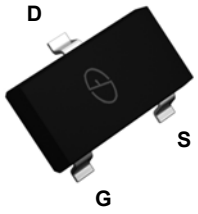
GOOD-ARK SEMICONDUCTOR

GSFC0201

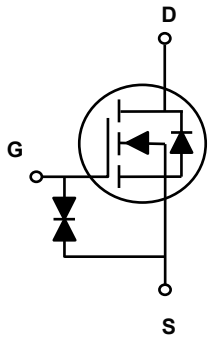
25V N-Channel MOSFET

Main Product Characteristics

BV_{DSS}	25V
$R_{DS(ON)}$	230mΩ
I_D	0.7A



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 GSFC0201 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 supplies and a wide variety of other applications.

Absolute Maximum Ratings (T_C=25°C unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	25	V
Gate-Source Voltage	V_{GS}	±8	V
Drain Current-Continuous (T_A=25°C)[1,3]	I_D	0.7	A
Drain Current-Continuous (T_A=70°C)[1,3]		0.45	
Drain Current-Pulsed[2]	I_{DM}	2.5	A
Diode Continuous Forward Current	I_S	0.6	A
Power Dissipation (T_A=25°C)	P_D	0.7	W
Power Dissipation (T_A=70°C)		0.4	W
Thermal Resistance, Junction-to-Ambient[2]	$R_{\theta JA}$	180	°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°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ	Max	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	25	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=16V, V_{GS}=0V	-	-	1	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V	-	-	±10	μA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=0.55A	-	190	230	mΩ
		V_{GS}=2.5V, I_D=0.45A	-	234	305	
		V_{GS}=1.8V, I_D=0.35A	-	303	455	
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250uA	0.5	-	1	V
Forward Transconductance	g_{fs}	V_{DS}=5V, I_D=0.55A	-	1.7	-	S
Dynamic and Switching Characteristics						
Total Gate Charge	Q_g	V_{GS}=2.5V, V_{DS}=10V, I_D=1A	-	1.1	-	nC
Total Gate Charge	Q_g	V_{DS}=10V, I_D=1A V_{GS}=4.5V	-	2	-	nC
Gate-Source Charge	Q_{gs}		-	0.3	-	
Gate-Drain Charge	Q_{gd}		-	0.3	-	
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=10V, R_G=6Ω V_{GS}=4.5V, I_D=2A	-	1.2	-	nS
Rise Time	t_r		-	25	-	
Turn-Off Delay Time	$t_{d(off)}$		-	14	-	
Fall Time	t_f		-	15	-	
Input Capacitance	C_{lss}	V_{DS}=10V, V_{GS}=0V, F=1MHz	-	43	-	pF
Output Capacitance	C_{oss}		-	9	-	
Reverse Transfer Capacitance	C_{rss}		-	6	-	
Drain-Source Diode Characteristics and Maximum Ratings						
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_{SD}=0.35A	-	-	1.1	V
Reverse Recovery Time	t_{rr}	I_F=1A, di/dt=100A/μs	-	9	-	nS
Reverse Recovery Charge	Q_{rr}		-	1	-	nC

Note:

1. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR- 4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.
2. Repetitive Rating: pulse width limited by maximum junction temperature.
3. The current rating is based on the t<10s junction to ambient thermal resistance rating.

Typical Electrical and Thermal Characteristic Curves

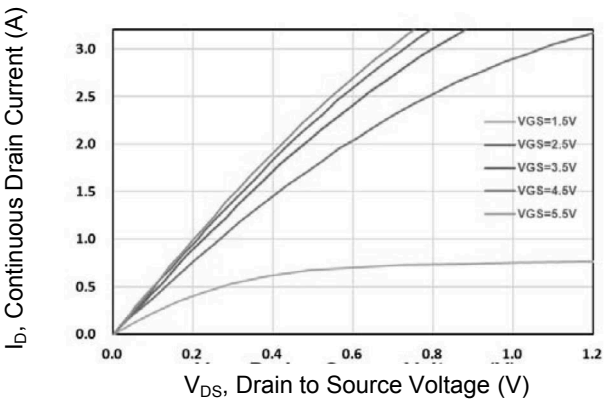


Figure 1. Typical Output Characteristics

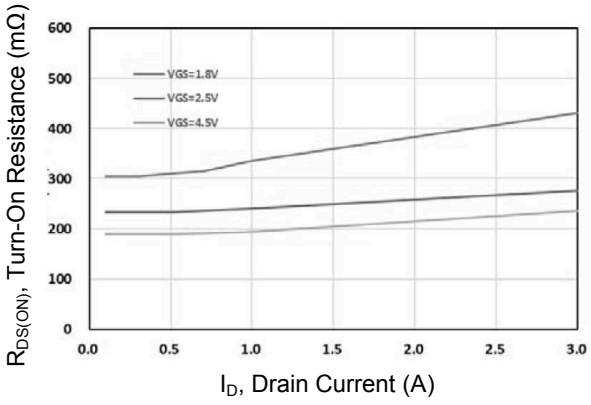


Figure 2. Turn-On Resistance vs. I_D

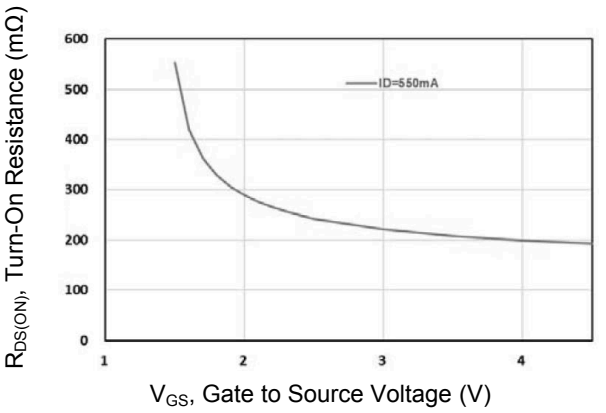


Figure 3. Turn-On Resistance vs. V_{GS}

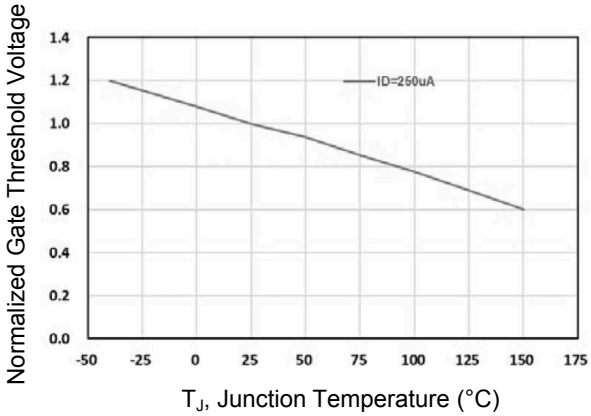


Figure 4. Normalized V_{th} vs. T_J

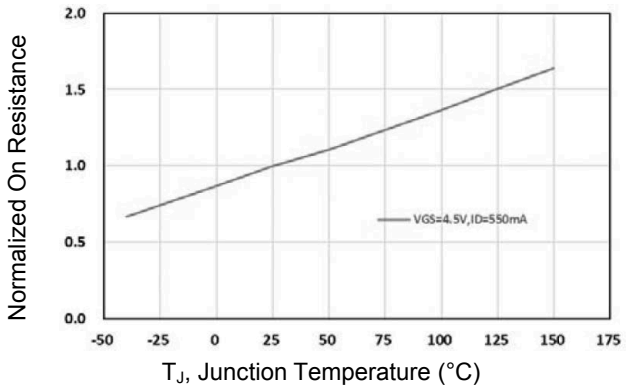


Figure 5. Normalized $R_{DS(ON)}$ vs. T_J

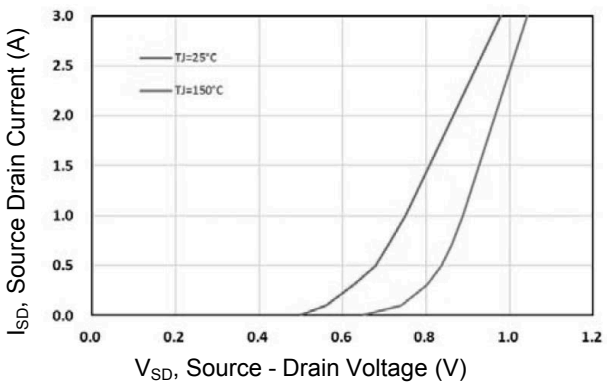


Figure 6. Typical Source - Drain Diode Forward Voltage

Typical Electrical and Thermal Characteristic Curves

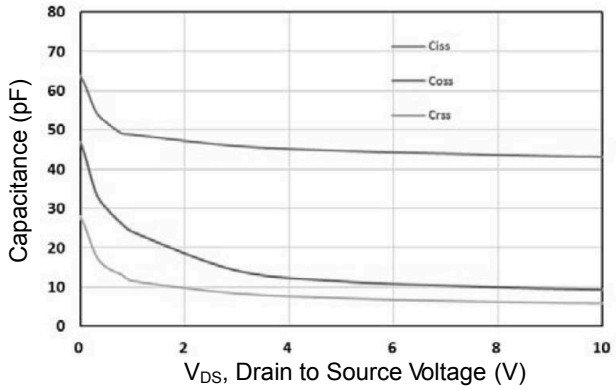


Figure 7. Capacitance Characteristics

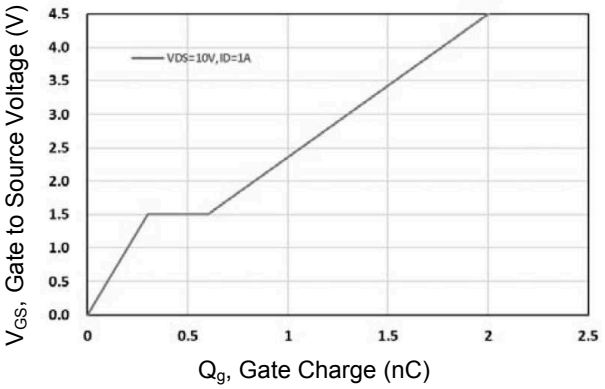


Figure 8. Gate Charge Characteristics

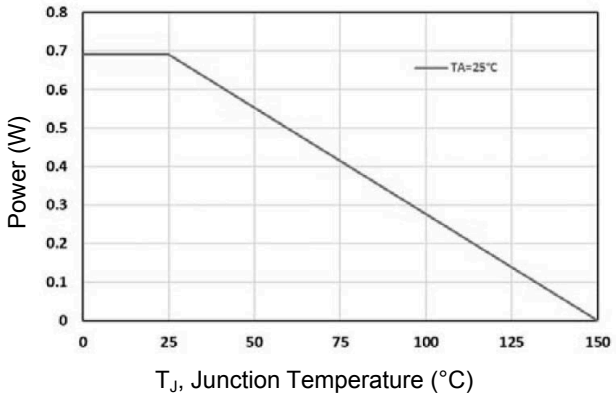


Figure 9. Power Dissipation

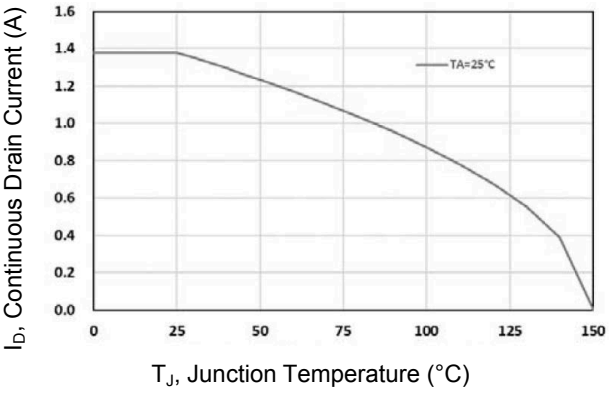


Figure 10. Drain Current

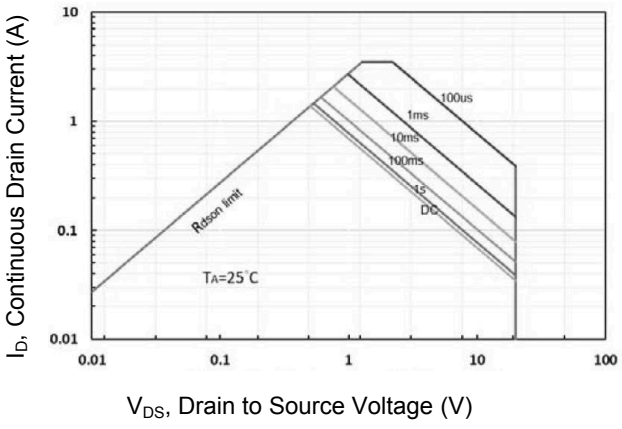


Figure 11. Maximum Safe Operation Area

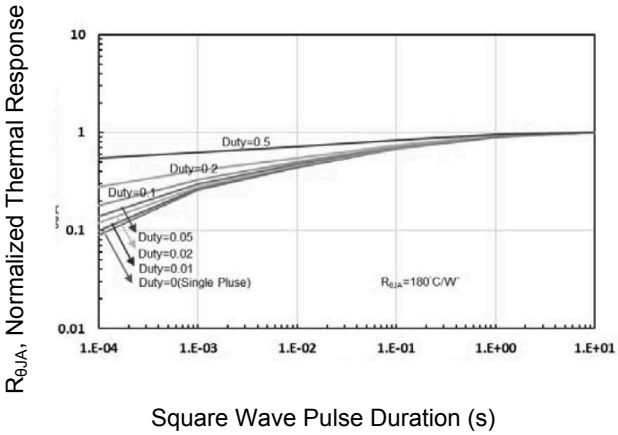
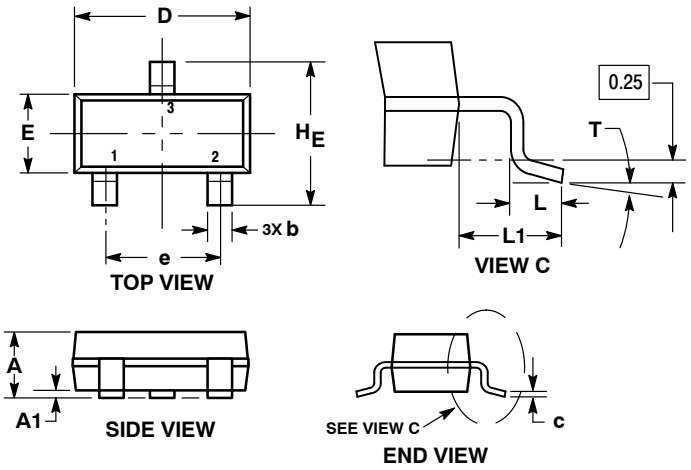


Figure 12. Normalized Transient Impedance

Package Outline Dimensions SOT-23



Symbol	Dimensions in Milimeters			Dimensions in Inches		
	Min	Nom	Max	Min	Nom	Max
A	0.890	1.000	1.110	0.035	0.039	0.044
A1	0.010	0.060	0.100	0.000	0.002	0.004
b	0.370	0.440	0.500	0.015	0.017	0.020
c	0.080	0.140	0.200	0.003	0.006	0.008
D	2.800	2.900	3.040	0.110	0.114	0.120
E	1.200	1.300	1.400	0.047	0.051	0.055
e	1.780	1.900	2.040	0.070	0.075	0.080
L	0.300	0.430	0.550	0.012	0.017	0.022
L1	0.350	0.540	0.690	0.014	0.021	0.027
H_E	2.100	2.400	2.640	0.083	0.094	0.104
T	0°	-	10°	0°	-	10°