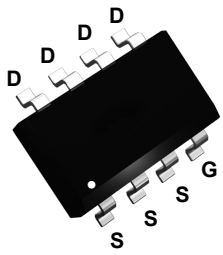
GOOD-ARK SEMICONDUCTOR

GSFQ161P15

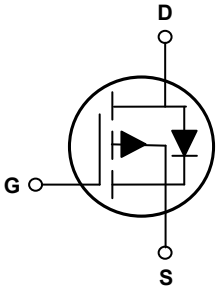
150V P-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	-150V
$R_{DS(ON)}$	160mΩ (Max.)
I_D	-9A



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 GSFQ161P15 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°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-150	V
Gate-to-Source Voltage	V_{GS}	±20	V
Continuous Drain Current, @ Steady-State @ T_C=25°C	I_D	-9.0	A
Continuous Drain Current, @ Steady-State @ T_C=100°C		-5.8	A
Pulsed Drain Current @ T_C=25°C[1]	I_{DM}	-36	A
Power Dissipation @ T_C=25°C[2]	P_D	19	W
Single Pulse Avalanche Energy	E_{AS}	65	mJ
Single Pulse Current	I_{AS}	-36	A
Max. Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	50	°C/W
Max. Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	6.58	°C/W
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +150	°C
Soldering Temperature (SMD)	T_{sold}	260	°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	-150	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	V_{DS}=-150V, V_{GS}=0V, T_J=25°C	-	-	-1.0	μA
		V_{DS}=-150V, V_{GS}=0V, T_J=125°C	-	-1.0	-	
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-2.4A	-	130	160	mΩ
		V_{GS}=-6V, I_D=-2.2A	-	141	185	
Gate-to-Source Forward Leakage	I_{GSS}	V_{DS}=0V, V_{GS}=±20V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-2.0	-	-4.0	V
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-75V, f=1MHz	-	1059	-	pF
Output Capacitance	C_{oss}		-	89	-	
Reverse Transfer Capacitance	C_{rss}		-	3.5	-	
Total Gate Charge[3,4]	Q_g	I_D=-2.4A, V_{DD}=-75V, V_{GS}=-10V	-	15	-	nC
Gate-to-Source Charge[3,4]	Q_{gs}		-	5.3	-	
Gate-to-Drain ("Miller") Charge[3,4]	Q_{gd}		-	2.2	-	
Gate-to-Plateau[3,4]	$V_{plateau}$		-	4.6	-	V
Turn-On Delay Time[3,4]	$t_{d(on)}$	V_{DD}=-75V, V_{GS}=-10V, R_G=6Ω, I_D=-2.4A	-	8.9	-	nS
Rise Time[3,4]	t_r		-	21	-	
Turn-Off Delay Time[3,4]	$t_{d(off)}$		-	25	-	
Fall Time[3,4]	t_f		-	21	-	
Gate Resistance	R_g	f=1MHz	-	2.6	-	Ω
Drain-Source Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode	-	-	-9.0	A
Diode Pulse Current	$I_{S.pulse}$		-	-	-36	A
Diode Forward Voltage	V_{SD}	I_S=-2.4A, V_{GS}=0V	-	-	-1.4	V
Reverse Recovery Time[3]	t_{rr}	I_S=-2.4A, V_{GS}=0V, dI_F/dt=100A/us	-	51	-	nS
Reverse Recovery Charge[3]	Q_{rr}		-	122	-	nC

Note:

1. Pulse time of 5us.
2. The dissipated power value will change with the temperature. When it is greater than 25°C, the dissipated power value will decrease 0.31W/°C for each 1 degree of temperature increase.
3. Pulse test: Pulse width ≤300us, duty cycle ≤2%.
4. Basically unaffected by operating temperature.

Typical Electrical and Thermal Characteristic Curves

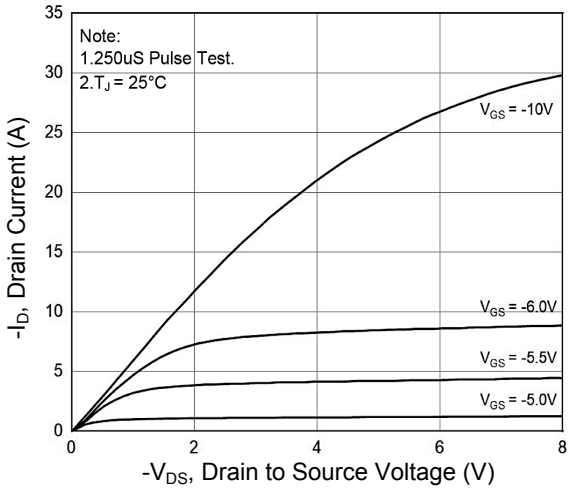


Figure 1. Output Characteristics

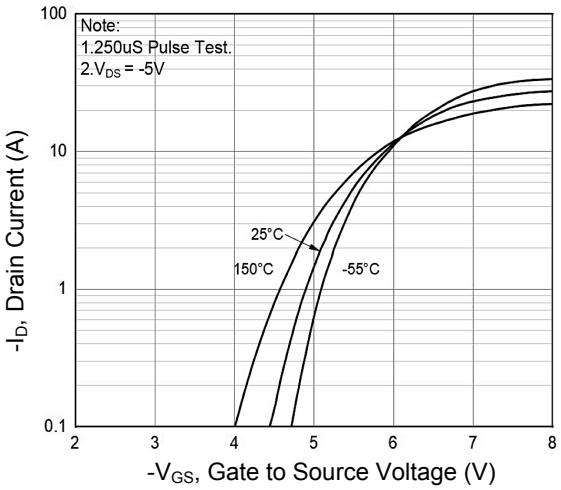


Figure 2. Transfer Characteristics

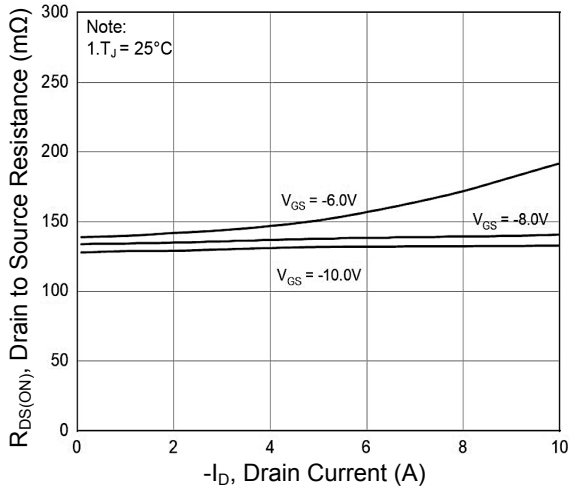


Figure 3. On-Resistance vs. Drain Current

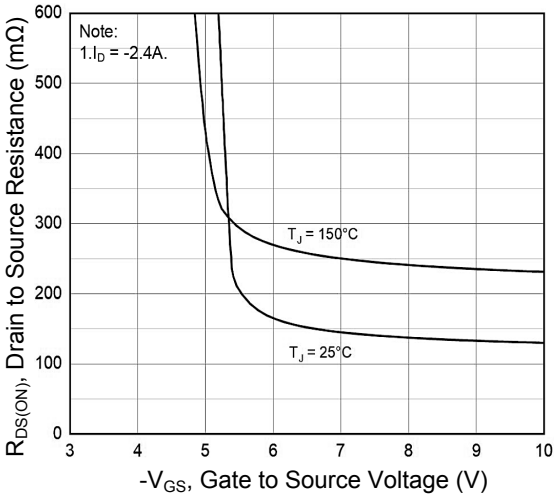


Figure 4. On-Resistance vs. V_{GS}

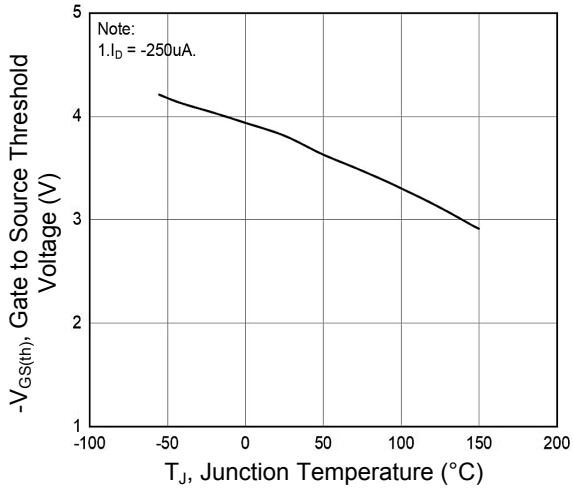


Figure 5. $V_{GS(th)}$ vs. T_J

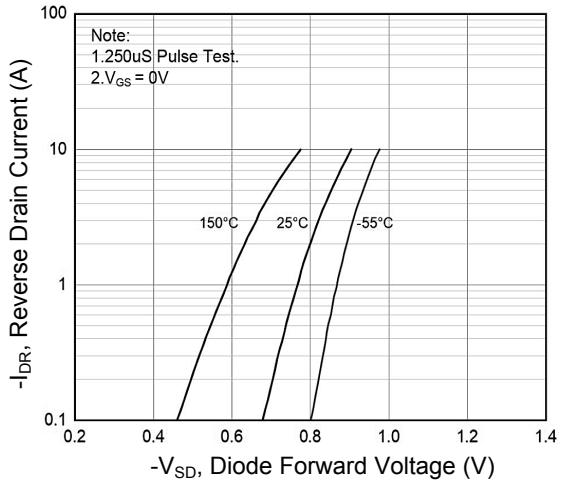


Figure 6. Body Diode Characteristics

Typical Electrical and Thermal Characteristic Curves

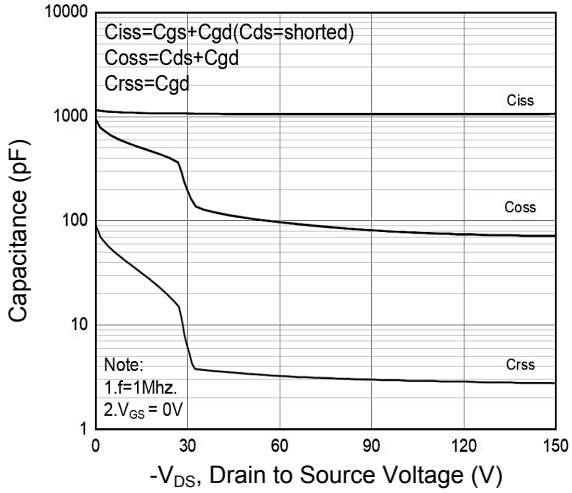


Figure 7. Capacitance Characteristics

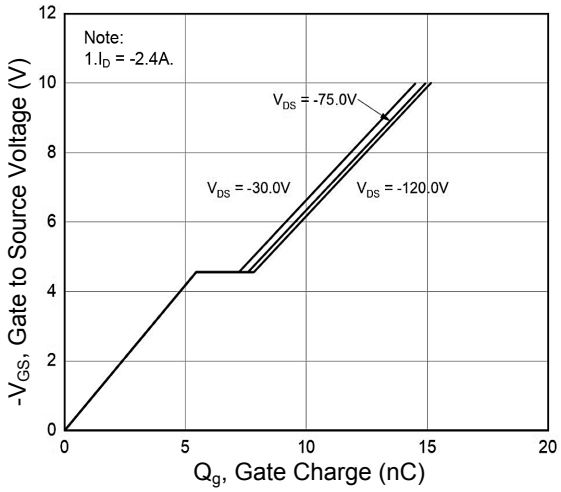


Figure 8. Gate Charge

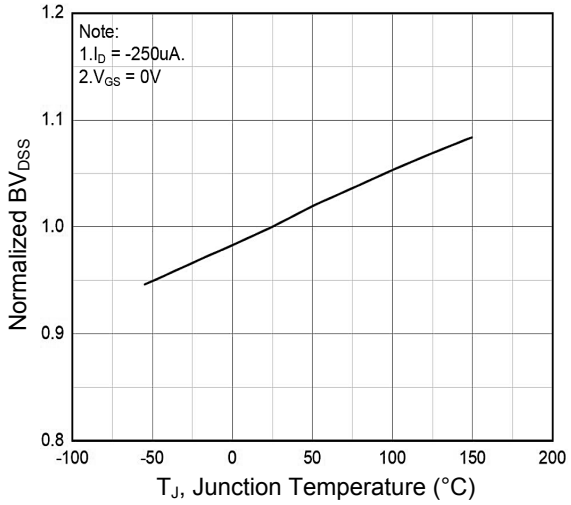


Figure 9. Normalized BV_{DSS} vs. T_J

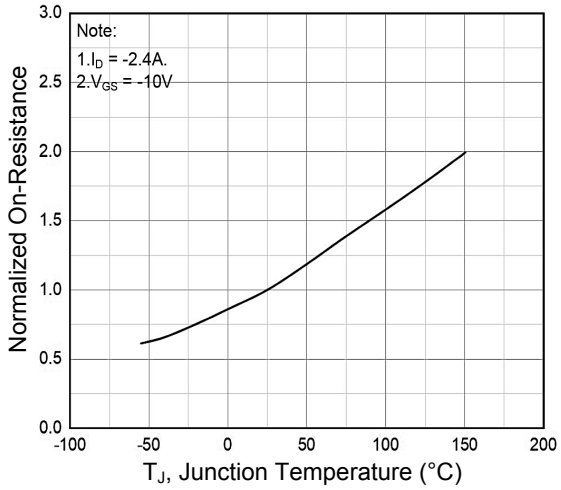


Figure 10. Normalized On-Resistance vs. T_J

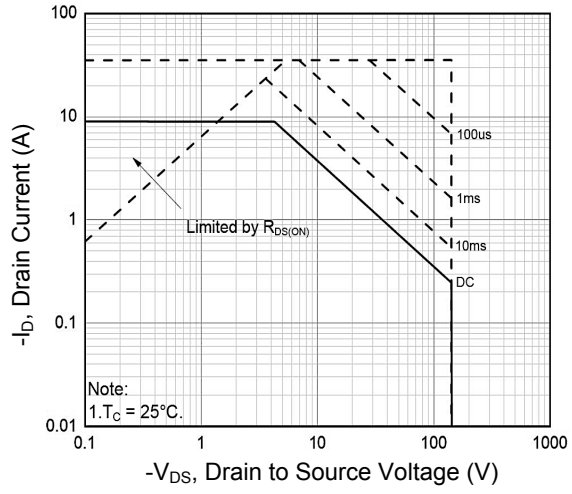
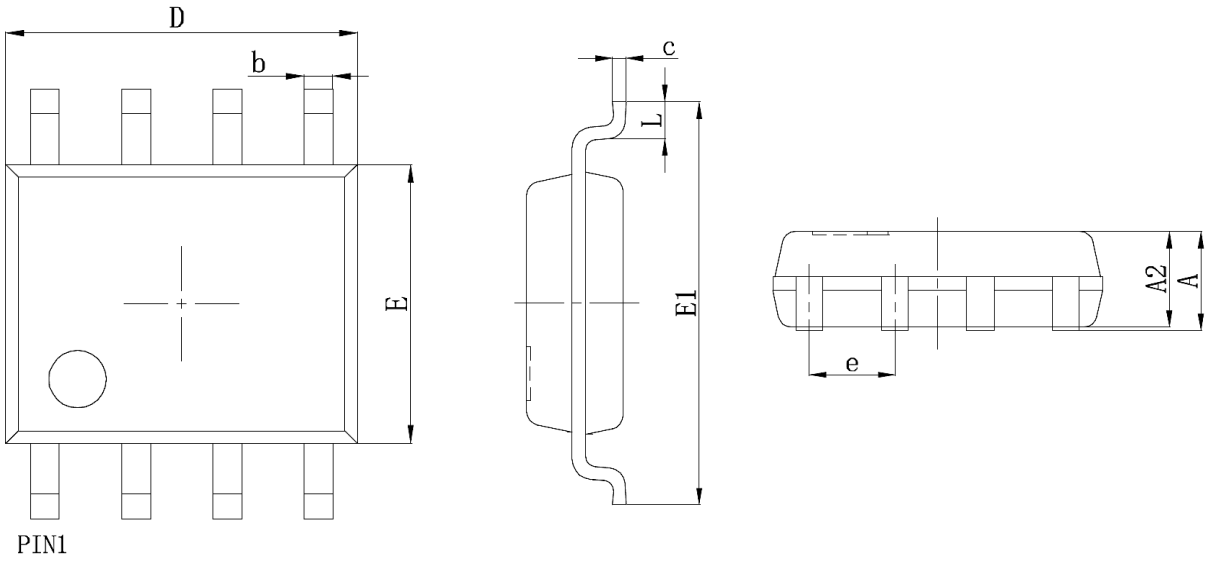


Figure 11. Safe Operation Area

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	Packaging	SPQ
GSFQ161P15	SOP-8	Q161P15	Tape & Reel	3,000 Pcs / Reel