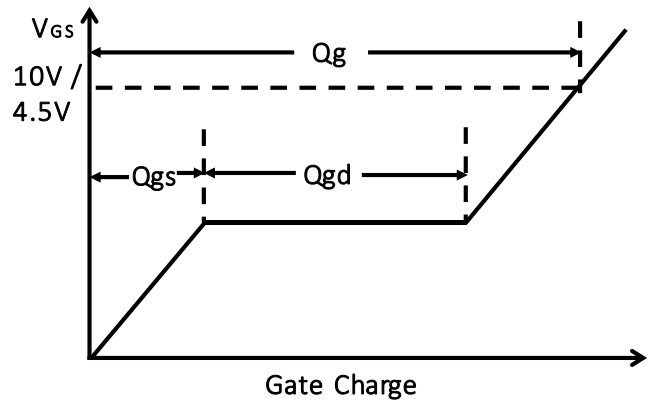


Figure 10. Gate Charge Waveform

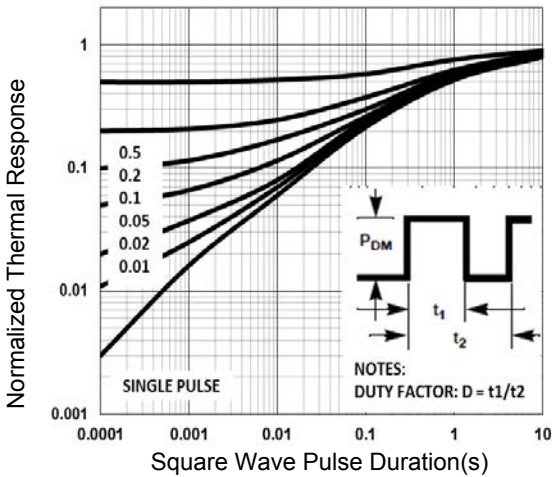


Figure 11. Normalized Transient Impedance

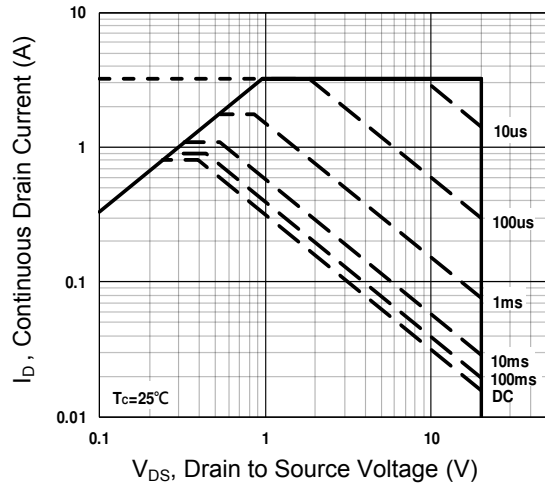
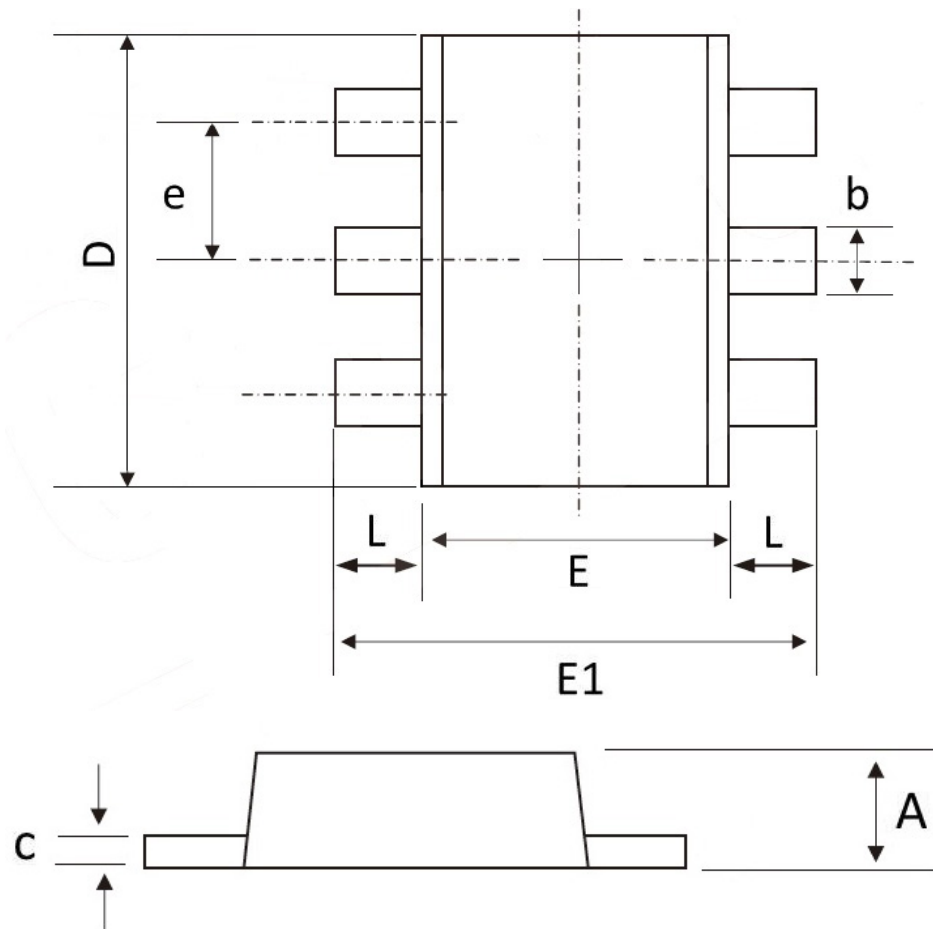


Figure 12. Maximum Safe Operation Area

Package Outline Dimensions

SOT-563



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	0.600	0.500	0.024	0.020
b	0.300	0.150	0.012	0.006
c	0.180	0.100	0.007	0.004
D	1.700	1.500	0.067	0.059
E	1.250	1.100	0.049	0.043
E1	1.700	1.550	0.067	0.061
e	0.5BSC		0.02BSC	
L	0.300	0.100	0.012	0.004

Order Information

Device	Package	Marking Code	Carrier	Quantity	HSF Status
SSF2220Y	SOT-563	C	Tape & Reel	3,000/Reel	RoHS Compliant