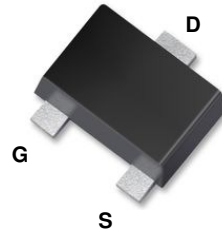
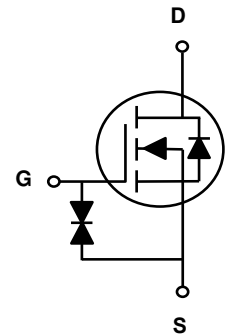


### Main Product Characteristics

$BV_{DSS}$	30V
$R_{DS(ON)}$	450m $\Omega$
$I_D$	780mA



SOT-723



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 GSFF0308 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<sub>C</sub>=25°C unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Drain Current (T <sub>A</sub> =25°C)	$I_D$	780	mA
Drain Current (T <sub>A</sub> =70°C)		620	mA
Pulsed Drain Current <sup>1</sup>	$I_{DM}$	3.12	A
Power Dissipation (T <sub>A</sub> =25°C)	$P_D$	446	mW
Power Dissipation – Derate above 25°C		3.57	mW/°C
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	280	°C/W
Operating Junction Temperature Range	$T_J$	-55 To +150	°C
Storage Temperature Range	$T_{STG}$	-55 To +150	°C

### 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> =250μA	30	-	-	V
BV <sub>DSS</sub> Temperature Coefficient	ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	Reference to 25°C, I <sub>D</sub> =1mA	-	-0.03	-	V/°C
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C	-	-	1	μA
		V <sub>DS</sub> =24V, V <sub>GS</sub> =0V, T <sub>J</sub> =125°C	-	-	10	μA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V	-	-	±20	μA
<b>On Characteristics</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.5	0.7	1.2	V
V <sub>GS(th)</sub> Temperature Coefficient	ΔV <sub>GS(th)</sub>		-	-1.74	-	mV/°C
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =0.3A	-	370	450	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =0.2A	-	510	650	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =4V, I <sub>D</sub> =0.3A	-	0.8	-	S
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>2,3</sup>	Q <sub>g</sub>	V <sub>DS</sub> =15V, I <sub>D</sub> =0.3A, V <sub>GS</sub> =4.5V	-	2.6	5.2	nC
Gate-Source Charge <sup>2,3</sup>	Q <sub>gs</sub>		-	0.9	1.8	
Gate-Drain Charge <sup>2,3</sup>	Q <sub>gd</sub>		-	0.6	1.2	
Turn-On Delay Time <sup>2,3</sup>	t <sub>d(on)</sub>	V <sub>DD</sub> =15V, I <sub>D</sub> =0.3A, V <sub>GS</sub> =4.5V, R <sub>G</sub> =10Ω	-	5.5	11	nS
Rise Time <sup>2,3</sup>	t <sub>r</sub>		-	4	8	
Turn-Off Delay Time <sup>2,3</sup>	t <sub>d(off)</sub>		-	14.5	29	
Fall Time <sup>2,3</sup>	t <sub>f</sub>		-	6.5	13	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, F=1.0MHz	-	72.9	146	pF
Output Capacitance	C <sub>oss</sub>		-	18.3	36.6	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	7.4	14.8	
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Continuous Source Current	I <sub>S</sub>	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current	-	-	0.78	A
Pulsed Source Current	I <sub>SM</sub>		-	-	1.56	A
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =0.3A, T <sub>J</sub> =25°C	-	-	1	V

Notes:

1. Repetitive Rating: Pulse 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

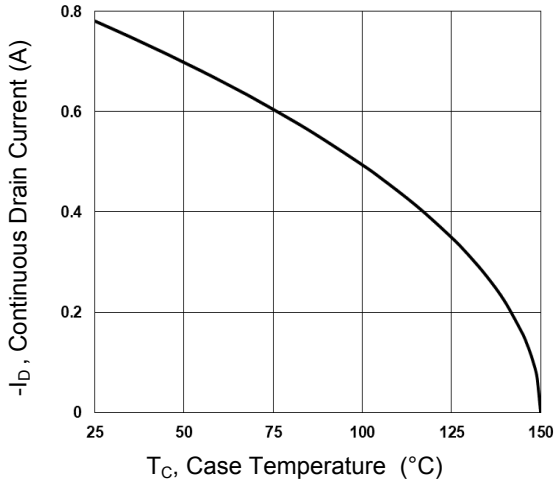


Figure 1. Continuous Drain Current vs.  $T_C$

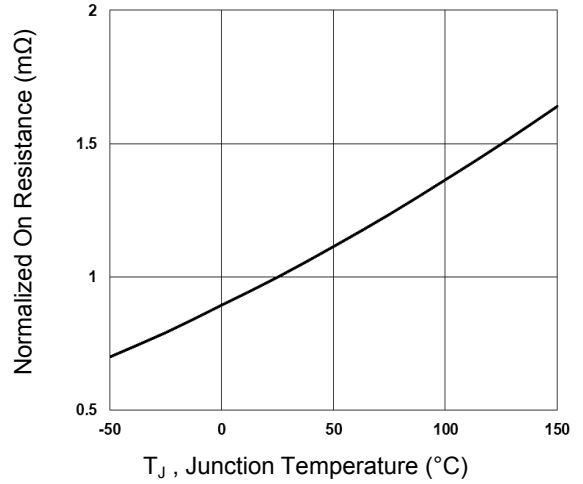


Figure 2. Normalized  $R_{DS(on)}$  vs.  $T_J$

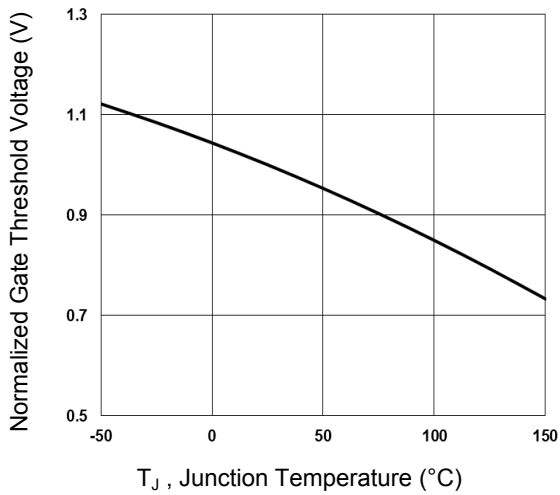


Figure 3. Normalized  $V_{th}$  vs.  $T_J$

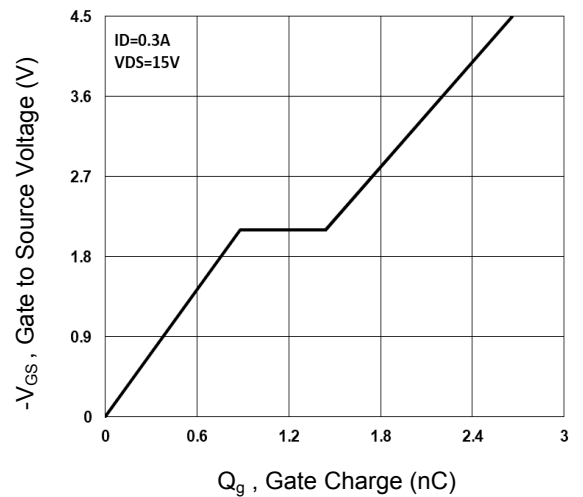


Figure 4. Gate Charge

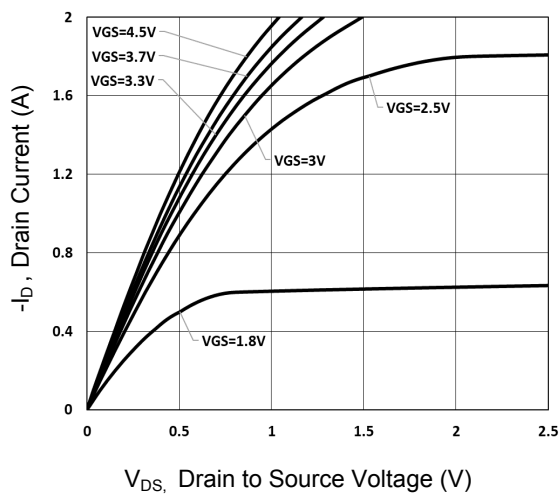


Figure 5. Typical Output Characteristics

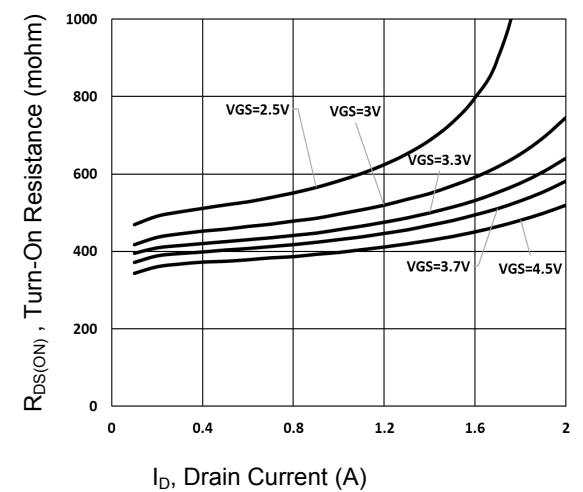


Figure 6. Turn-On Resistance vs.  $I_D$

## Typical Electrical and Thermal Characteristic Curves

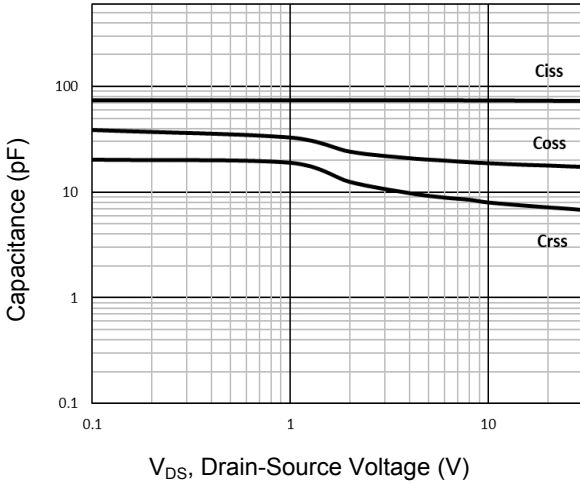


Figure 7. Capacitance Characteristics

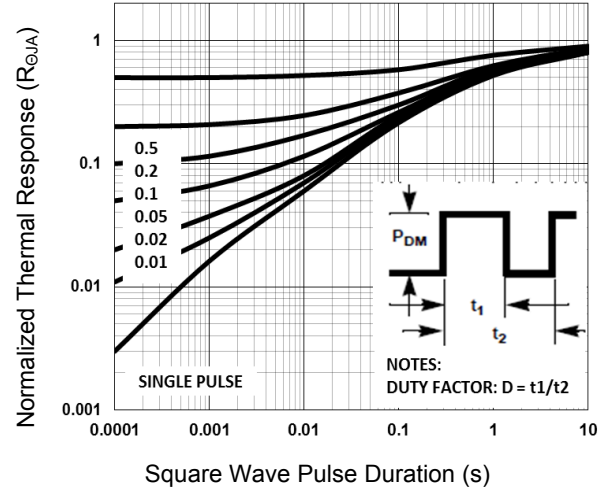


Figure 8. Normalized Transient Response

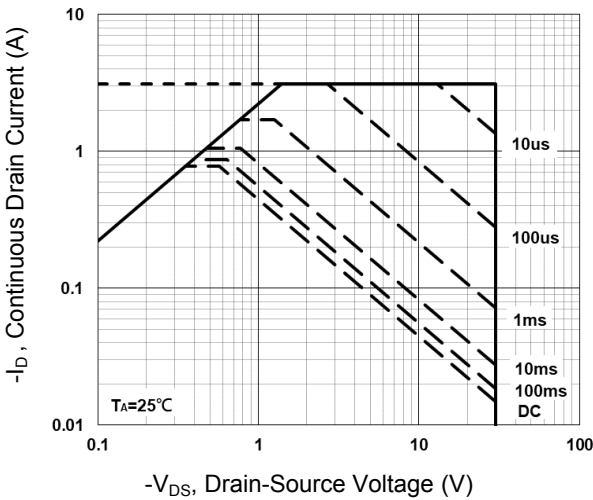


Figure 9. Maximum Safe Operation Area

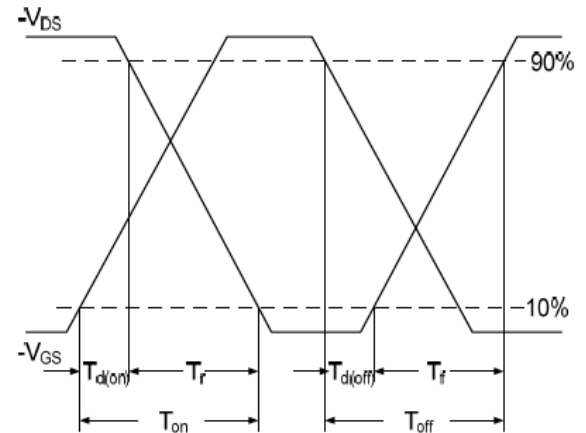


Figure 10. Switching Time Waveform

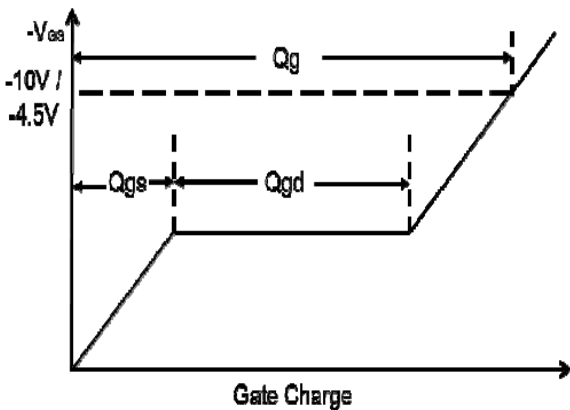
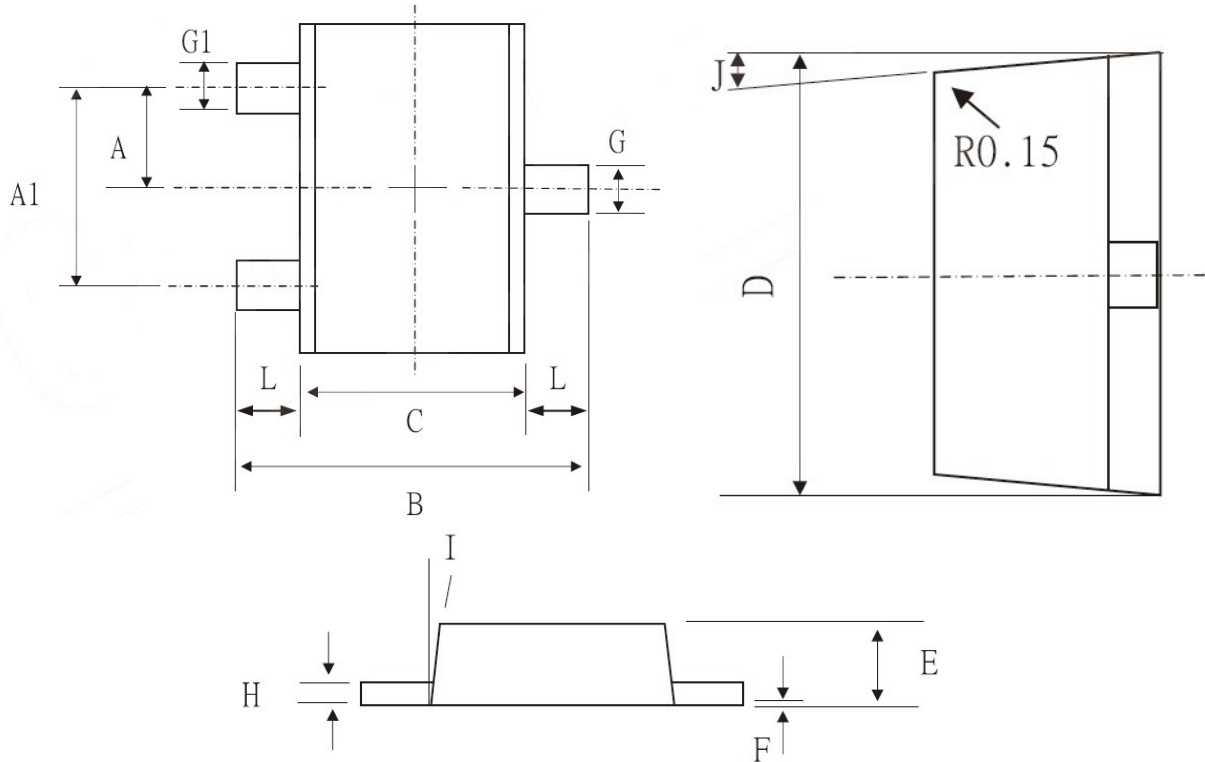


Figure 11 Gate Charge Waveform

**Package Outline Dimensions (SOT-723)**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	0.4BSC		0.016BSC	
A1	0.8BSC		0.031BSC	
B	1.250	1.150	0.049	0.045
C	0.850	0.750	0.033	0.030
D	1.250	1.150	0.049	0.045
E	0.390	0.370	0.015	0.015
F	0.050	0.000	0.002	0.000
G	0.270	0.220	0.011	0.009
G1	0.220	0.170	0.009	0.007
H	0.110	0.009	0.004	0.000
I	13°	9°	13°	9°
L	0.250	0.150	0.010	0.006
J	11°	7°	11°	7°