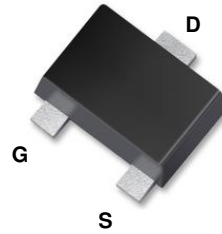
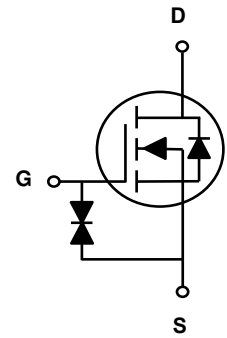


Main Product Characteristics

BV_{DSS}	30V
$R_{DS(ON)}$	450m Ω
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

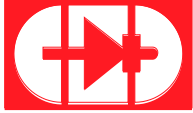


Description

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

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current ($T_A=25^\circ\text{C}$)	I_D	780	mA
Drain Current ($T_A=70^\circ\text{C}$)		620	mA
Pulsed Drain Current ¹	I_{DM}	3.12	A
Power Dissipation ($T_A=25^\circ\text{C}$)	P_D	446	mW
Power Dissipation – Derate above 25 $^\circ\text{C}$		3.57	mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	280	$^\circ\text{C}/\text{W}$
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
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
BV_{DSS} Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C , $I_D=1\text{mA}$	-	-0.03	-	$V/^\circ\text{C}$
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V,$ $T_J=25^\circ\text{C}$	-	-	1	μA
		$V_{DS}=24V, V_{GS}=0V,$ $T_J=125^\circ\text{C}$	-	-	10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$	-	-	± 20	μA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS},$ $I_D=250\mu A$	0.5	0.7	1.2	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		-	-1.74	-	$\text{mV}/^\circ\text{C}$
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=0.3A$	-	370	450	$\text{m}\Omega$
		$V_{GS}=2.5V, I_D=0.2A$	-	510	650	
Forward Transconductance	g_{FS}	$V_{DS}=4V, I_D=0.3A$	-	0.8	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q_g	$V_{DS}=15V, I_D=0.3A,$ $V_{GS}=4.5V$	-	2.6	5.2	nC
Gate-Source Charge ^{2,3}	Q_{gs}		-	0.9	1.8	
Gate-Drain Charge ^{2,3}	Q_{gd}		-	0.6	1.2	
Turn-On Delay Time ^{2,3}	$t_{d(on)}$	$V_{DD}=15V, I_D=0.3A$ $V_{GS}=4.5V, R_G=10\Omega$	-	5.5	11	nS
Rise Time ^{2,3}	t_r		-	4	8	
Turn-Off Delay Time ^{2,3}	$t_{d(off)}$		-	14.5	29	
Fall Time ^{2,3}	t_f		-	6.5	13	
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V,$ $F=1.0\text{MHz}$	-	72.9	146	pF
Output Capacitance	C_{oss}		-	18.3	36.6	
Reverse Transfer Capacitance	C_{rss}		-	7.4	14.8	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_S	$V_G=V_D=0V,$ Force Current	-	-	0.78	A
Pulsed Source Current	I_{SM}		-	-	1.56	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=0.3A,$ $T_J=25^\circ\text{C}$	-	-	1	V

Notes:

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

Typical Electrical and Thermal Characteristic Curves

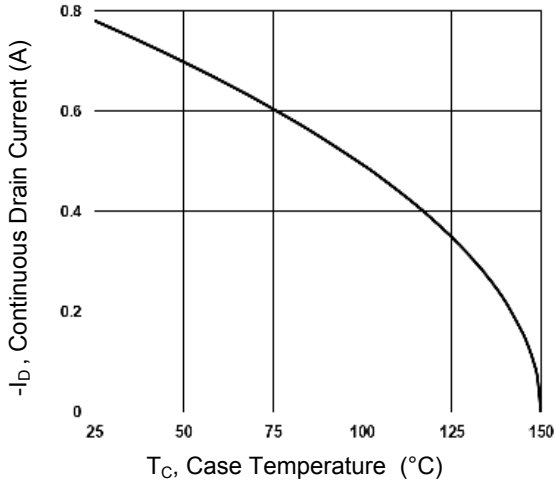


Figure 1. Continuous Drain Current vs. T_C

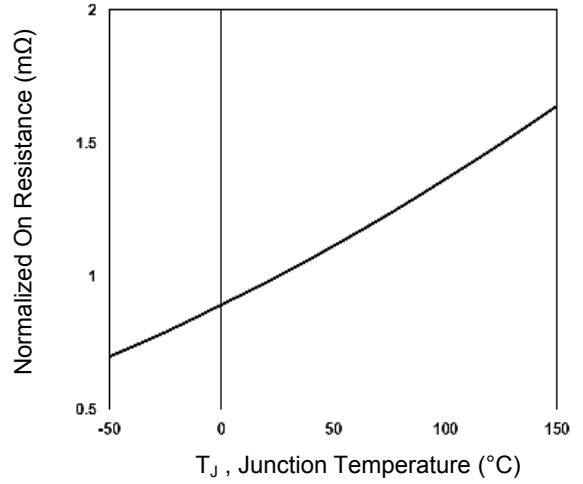


Figure 2. Normalized $R_{DS(on)}$ vs. T_J

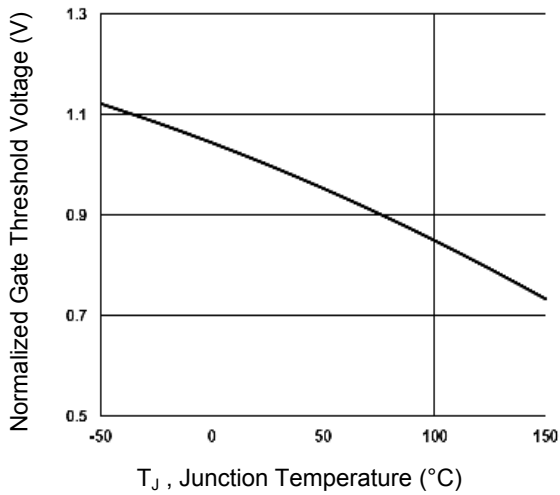


Figure 3. Normalized V_{th} vs. T_J

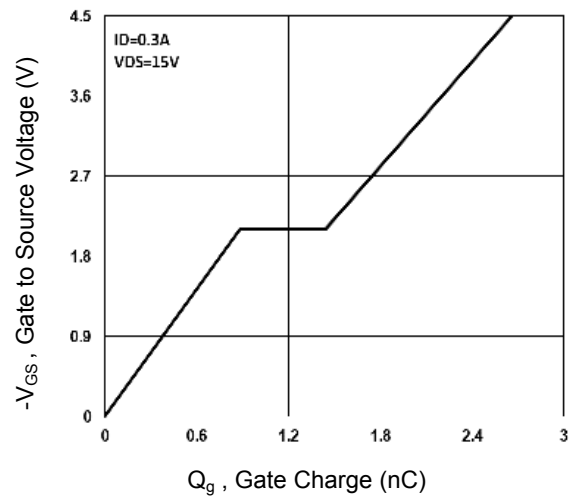


Figure 4. Gate Charge Waveform

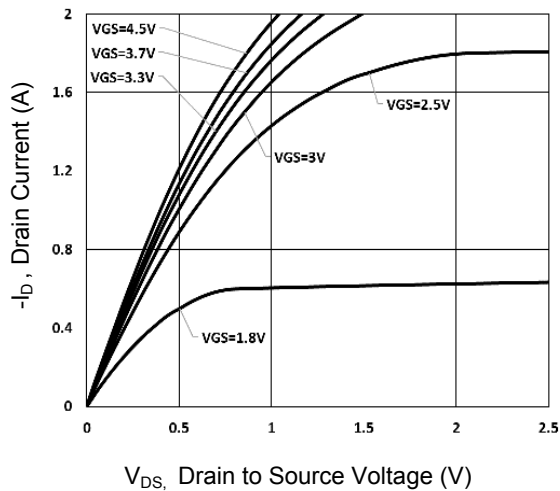


Figure 5. Typical Output Characteristics

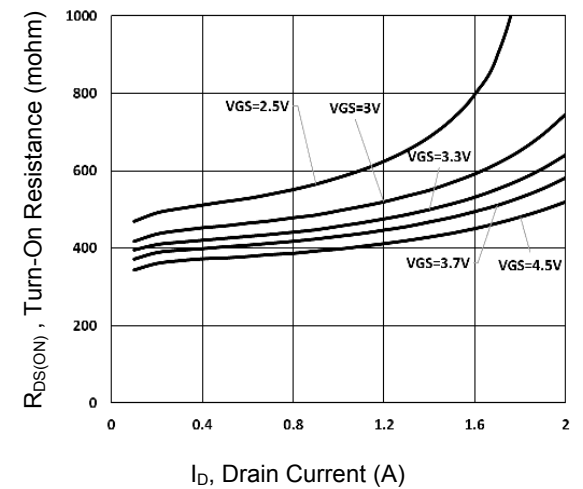


Figure 6. Turn-On Resistance vs. I_D

Typical Electrical and Thermal Characteristic Curves

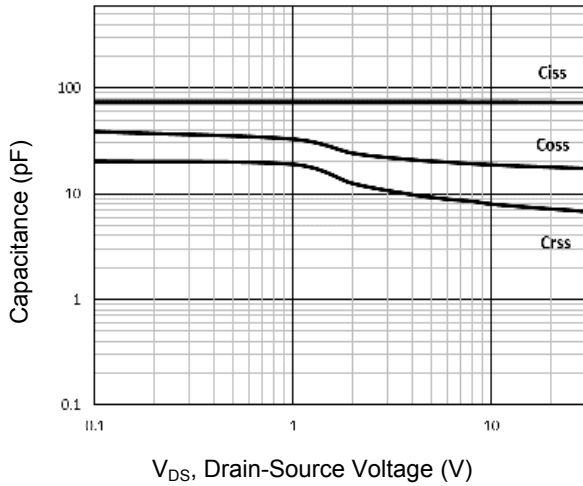


Figure 7. Capacitance Characteristics

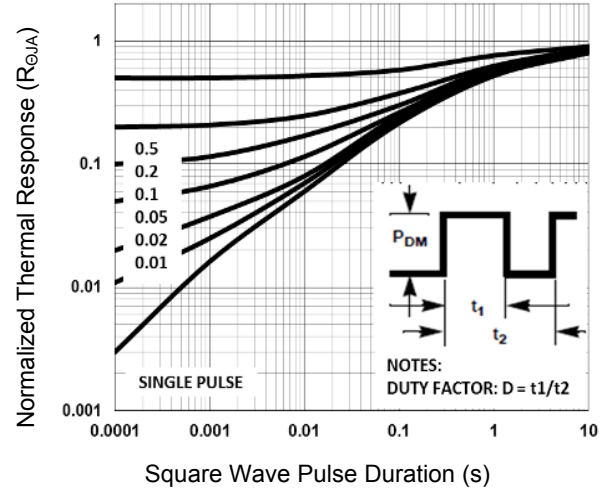


Figure 8. Normalized Transient Response

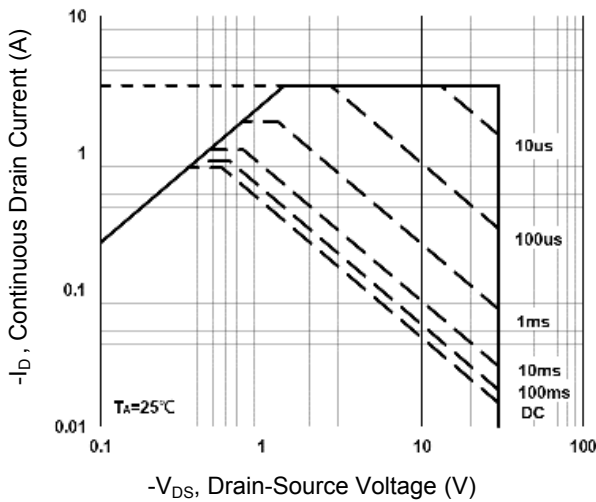


Figure 9. Maximum Safe Operation Area

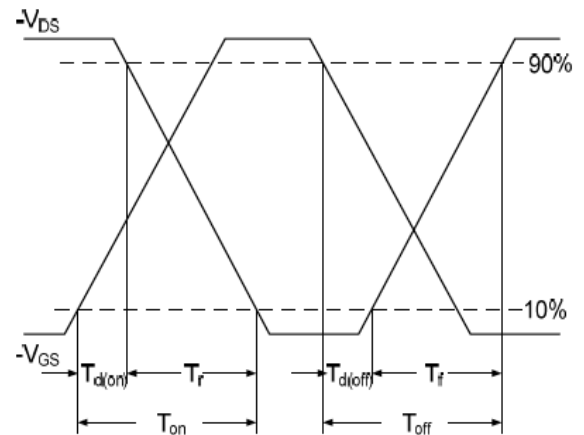


Figure 10. Switching Time Waveform

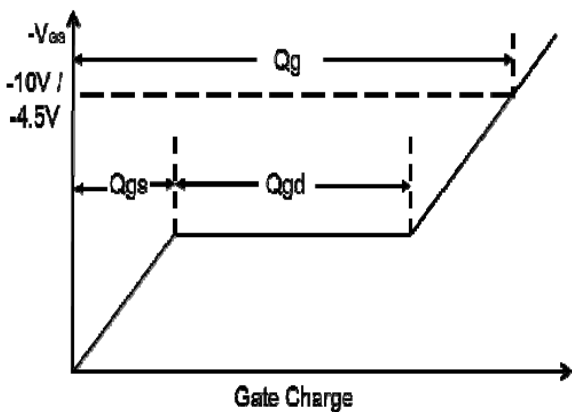
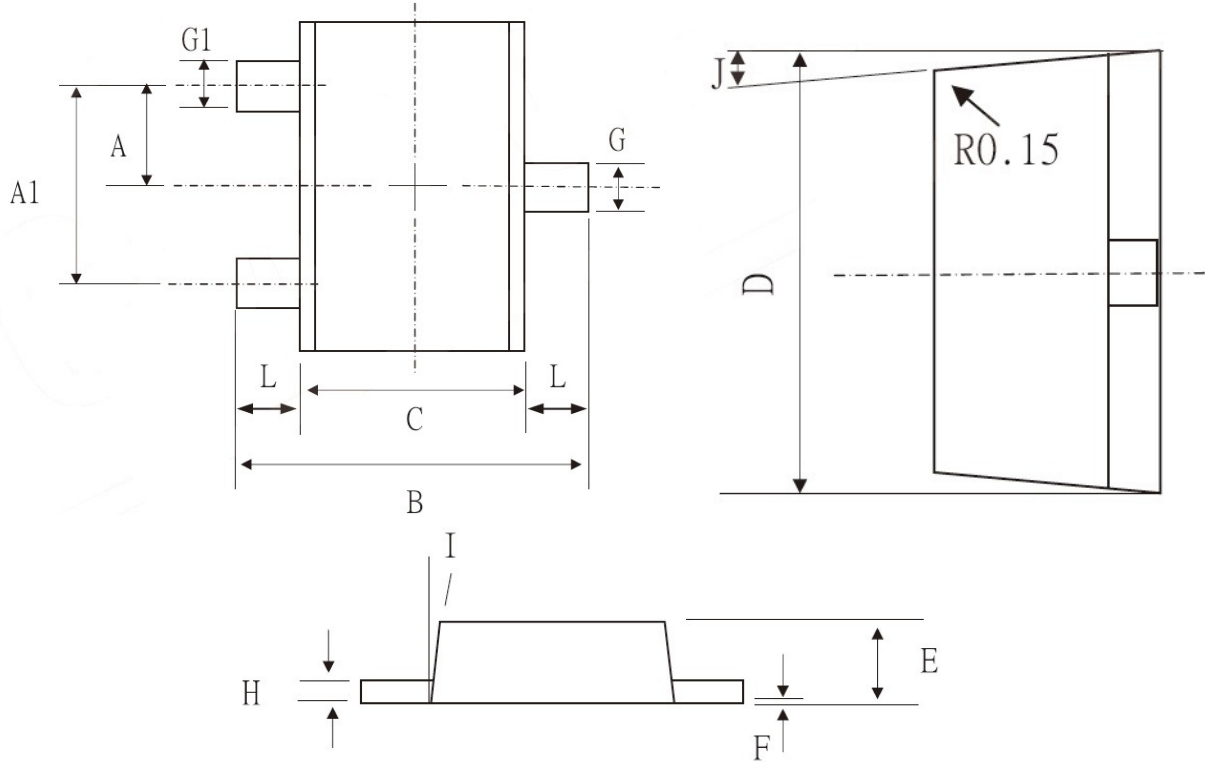


Figure 11 Gate Charge Waveform

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°