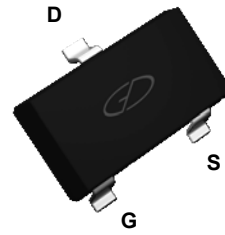
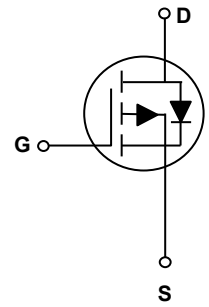


**Main Product Characteristics**

$V_{DS}$	-20V
$R_{DS(ON)}$	90mΩ
$I_D$	-1.5A



SOT-323



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 GSF2315 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** ( $T_C=25^{\circ}C$  unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 10$	V
Drain Current-Continuous ( $T_C=25^{\circ}C$ )	$I_D$	-1.5	A
Drain Current-Continuous ( $T_C=100^{\circ}C$ )		-0.95	A
Drain Current-Pulsed <sup>1</sup>	$I_{DM}$	-6	A
Power Dissipation ( $T_C=25^{\circ}C$ )	$P_D$	312	mW
Power Dissipation-Derate Above 25°C		2.5	mW/°C
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	400	°C/W
Operating Junction Temperature Range	$T_J$	-55 To +150	°C
Storage Temperature Range	$T_{STG}$	-55 To +150	°C

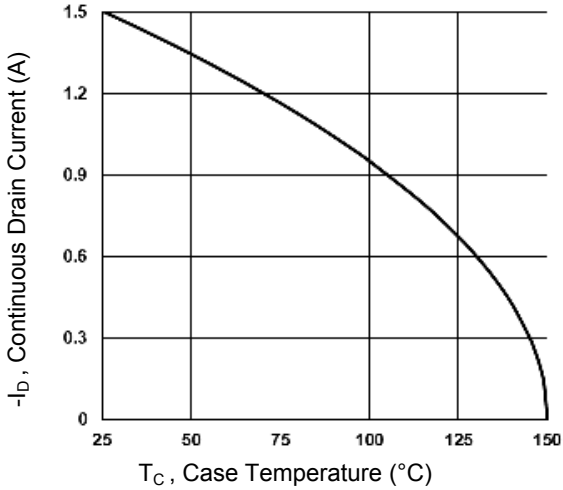
### Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	BVDSS	V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA	-20	-	-	V
BVDSS 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 (T <sub>J</sub> =25°C)	I <sub>DSS</sub>	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V	-	-	-1	μA
Drain-Source Leakage Current (T <sub>J</sub> =125°C)		V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V	-	-	-10	μA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±10V, V <sub>DS</sub> =0V	-	-	±100	nA
<b>On Characteristics</b>						
Static Drain-Source On-State Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-1A	-	75	90	mΩ
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-1A	-	100	130	
		V <sub>GS</sub> =-1.8V, I <sub>D</sub> =-1A	-	130	170	
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-0.3	-0.6	-1	V
V <sub>GS(th)</sub> Temperature Coefficient	ΔV <sub>GS(th)</sub>		-	3	-	mV/°C
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> =-10V, I <sub>S</sub> =-1A	-	2.2	-	S
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>2,3</sup>	Q <sub>g</sub>	V <sub>DS</sub> =-10V, I <sub>D</sub> =-1A, V <sub>GS</sub> =-4.5V	-	4.8	8	nC
Gate-Source Charge <sup>2,3</sup>	Q <sub>gs</sub>		-	0.5	1	
Gate-Drain Charge <sup>2,3</sup>	Q <sub>gd</sub>		-	1.9	4	
Turn-On Delay Time <sup>2,3</sup>	t <sub>d(on)</sub>	V <sub>DD</sub> =-10V, I <sub>D</sub> =-1A V <sub>GS</sub> =-4.5V, R <sub>G</sub> =25Ω	-	3.5	7	nS
Rise Time <sup>2,3</sup>	t <sub>r</sub>		-	12.6	24	
Turn-Off Delay Time <sup>2,3</sup>	t <sub>d(off)</sub>		-	32.6	62	
Fall Time <sup>2,3</sup>	t <sub>f</sub>		-	8.4	16	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-15V, V <sub>GS</sub> =0V, F=1.0MHz	-	350	510	pF
Output Capacitance	C <sub>oss</sub>		-	65	95	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	50	75	
<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	-	-	-1.5	A
Pulsed Source Current	I <sub>SM</sub>		-	-	-3	A
Diode Forward Voltage	V <sub>SD</sub>	T <sub>J</sub> =25°C, I <sub>S</sub> =-1A, V <sub>GS</sub> =0V	-	-	-1	V

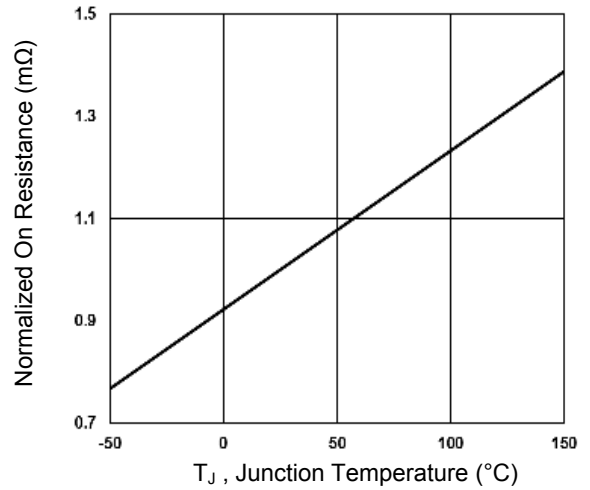
Note :

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.

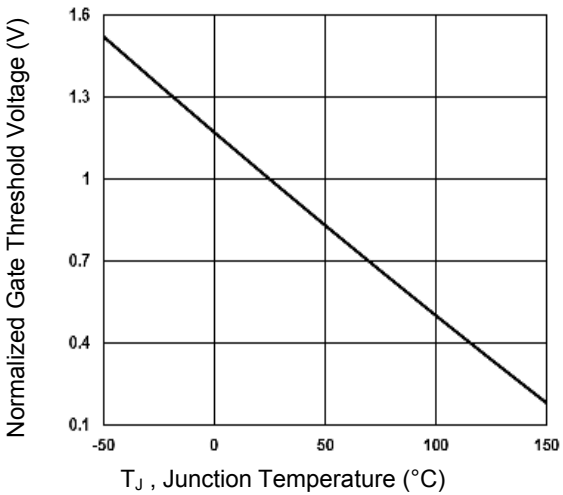
**Typical Electrical and Thermal Characteristic Curves**



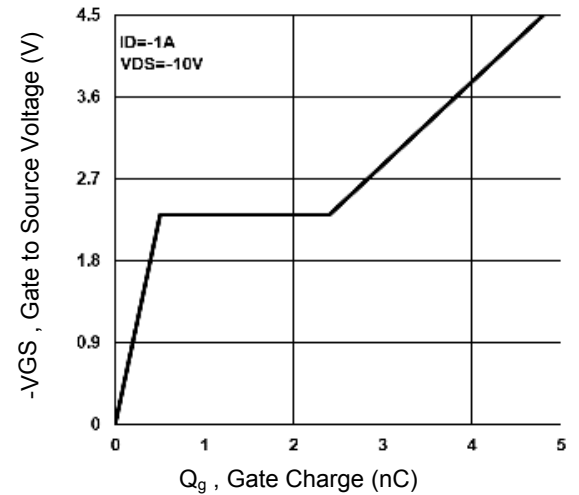
**Figure 1. Continuous Drain Current vs.  $T_C$**



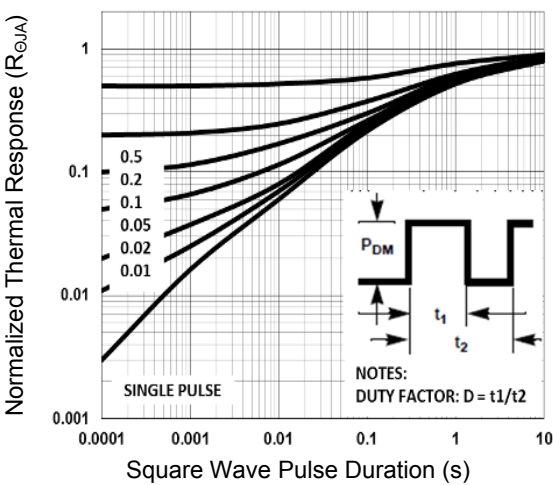
**Figure 2. Normalized  $R_{DS(on)}$  vs.  $T_J$**



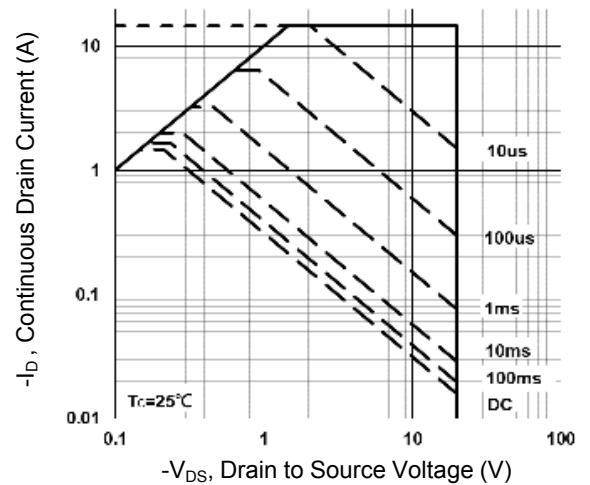
**Figure 3. Normalized  $V_{th}$  vs.  $T_J$**



**Figure 4. Gate Charge Waveform**

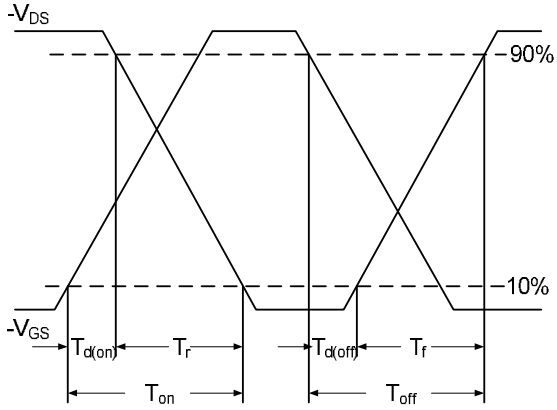


**Figure 5. Normalized Transient Response**

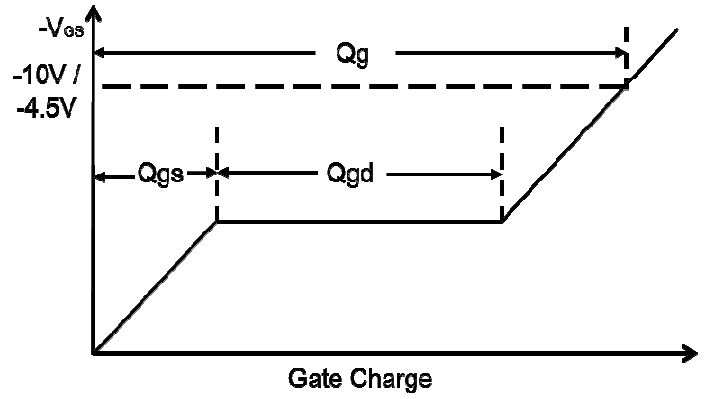


**Figure 6. Maximum Safe Operation Area**

**Typical Electrical and Thermal Characteristic Curves**

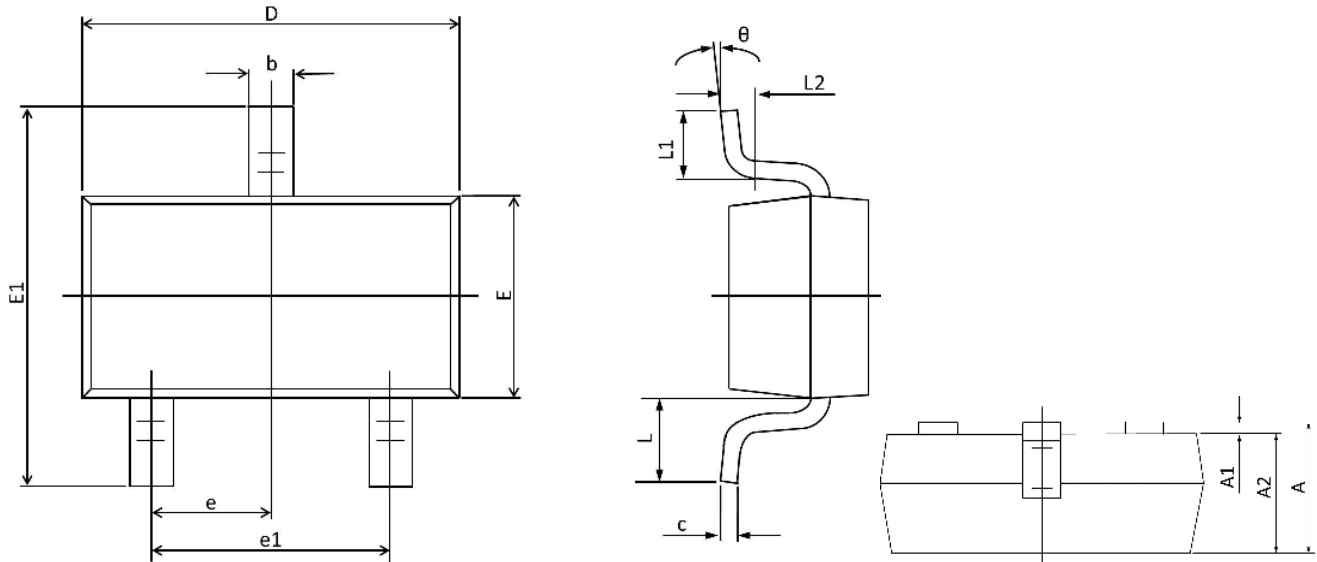


**Figure 7. Switching Time Waveform**



**Figure 8. Gate Charge Waveform**

## Package Outline Dimensions (SOT-323)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
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	0.400	0.200	0.016	0.008
c	0.250	0.080	0.010	0.003
D	2.200	1.800	0.087	0.071
E	1.350	1.150	0.053	0.045
E1	2.450	1.800	0.096	0.071
e	0.65BSC		0.026BSC	
e1	1.400	1.200	0.055	0.047
L	0.525REF.		0.021REF.	
L1	0.460	0.150	0.018	0.006
L2	0.200	0.000	0.008	0.000
theta	8°	0°	8°	0°