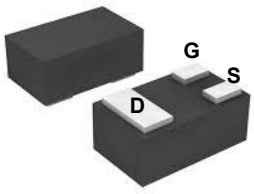
GOOD-ARK SEMICONDUCTOR

GSFW2R230

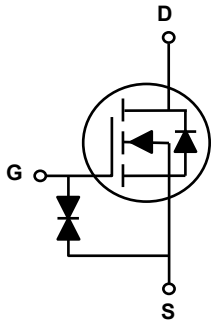
20V N-Channel MOSFET

Main Product Characteristics

V_{DS}	20V
$R_{DS(ON)}$	230mΩ
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 GSFW2R230 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	Max.	Unit
Drain-Source Voltage	V_{DSS}	20	V
Gate-Source Voltage	V_{GSS}	±8	V
Drain Current-Continuous[1,3](T_A=25°C)	I_D	1.4	A
Drain Current-Continuous[1,3](T_A=70°C)		1.1	
Drain Current-Pulsed[2]	I_{DM}	3.5	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	
Thermal Resistance, Junction-to-Ambient[2]	$R_{\theta JA}$	180	°C/W
Storage Temperature Range	T_{STG}	-55 To +150	°C
Operating Junction Temperature Range	T_J	-55 To +150	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=16V, V_{GS}=0V	-	-	1	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250μA	0.5	-	1	V
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V	-	-	±10	μA
Drain-Source On-State 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	
Forward Transconductance	g_{fs}	V_{DS}=5V, I_D=0.55A	-	1.7	-	S
Total Gate Charge	Q_g	V_{DS}=10V, I_D=1A, V_{GS}=2.5V	-	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
Turn-On Rise Time	t_r		-	25	-	
Turn-Off Delay Time	$t_{d(off)}$		-	14	-	
Turn-Off Fall Time	t_f		-	15	-	
Input Capacitance	C_{lss}	V_{DS}=10V, V_{GS}=0V, F=1MHz	-	33	-	pF
Output Capacitance	C_{oss}		-	6.5	-	
Reverse Transfer Capacitance	C_{rss}		-	3.3	-	
Reverse Diode Characteristics						
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

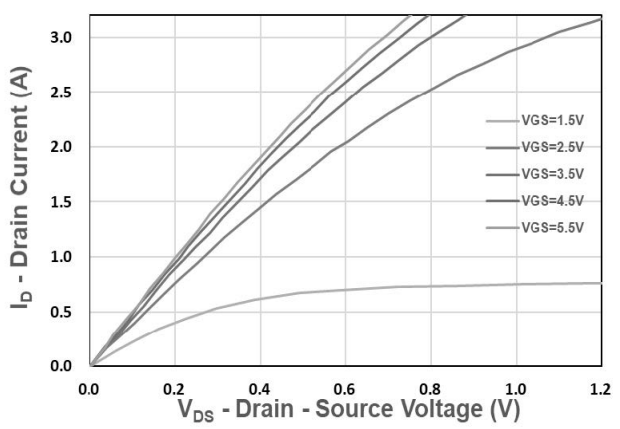


Figure 1. Output Characteristics

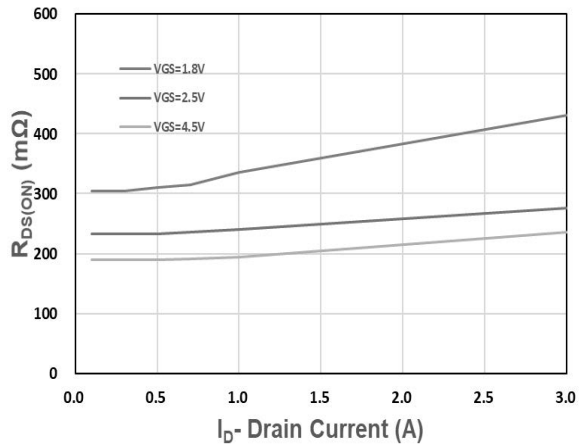


Figure 2. On−Resistance vs. I_D

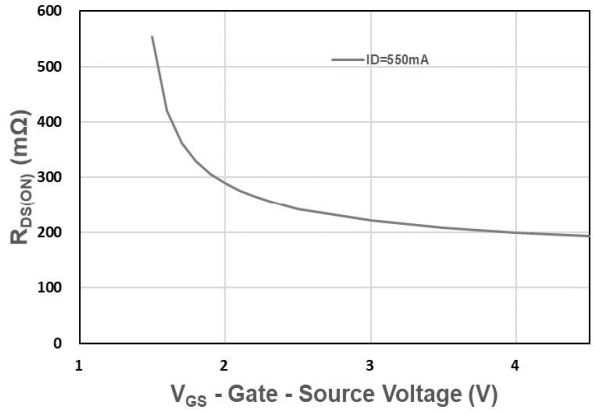


Figure 3. On−Resistance vs. V_{GS}

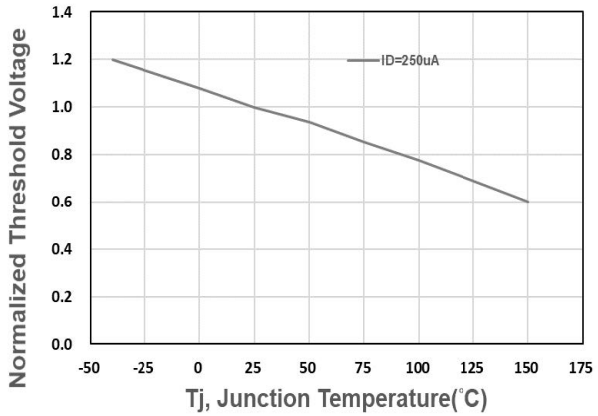


Figure 4. Gate Threshold Voltage

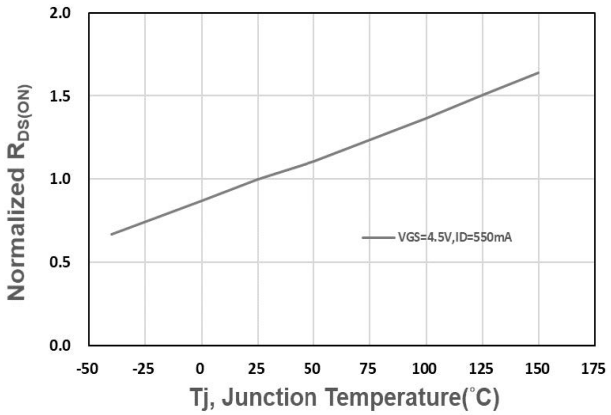


Figure 5. Drain-Source On Resistance

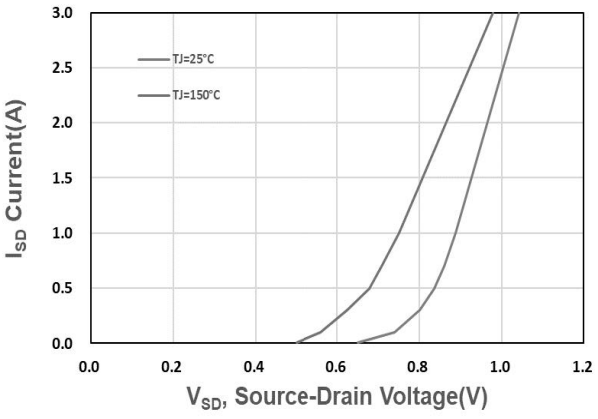
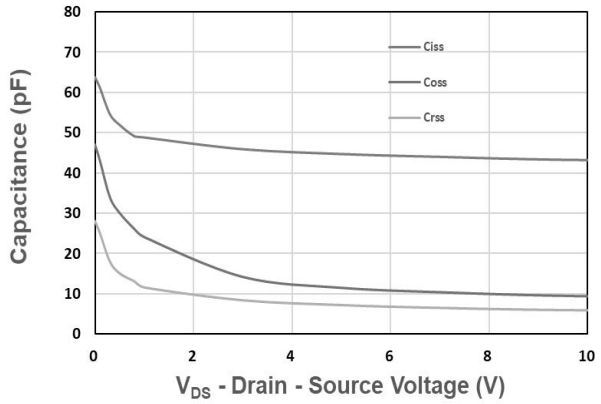
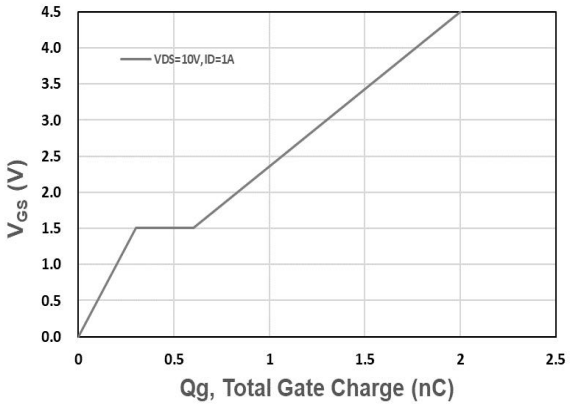


Figure 6. Source-Drain Diode Forward

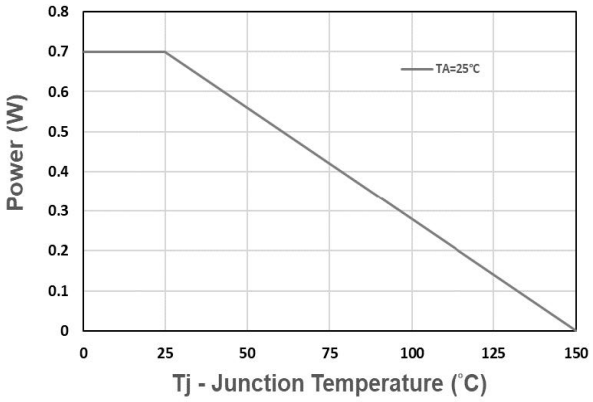
Typical Electrical and Thermal Characteristic Curves



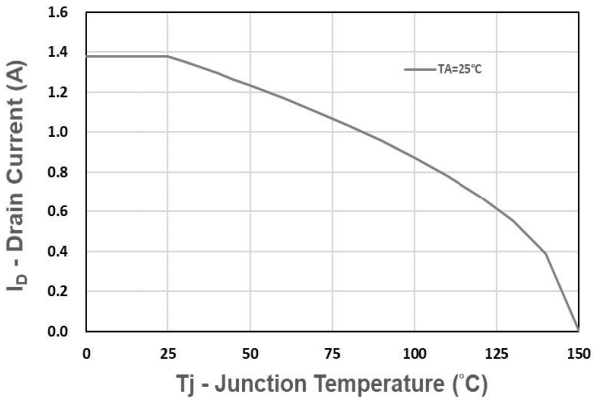
Firgure 7. Capacitance



Firgure 8. Gate Charge Characteristics

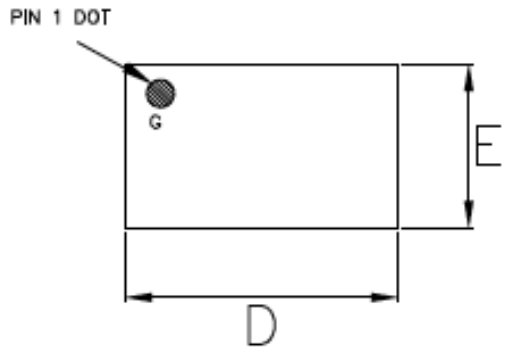


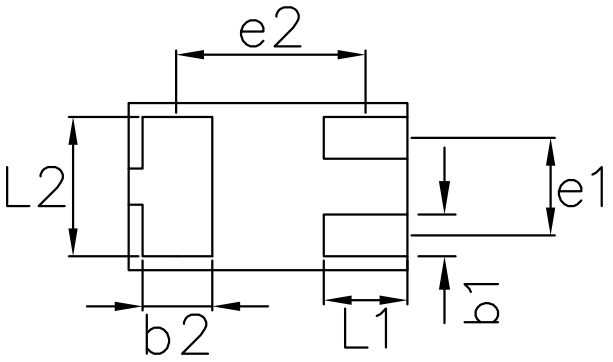
Firgure 9. Power Dissipation

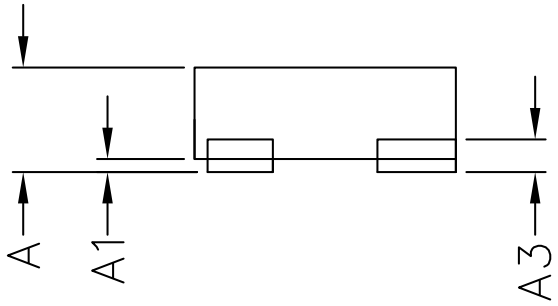


Firgure 10. Drain Current

Package Outline Dimensions (SOT-883)

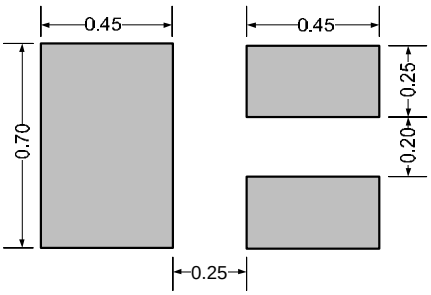






Package Outline Dimensions (MM)			
Package	SOT-883		
REF.	MIN.	TYP.	MAX
A	0.40	-	0.50
A1	0.001	-	0.05
A3	0.125 REF.		
D	0.95	1.00	1.05
E	0.55	0.60	0.65
b1	0.10	0.15	0.20
b2	0.20	0.25	0.30
L1	0.20	0.30	0.40
L2	0.40	0.50	0.60
e1	0.35 BSC		
e2	0.675 BSC		

Recommended Pad Layout



(Unit in MM)

Order Information

MPN	Package	Marking Code	Carrier	Quantity	HSF Status
GSFW2R230	SOT-883	48	Tape & Reel	10,000pcs / Reel	RoHS Compliant