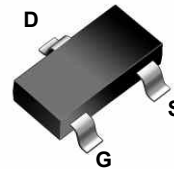
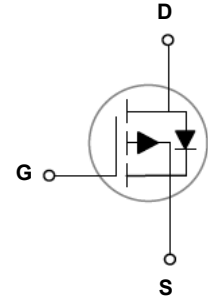


Main Product Characteristics

$V_{(BR)DSS}$	-20V
$R_{DS(on)}$	33mΩ
I_D	-5.8A



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 GSFC0205 utilizes the latest processing techniques to achieve high cell density, low on-resistance and high repetitive avalanche rating. These features make this device extremely efficient and reliable device for use in power switching applications and a wide variety of other applications.

Absolute Maximum Ratings ($T_C=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±10	V
Drain Current – Continuous ($T_C=25^{\circ}C$)	I_D	-5.8	A
Drain Current – Continuous ($T_C=100^{\circ}C$)		-3.7	A
Drain Current – Pulsed ¹	I_{DM}	-23.2	A
Power Dissipation ($T_C=25^{\circ}C$)	P_D	1.56	W
Power Dissipation – Derate above 25°C		0.012	W/°C
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	80	°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)

DUfUa Yf	Gna Vc`	7 cbX]hcbg	A]b"	Hnd"	A U "	I b]h
CZZ7 \ fUWYf]gh]Vg						
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°C , $I_D=-1\text{mA}$	---	-0.02	---	$V/^\circ\text{C}$
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	-1	μA
		$V_{DS}=-16V, V_{GS}=0V, T_J=125^\circ\text{C}$	---	---	-10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}\leq 10V, V_{DS}=0V$	---	---	± 100	nA
Cb7 \ fUWYf]gh]Vg						
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-4.5V, I_D=-4A$	---	28	33	m Ω
		$V_{GS}=-2.5V, I_D=-3A$	---	37	45	
		$V_{GS}=-1.8V, I_D=-2A$	---	49	65	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-0.3	-0.6	-1	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		---	2	---	mV/ $^\circ\text{C}$
Forward Transconductance	g_{fs}	$V_{DS}=-10V, I_S=-3A$	---	8.4	---	S
8 mbUa]WUbX`Gk]fW]b[`7 \ fUWYf]gh]Vg						
Total Gate Charge ^{2, 3}	Q_g	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-4A$	---	16.1	25	nC
Gate-Source Charge ^{2, 3}	Q_{gs}		---	1.8	3	
Gate-Drain Charge ^{2, 3}	Q_{gd}		---	3.8	7	
Turn-On Delay Time ^{2, 3}	$T_{d(on)}$	$V_{DD}=-10V, V_{GS}=-4.5V, R_G=25\Omega, I_D=-1A$	---	8.2	16	nS
Rise Time ^{2, 3}	T_r		---	30	57	
Turn-Off Delay Time ^{2, 3}	$T_{d(off)}$		---	71.1	135	
Fall Time ^{2, 3}	T_f		---	19.8	38	
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V, F=1\text{MHz}$	---	1440	2100	pF
Output Capacitance	C_{oss}		---	155	230	
Reverse Transfer Capacitance	C_{rss}		---	115	170	
8 fU]b!Gci fW`8]cXY7 \ fUWYf]gh]Vg UbX`AU]a i a `FU]b[g						
Continuous Source Current	I_S	$V_G=V_D=0V$, Force Current	---	---	-5.8	A
Pulsed Source Current	I_{SM}		---	---	-23.2	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-1A, T_J=25^\circ\text{C}$	---	---	-1	V

Note:

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

Typical Electrical and Thermal Characteristic Curves

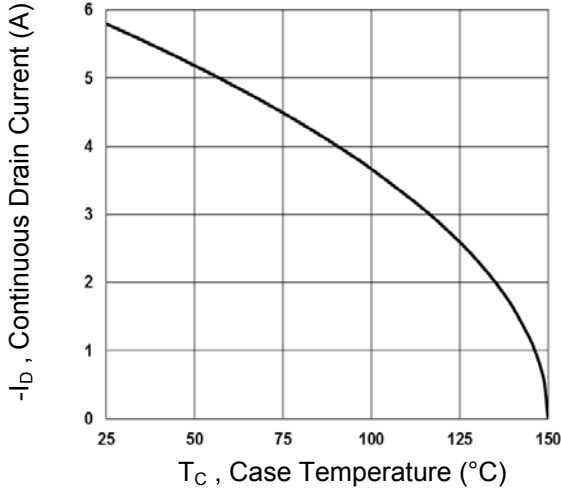


Fig.1 Continuous Drain Current vs. T_C

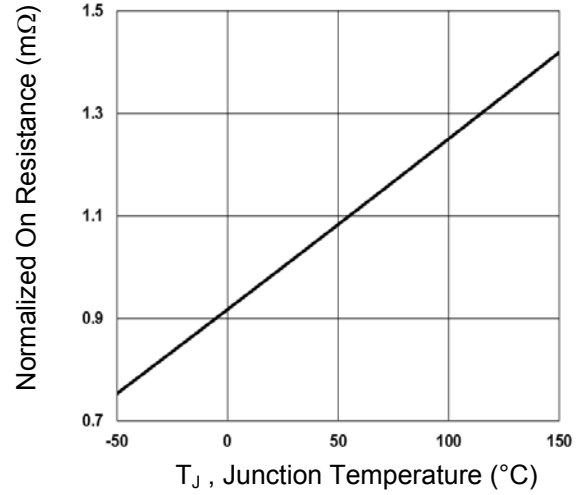


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

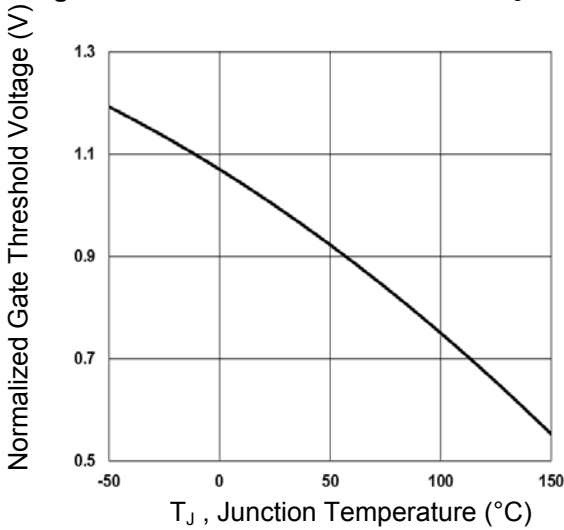


Fig.3 Normalized V_{th} vs. T_J

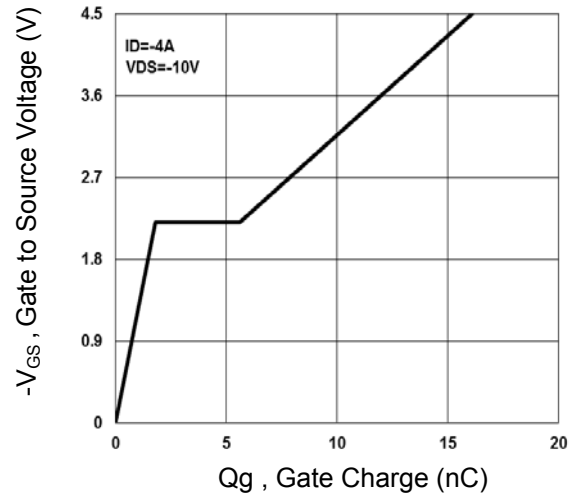


Fig.4 Gate Charge Waveform

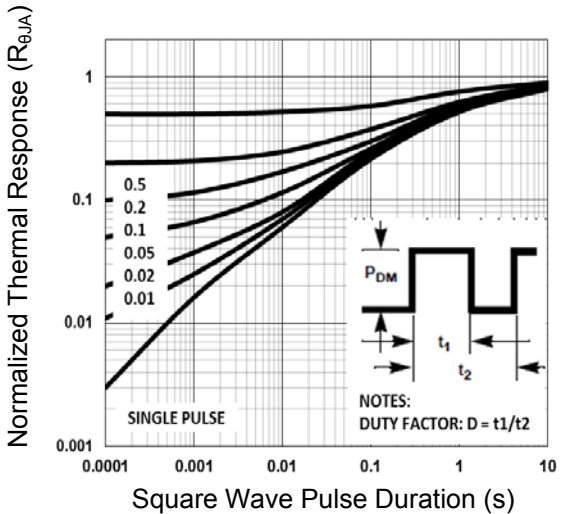


Fig.5 Normalized Transient Impedance

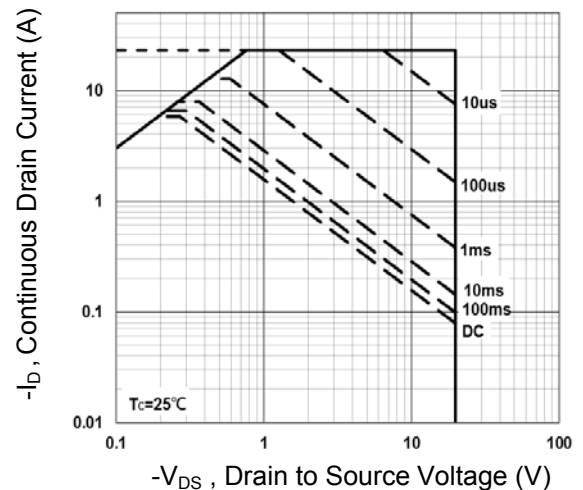


Fig.6 Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

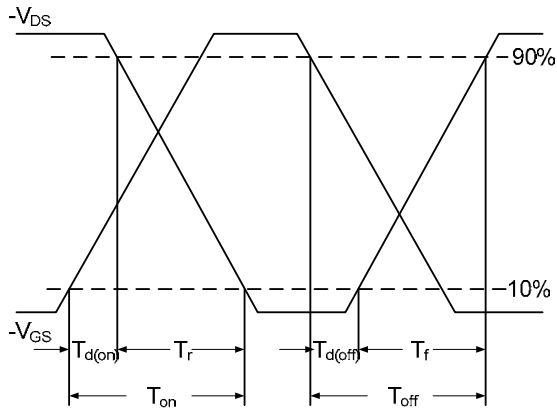


Fig.7 Switching Time Waveform

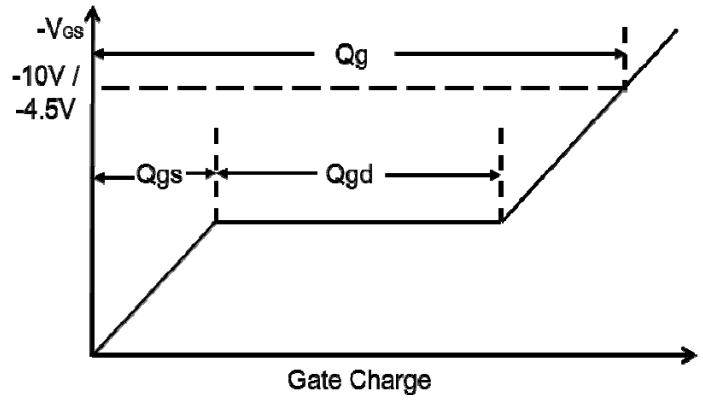
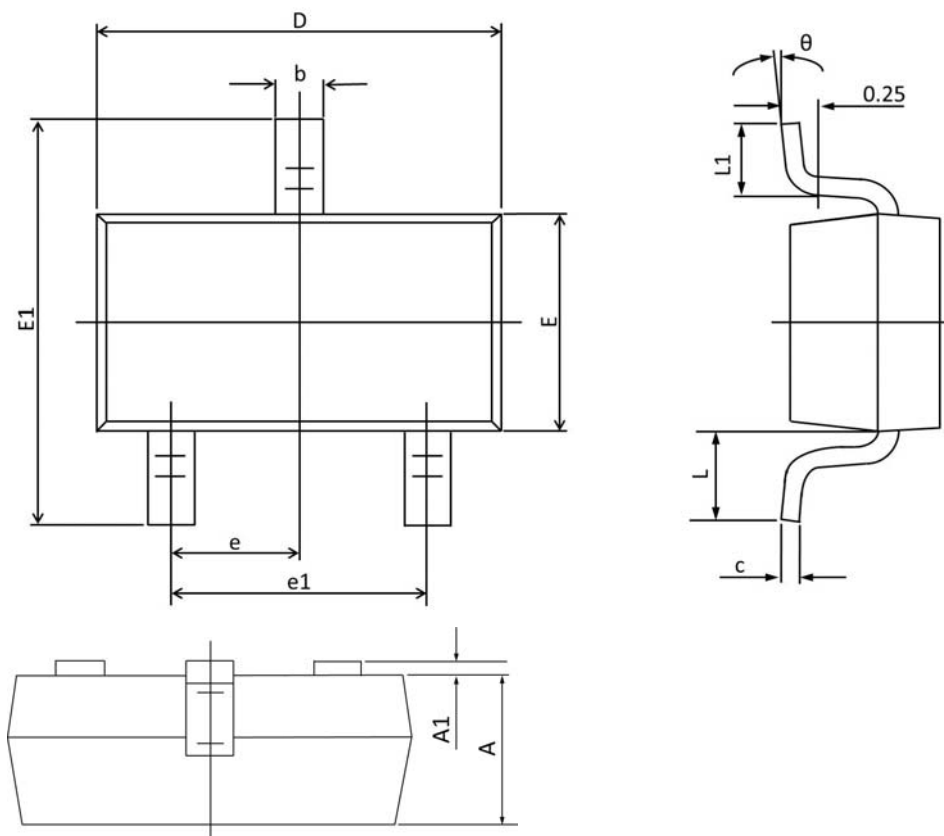


Fig.8 Gate Charge Waveform

Package Outline Dimensions

SOT-23-3S



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.9	1	0.035	0.039
A1	0	0.1	0	0.004
b	0.3	0.5	0.012	0.02
c	0.09	0.11	0.003	0.004
D	2.8	3	0.11	0.118
E	1.2	1.4	0.047	0.055
E1	2.25	2.55	0.089	0.1
e	0.950 TYP.		0.037 TYP.	
e1	1.8	2	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.3	0.5	0.012	0.02
θ	1°	7°	1°	7°