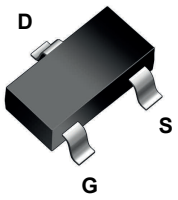
GOOD-ARK SEMICONDUCTOR

GSFC10203

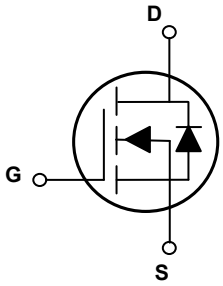
20V N-Channel MOSFET

Main Product Characteristics

V_{DS}	20V
$R_{DS(ON)}$	45mΩ (Max.)
I_D	3.5A



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 GSFC10203 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}	±12	V
Continuous Drain Current @ Steady State (T_A=25°C)	I_D	3.5	A
Continuous Drain Current @ Steady State (T_A=70°C)		2.8	
Pulsed Drain Current[1]	I_{DM}	13.8	A
Total Power Dissipation (T_A=25°C)[2]	P_D	0.86	W
Thermal Resistance, Junction to Ambient[2]	$R_{\theta JA}$	155	°C/W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 To +150	°C

Electrical Characteristics (T_J=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, V_{GS}=0V, T_C=25°C	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±12V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.4	-	1	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=3A	-	32	45	mΩ
		V_{GS}=2.5V, I_D=2A	-	40	58	
		V_{GS}=1.8V, I_D=1A	-	50	70	
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	V_{DS}=10V, V_{GS}=0V, f=1MHz	-	272	-	pF
Output Capacitance	C_{oss}		-	34	-	
Reverse Transfer Capacitance	C_{rss}		-	31	-	
Total Gate Charge	Q_g	V_{GS}=4.5V, V_{DS}=10V, I_D=3A	-	3.6	-	nC
Gate Source Charge	Q_{gs}		-	0.37	-	
Gate Drain Charge	Q_{gd}		-	1.1	-	
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=4.5V, V_{DD}=10V, I_D=3A, R_{GEN}=3Ω	-	9	-	nS
Turn-on Rise Time	t_r		-	18	-	
Turn-off Delay Time	$t_{d(off)}$		-	42	-	
Turn-off Fall Time	t_f		-	27	-	
Source-Drain Ratings and Characteristics						
Diode Forward Voltage	V_{SD}	I_S=3A, V_{GS}=0V	-	0.8	1.2	V
Maximum Body-Diode Continuous Current	I_S	-	-	-	3.5	A

Note:

1. Pulse test: Pulse width ≤300μs, duty cycle ≤2%.
2. Device mounted on 1" x 1" FR-4 PCB, with high coverage 2oz copper, single sided.

Typical Electrical and Thermal Characteristic Curves

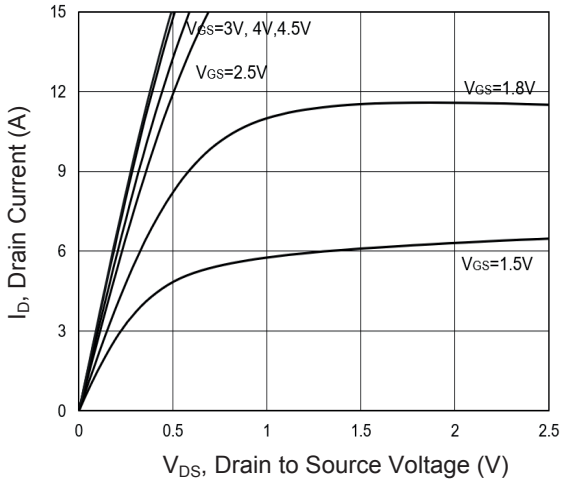


Figure 1. Output Characteristics

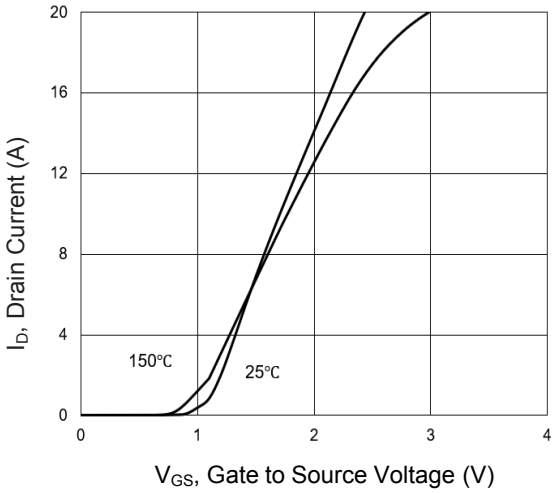


Figure 2. Transfer Characteristics

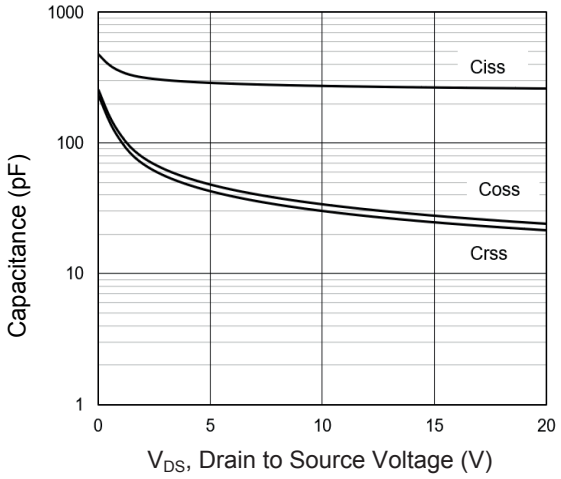


Figure 3. Capacitance Characteristics

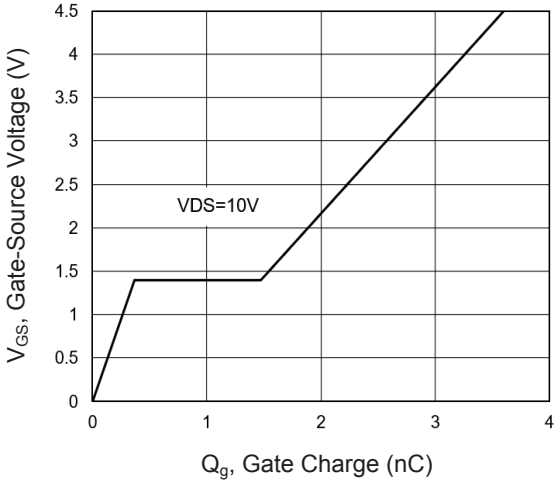


Figure 4. Gate Charge

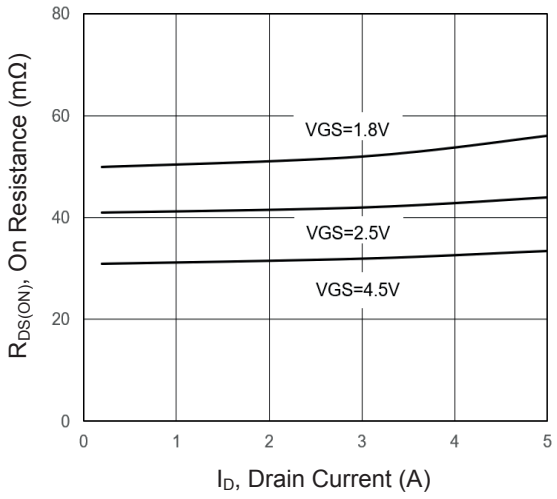


Figure 5. Drain-Source On Resistance

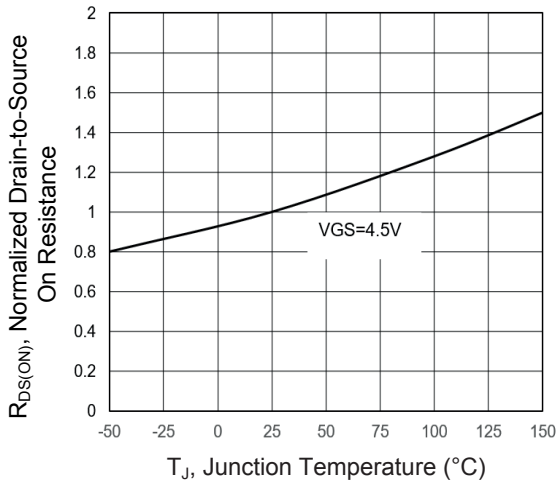


Figure 6. Normalized On-Resistance vs. T_J

Typical Electrical and Thermal Characteristic Curves

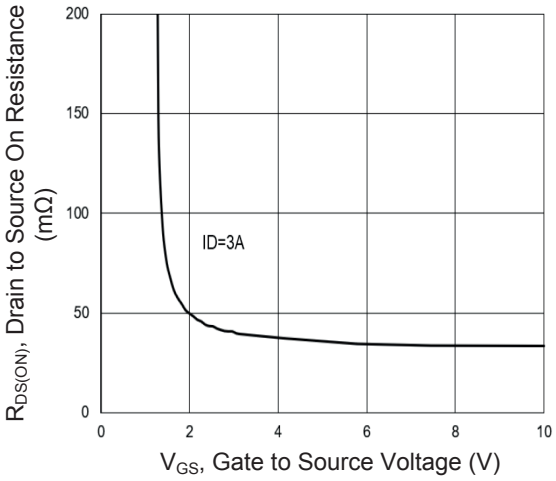


Figure 7. Typical Drain to Source On Resistance vs. Gate Voltage

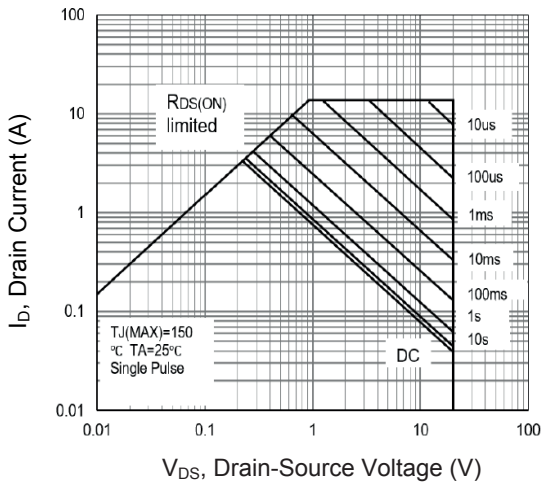


Figure 8. Safe Operation Area

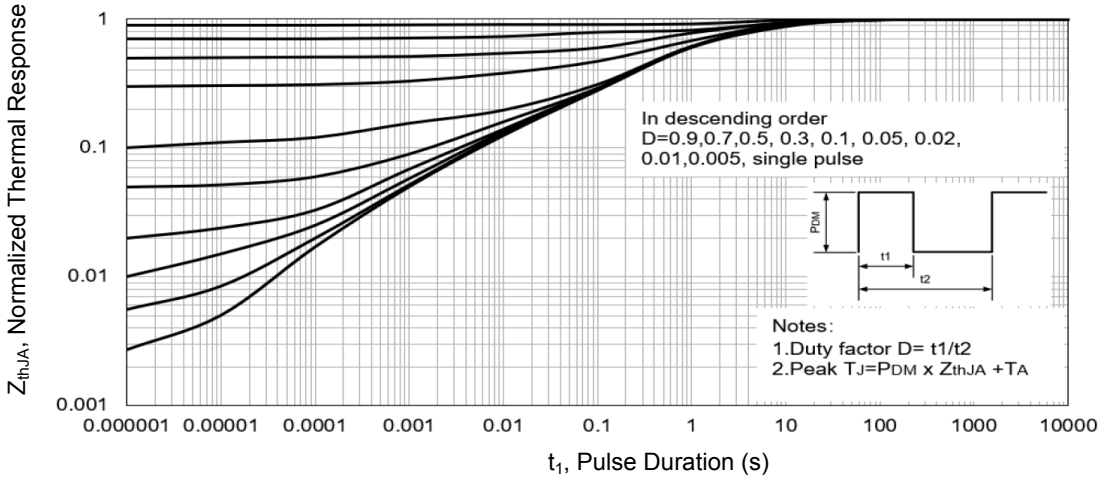
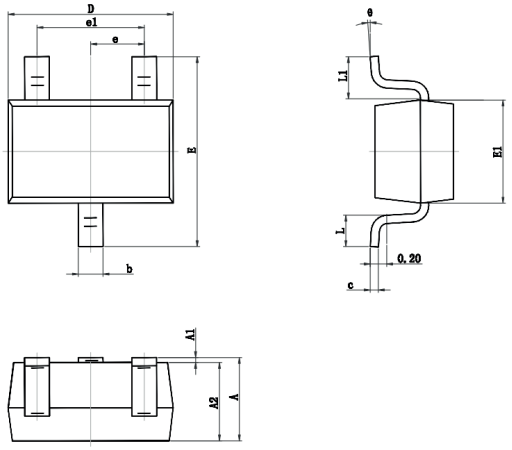


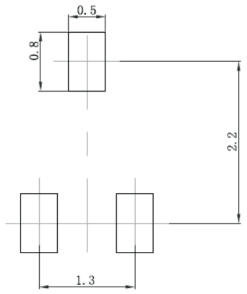
Figure 9. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

Package Outline Dimensions (SOT-323)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.10	0.035	0.043
A1	0.00	0.10	0.000	0.004
A2	0.90	1.00	0.035	0.039
b	0.20	0.40	0.008	0.016
c	0.08	0.15	0.003	0.006
D	2.00	2.20	0.079	0.087
E	2.15	2.45	0.085	0.096
E1	1.15	1.35	0.045	0.053
e	0.650 TYP		0.026 TYP	
e1	1.20	1.40	0.047	0.055
L	0.26	0.46	0.010	0.018
L1	0.525 REF		0.021 REF	
θ	0°	8°	0°	8°

Recommended Pad Layout



Unit: mm

Order Information

Device	Package	Marking	Packaging	SPQ
GSFC10203	SOT-323	CK	Tape & Reel	3,000 Pcs / Reel