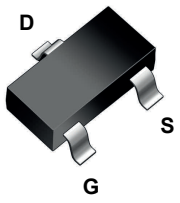
GOOD-ARK SEMICONDUCTOR

GSFC10201

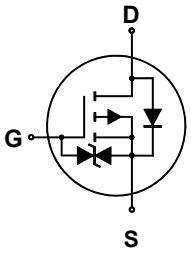
20V P-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	-20V
$R_{DS(ON)}$	1.2Ω (Max.)
I_D	-390mA



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 GSFC10201 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_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±10	V
Drain Current	I_D	-390	mA
Peak Drain Current, Pulsed[1]	I_{DM}	-2	A
Power Dissipation[2]	P_D	250	mW
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to +150	℃
Max. Thermal Resistance from Junction to Ambient[2]	$R_{\theta JA}$	500	℃/W

Notes:

1. Pulse test: Pulse width ≤ 100μs, duty cycle ≤ 2%, repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.
2. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

Electrical Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=-250μA	-20	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-20V	-	-	-1	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±8V	-	-	±10	μA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-0.3	-	-1.0	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=-4.5V, I_D=-390mA	-	-	1.2	Ω
		V_{GS}=-2.5V, I_D=-290mA	-	-	1.5	
Forward Transconductance	gfs	V_{DS}=-5V, I_D=-400mA	-	1	-	S
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	V_{DS}=-15V, V_{GS}=0V, F=1MHz	-	45	-	pF
Output Capacitance	C_{oss}		-	14	-	
Reverse Transfer Capacitance	C_{rss}		-	7	-	
Total Gate Charge	Q_g	V_{DS}=-10V, I_D=-0.3A, V_{GS}=-4.5V	-	1.1	-	nC
		V_{DS}=-10V, I_D=-0.3A, V_{GS}=-2.5V	-	0.6	-	
Gate-Source Charge	Q_{gs}	V_{DS}=-10V, I_D=-0.3A, V_{GS}=-4.5V	-	0.24	-	
Gate-Drain Charge	Q_{gd}		-	0.1	-	
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=-10V, V_{GS}=-4.5V, I_D=-1A, R_G=3.3Ω	-	57	-	nS
Turn-On Rise Time	t_r		-	40	-	
Turn-Off Delay Time	$t_{d(off)}$		-	34	-	
Turn-Off Fall Time	t_f		-	16	-	
Source-Drain Ratings and Characteristics						
Drain-Source Diode Forward Voltage	V_{SD}	I_S=-0.4A, V_{GS}=0V	-	-	-1.3	V
Body-Diode Continuous Current	I_S	-	-	-	-390	mA
Body Diode Reverse Recovery Time	T_{rr}	I_S=-1A, di/dt=50A/μs	-	88	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	16	-	nc

Electrical Characteristics Curves

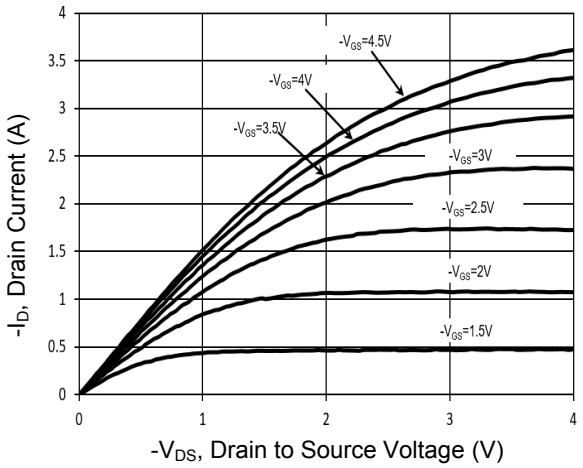


Figure 1. Typical Output Characteristics

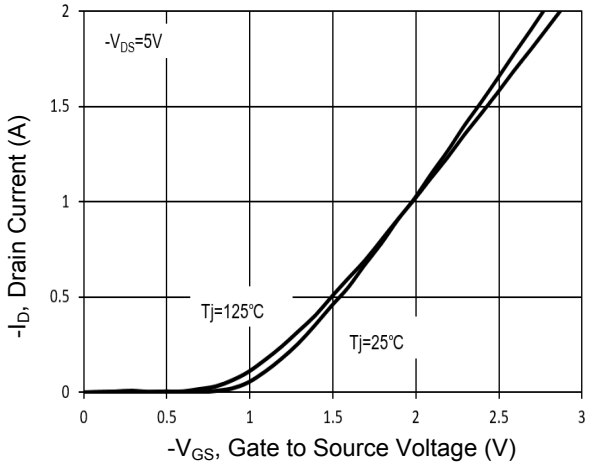


Figure 2. Typical Transfer Characteristics

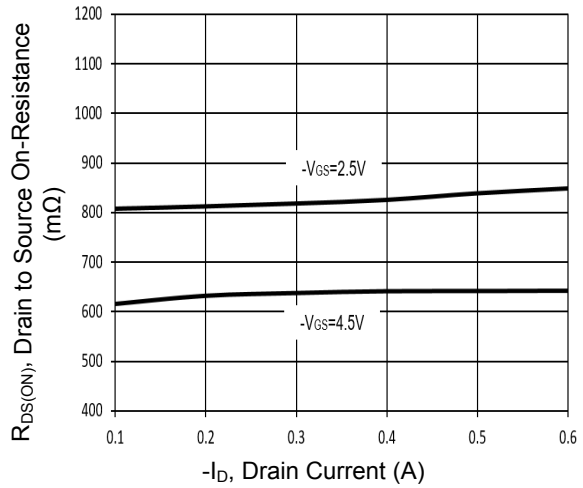


Figure 3. On Resistance vs. Drain Current

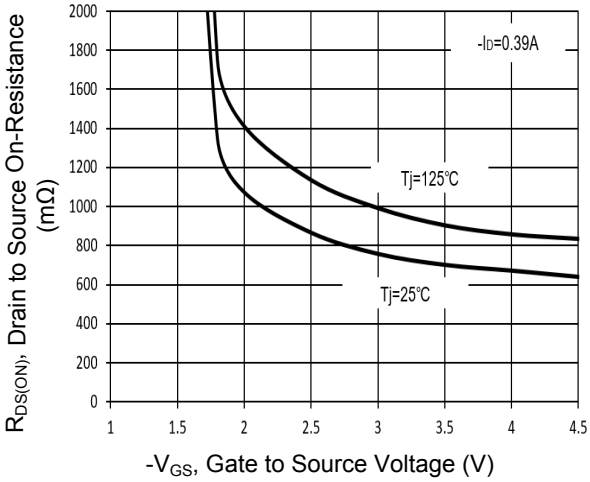


Figure 4. On Resistance vs. Gate Source Voltage

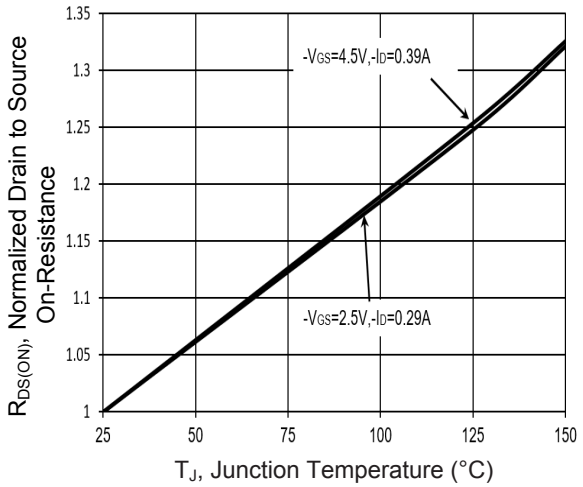


Figure 5. On-Resistance vs. T_J

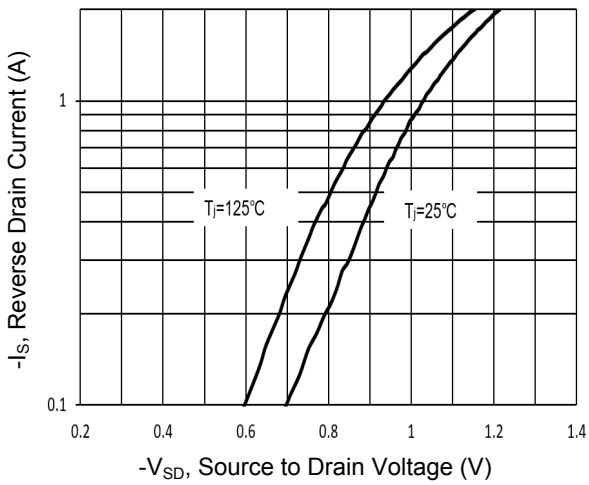


Figure 6. Typical Forward Characteristics

Electrical Characteristics Curves

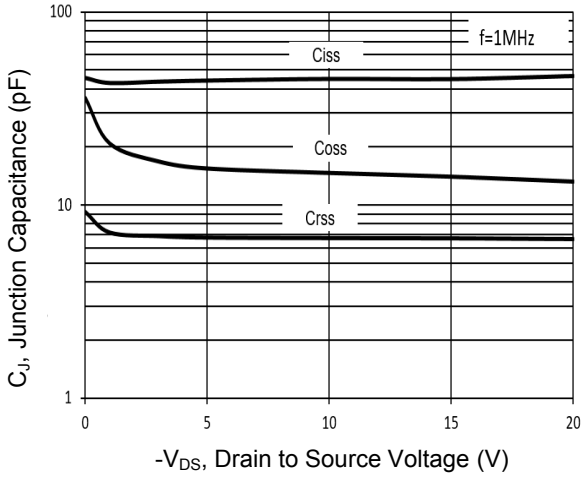


Figure 7. Typical Junction Capacitance

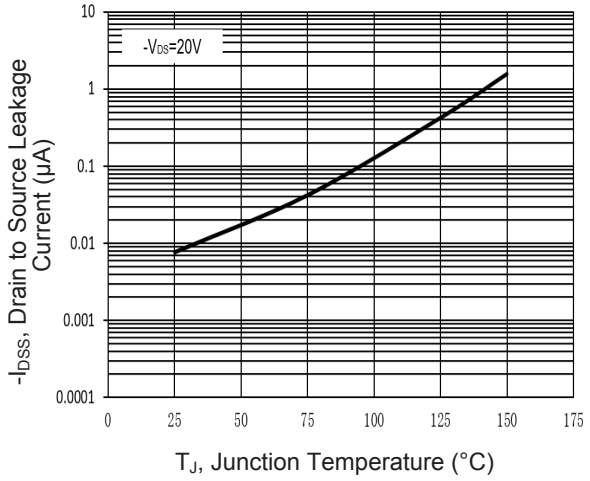


Figure 8. Drain to Source Leakage Current vs. T_J

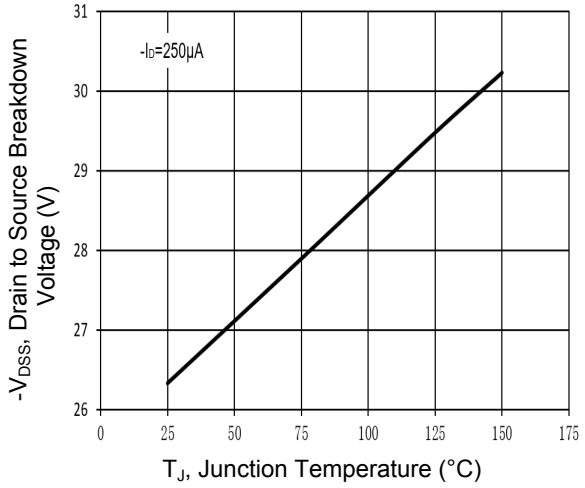


Figure 9. V_{DSS} vs. Junction Temperature

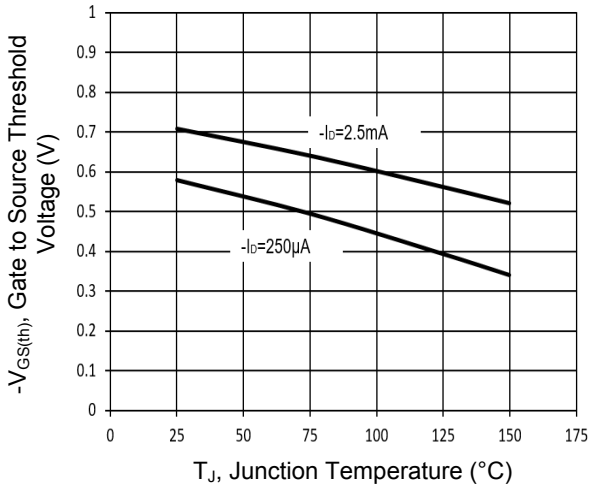


Figure 10. Gate to Source Threshold Voltage vs. T_J

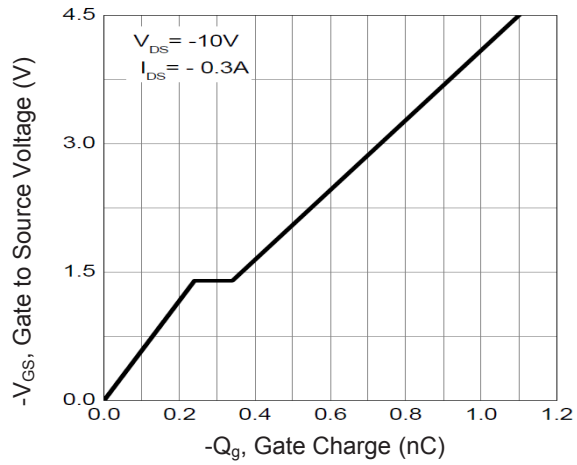
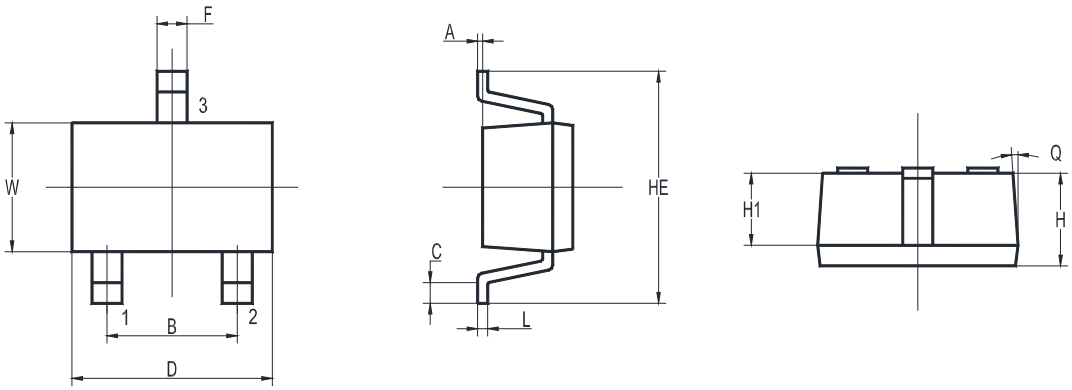


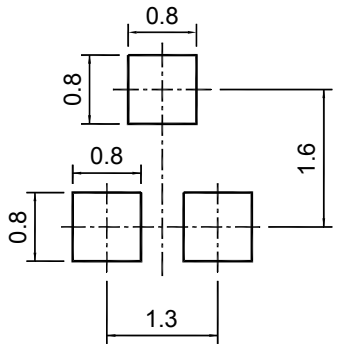
Figure 11. Gate Charge

Package Outline Dimensions (SOT-323)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	-	0.10	-	0.004
B	1.20	1.40	0.047	0.055
C	0.20	-	0.008	-
D	1.90	2.10	0.075	0.083
H	0.80	1.00	0.031	0.039
H1	0.70 TYP.		0.028 TYP.	
HE	2.00	2.40	0.079	0.094
F	0.25	0.35	0.010	0.014
L	0.05	0.15	0.002	0.006
W	1.15	1.35	0.045	0.053
Q	-	5°	-	5°

Recommended Pad Layout



unit: mm

Order Information

Device	Package	Marking	Carrier	Quantity
GSFC10201	SOT-323	NS	Tape & Reel	3,000pcs / Reel