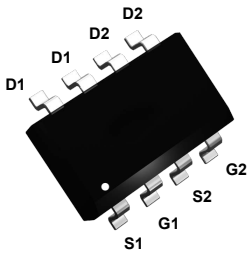
GOOD-ARK SEMICONDUCTOR

GSFQ2016

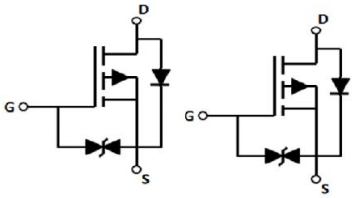
20V Dual P-Channel MOSFET

Main Product Characteristics

BV_{DSS}	-20V
$R_{DS(ON)}$	21mΩ (max.)
I_D	-7.7A



SOP-8



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 GSFQ2016 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_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±10	V
Continuous Drain Current	T_A=25°C	I_D	-7.7	A
	T_A=70°C		-6.2	A
Pulsed Drain Current		I_{DM}	-31	A
Total Power Dissipation @ T_A=25°C[1]		P_D	2	W
Thermal Resistance Junction-to-Ambient[1]		$R_{\theta JA}$	62.5	°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	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-0.4	-	-1.0	V
Static Drain-Source on-Resistance	$R_{DS(on)}$	V_{GS}=-4.5V, I_D=-6A	-	17	21	mΩ
		V_{GS}=-2.5V, I_D=-4.2A	-	20	26	
		V_{GS}=-1.8V, I_D=-2A	-	25	33	
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	V_{DS}=-10V, V_{GS}=0V, F=1MHz	-	1870	-	pF
Output Capacitance	C_{oss}		-	173	-	
Reverse Transfer Capacitance	C_{rss}		-	115	-	
Total Gate Charge	Q_g	V_{GS}=-4.5V, V_{DS}=-10V, I_D=-7.7A	-	1.6	-	nC
Gate Source Charge	Q_{gs}		-	0.1	-	
Gate Drain Charge	Q_{gd}		-	0.12	-	
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=-4.5V, V_{DD}=-10V, I_D=-1A, R_{GEN}=10Ω	-	13	-	nS
Turn-on Rise Time	t_r		-	11	-	
Turn-off Delay Time	$t_{d(off)}$		-	175	-	
Turn-off Fall Time	t_f		-	60	-	
Source-Drain Ratings and Characteristics						
Diode Forward Voltage	V_{SD}	I_S=-7.7A, V_{GS}=0V	-	-0.85	-1.2	V
Maximum Body-Diode Continuous Current	I_S	-	-	-	-7.7	A

Note

1. Device mounted on FR-4 PCB , 1 inch x 0.85 inch x 0.062 inch with 2oz. Copper, t ≤10s.

Typical Electrical and Thermal Characteristic Curves

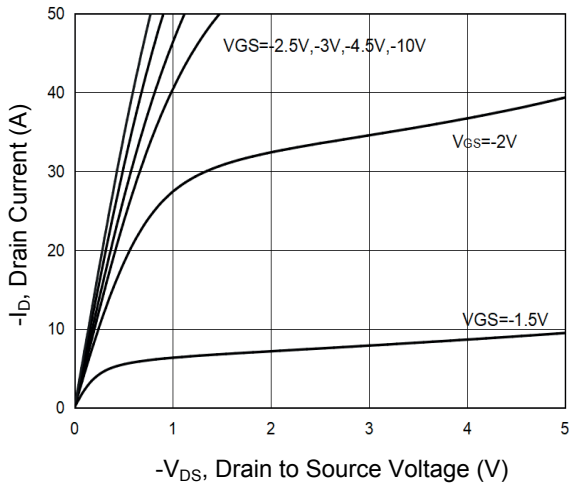


Figure 1. Output Characteristics

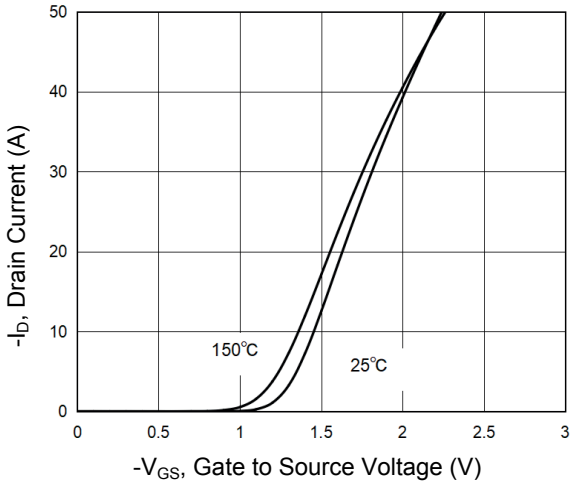


Figure 2. Transfer Characteristics

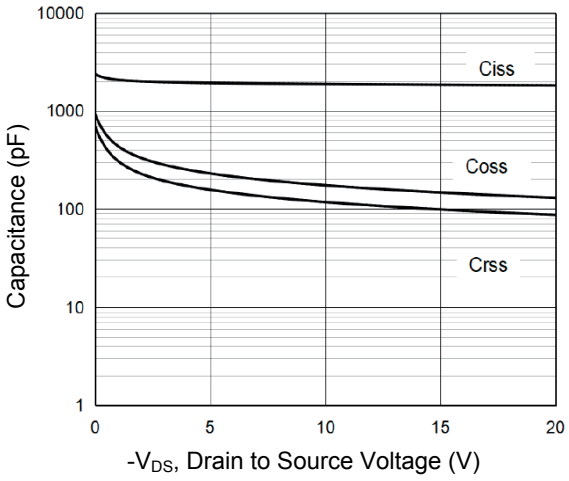


Figure 3. Capacitance Characteristics

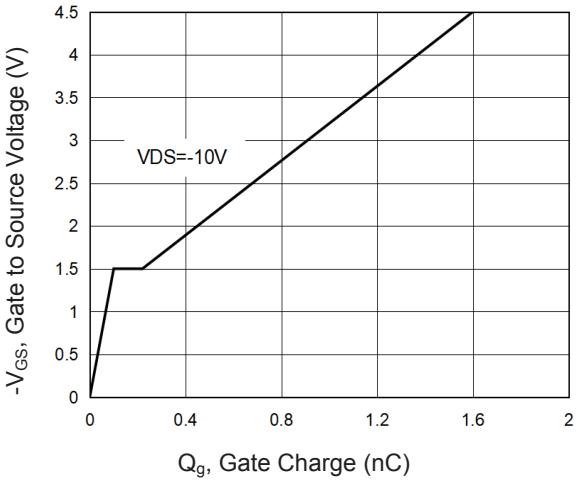


Figure 4. Gate Charge

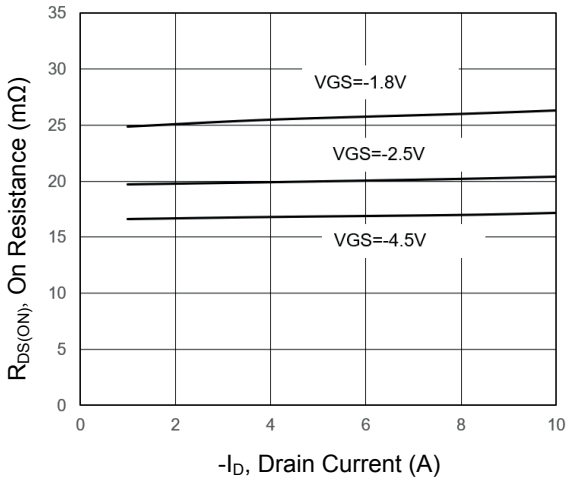


Figure 5. Drain to Source on Resistance

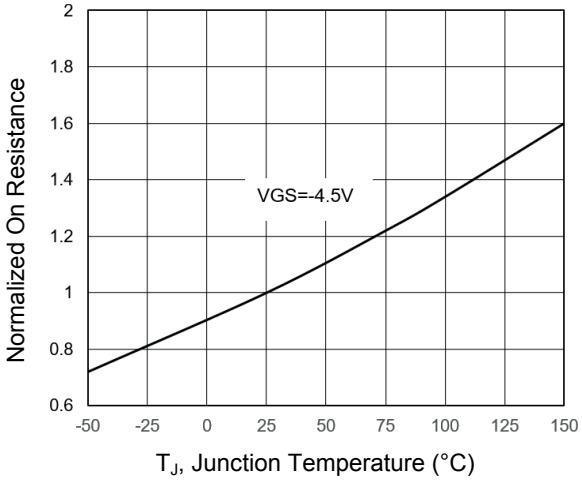


Figure 6. Normalized $R_{DS(ON)}$ vs. T_J

Typical Electrical and Thermal Characteristic Curves

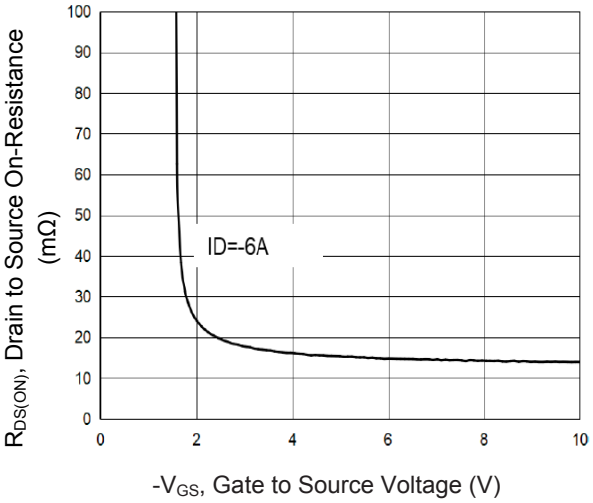


Figure 7. Typical Drain to Source ON Resistance vs. Gate Voltage and Drain Current

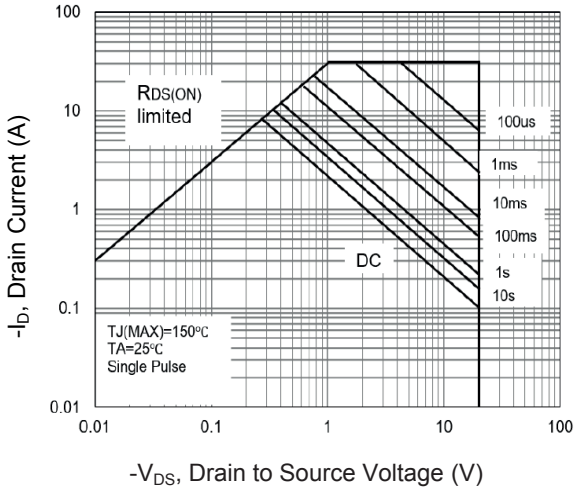


Figure 8. Safe Operation Area

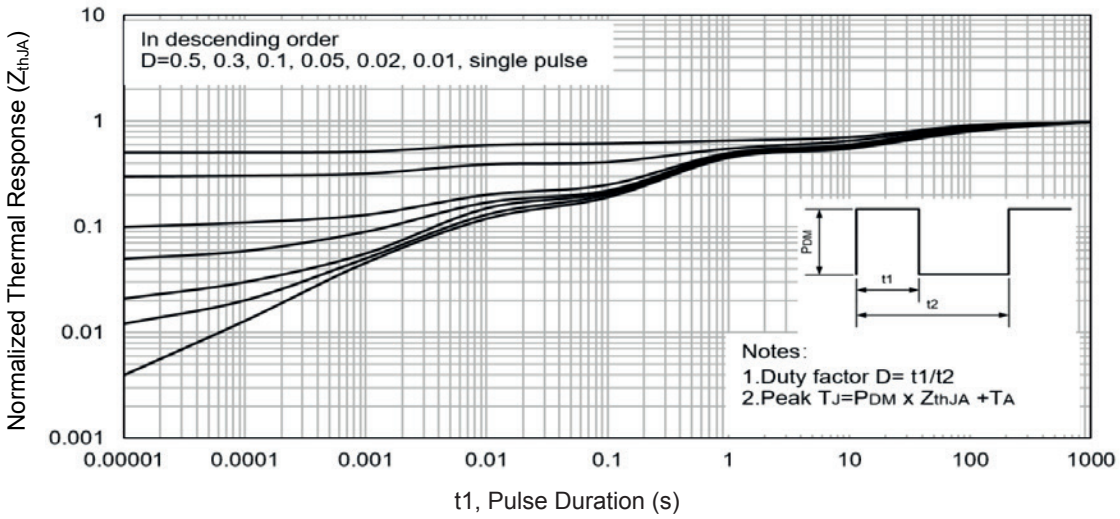
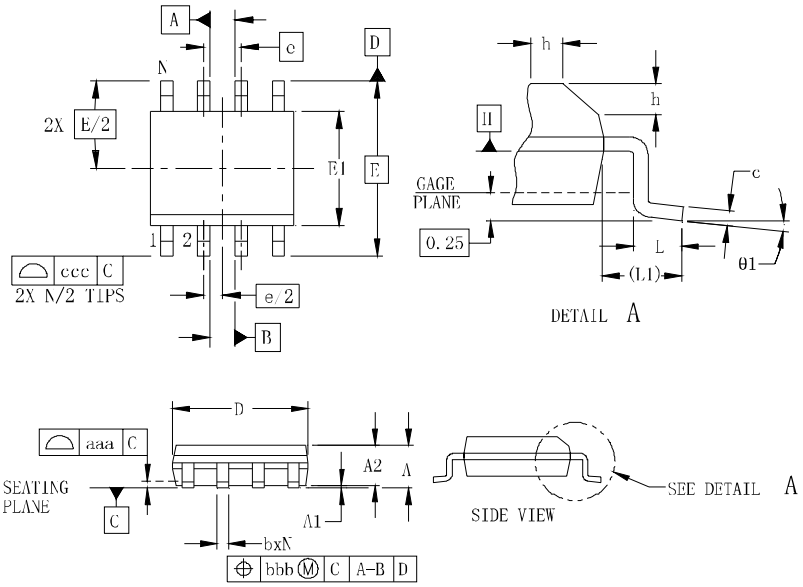


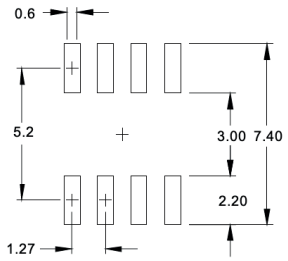
Figure 9. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

Package Outline Dimensions (SOP-8)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
A2	1.25	1.65	0.049	0.065
b	0.31	0.51	0.012	0.020
c	0.17	0.25	0.007	0.010
D	4.80	5.00	0.189	0.197
E1	3.80	4.00	0.150	0.157
E	6.00 BSC		0.236 BSC	
e	1.27 BSC		0.050 BSC	
h	0.25	0.50	0.010	0.020
L	0.40	1.04	0.016	0.041
L1	1.04 REF		0.041 REF	
N	8		8	
θ1	0°	8°	0°	8°
aaa	0.10 REF		0.004 REF	
bbb	0.25 REF		0.010 REF	
ccc	0.20 REF		0.008 REF	

Recommended Pad Layout



Unit: mm

Order Information

Device	Package	Marking	Carrier	Quantity
GSFQ2016	SOP-8	P2016KWS8D	Tape & Reel	4,000 Pcs / Reel