GOOD-ARK SEMICONDUCTOR

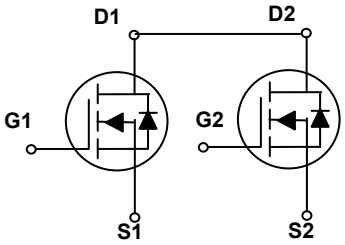
GSFQ8205A

20V Dual N-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	20V
$R_{DS(ON)}$	26mΩ (max.)
I_D	6A

TSSOP-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 GSFQ8205A 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-to-Source Voltage	V_{GS}	±10	V
Continuous Drain Current, @ Steady-State (T_A=25°C)[1]	I_D	6.0	A
Continuous Drain Current, @ Steady-State (T_A=70°C)		4.8	A
Pulsed Drain Current[2]	I_{DM}	20	A
Power Dissipation (T_A=25°C)	P_D	1.5	W
Linear Derating Factor (T_A=25°C)		0.012	W/°C
Junction-to-Ambient (PCB Mounted, Steady-State)[3]	$R_{\theta JA}$	83.0	°C/W
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +150	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	20	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	V_{DS}=20V, V_{GS}=0V	-	-	1	μA
		T_J=125°C	-	-	50	
Gate-to-Source Forward Leakage	I_{GSS}	V_{GS}=10V	-	-	100	nA
		V_{GS}=-10V	-	-	-100	
Static Drain-to-Source On Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=4.5A	-	22	26	mΩ
		V_{GS}=2.5V, I_D=3.55A	-	26	32	
Gate Resistance	gfs	V_{DS}=5V, I_D=4.5A	-	10	-	S
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.5	0.7	1.2	V
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=8V F=1MHz	-	600	-	pF
Output Capacitance	C_{oss}		-	330	-	
Reverse Transfer Capacitance	C_{rss}		-	140	-	
Total Gate Charge	Q_g	I_D=6A, V_{DD}=10V, V_{GS}=4.5V	-	10	-	nC
Gate-to-Source Charge	Q_{gs}		-	2.3	-	
Gate-to-Drain ("Miller") Charge	Q_{gd}		-	3.0	-	
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=4.5V, V_{DD}=10V, I_D=1A, R_{GEN}=6Ω	-	10	-	nS
Rise Time	t_r		-	11	-	
Turn-Off Delay Time	$t_{d(off)}$		-	35	-	
Fall Time	t_f		-	30	-	
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	6	A
Pulsed Source Current (Body Diode)	I_{SM}		-	-	20	A
Diode Forward Voltage	V_{SD}	I_S=1.7A, V_{GS}=0V	-	0.8	1.2	V

Note:
1. Pulse test: pulse width ≤300us, duty cycle ≤2%.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Electrical and Thermal Characteristic Curves

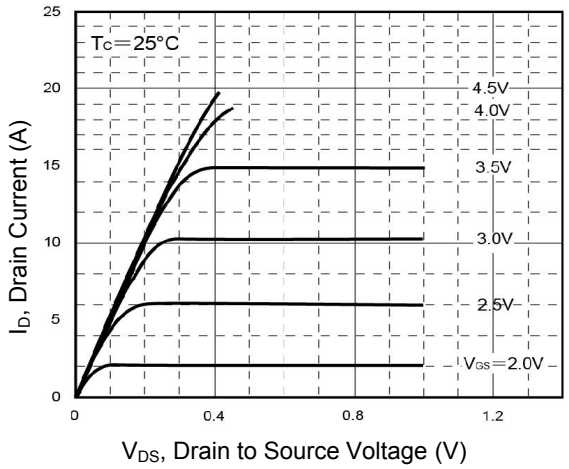


Figure 1. Output Characteristics

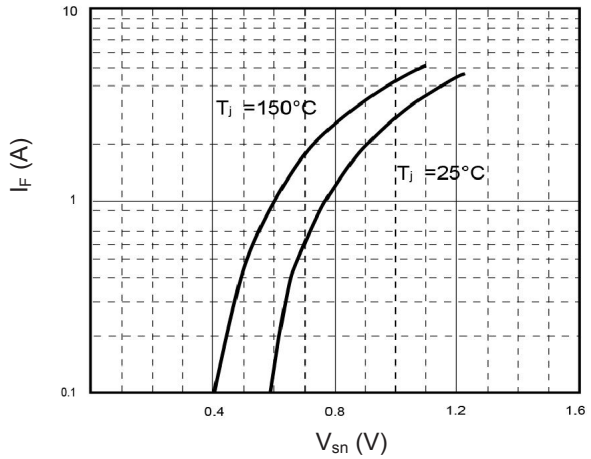


Figure 2. Body Diode Characteristics

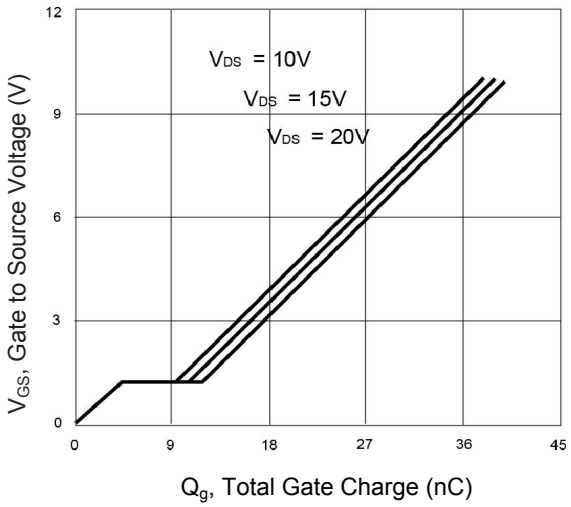


Figure 3. Gate Charge

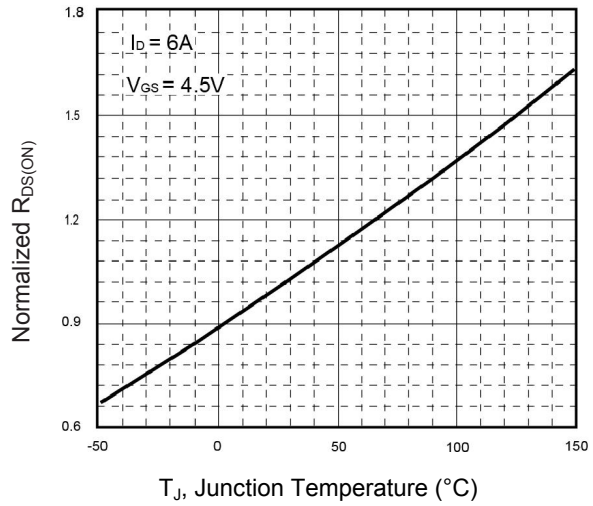


Figure 4. Normalized $R_{DS(ON)}$ vs. T_J

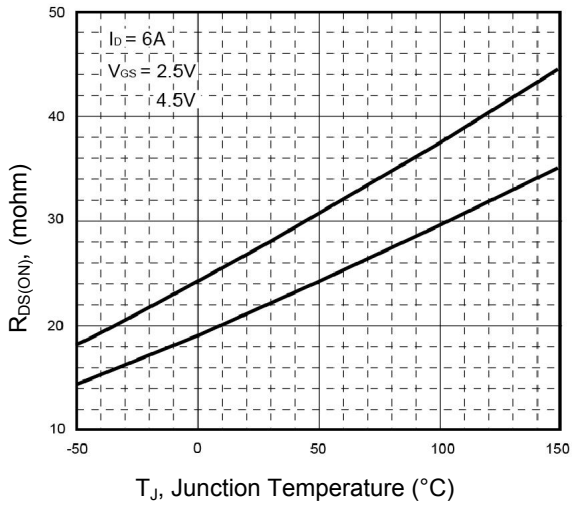


Figure 5. On-Resistance vs. T_J

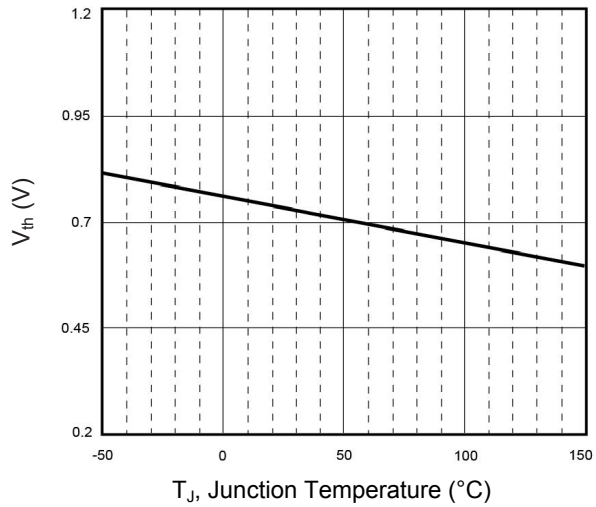


Figure 6. V_{th} vs. Junction Temperature

Typical Electrical and Thermal Characteristic Curves

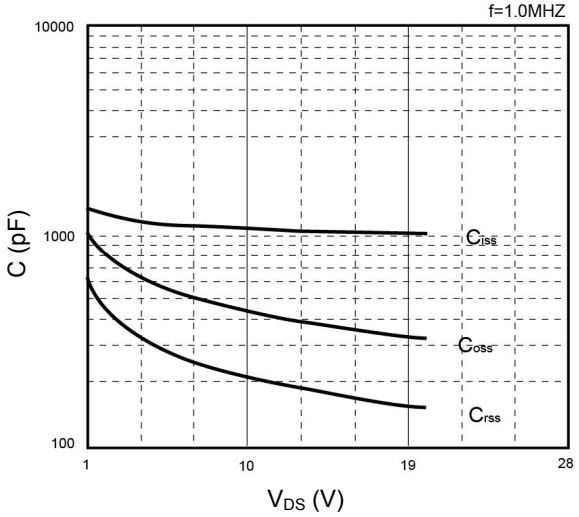


Figure 7. Capacitance Characteristics

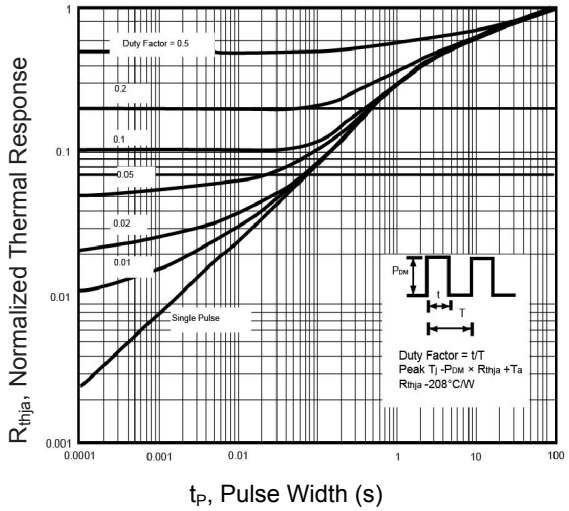


Figure 8. Normalized Transient Impedance

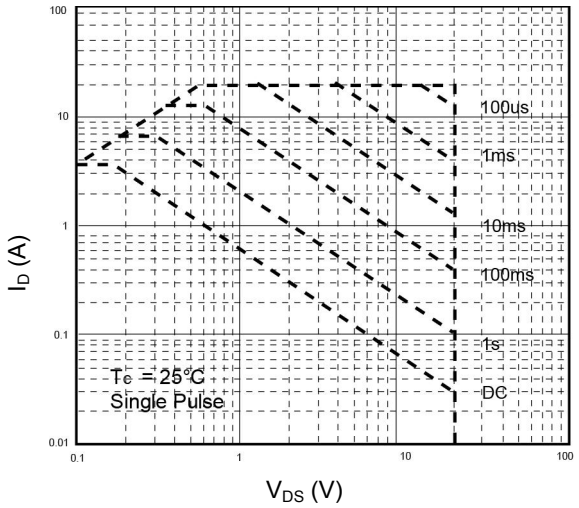
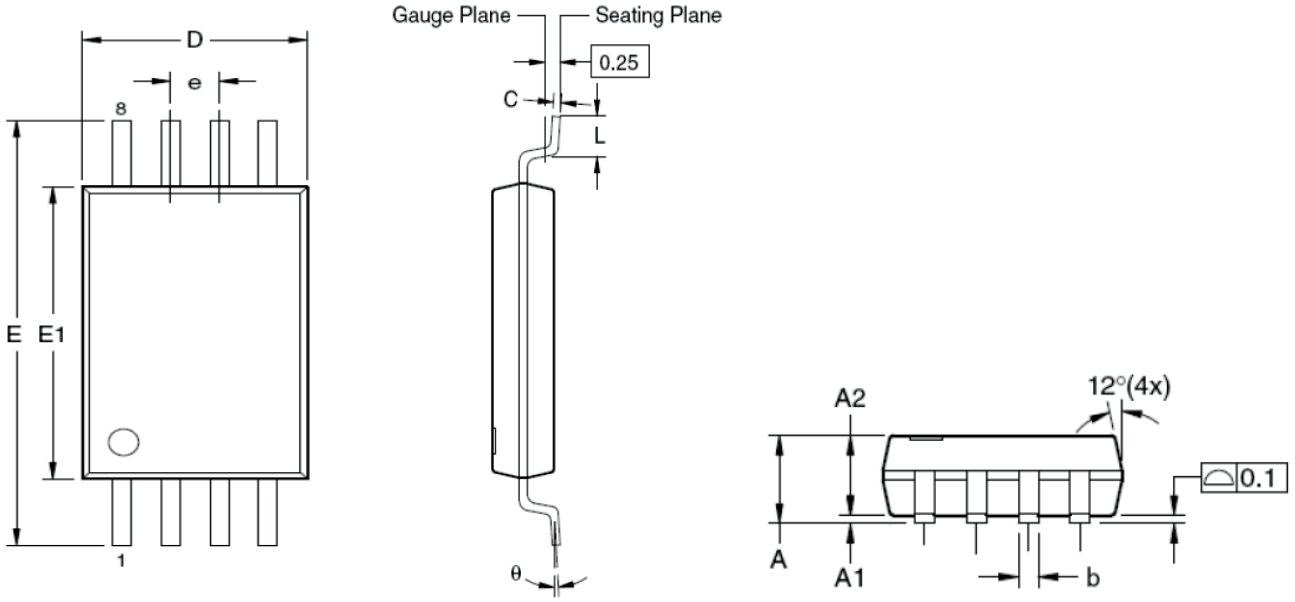


Figure 9. Safe Operation Area

Package Outline Dimensions (TSSOP-8)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	-	1.20	-	0.047
A1	0.05	0.15	0.002	0.006
A2	0.8	1.05	0.031	0.041
b	0.19	0.30	0.007	0.012
C	0.09	0.20	0.004	0.008
D	2.90	3.10	0.114	0.122
E	6.40 BSC		0.252 BSC	
E1	4.30	4.50	0.169	0.177
e	0.65 BSC		0.026 BSC	
L	0.45	0.75	0.018	0.030
θ	0°	8°	0°	8°