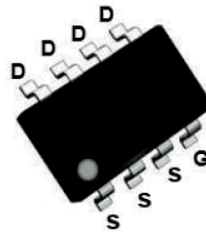
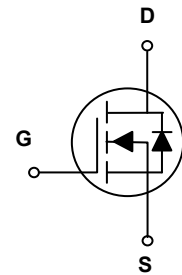


Main Product Characteristics

$V_{(BR)DSS}$	150V
$R_{DS(ON)}$	52m Ω (Typ.)
I_D	4.1A



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 GSFQ68015 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 ($T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	150	V
Gate-to-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, @ Steady-State ($T_C=25^\circ\text{C}$) ¹	I_D	4.1	A
Continuous Drain Current, @ Steady-State ($T_C=100^\circ\text{C}$)		2.6	A
Pulsed Drain Current ²	I_{DM}	16.4	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	2.7	W
Linear Derating Factor ($T_C=25^\circ\text{C}$)		0.22	W/ $^\circ\text{C}$
Single Pulse Avalanche Energy ³	E_{AS}	25	mJ
Junction-to-Case	$R_{\theta JC}$	46	$^\circ\text{C/W}$
Junction-to-Ambient (PCB Mounted, Steady-State) ⁴	$R_{\theta JA}$	65	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	150	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=150V, V_{GS}=0V$	-	-	1	μA
		$T_J=125^{\circ}\text{C}$	-	-	50	
Gate-to-Source Forward Leakage	I_{GSS}	$V_{GS}=20V$	-	-	100	nA
		$V_{GS}=-20V$	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=5A$	-	52	68	m Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.1	3	3.9	V
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=75V, f=1\text{MHz}$	-	518	-	pF
Output Capacitance	C_{oss}		-	76	-	
Reverse Transfer Capacitance	C_{rss}		-	3.3	-	
Total Gate Charge	Q_g	$I_D=5A, V_{DS}=75V, V_{GS}=10V$	-	9.1	-	nC
Gate-to-Source Charge	Q_{gs}		-	3.5	-	
Gate-to-Drain ("Miller") Charge	Q_{gd}		-	1.8	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=30V, I_D=5A, R_{GEN}=6\Omega$	-	7.3	-	nS
Rise Time	t_r		-	24	-	
Turn-Off Delay Time	$t_{d(off)}$		-	14	-	
Fall Time	t_f		-	22	-	
Gate Resistance	R_g	$f=1\text{MHz}$	-	2.5	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	4.1	A
Pulsed Source Current (Body Diode)	I_{SM}		-	-	16.4	A
Diode Forward Voltage	V_{SD}	$I_S=2A, V_{GS}=0V$	-	-	1.4	V
Reverse Recovery Time	T_{rr}	$I_S=4A, V_{GS}=0V, di/dt=100A/\mu s$	-	54	-	μs
Reverse Recovery Charge	Q_{rr}		-	0.11	-	nC

Notes

1. Pulse test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. $L=0.5\text{mH}$, $R_G=25\Omega$, $V_{DD}=50V$, $I_{AS}=10A$, $T_J=25^{\circ}\text{C}$.
4. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Electrical and Thermal Characteristic Curves

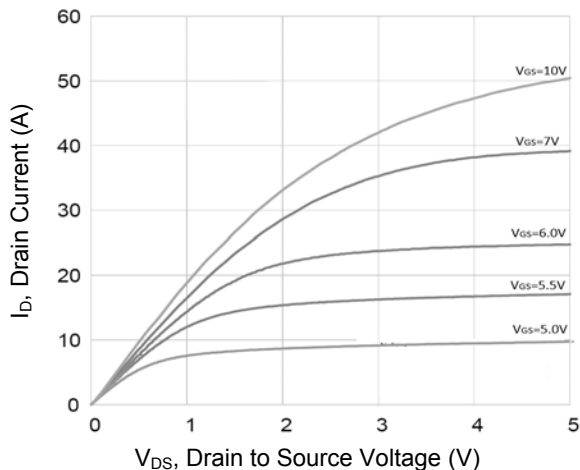


Figure 1. Typical Output Characteristics

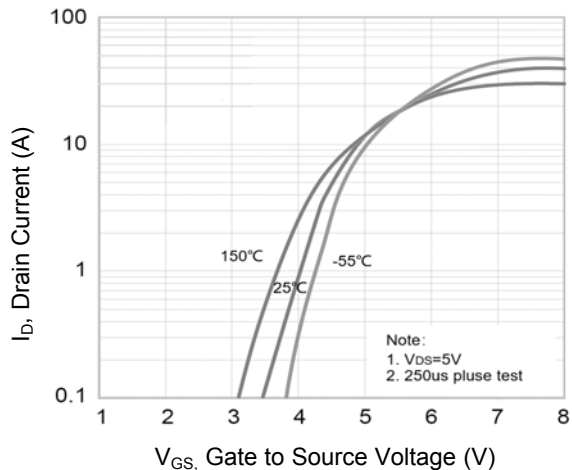


Figure 2. Transfer Characteristics

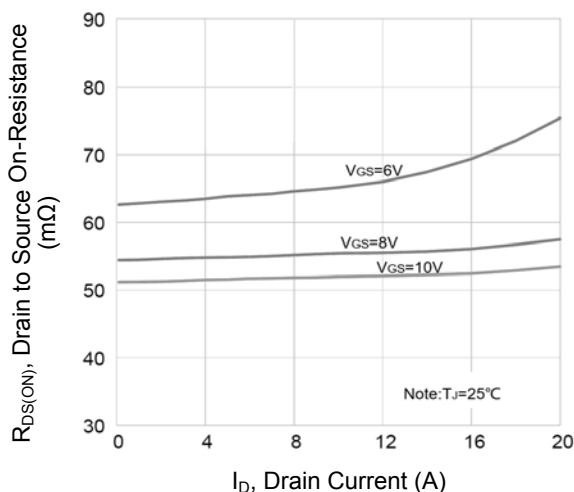


Figure 3. $R_{DS(ON)}$ vs. Drain Current

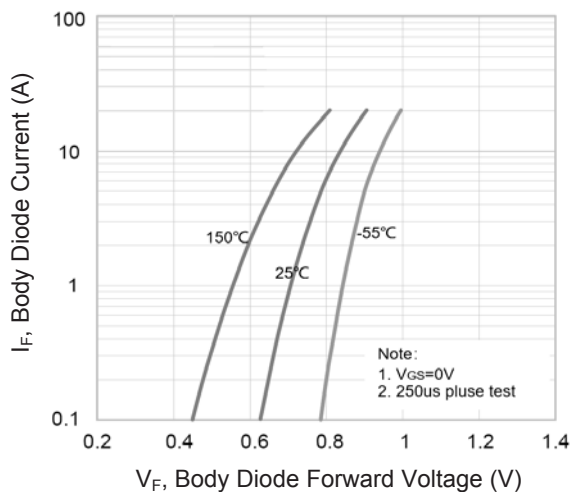


Figure 4. Body Diode Characteristics

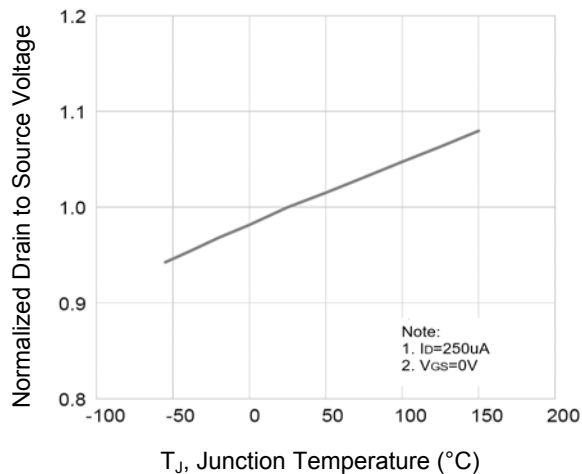


Figure 5. Normalized BV_{DSS} vs. T_J

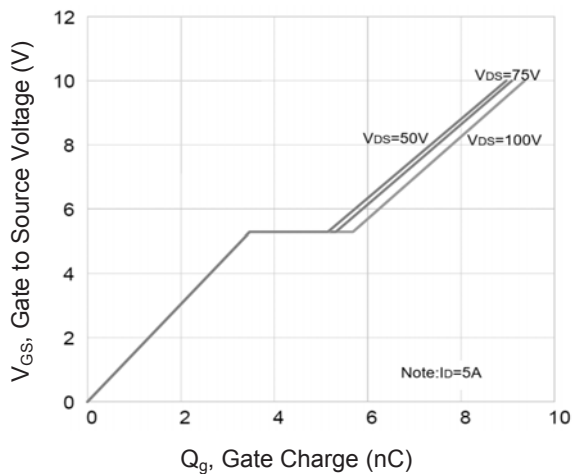


Figure 6. Gate Charge

Typical Electrical and Thermal Characteristic Curves

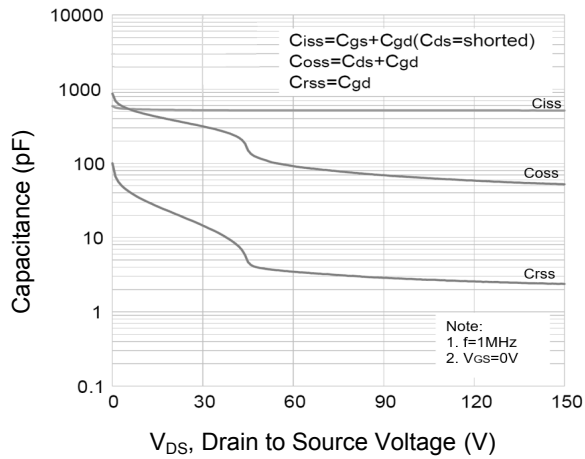


Figure 7. Capacitance Characteristics

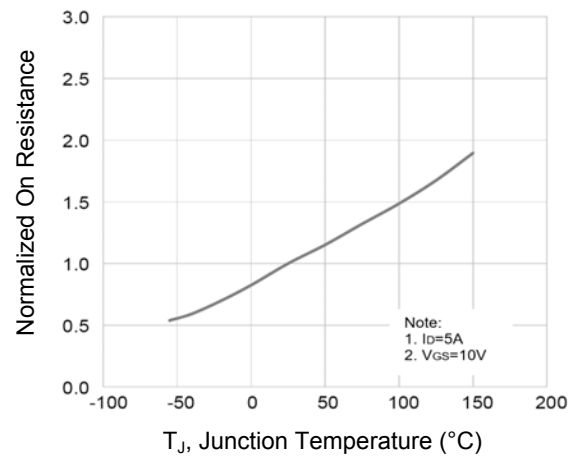


Figure 8. Normalized $R_{DS(ON)}$ vs. T_J

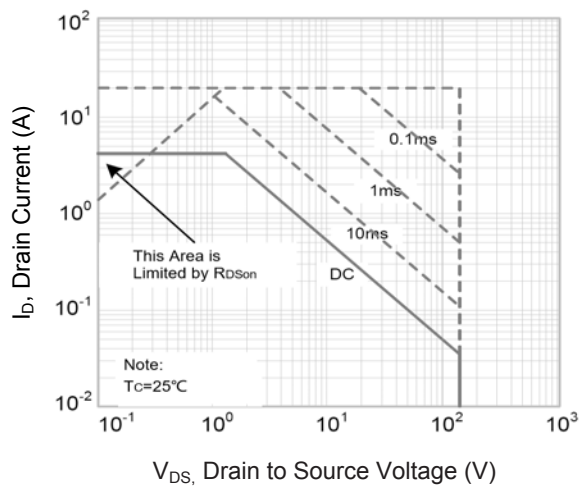
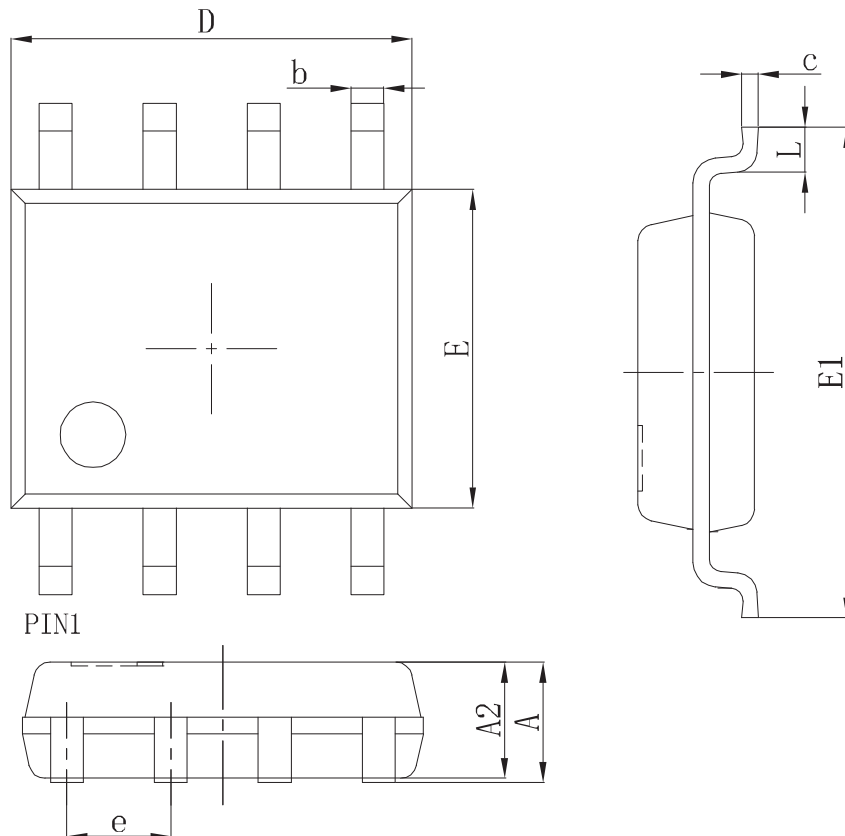


Figure 9. Safe Operation Area

Package Outline Dimensions (SOP-8)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.30	1.70	0.051	0.067
A2	1.25	1.55	0.049	0.061
c	0.17	0.25	0.007	0.010
E	3.80	4.00	0.150	0.157
E1	5.80	6.20	0.228	0.244
L	0.45	0.75	0.018	0.030
b	0.33	0.51	0.013	0.020
D	4.80	5.00	0.189	0.197
e	1.27 BSC		0.050 BSC	

Order Information

Device	Package	Marking	Carrier	Quantity
GSFQ68015	SOP-8	Q68015	Tape & Reel	3,000 Pcs / Reel