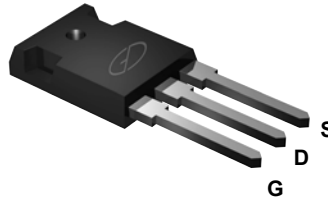
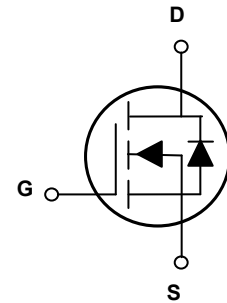


Main Product Characteristics

V_{DS}	100V
$R_{DS(ON)}$	2.7m Ω (Max)
I_D	200A



TO-247



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 GSFA10200 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	Max.	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous (T _c =25°C) ¹	I_D	200	A
Drain Current-Continuous (T _c =100°C)		142	
Drain Current-Pulsed ²	I_{DM}	800	A
Single Pulse Avalanche Energy ³	E_{AS}	961	mJ
Power Dissipation (T _c =25°C)	P_D	400	W
Power Dissipation-Derate above 25°C		3.2	
Thermal Resistance, Junction-to-Ambient ⁴	$R_{\theta JA}$	50	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.32	°C/W
Operating Junction Temperature Range	T_J	-55 To +150	°C
Storage Temperature Range	T_{STG}	-55 To +150	°C

Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V, T_J=25^\circ\text{C}$	-	-	1	μA
		$V_{DS}=100V, V_{GS}=0V, T_J=125^\circ\text{C}$	-	-	20	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V$	-	-	± 100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=60A$	-	2.1	2.7	m Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	2.1	3	3.9	V
Dynamic and Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS}=50V, I_D=90A, V_{GS}=10V$	-	165	-	nC
Gate-Source Charge	Q_{gs}		-	61	-	
Gate-Drain Charge	Q_{gd}		-	40	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=50V, R_G=3\Omega, V_{GS}=10V, I_D=90A$	-	33	-	nS
Rise Time	t_r		-	46	-	
Turn-Off Delay Time	$t_{d(off)}$		-	119	-	
Fall Time	t_f		-	44	-	
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V, F=1\text{MHz}$	-	10430	-	pF
Output Capacitance	C_{oss}		-	1263	-	
Reverse Transfer Capacitance	C_{rss}		-	35	-	
Gate Resistance	R_g	$F=1\text{MHz}$	-	2.2	-	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	200	A
Pulsed Source Current	I_{SM}		-	-	800	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=60A$	-	1	1.2	V
Reverse Recovery Time	t_{rr}	$I_F=90A, di/dt=100A/\mu s, T_J=25^\circ\text{C}$	-	85	-	nS
Reverse Recovery Charge	Q_{rr}		-	0.26	-	μC

Note:

1. Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
2. Repetitive rating: Pulsed width limited by maximum junction temperature.
3. $L=0.5\text{mH}, V_{DD}=80V, I_{AS}=62A$, starting $T_J=25^\circ\text{C}$.
4. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Electrical and Thermal Characteristic Curves

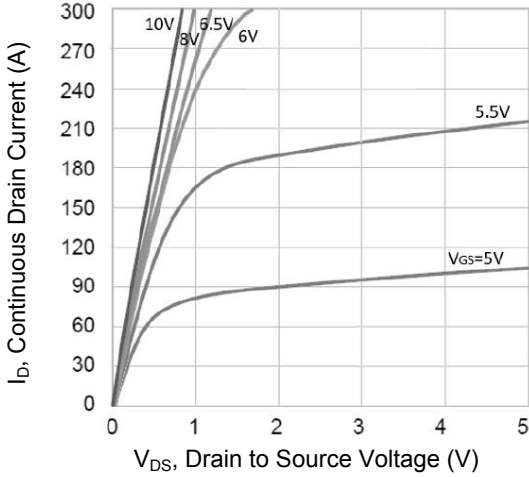


Figure 1. Output Characteristics

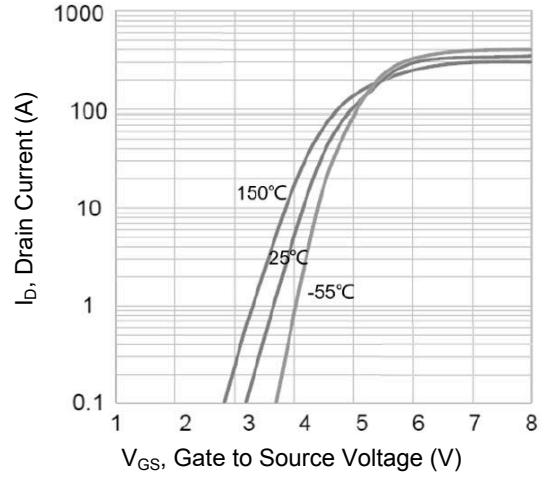


Figure 2. Transfer Characteristics

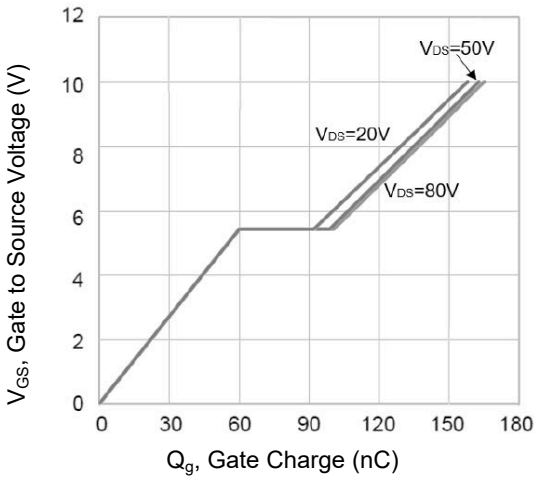


Figure 3. Gate Charge Waveform

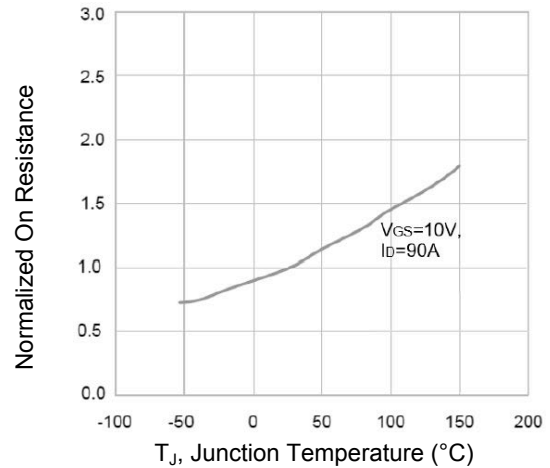


Figure 4. Normalized $R_{DS(ON)}$ vs. Junction Temperature

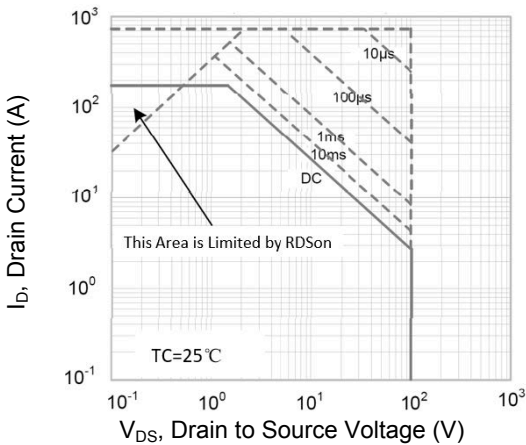


Figure 5. Safe Operation Area

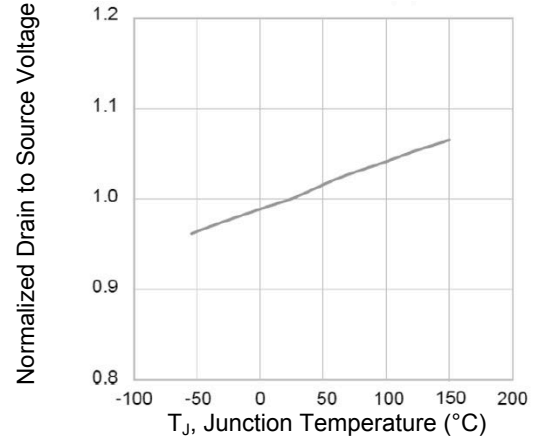


Figure 6. Normalized BV_{DSS} vs. Junction Temperature

Typical Electrical and Thermal Characteristic Curves

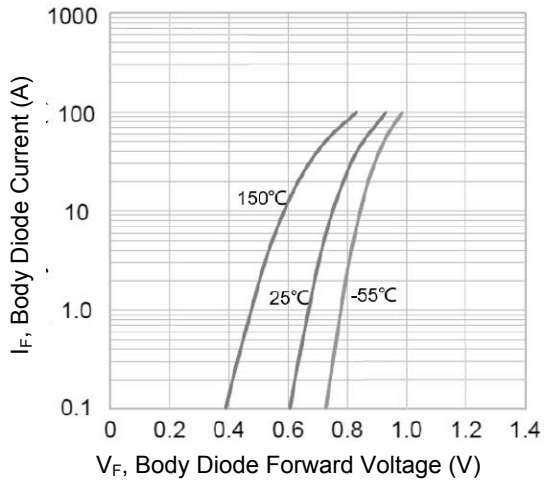


Figure 7. Body Diode Characteristics

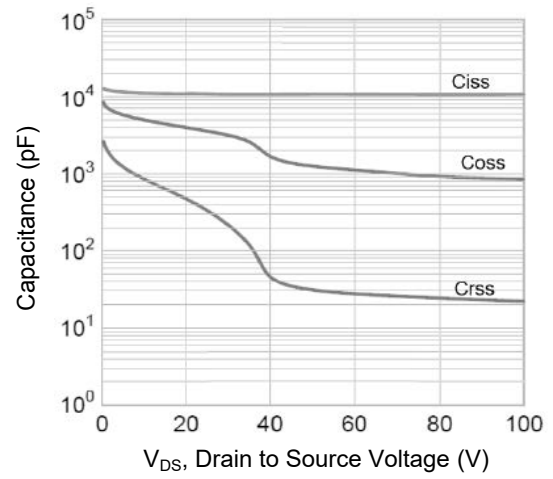
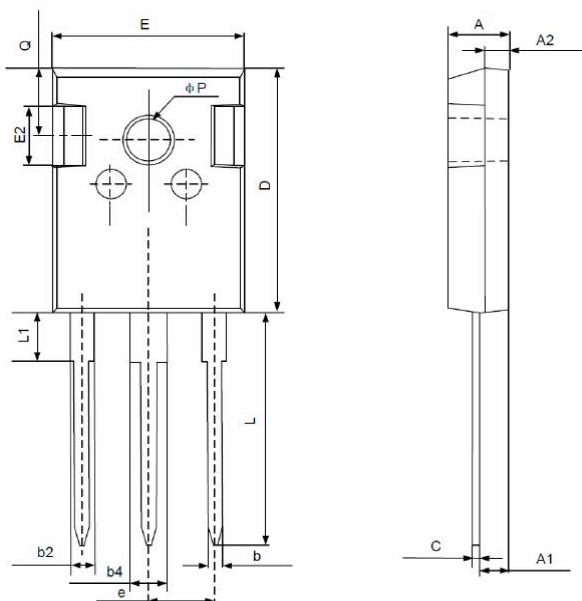


Figure 8. Capacitance Characteristics

Package Outline Dimensions (TO-247)



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	4.800	5.200	0.189	0.205
A1	2.210	2.590	0.087	0.102
A2	1.850	2.150	0.073	0.085
b	1.110	1.360	0.044	0.054
b2	1.910	2.250	0.075	0.089
b4	2.910	3.250	0.115	0.128
c	0.510	0.750	0.020	0.030
D	20.800	21.300	0.819	0.839
E	15.500	16.100	0.610	0.634
E2	4.400	5.200	0.173	0.205
e	5.440 BSC		0.214 BSC	
L	19.720	20.220	0.776	0.796
L1	-	4.300	-	0.169
Q	5.600	6.000	0.220	0.236
P	3.400	3.800	0.134	0.150

Order Information

Device	Package	Marking	Quantity	HSF Status
GSFA10200	TO-247	A2R710	50pcs / Tube	RoHS Compliant