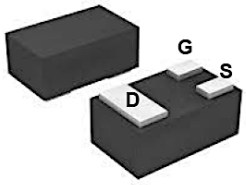
GOOD-ARK SEMICONDUCTOR

GSFC02016

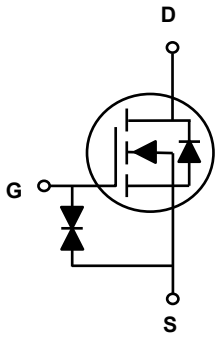
20V N-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	20V
$R_{DS(ON)}$	175mΩ (Max.)
I_D	1.6A



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 GSFC02016 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
Continuous Drain Current @ V_{GS}=4.5V (T_A=25°C)	I_D	1.6	A
Continuous Drain Current @ V_{GS}=4.5V (T_A=70°C)		1.3	A
Pulsed Drain Current	I_{DM}	6.6	A
Total Power Dissipation (T_A=25°C)[1]	P_D	0.76	W
Max. Thermal Resistance Junction-to-Ambient[1]	$R_{\theta JA}$	165	°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}=±10V, V_{DS}=0V	-	-	±10	uA
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=1A	-	115	175	mΩ
		V_{GS}=2.5V, I_D=0.75A	-	165	240	
		V_{GS}=1.8V, I_D=0.5A	-	325	390	
		V_{GS}=1.5V, I_D=0.1A	-	530	640	
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	V_{DS}=16V, V_{GS}=0V, f=1MHz	-	45.1	-	pF
Output Capacitance	C_{oss}		-	9.3	-	
Reverse Transfer Capacitance	C_{rss}		-	7.9	-	
Total Gate Charge	Q_g	V_{GS}=4.5V, V_{DS}=10V, I_D=0.5A	-	0.71	-	nC
Gate Source Charge	Q_{gs}		-	0.11	-	
Gate Drain Charge	Q_{gd}		-	0.2	-	
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=4.5V, V_{DD}=10V, I_D=0.5A, R_{GEN}=10Ω	-	3.6	-	nS
Turn-On Rise Time	t_r		-	5.7	-	
Turn-Off Delay Time	$t_{d(off)}$		-	18.8	-	
Turn-Off Fall Time	t_f		-	6.2	-	
Drain-Source Ratings and Characteristics						
Diode Forward Voltage	V_{SD}	I_S=0.5A, V_{GS}=0V	-	0.8	1.2	V
Maximum Body-Diode Continuous Current	I_S	-	-	-	1.6	A

Notes:
1. Device mounted on an FR4 PCB, single-sided copper, tin-plated and mounting pad for drain 1cm^2.

Typical Electrical and Thermal Characteristic Curves

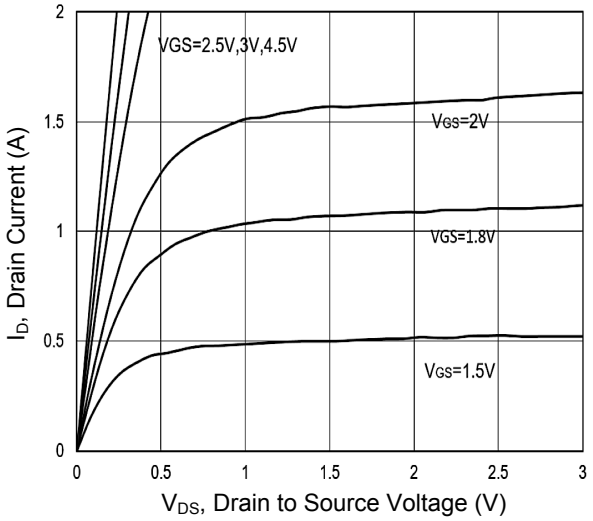


Figure 1. Output Characteristics

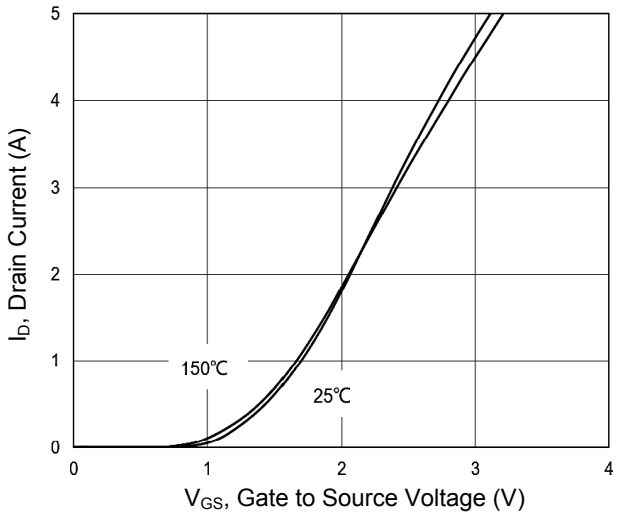


Figure 2. Transfer Characteristics

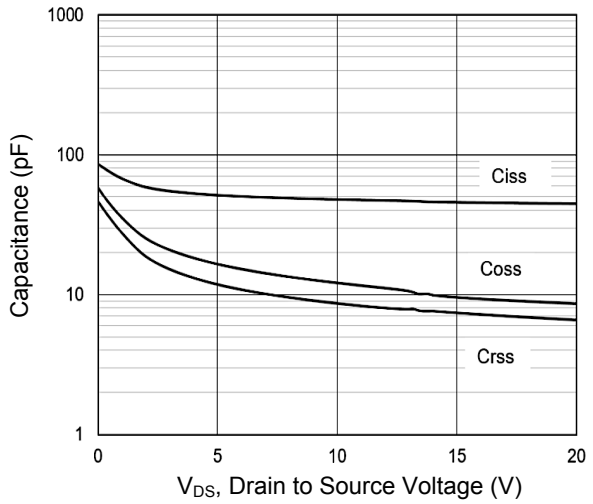


Figure 3. Capacitance Characteristics

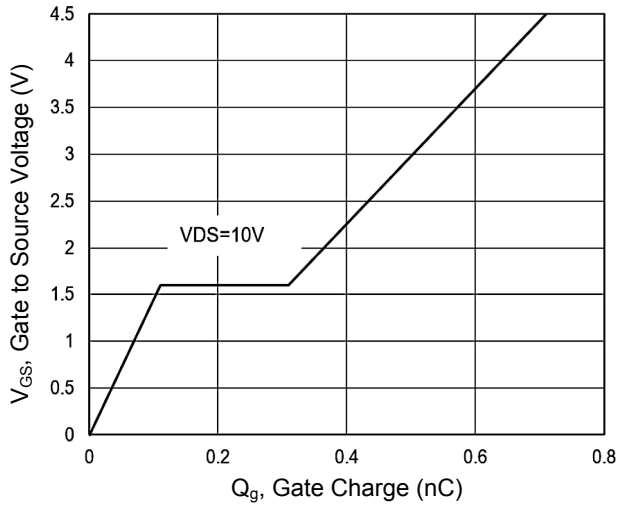


Figure 4. Gate Charge

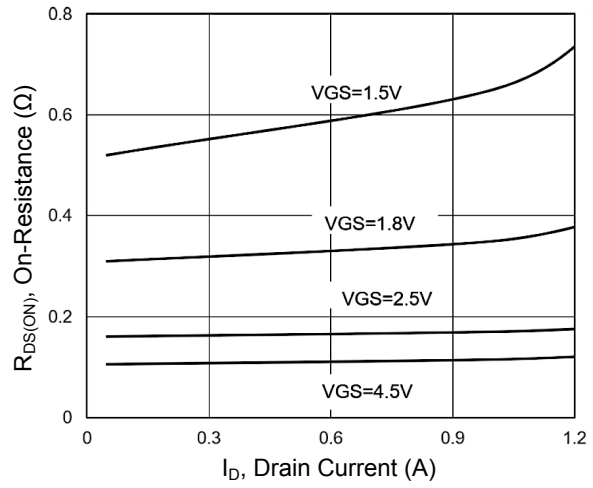


Figure 5. Drain-Source On Resistance

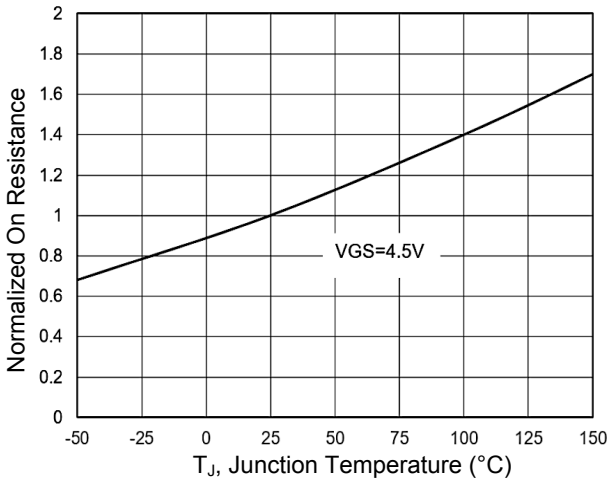


Figure 6. Normalized On-Resistance vs. T_J

Typical Electrical and Thermal Characteristic Curves

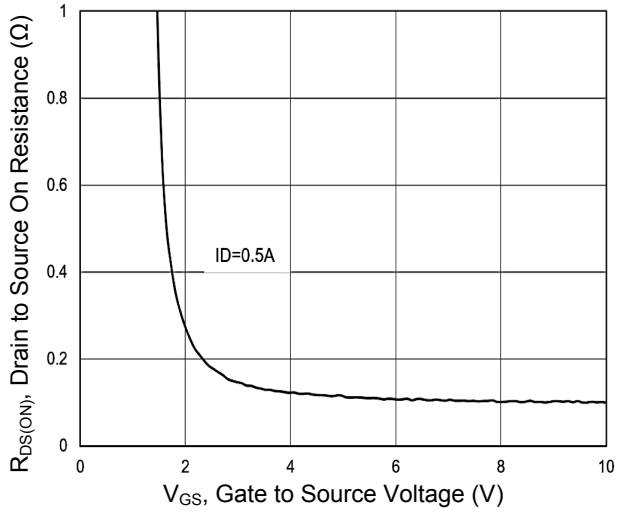


Figure 7. Typical Drain to Source On Resistance vs. Gate Voltage

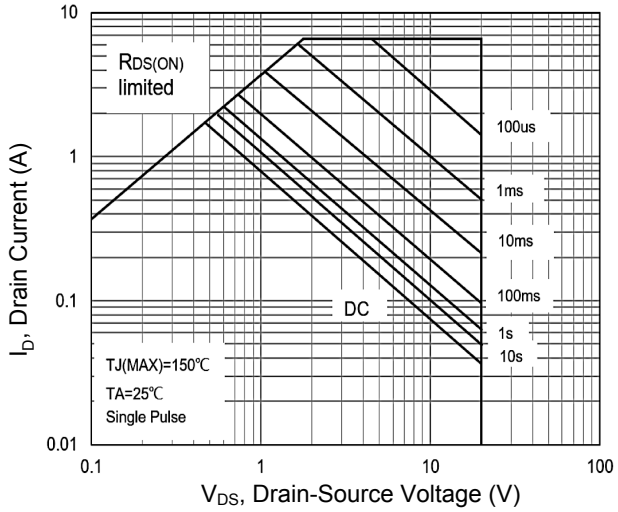


Figure 8. Safe Operation Area

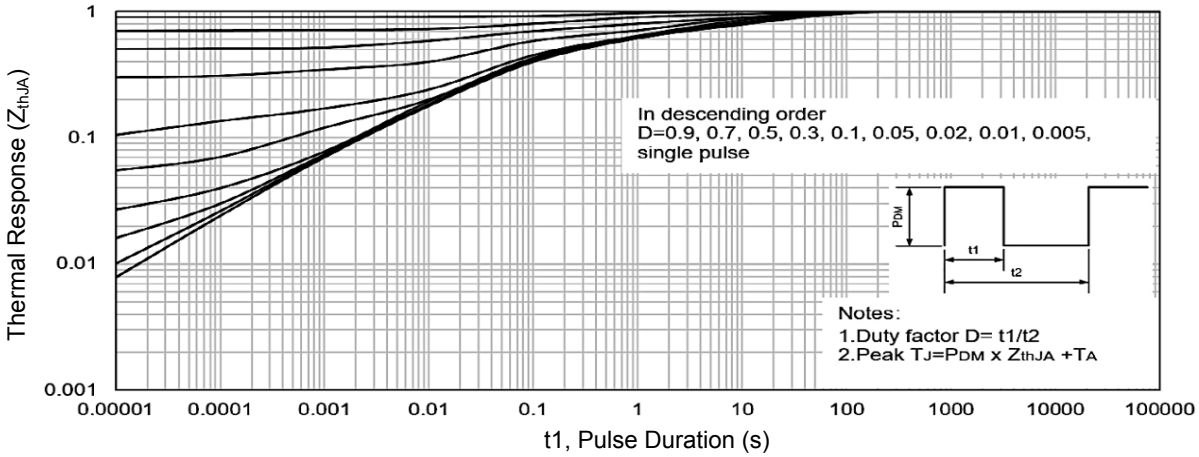
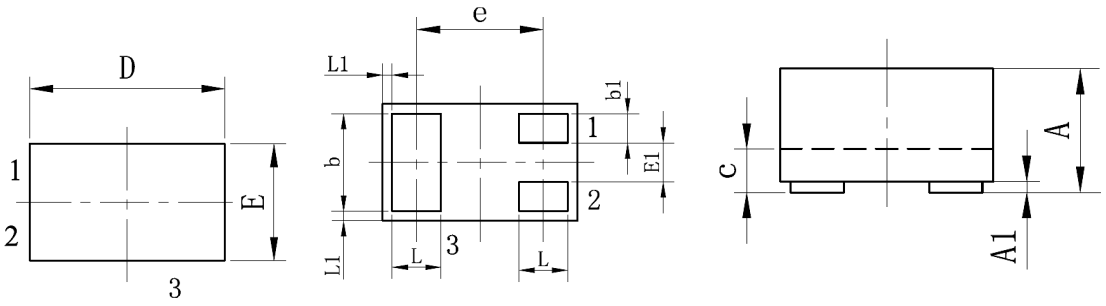


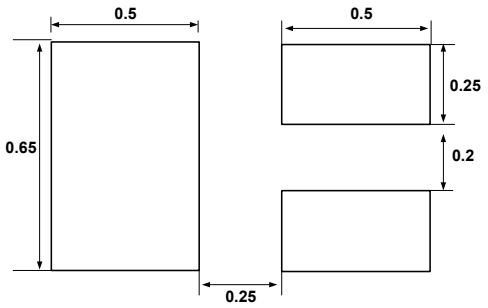
Figure 9. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

Package Outline Dimensions (SOT-883)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.45	0.55	0.018	0.022
A1	0.00	0.05	0.000	0.002
b	0.45	0.55	0.018	0.022
b1	0.10	0.20	0.004	0.008
c	0.12	0.18	0.005	0.007
D	0.95	1.05	0.037	0.041
e	0.65 BSC		0.026 BSC	
E	0.55	0.65	0.022	0.026
E1	0.15	0.25	0.006	0.010
L	0.20	0.30	0.008	0.012
L1	0.05 REF		0.002 REF	

Recommended Pad Layout



Unit: mm

Order Information

Device	Package	Marking	Packaging	SPQ
GSFC02016	SOT-883	U4	Tape & Reel	10,000 Pcs / Reel