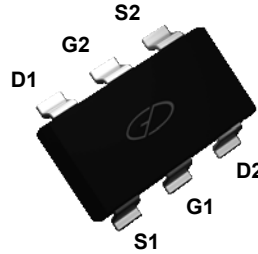
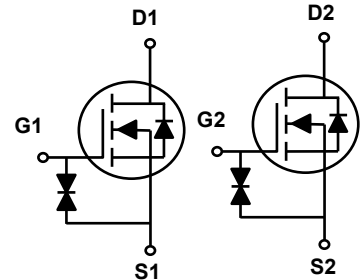


Main Product Characteristics

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



SOT-363



Schematic Diagram

Features and Benefits

- Fast switching and reverse body recovery
- Ideal for 1.5V gate drive applications
- Low on-resistance with low gate charge
- ESD protection up to 2KV



Description

The SSFK3220B 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	Rating	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	mA
Drain Current – Pulsed ¹	I_{DM}	3.2	A
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	275	mW
Power Dissipation – Derate above 25 $^{\circ}\text{C}$		2.2	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	$R_{\theta JA}$	---	450	$^{\circ}\text{C}/\text{W}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static State 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 , $I_D=1mA$	-	-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}	$V_{GS}=\pm 4.5V, V_{DS}=0V$	-	-	± 1.5	μA
On Characteristics						
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	$V_{GS(th)}$	$V_{DS}=V_{GS},$ $I_D=250\mu A$	0.3	0.6	1.0	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		-	-1.6	-	$mV/^\circ\text{C}$
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}	$V_{DS}=10V, V_{GS}=0V,$ $F=1MHz$	-	38.2	75	PF
Output Capacitance	C_{oss}		-	14.4	28	
Reverse Transfer Capacitance	C_{rss}		-	6	12	
Drain-Source Diode Characteristics						
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}	$V_{GS}=0V, I_S=0.2A,$ $T_J=25^\circ\text{C}$	-	-	1	V

Note:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

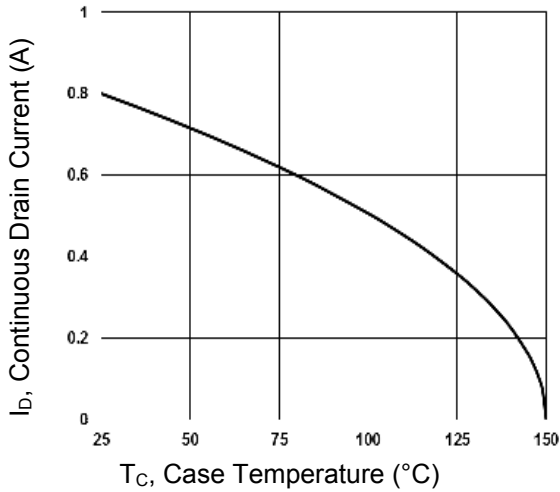


Figure 1. Continuous Drain Current vs. T_C

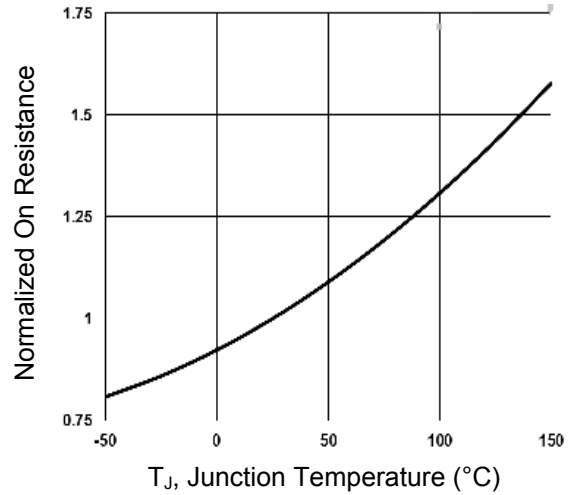


Figure 2. Normalized $R_{DS(ON)}$ vs. T_J

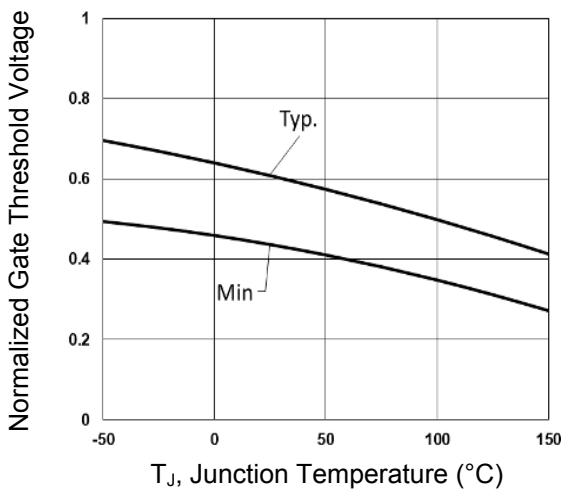


Figure 3. Normalized V_{th} vs. T_J

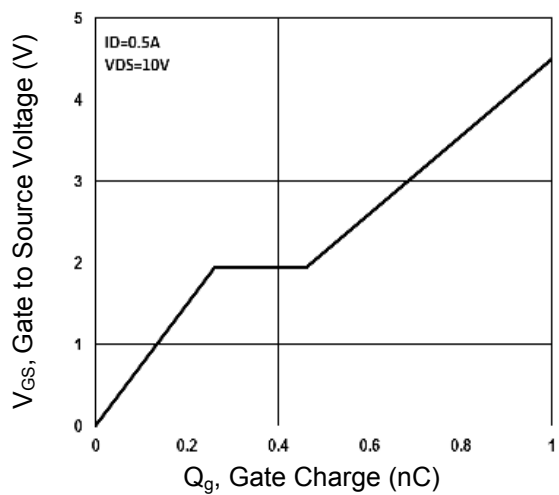


Figure 4. Gate Charge Waveform

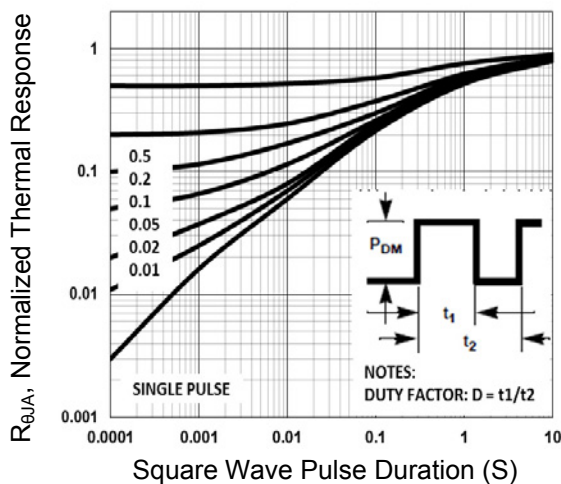


Figure 5. Normalized Transient Impedance

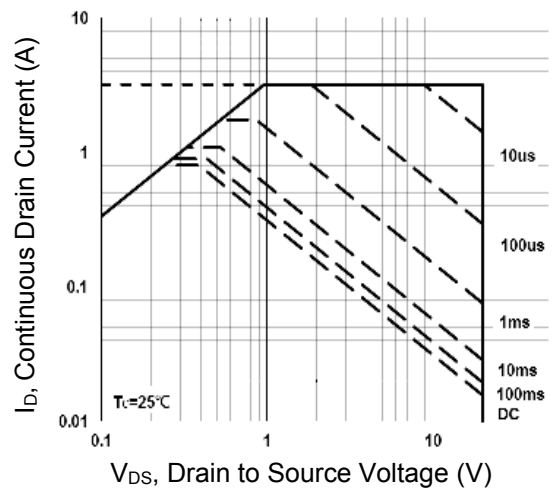
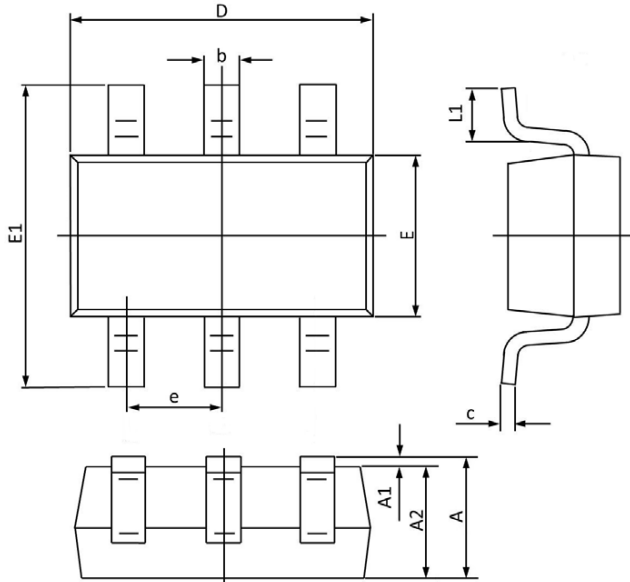


Figure 6. Maximum Safe Operation Area

Package Outline Dimensions (SOT-363)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.100	0.800	0.043	0.031
A1	0.100	0.000	0.004	0.000
A2	1.000	0.800	0.039	0.031
b	0.330	0.100	0.013	0.004
c	0.250	0.100	0.010	0.004
D	2.200	1.800	0.087	0.071
E	1.350	1.150	0.053	0.045
E1	2.400	1.800	0.094	0.071
e	0.650 BSC		0.026 BSC	
L1	0.350	0.100	0.014	0.004

Order Information

Device	Package	Marking	Carrier	Quantity
SSFK3220B	SOT-363	r	Tape & Reel	3,000pcs / Reel

Note:

Marking: XY - last two digits various by lots and date code.