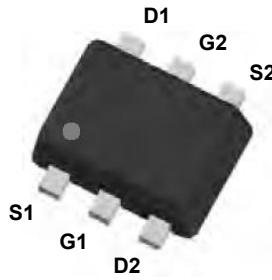
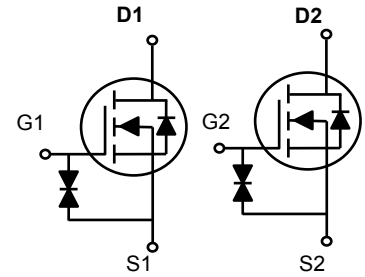


### Main Product Characteristics

$V_{(BR)DSS}$	20V
$R_{DS(on)}$	300m $\Omega$
$I_D$	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



### Description

The SSF2220Y utilizes the latest processing techniques to achieve high cell density, low on-resistance and high repetitive avalanche rating. These features make this device extremely efficient and reliable device for use in power switching applications and a wide variety of other applications.

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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	V
Drain Current – Continuous ( $T_C=25^\circ\text{C}$ )	$I_D$	800	mA
Drain Current – Continuous ( $T_C=100^\circ\text{C}$ )		510	mA
Drain Current – Pulsed <sup>1</sup>	$I_{DM}$	3.2	A
Power Dissipation ( $T_C=25^\circ\text{C}$ )	$P_D$	312	mW
Power Dissipation – Derate above $25^\circ\text{C}$		2.5	mW/ $^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 to +150	$^\circ\text{C}$
Operating Junction Temperature Range	$T_J$	-55 to +150	$^\circ\text{C}$

### Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	---	400	$^\circ\text{C}/\text{W}$

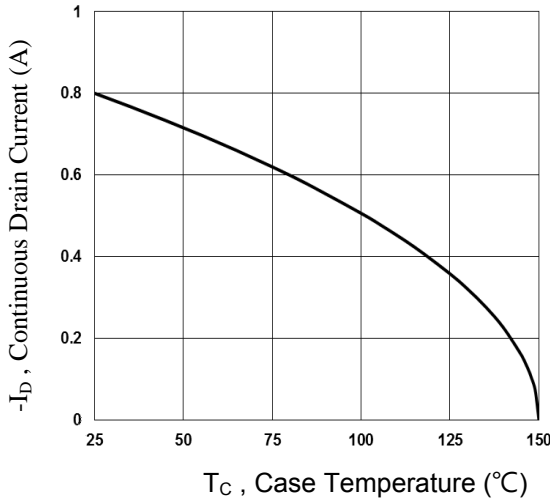
### Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	20	---	---	V
BV <sub>DSS</sub> Temperature Coefficient	ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	Reference to 25°C, I <sub>D</sub> =1mA	---	-0.01	---	V/°C
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C	---	---	1	uA
		V <sub>DS</sub> =16V, V <sub>GS</sub> =0V, T <sub>J</sub> =125°C	---	---	10	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±6V, V <sub>DS</sub> =0V	---	---	±20	uA
<b>On Characteristics</b>						
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =0.5A	---	200	300	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =0.4A	---	235	400	
		V <sub>GS</sub> =1.8V, I <sub>D</sub> =0.2A	---	295	550	
		V <sub>GS</sub> =1.5V, I <sub>D</sub> =0.1A	---	365	800	
		V <sub>GS</sub> =1.2V, I <sub>D</sub> =0.1A	---	600	1500	
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	0.3	0.6	1.0	V
V <sub>GS(th)</sub> Temperature Coefficient	ΔV <sub>GS(th)</sub>		---	3	---	mV/°C
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>2,3</sup>	Q <sub>g</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =0.5A	---	1	2	nC
Gate-Source Charge <sup>2,3</sup>	Q <sub>gs</sub>		---	0.26	0.5	
Gate-Drain Charge <sup>2,3</sup>	Q <sub>gd</sub>		---	0.2	0.4	
Turn-On Delay Time <sup>2,3</sup>	T <sub>d(on)</sub>	V <sub>DD</sub> =10V, V <sub>GS</sub> =4.5V, R <sub>G</sub> =10Ω I <sub>D</sub> =0.5A	---	5	10	ns
Rise Time <sup>2,3</sup>	T <sub>r</sub>		---	3.5	7	
Turn-Off Delay Time <sup>2,3</sup>	T <sub>d(off)</sub>		---	14	28	
Fall Time <sup>2,3</sup>	T <sub>f</sub>		---	6	12	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, F=1MHz	---	38.2	75	pF
Output Capacitance	C <sub>oss</sub>		---	14.4	28	
Reverse Transfer Capacitance	C <sub>rss</sub>		---	6	12	
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	I <sub>S</sub>	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current	---	---	0.8	A
Pulsed Source Current	I <sub>SM</sub>		---	---	1.6	A
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =0.2A, T <sub>J</sub> =25°C	---	---	1	V

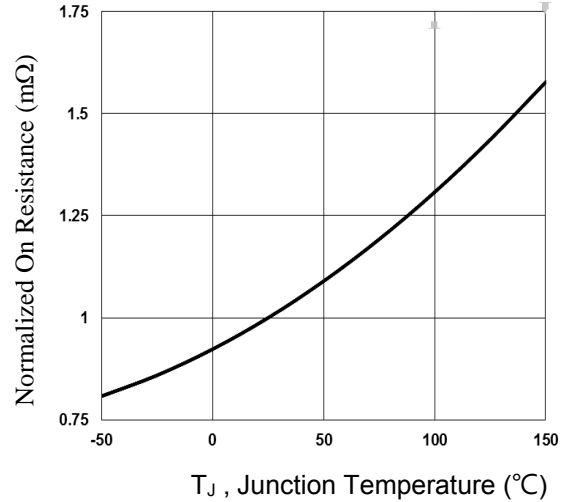
Note :

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.

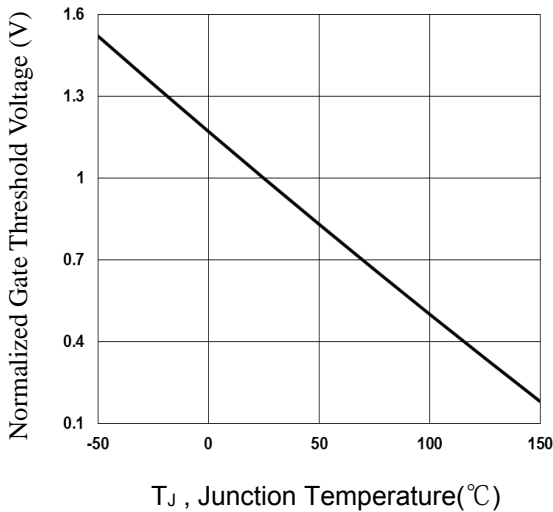
### Typical Electrical and Thermal Characteristic Curves



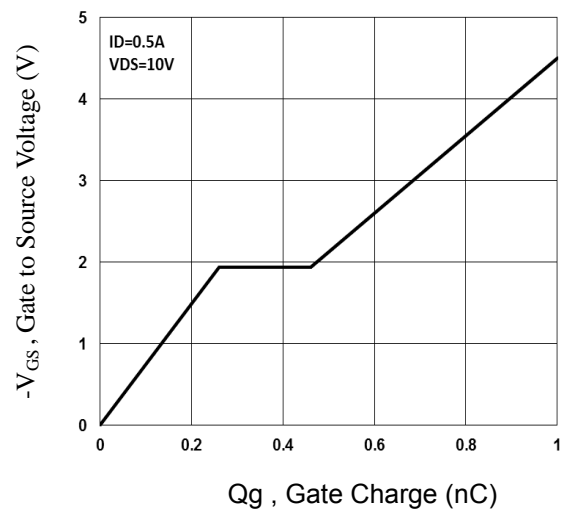
**Fig.1 Continuous Drain Current vs.  $T_c$**



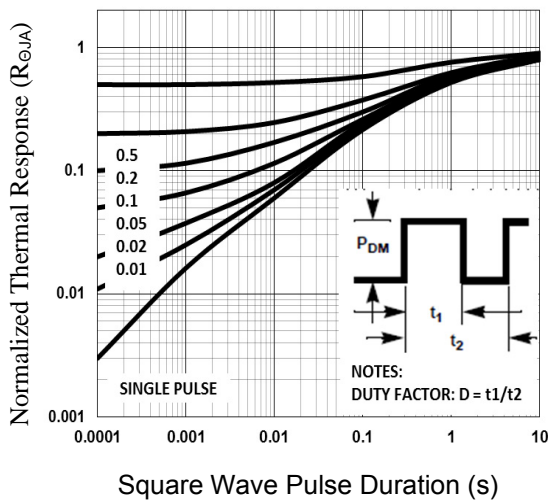
**Fig.2 Normalized RDSON vs.  $T_j$**



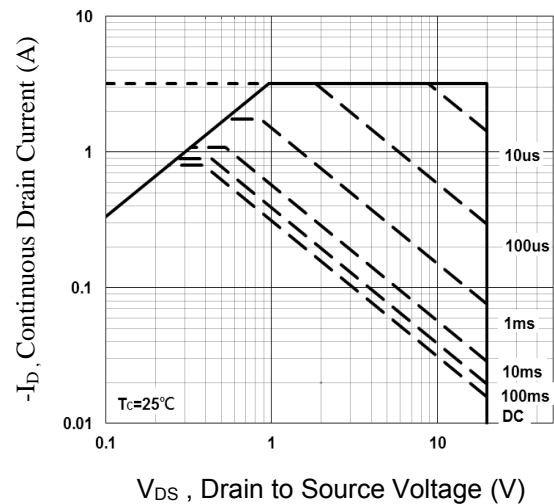
**Fig.3 Normalized  $V_{th}$  vs  $T_j$**



**Fig.4 Gate Charge Waveform**



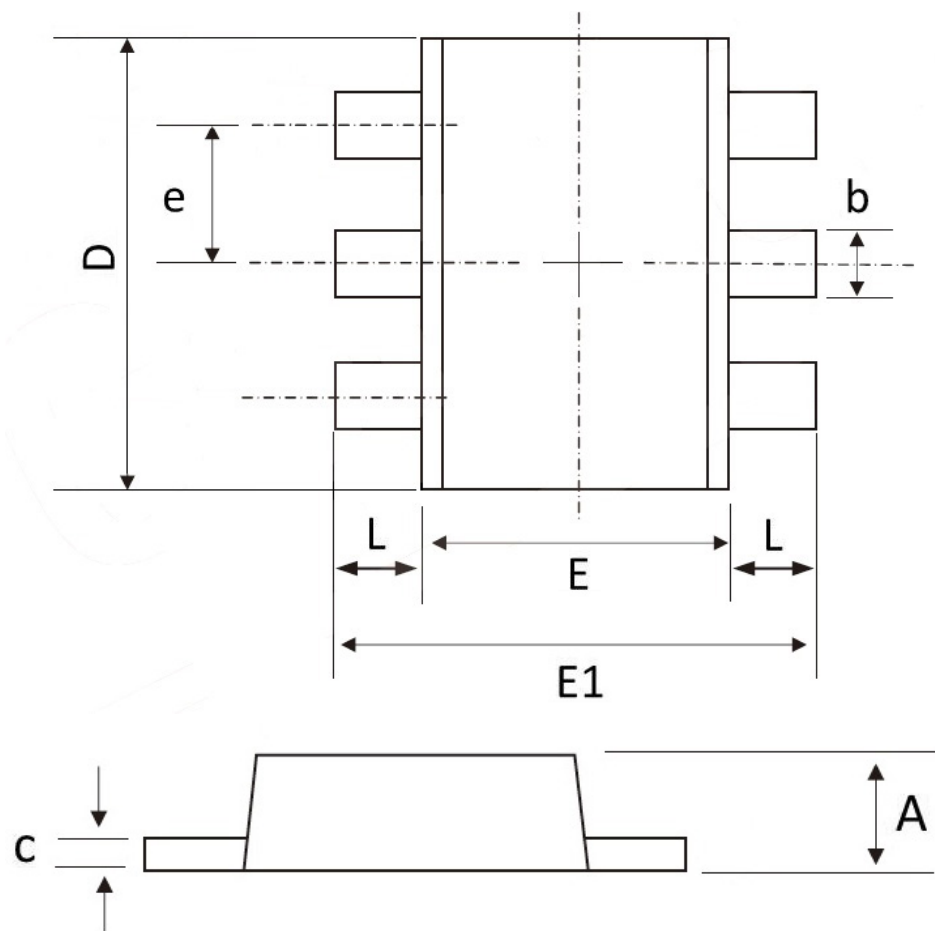
**Fig.5 Normalized Transient Impedance**



**Fig.6 Maximum Safe Operation Area**

**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