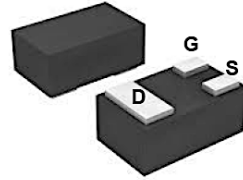
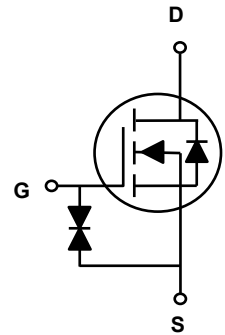


## Main Product Characteristics

$BV_{DSS}$	30V
$R_{DS(ON)}$	160m $\Omega$ (Max.)
$I_D$	1.6A



SOT-883



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 GSFW3018K 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 ( $T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	V
Continuous Drain Current @ $V_{GS}=4.5\text{V}$ , $T_A=25^\circ\text{C}$	$I_D$	1.6	A
Continuous Drain Current @ $V_{GS}=4.5\text{V}$ , $T_A=75^\circ\text{C}$		1.3	A
Pulsed Drain Current	$I_{DM}$	6.2	A
Total Power Dissipation ( $T_A=25^\circ\text{C}$ )	$P_D$	0.97	mW
Thermal Resistance Junction to Ambient <sup>1</sup>	$R_{\theta JA}$	129	$^\circ\text{C/W}$
Junction and Storage Temperature Range	$T_J/T_{STG}$	-55 to +150	$^\circ\text{C}$

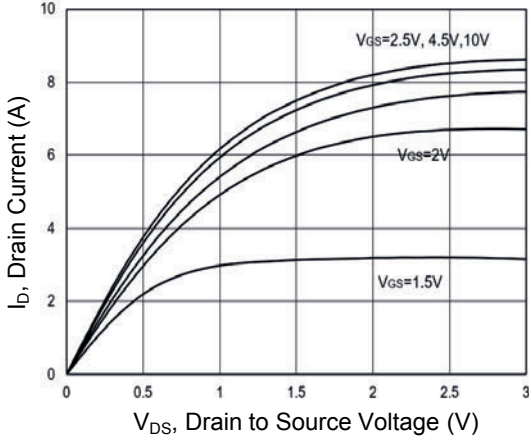
Note:

1. Device mounted on FR-4 substrate PC board, 2oz copper, with 1 inch square copper plate.

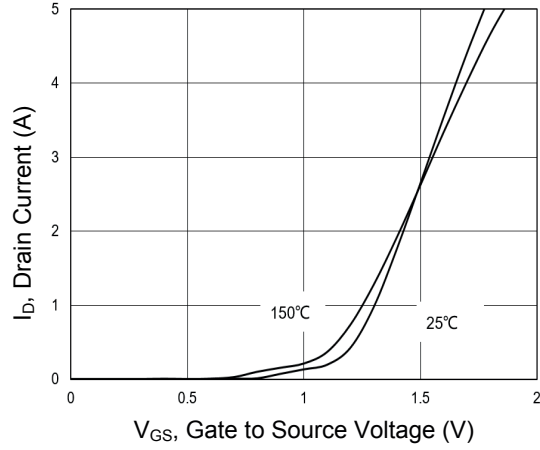
**Electrical Characteristics** ( $T_J=25^{\circ}\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>On / Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V, T_C=25^{\circ}\text{C}$	-	-	1	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8V, V_{DS}=0V$	-	-	$\pm 10$	$\mu A$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.4	-	1.1	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=0.2A$	-	130	160	m $\Omega$
		$V_{GS}=4.5V, I_D=0.2A$	-	140	190	
		$V_{GS}=2.5V, I_D=0.1A$	-	160	215	
<b>Dynamic and Switching Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$	-	134	-	pF
Output Capacitance	$C_{oss}$		-	12.8	-	
Reverse Transfer Capacitance	$C_{rss}$		-	6.9	-	
Total Gate Charge	$Q_g$	$V_{GS}=4.5V, V_{DS}=15V, I_D=1.3A$	-	1.36	-	nC
Gate Source Charge	$Q_{gs}$		-	0.18	-	
Gate Drain Charge	$Q_{gd}$		-	0.33	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=4.5V, V_{DD}=15V, I_D=1.3A, R_{GEN}=4.5\Omega$	-	4.4	-	ns
Turn-on Rise Time	$t_r$		-	11.7	-	
Turn-off Delay Time	$t_{d(off)}$		-	20.8	-	
Turn-off Fall Time	$t_f$		-	12.1	-	
Gate Resistance	$R_g$	$f=1\text{MHz}$	-	13	-	$\Omega$
<b>Source-Drain Ratings and Characteristics</b>						
Maximum Body-Diode Continuous Current	$I_S$	-	-	-	1.6	A
Diode Forward Voltage	$V_{SD}$	$I_S=1.6A, V_{GS}=0V$	-	0.85	1.2	V

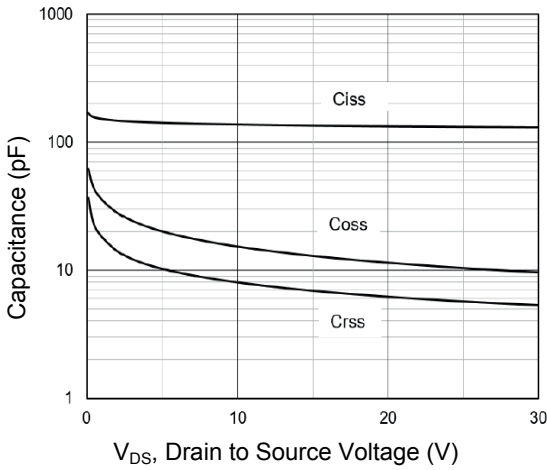
**Typical Electrical and Thermal Characteristic Curves**



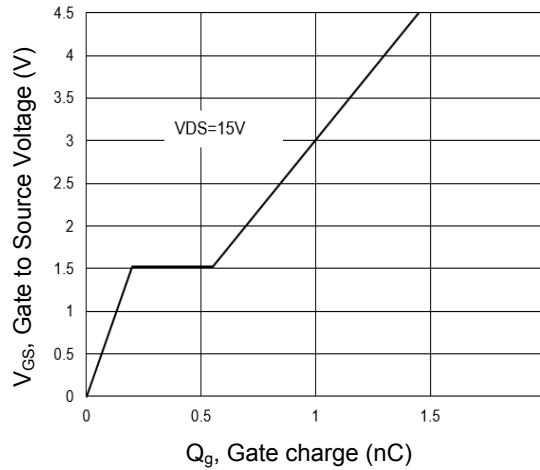
**Figure 1. Output Characteristics**



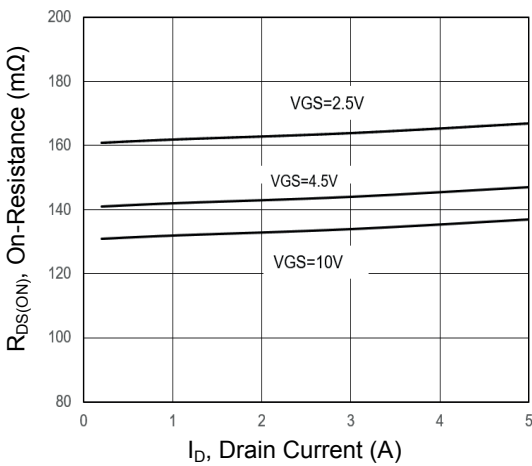
**Figure 2. Transfer Characteristics**



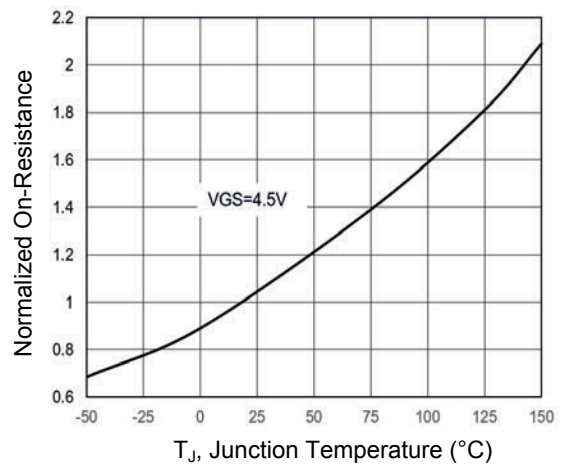
**Figure 3. Capacitance Characteristics**



**Figure 4. Gate Charge**

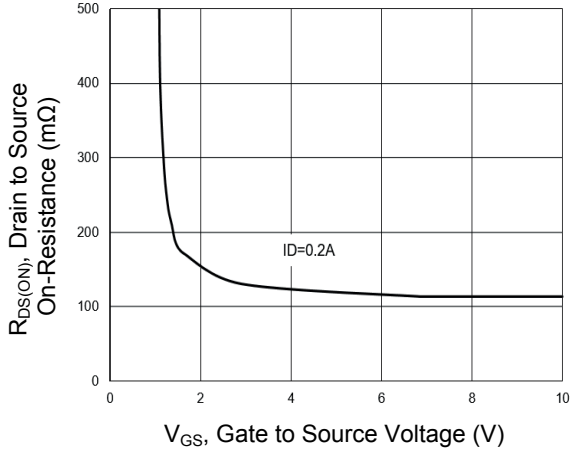


**Figure 5. On-Resistance vs. Drain Current**

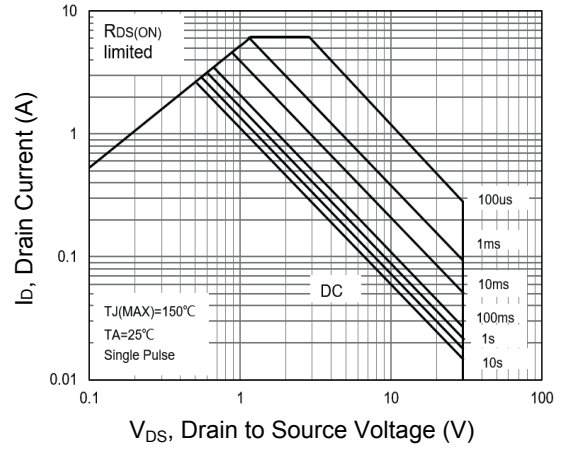


**Figure 6. Normalized  $R_{DSon}$  vs.  $T_J$**

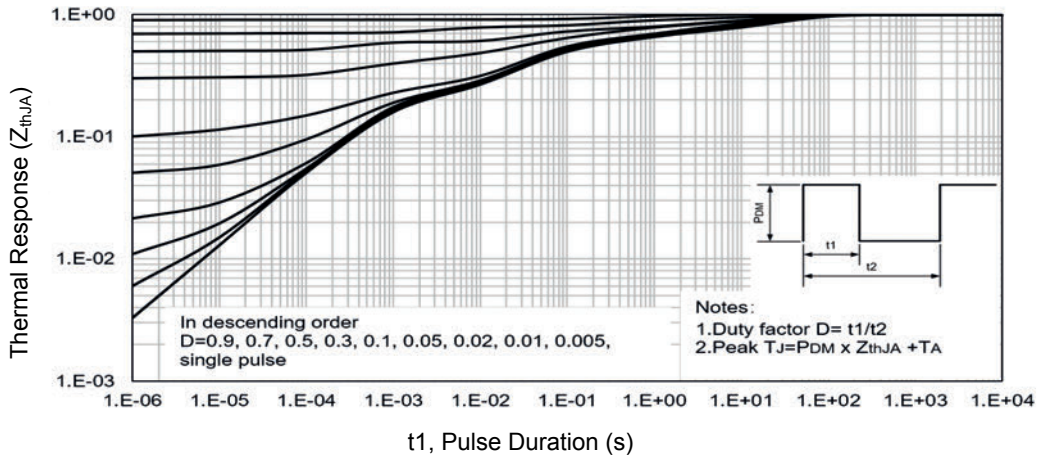
**Typical Electrical and Thermal Characteristic Curves**



**Figure 7. Typical  $R_{DS(on)}$  vs. Gate Voltage**

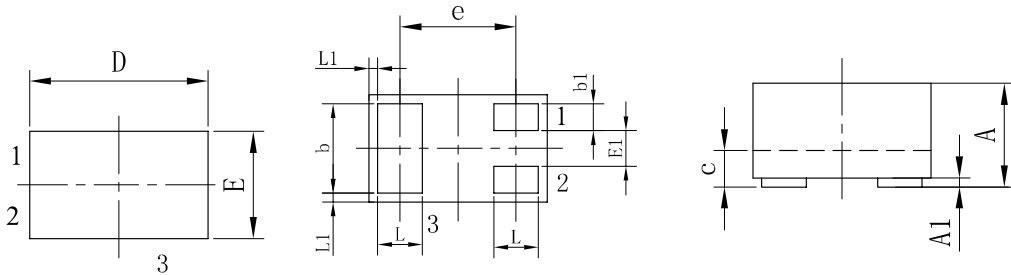


**Figure 8. Safe Operation Area**



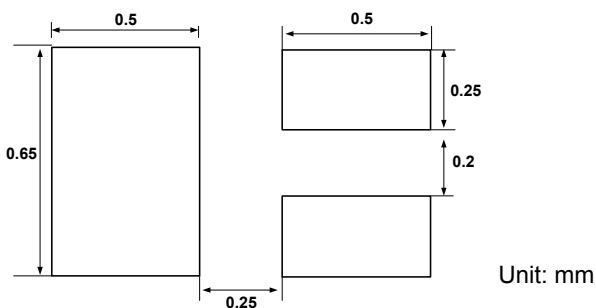
**Figure 9. Maximum Effective Transient Thermal Impedance, Junction to Ambient**

### Package Outline Dimensions (SOT-883)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.45	0.55	0.018	0.022
A1	0.00	0.05	0.000	0.002
b	0.45	0.55	0.018	0.022
b1	0.10	0.20	0.004	0.008
c	0.12	0.18	0.005	0.007
D	0.95	1.05	0.037	0.041
e	0.675 BSC		0.027 BSC	
E	0.55	0.65	0.022	0.026
E1	0.15	0.25	0.006	0.010
L	0.25	0.35	0.001	0.014
L1	0.05 REF		0.002 REF	

### Recommended Pad Layout



### Order Information

Device	Package	Marking	Packaging	SPQ
GSFW3018K	SOT-883	U3	Tape & Reel	10,000 Pcs / Reel