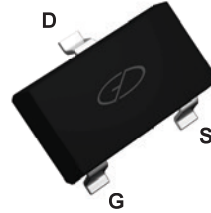
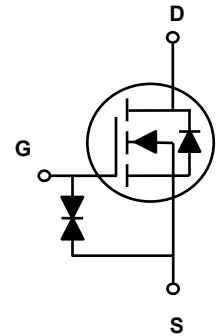


**Main Product Characteristics**

$BV_{DSS}$	20V
$R_{DS(ON)}$	300mΩ
$I_D$	1.45A



SOT-23



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 GSFC0202 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	$V_{GS}$	±8	V
Drain Current-Continuous ( $T_A=25^{\circ}C$ )	$I_D$	1.45	A
Drain Current-Continuous ( $T_A=70^{\circ}C$ )		1.15	
Drain Current-Pulsed <sup>1</sup>	$I_{DM}$	5.8	A
Power Dissipation ( $T_A=25^{\circ}C$ )	$P_D$	1	W
Power Dissipation-Derate above 25°C		8	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	125	°C/W
Operating Junction Temperature Range	$T_J$	-55 To +150	°C
Storage Temperature Range	$T_{STG}$	-55 To +150	°C

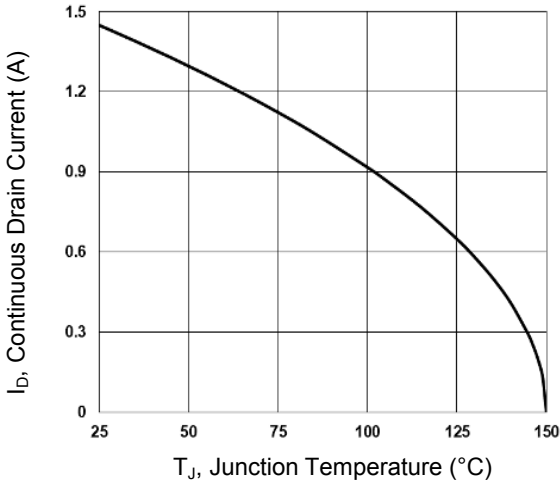
### Electrical Characteristics ( $T_J=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On/Off Characteristics</b>						
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 $25^\circ\text{C}$ , $I_D=1mA$	-	-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	$\mu A$
		$V_{DS}=16V, V_{GS}=0V,$ $T_J=125^\circ\text{C}$	-	-	10	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8V, V_{DS}=0V$	-	-	$\pm 10$	$\mu A$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=0.5A$	-	215	300	m $\Omega$
		$V_{GS}=2.5V, I_D=0.4A$	-	255	400	
		$V_{GS}=1.8V, I_D=0.2A$	-	315	550	
		$V_{GS}=1.5V, I_D=0.1A$	-	390	800	
		$V_{GS}=1.2V, I_D=0.1A$	-	815	1500	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	0.3	0.6	1.0	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		-	3	-	$mV/^\circ\text{C}$
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>2,3</sup>	$Q_g$	$V_{DS}=10V, I_D=0.5A,$ $V_{GS}=4.5V$	-	1	2	nC
Gate-Source Charge <sup>2,3</sup>	$Q_{gs}$		-	0.26	0.5	
Gate-Drain Charge <sup>2,3</sup>	$Q_{gd}$		-	0.2	0.4	
Turn-On Delay Time <sup>2,3</sup>	$t_{d(on)}$	$V_{DD}=10V, R_G=10\Omega,$ $V_{GS}=4.5V, I_D=0.5A$	-	5	10	nS
Rise Time <sup>2,3</sup>	$t_r$		-	3.5	7	
Turn-Off Delay Time <sup>2,3</sup>	$t_{d(off)}$		-	14	28	
Fall Time <sup>2,3</sup>	$t_f$		-	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	
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Continuous Source Current	$I_S$	$V_G=V_D=0V,$ Force Current	-	-	1.45	A
Pulsed Source Current	$I_{SM}$		-	-	2.9	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=0.2A,$ $T_J=25^\circ\text{C}$	-	-	1	V

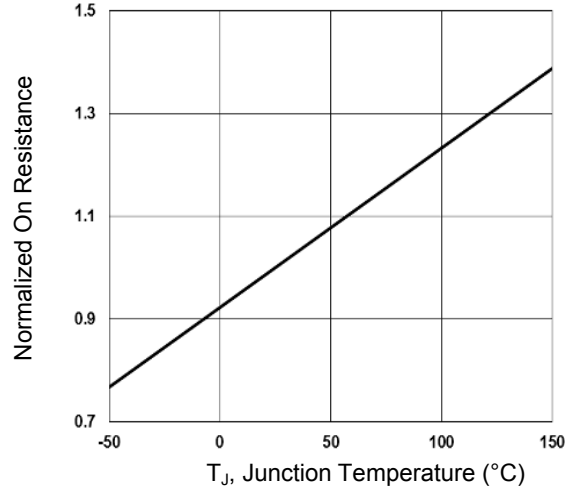
Note:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. Pulse test: pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
3. Essentially independent of operation temperature.

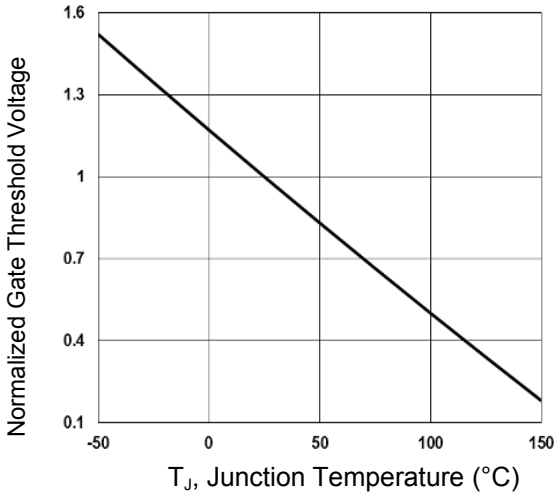
**Typical Electrical and Thermal Characteristic Curves**



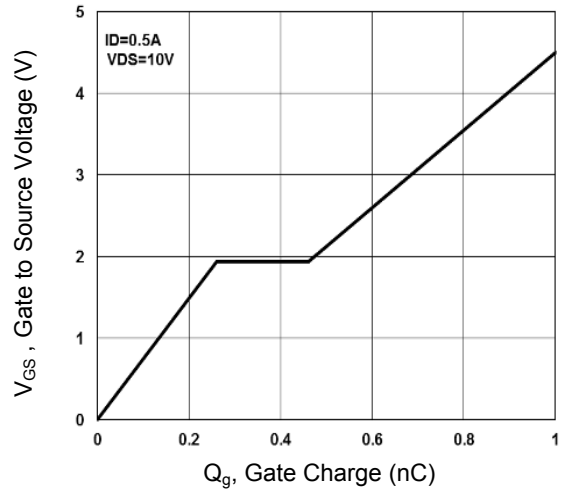
**Fig.1 Continuous Drain Current vs. T<sub>J</sub>**



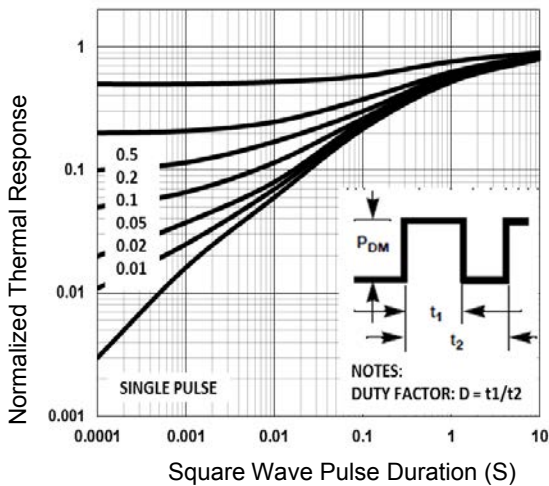
**Fig.2 Normalized R<sub>DS(ON)</sub> vs. T<sub>J</sub>**



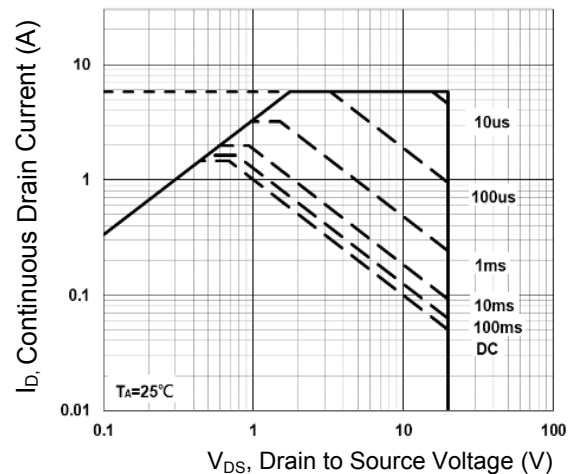
**Fig.3 Normalized V<sub>th</sub> vs. T<sub>J</sub>**



**Fig.4 Gate Charge Waveform**

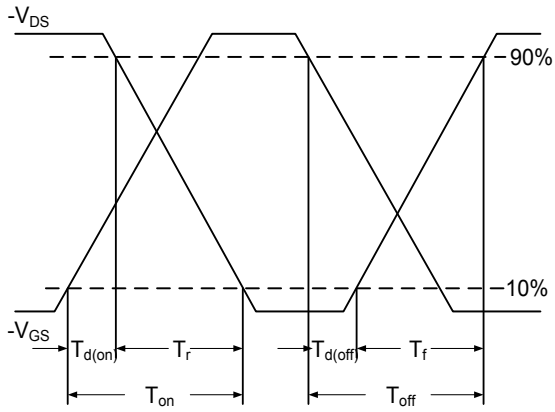


**Fig.5 Normalized Transient Response**

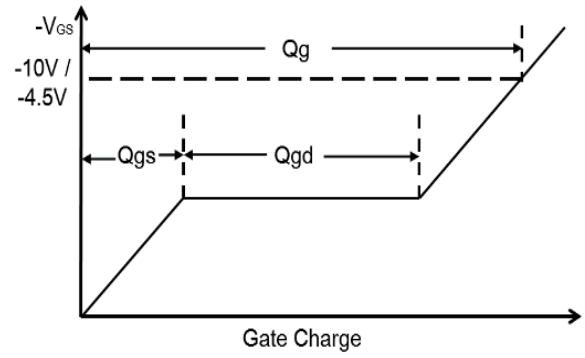


**Fig.6 Maximum Safe Operation Area**

**Typical Electrical and Thermal Characteristic Curves**

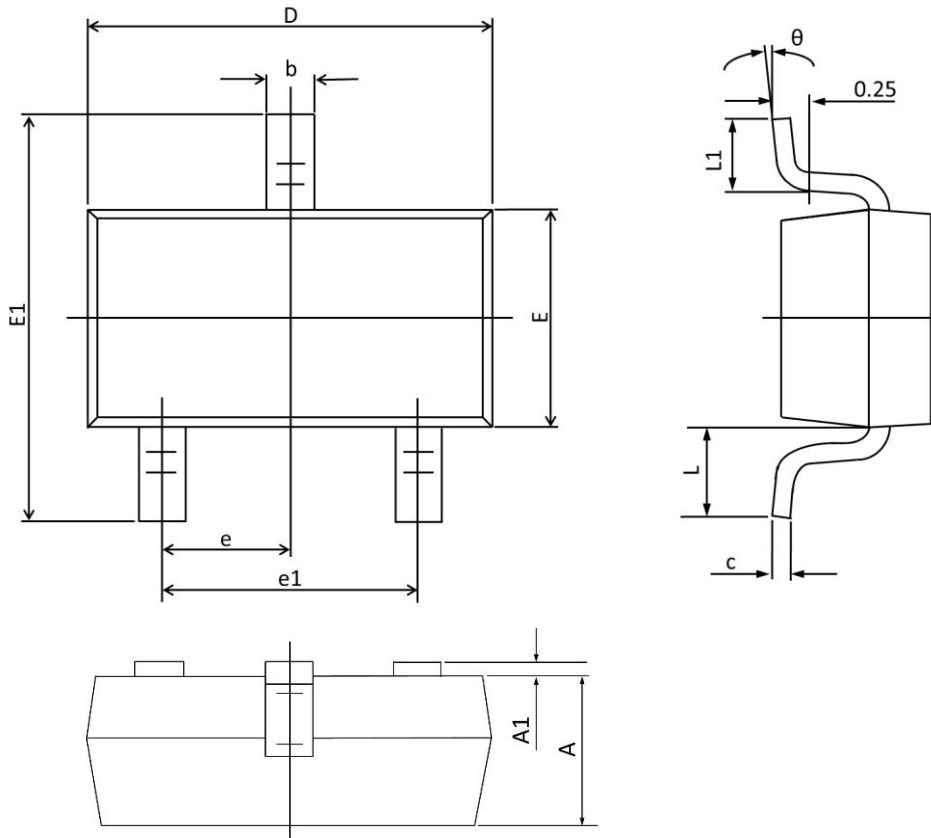


**Fig.7 Switching Time Waveform**



**Fig.8 Gate Charge Waveform**

**Package Outline Dimensions (SOT-23)**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
<b>A</b>	0.900	1.110	0.035	0.044
<b>A1</b>	0.001	0.100	0.000	0.004
<b>b</b>	0.300	0.500	0.012	0.020
<b>c</b>	0.080	0.180	0.003	0.008
<b>D</b>	2.800	3.040	0.110	0.120
<b>E</b>	1.200	1.400	0.047	0.055
<b>E1</b>	2.100	2.640	0.080	0.104
<b>e</b>	0.950 TYP.		0.037 TYP.	
<b>e1</b>	1.780	2.040	0.070	0.080
<b>L</b>	0.550 REF.		0.022 REF.	
<b>L1</b>	0.100	0.500	0.004	0.020
<b>θ</b>	1°	10°	1°	10°