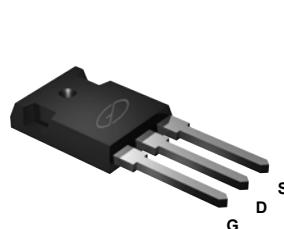
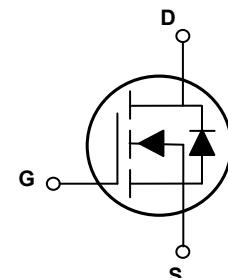


Main Product Characteristics

$V_{(BR)DSS}$	650V
$R_{DS(ON)}$	76mΩ (max.)
I_D	48A



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 GSJA65RF076 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 ($T_J=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Parameter.	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-to-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, @ Steady-State ($T_C=25^\circ\text{C}$)	I_D	48	A
Continuous Drain Current, @ Steady-State ($T_C=100^\circ\text{C}$)		31	A
Pulsed Drain Current	I_{DM}	192	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	340	W
		2.72	W/ $^\circ\text{C}$
Single Pulse Avalanche Energy ¹	E_{AS}	1239	mJ
Body Diode Reverse Voltage Slope ²	dv/dt	50	V/ns
MOS dv/dt Reggedness ³	dv/dt	50	V/ns
Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	50	$^\circ\text{C}/\text{W}$
Junction-to-Case	$R_{\theta JC}$	0.37	$^\circ\text{C}/\text{W}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to + 150	$^\circ\text{C}$
Soldering Temperature	T_{sold}	260	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-to-Source Breakdown Voltage	$V_{(\text{BR})\text{DSS}}$	$V_{\text{GS}}=0\text{V}, I_D=250\mu\text{A}$	650	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{\text{DS}}=650\text{V}, V_{\text{GS}}=0\text{V}, T_J=25^\circ\text{C}$	-	-	1.0	μA
		$V_{\text{DS}}=650\text{V}, V_{\text{GS}}=0\text{V}, T_J=125^\circ\text{C}$	-	-	15	μA
Gate-to-Source Forward Leakage	I_{GSS}	$V_{\text{DS}}=0\text{V}, V_{\text{GS}}=20\text{V}$	-	-	100	nA
		$V_{\text{DS}}=0\text{V}, V_{\text{GS}}=-20\text{V}$	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{\text{DS}(\text{ON})}$	$V_{\text{GS}}=10\text{V}, I_D=22\text{A}$	-	64	76	$\text{m}\Omega$
Gate Threshold Voltage	$V_{\text{GS}(\text{th})}$	$V_{\text{DS}}=V_{\text{GS}}, I_D=250\mu\text{A}$	3.1	-	4.9	V
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	$V_{\text{GS}}=0\text{V}, V_{\text{DS}}=200\text{V}, f=1\text{MHz}$	-	4110	-	pF
Output Capacitance	C_{oss}		-	108	-	
Reverse Transfer Capacitance	C_{rss}		-	6.3	-	
Total Gate Charge ^{4,5}	Q_g	$I_D=26\text{A}, V_{\text{DD}}=480\text{V}, V_{\text{GS}}=10\text{V}$	-	96	-	nC
Gate-to-Source Charge ^{4,5}	Q_{gs}		-	34	-	
Gate-to-Drain ("Miller") Charge ^{4,5}	Q_{gd}		-	42	-	
Gate Plateau ^{4,5}	V_{plateau}		-	7.3	-	V
Turn-On Delay Time ^{4,5}	$t_{\text{d}(\text{on})}$	$V_{\text{DD}}=400\text{V}, V_{\text{GS}}=13\text{V}, R_G=1.8\Omega, I_D=26\text{A}$	-	27	-	nS
Rise Time ^{4,5}	t_r		-	27	-	
Turn-Off Delay Time ^{4,5}	$t_{\text{d}(\text{off})}$		-	72	-	
Fall Time ^{4,5}	t_f		-	24	-	
Gate Resistance	R_g	$f=1\text{MHz}$	-	1.6	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	$T_C=25^\circ\text{C}$, MOSFET symbol showing the integral reverse p-n junction diode.	-	-	48	A
Source Pulse Current	I_{SM}	-	-	192	A	
Diode Forward Voltage	V_{SD}	$I_S=26\text{A}, V_{\text{GS}}=0\text{V}$	-	-	1.4	V
Reverse Recovery Time ⁴	T_{rr}	$I_S=26\text{A}, V_{\text{GS}}=0\text{V}, dI_F/dt=100\text{A}/\mu\text{s}$	-	124	-	nS
Reverse Recovery Charge ⁴	Q_{rr}		-	0.73	-	μC
Reverse Recovery Peak Current ⁴	I_{rrm}		-	11	-	A

Notes:

1. $L=79\text{mH}, I_{AS}=5.6\text{A}, V_{\text{DD}}=100\text{V}, R_G=25\Omega$, starting temperature $T_J=25^\circ\text{C}$
2. $V_{\text{DS}}=0\text{-}400\text{V}, I_{\text{SD}} < I_S, T_J=25^\circ\text{C}$.
3. $V_{\text{DS}}=0\text{-}400\text{V}$.
4. Pulse test : pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
5. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

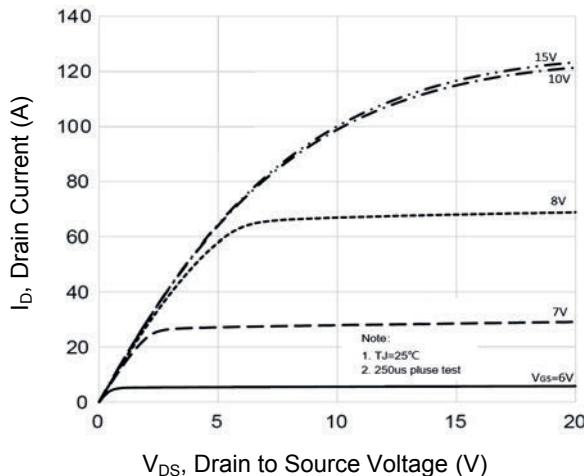


Figure 1. Typical Output Characteristics

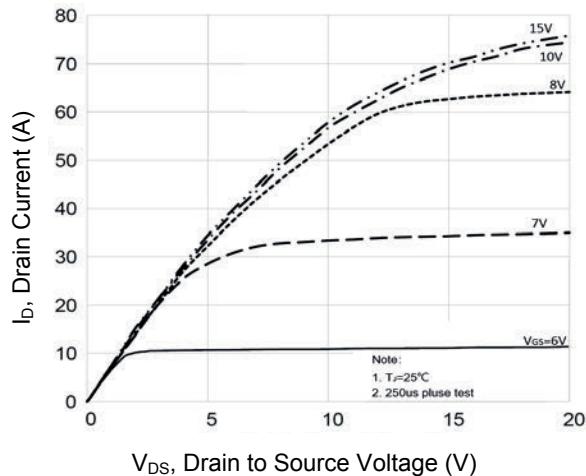


Figure 2. Transfer Output Characteristics

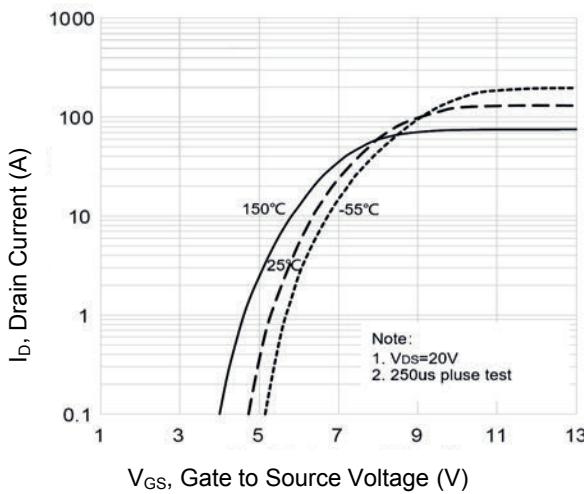


Figure 3. Transfer Characteristics

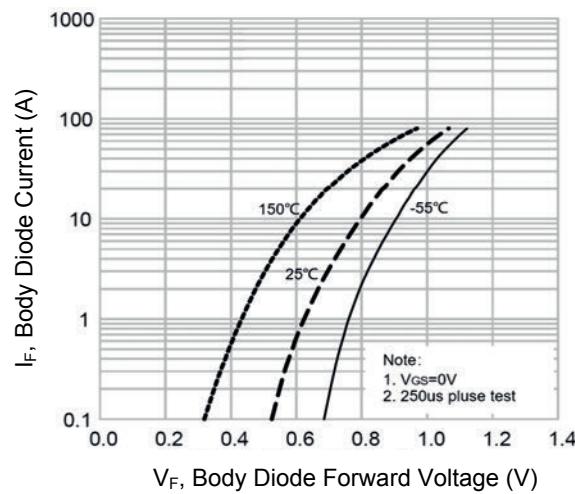


Figure 4. Body Diode Characteristics

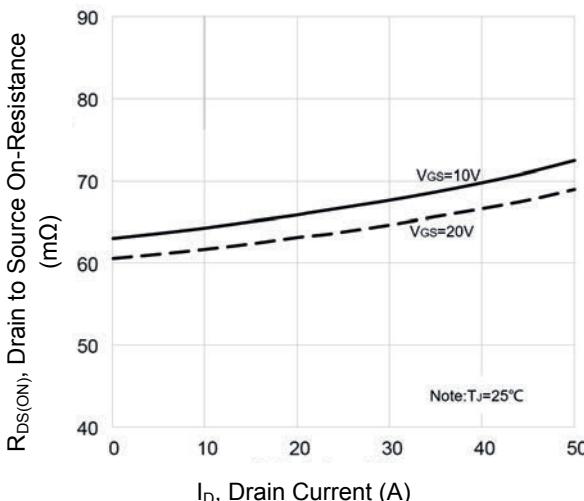


Figure 5. $R_{DS(ON)}$ Vs. Drain Current

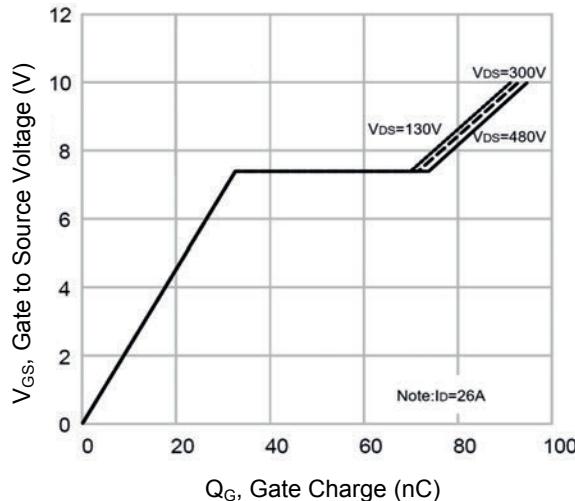


Figure 6. Gate Charge Characteristics

Typical Electrical and Thermal Characteristic Curves

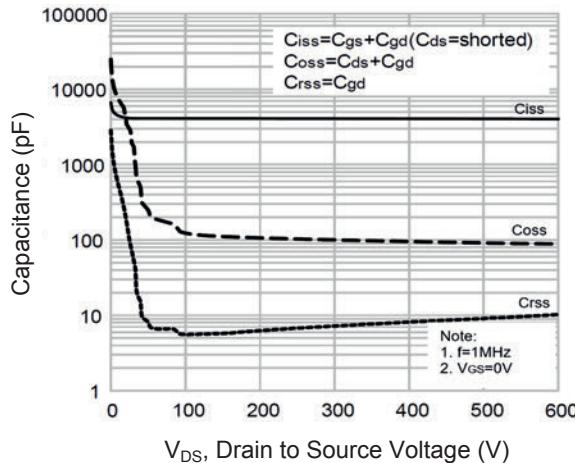


Figure 7. Capacitance Characteristics

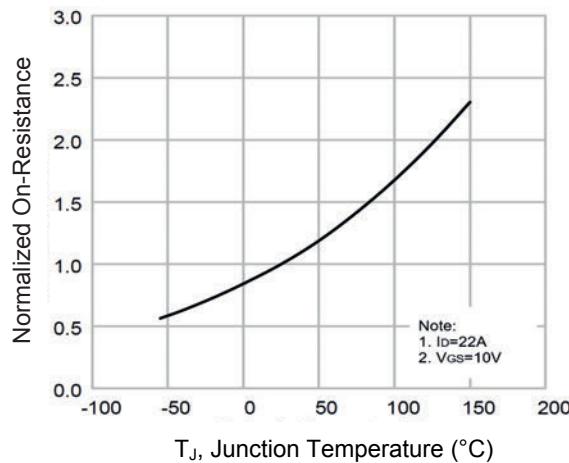


Figure 8. Normalized $R_{DS(ON)}$ Vs. T_J

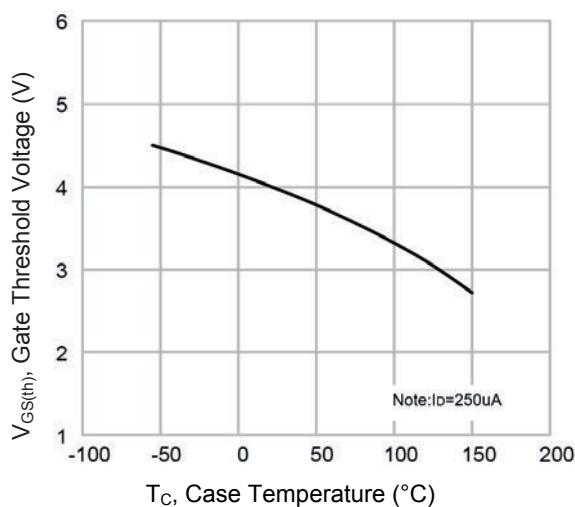


Figure 9. Gate Threshold Voltage Vs. T_C

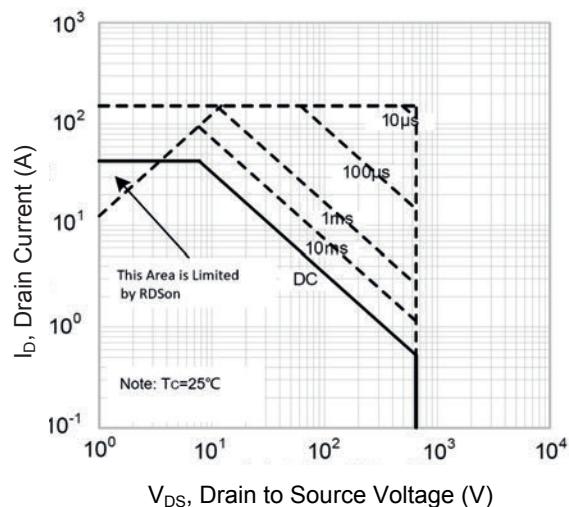


Figure 10. Safe Operation Area

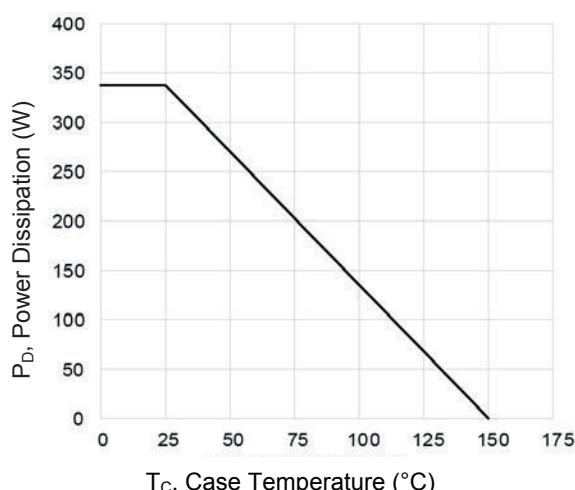


Figure 11. Power Dissipation Vs. T_C

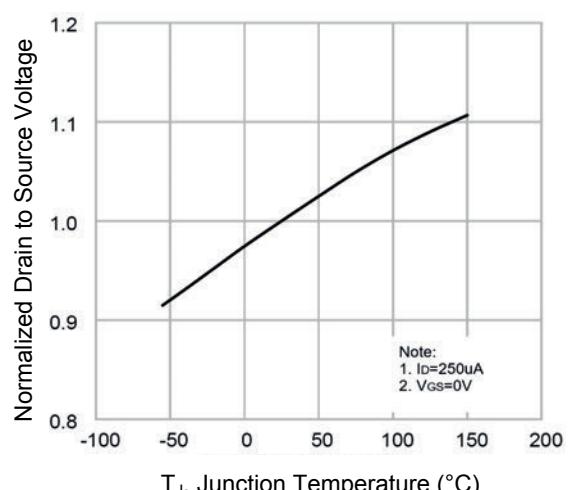
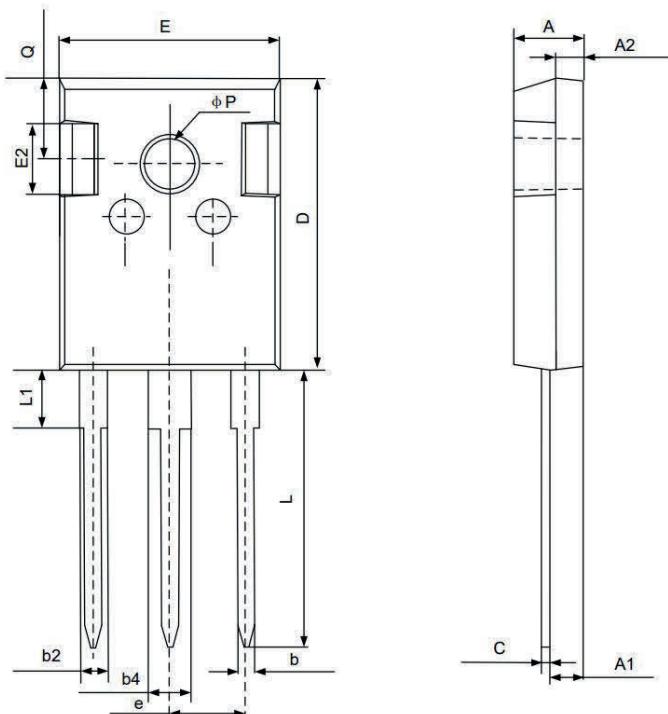


Figure 12. Normalized BV_{DSS} Vs. T_J

Package Outline Dimensions (TO-247)



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	4.80	5.20	0.189	0.205
A1	2.21	2.59	0.087	0.102
A2	1.85	2.15	0.073	0.085
b	1.11	1.36	0.044	0.054
b2	1.91	2.25	0.075	0.089
b4	2.91	3.25	0.115	0.128
c	0.51	0.75	0.020	0.030
D	20.80	21.30	0.819	0.839
E	15.50	16.10	0.610	0.634
E2	4.40	5.20	0.173	0.205
e	5.44 BSC		0.214 BSC	
L	19.72	20.22	0.776	0.796
L1	-	4.30	-	0.170
Q	5.60	6.00	0.220	0.236
P	3.40	3.80	0.134	0.150