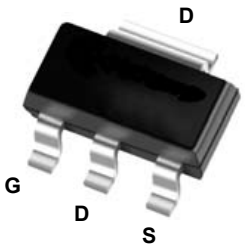
GOOD-ARK SEMICONDUCTOR

GSFN10096

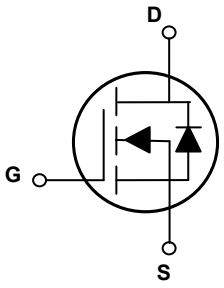
100V N-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	100V
$R_{DS(ON)}$	125mΩ (Max.)
I_D	4.4A



SOT-223



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 GSFN10096 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	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current @ T_A=25°C	I_D	4.4	A
Continuous Drain Current @ T_A=70°C		3.5	A
Pulsed Drain Current[1]	I_{DM}	18	A
Total Power Dissipation @ T_A=25°C[2]	P_D	24	W
Total Power Dissipation, Derating Factor above 25°C[2]		0.19	W/°C
Max. Thermal Resistance, Junction-to-Ambient[2]	$R_{\theta JA}$	32	°C/W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (T_C=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	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V, T_C=25°C	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	2	-	4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=3.2A	-	96	125	mΩ
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	V_{DS}=50V, V_{GS}=0V, f=1MHz	-	111	-	pF
Output Capacitance	C_{oss}		-	47	-	
Reverse Transfer Capacitance	C_{rss}		-	4	-	
Total Gate Charge	Q_g	V_{DS}=50V, I_D=3A, V_{GS}=10V	-	2.8	-	nC
Gate Source Charge	Q_{gs}		-	1	-	
Gate Drain Charge	Q_{gd}		-	0.8	-	
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DD}=50V, I_D=3A, R_{GEN}=3Ω	-	2	-	nS
Turn-On Rise Time	t_r		-	2.8	-	
Turn-Off Delay Time	$t_{d(off)}$		-	7	-	
Turn-Off Fall Time	t_f		-	2.9	-	
Drain-Source Ratings and Characteristics						
Maximum Body-Diode Continuous Current	I_S	-	-	-	4.4	A
Diode Forward Voltage	V_{SD}	I_S=4A, V_{GS}=0V	-	0.8	1.2	V

Notes:

1. Pulse test: Pulse width ≤300us, duty cycle ≤2%.
2. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1-inch square copper plate.

Typical Electrical and Thermal Characteristic Curves

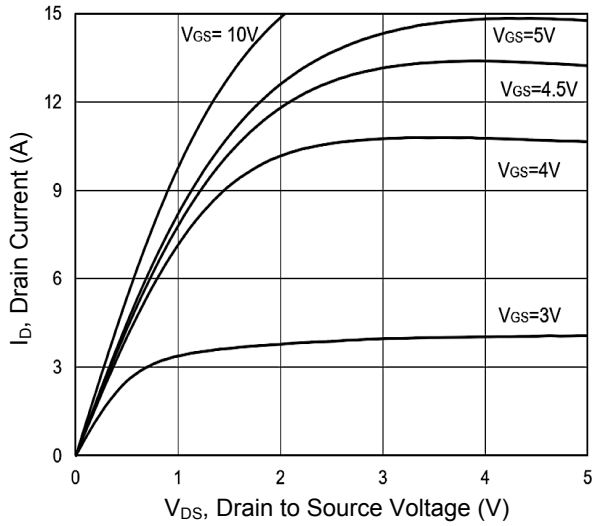


Figure 1. Output Characteristics

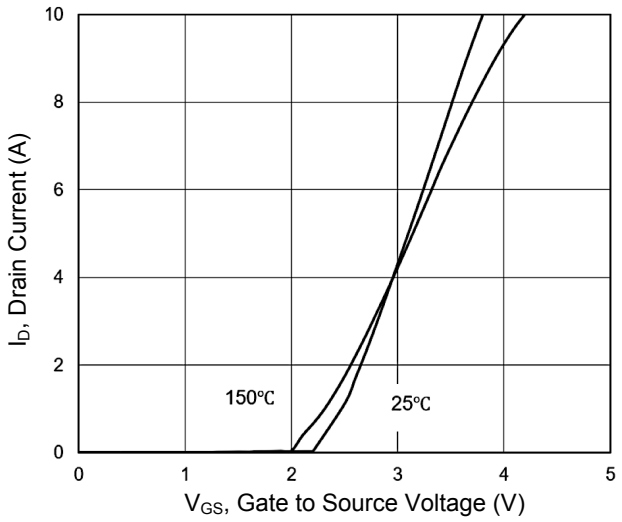


Figure 2. Transfer Characteristics

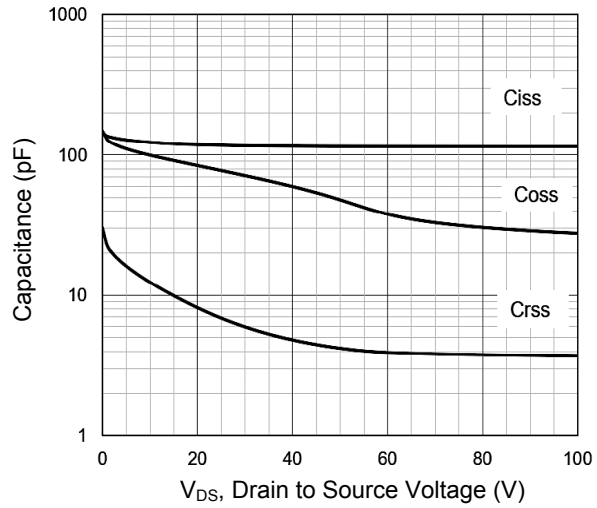


Figure 3. Capacitance Characteristics

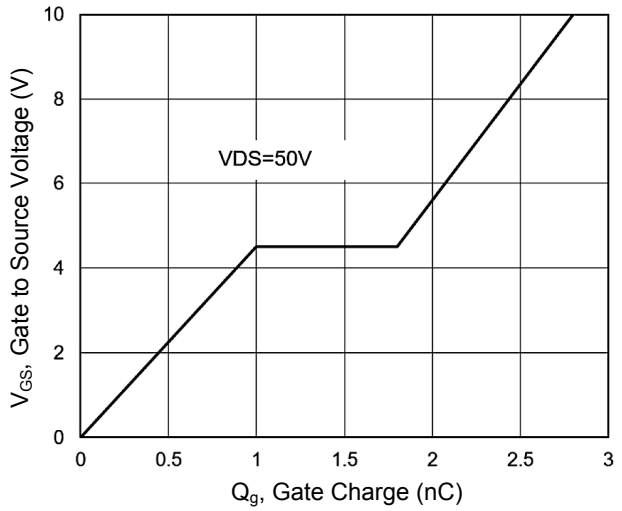


Figure 4. Gate Charge

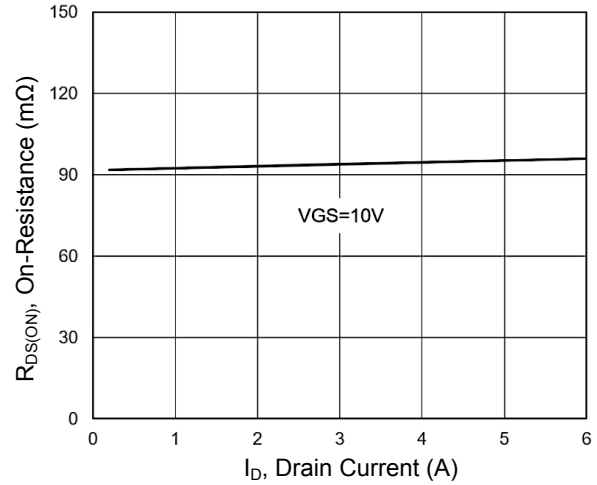


Figure 5. Drain-Source On Resistance

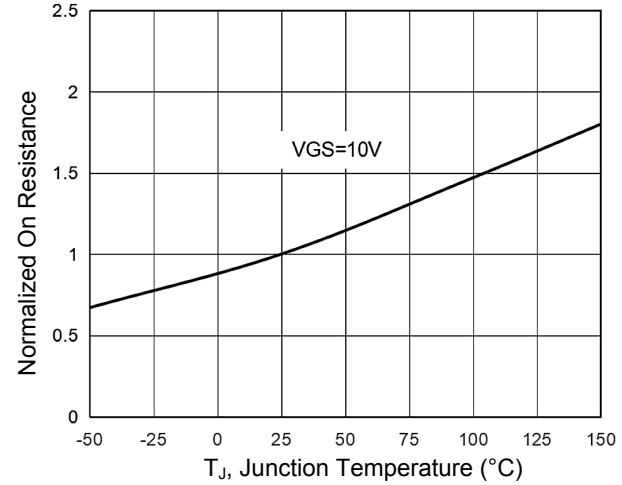


Figure 6. Normalized On-Resistance vs. T_J

Typical Electrical and Thermal Characteristic Curves

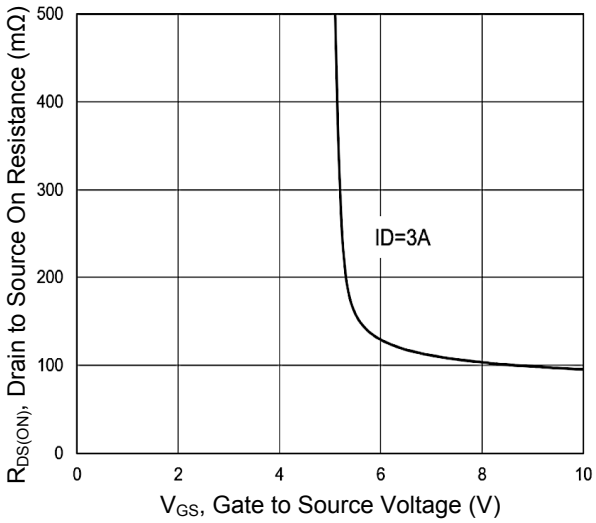


Figure 7. Typical Drain to Source On Resistance vs. Gate Voltage

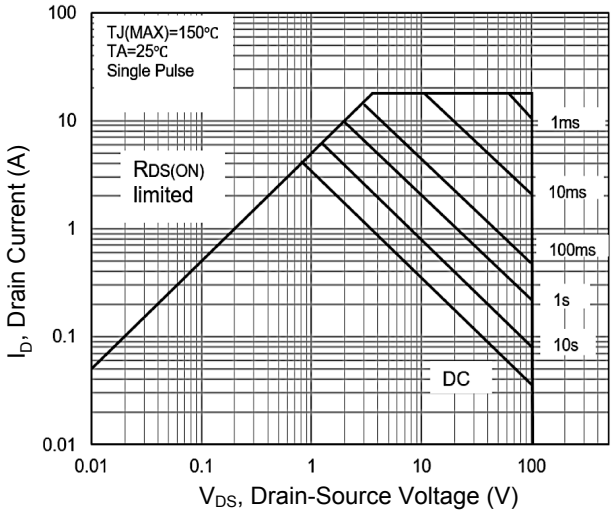


Figure 8. Safe Operation Area

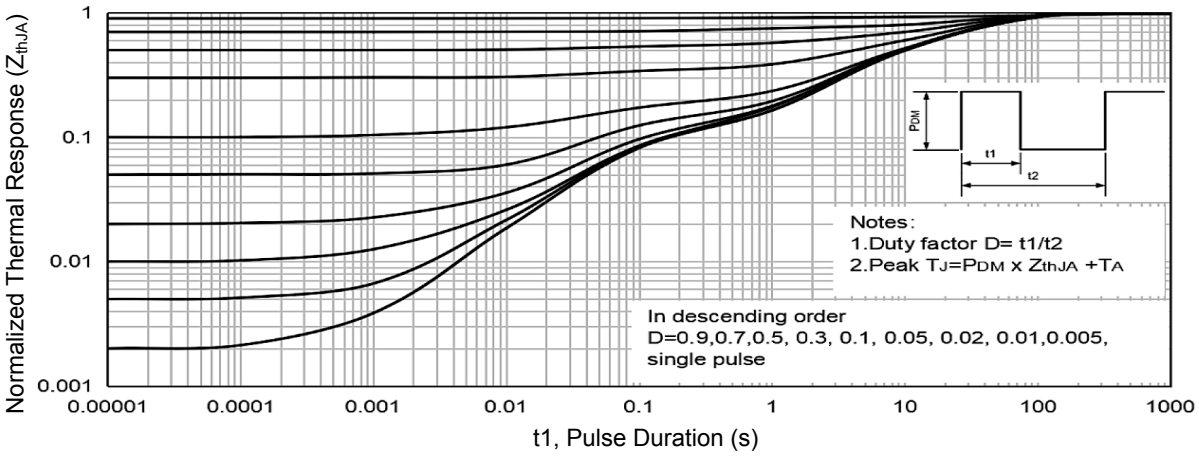
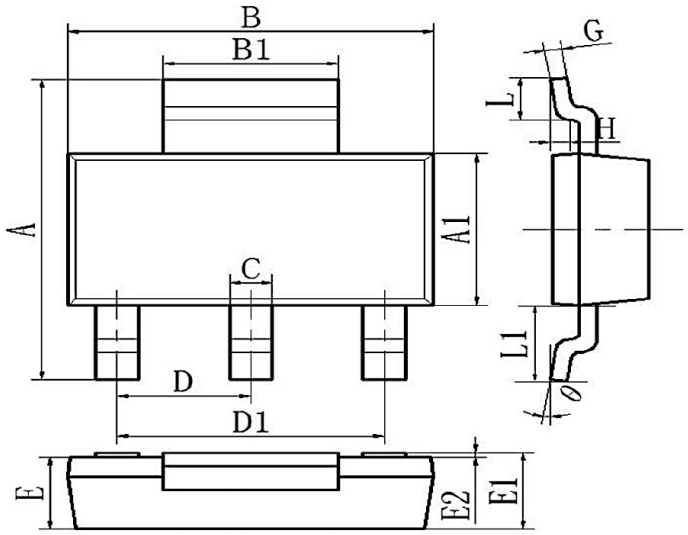


Figure 9. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

Package Outline Dimensions (SOT-223)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	6.800	7.200	0.268	0.283
A1	3.400	3.600	0.134	0.142
B	6.300	6.700	0.248	0.264
B1	2.950	3.150	0.116	0.124
C	0.660	0.820	0.026	0.032
D	2.250	2.350	0.089	0.093
D1	4.500	4.700	0.177	0.185
E	1.450	1.750	0.057	0.069
E1	1.510	1.810	0.059	0.071
E2	0.020	0.140	0.001	0.006
G	0.250	0.350	0.010	0.014
H	0.200	0.300	0.008	0.012
L	0.750	1.150	0.030	0.045
L1	1.650	1.850	0.065	0.073
θ	0°	8°	0°	8°

Order Information

Device	Package	Marking	Packaging	SPQ
GSFN10096	SOT-223	N10096	Tape & Reel	2,500 Pcs / Reel