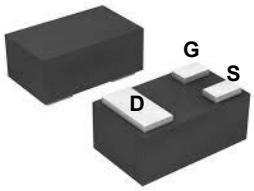
GSFW0202A

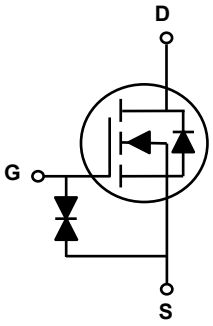
20V N-Channel MOSFET

Main Product Characteristics

BV_{DSS}	20V
$R_{DS(ON)}$	280mΩ
I_D	1.4A



SOT-883



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 GSFW0202A 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_J=25°C unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Drain Current-Continuous (T_A=25°C) [1,3]	I_D	0.7	A
Drain Current-Continuous (T_A=70°C) [1,3]		0.9	
Drain Current-Pulsed [2]	I_{DM}	1.9	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
Maximum Junction Temperature	T_J	150	°C
Operating/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.	Unit
On/Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	20	-	-	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	-	280	450	mΩ
		V_{GS}=2.5V, I_D=0.45A	-	450	600	
		V_{GS}=1.8V, I_D=0.35A	-	650	800	
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_{DS}=250uA	0.5	-	1.0	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_{GEN}=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 junction temperature .
3. The current rating is based on the t<10s junction to ambient thermal resistance rating.

Typical Electrical and Thermal Characteristic Curves

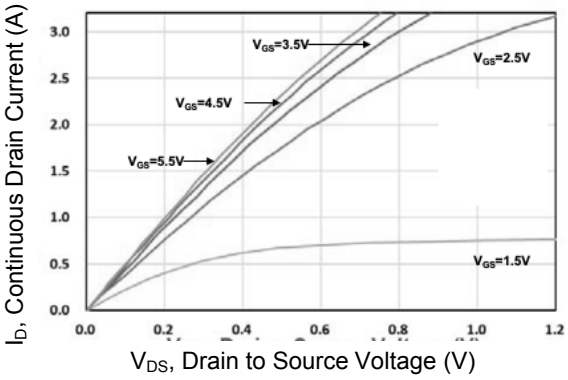


Figure 1. Typical Output Characteristics

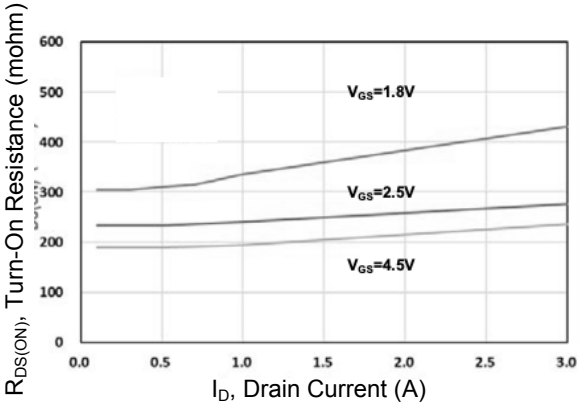


Figure 2. Turn-On Resistance vs. I_D

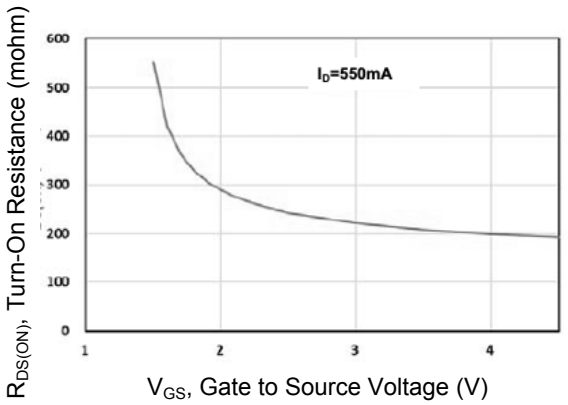


Figure 3. Turn-On Resistance vs. V_{GS}

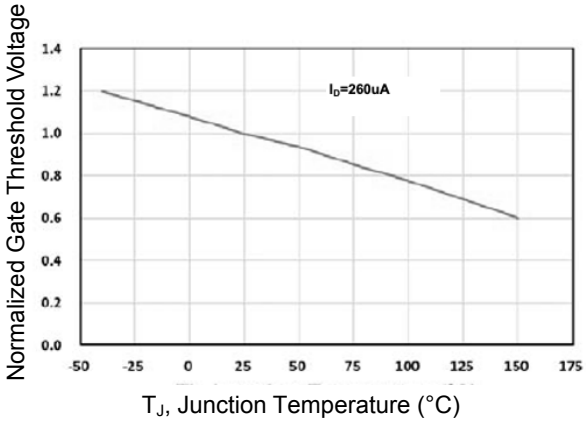


Figure 4. Normalized V_{th} vs. T_J

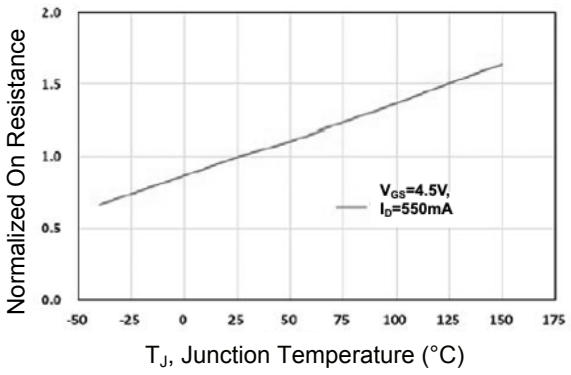


Figure 5. Normalized R_{DSON} vs. T_J

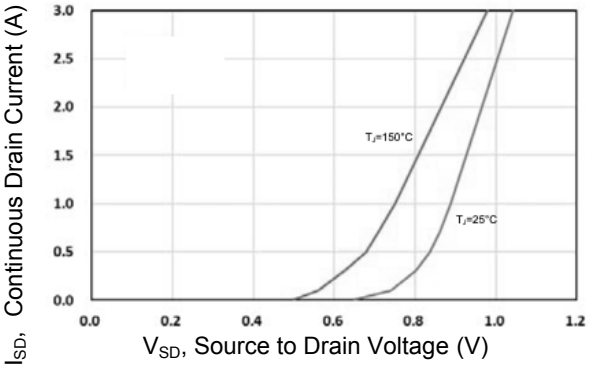


Figure 6. Source- Drain Diode Forward

Typical Electrical and Thermal Characteristic Curves

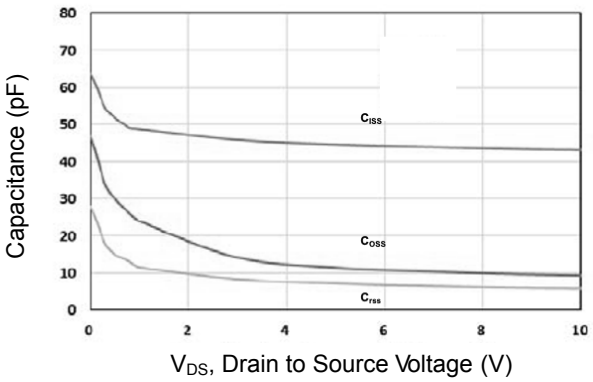


Figure 7. Capacitance Characteristics

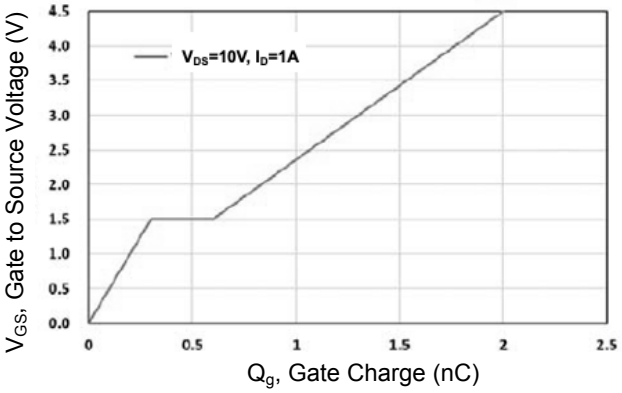


Figure 8. Gate Charge Characteristics

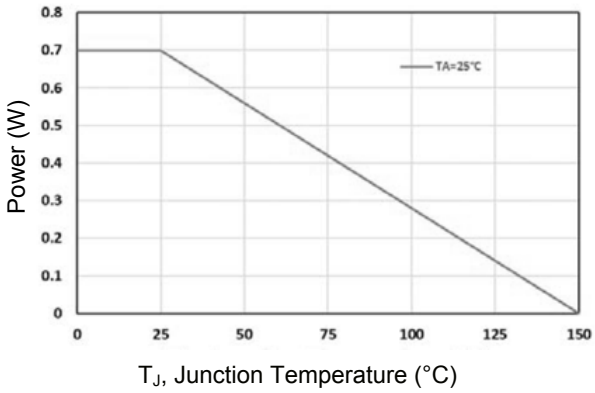


Figure 9. Power Dissipation

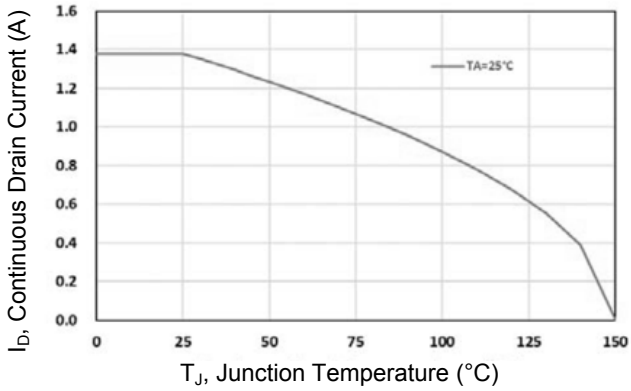


Figure 10. Continuous Drain Current vs. T_C

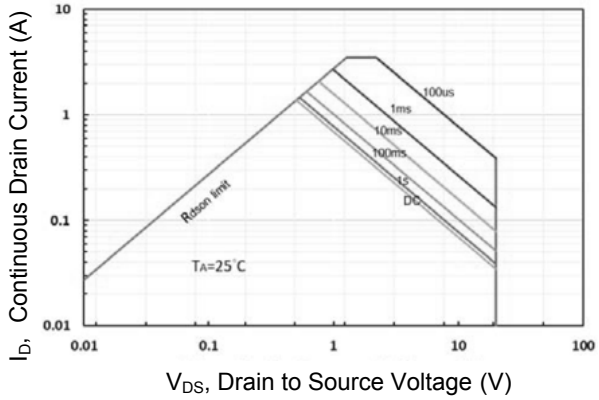


Figure 11. Maximum Safe Operation Area

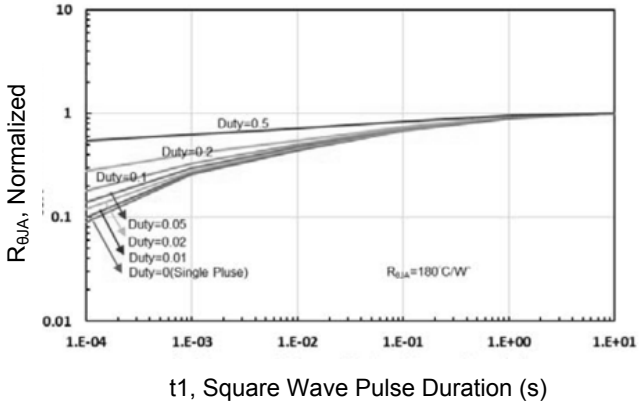
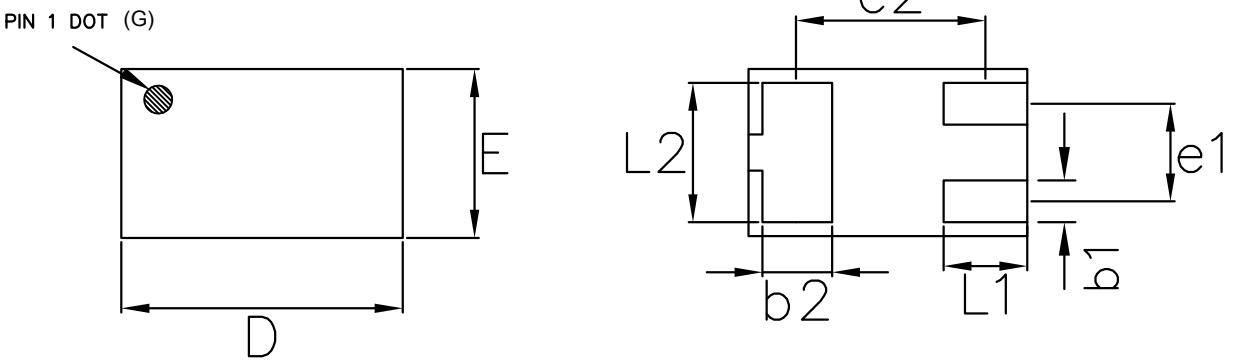
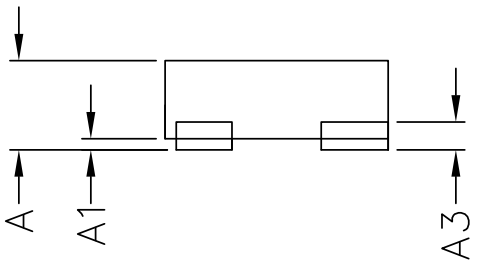


Figure 12. $R_{\theta JA}$ Transient Thermal Impedance

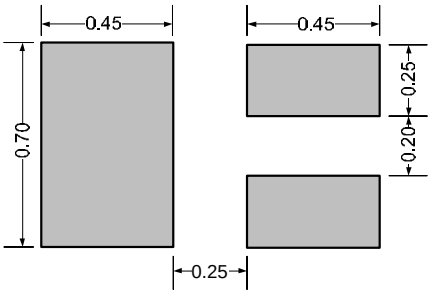
Package Outline Dimensions (SOT-883)





Dimensions (mm)			
Symbol	**Min**	**Nom**	**Max**
A	>0.40	-	0.50
A1	0.00	-	0.05
A3		0.125 REF	
D	0.95	1.00	1.05
E	0.55	0.60	0.65
b1	0.10	0.15	0.20
b2	0.20	0.25	0.30
L1	0.20	0.30	0.40
L2	0.40	0.50	0.60
e1		0.35 BSC	
e2		0.675 BSC	

Recommend Pad Layout



Order Information

MPN	Package	Marking	Carrier	Quantity	HSF Status
GSFW0202A	SOT-883	4B	Tape & Reel	10,000pcs	RoHS Compliant