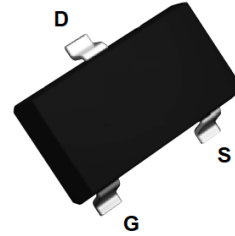
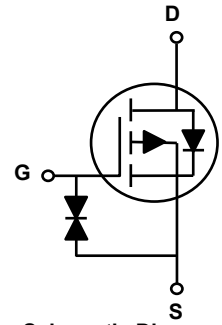


Main Product Characteristics

BV_{DSS}	-20V
$R_{DS(ON)}$	36m Ω @ -4.5V (Max.)
	49m Ω @ -2.5V (Max.)
I_D	-4A



SOT-23



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

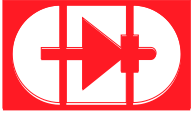


Description

The GSF3415B 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 supply and a wide variety of other applications.

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 10	V
Drain Current-Continuous	I_D	-4	A
Drain Current-Pulsed ¹	I_{DM}	-30	A
Maximum Power Dissipation	P_D	1.4	W
Thermal Resistance, Junction-to-Ambient ²	$R_{\theta JA}$	89	$^{\circ}\text{C/W}$
Storage Temperature Range	T_{STG}	-55 To +150	$^{\circ}\text{C}$
Operating Junction Temperature Range	T_J	-55 To +150	$^{\circ}\text{C}$


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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V$	-	-	-1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 10V, V_{DS}=0V$	-	-	± 10	μA
Gate Threshold Voltage ³	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.35	-0.65	-0.9	V
Drain-Source On-State Resistance ³	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-4A$	-	29	36	m Ω
		$V_{GS}=-2.5V, I_D=-4A$	-	37	49	
Forward Transconductance ³	g_{fs}	$V_{DS}=-5V, I_D=-4A$	8	-	-	S
Dynamic and Switching Characteristics						
Input Capacitance ⁴	C_{iss}	$V_{DS}=-10V, V_{GS}=0V,$ $F=1.0MHz$	-	1181.1	-	pF
Output Capacitance ⁴	C_{oss}		-	121.3	-	
Reverse Transfer Capacitance ⁴	C_{rss}		-	114.8	-	
Turn-On Delay Time ⁴	$T_{d(on)}$	$V_{DD}=-10V, R_L=2.5\Omega,$ $V_{GS}=-4.5V, R_{GEN}=3\Omega$	-	12	-	nS
Turn-On Rise Time ⁴	T_r		-	10	-	
Turn-Off Delay Time ⁴	$T_{d(off)}$		-	19	-	
Turn-Off Fall Time ⁴	T_f		-	25	-	
Total Gate Charge ⁴	Q_g	$V_{DS}=-10V, I_D=-4A,$ $V_{GS}=-4.5V$	-	10.2	-	nC
Gate-Source Charge ⁴	Q_{gs}		-	1.3	-	
Gate-Drain Charge ⁴	Q_{gd}		-	2.4	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage ³	V_{SD}	$V_{GS}=0V, I_S=-4A$	-	-	-1.2	V
Diode Forward Current ²	I_S	-	-	-	-4	A

Notes:

1. Repetitive rating: Pulse width limited by maximum junction temperature.
2. Surface mounted on FR4 board, $t \leq 10$ sec.
3. Pulse test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production

Typical Electrical and Thermal Characteristic Curves

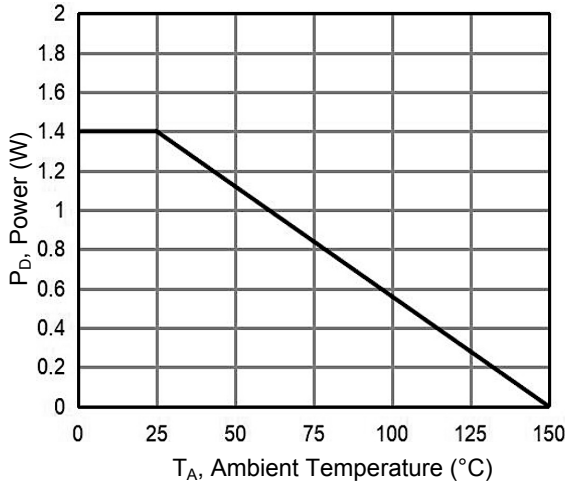


Figure 1. Power Dissipation

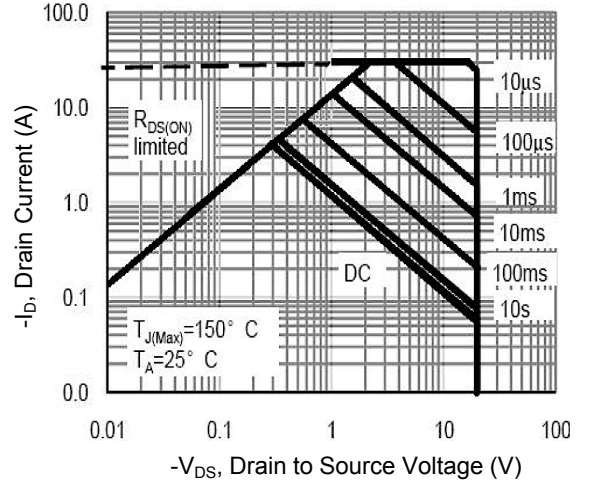


Figure 2. Safe Operation Area

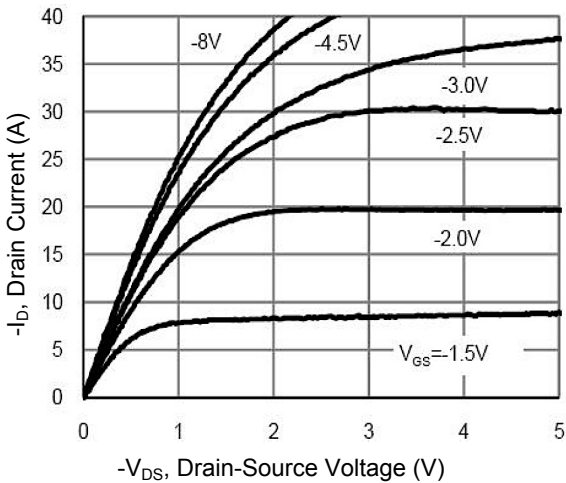


Figure 3. Output Characteristics

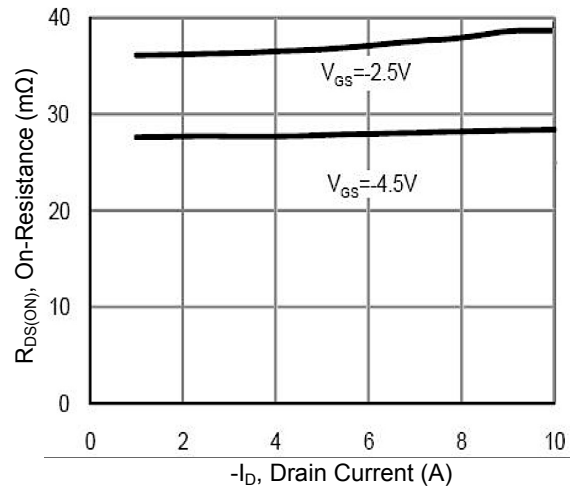


Figure 4. Drain-Source On-Resistance

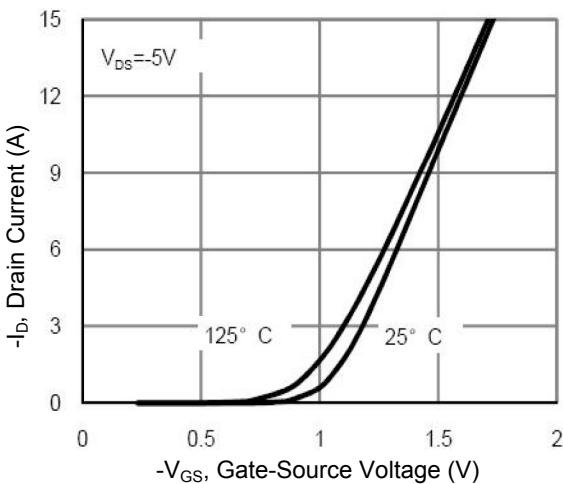


Figure 5. Transfer Characteristics

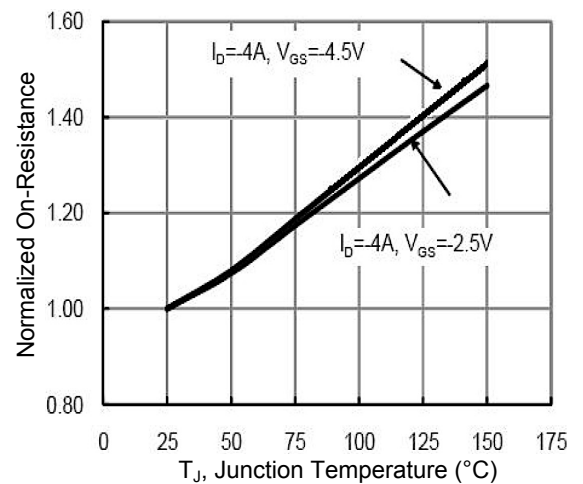


Figure 6. Normalized $R_{DS(ON)}$ vs. T_J

Typical Electrical and Thermal Characteristic Curves

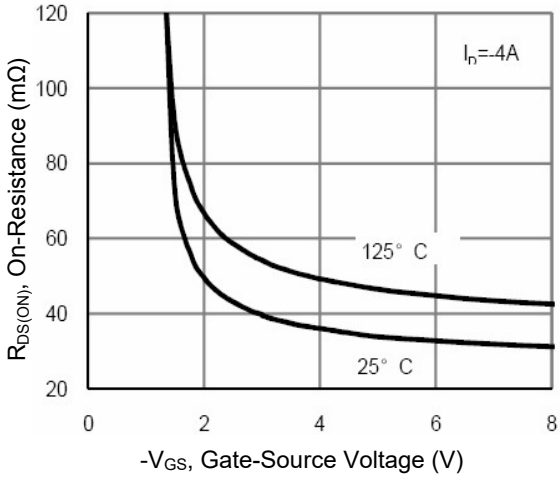


Figure 7. $R_{DS(ON)}$ vs. V_{GS}

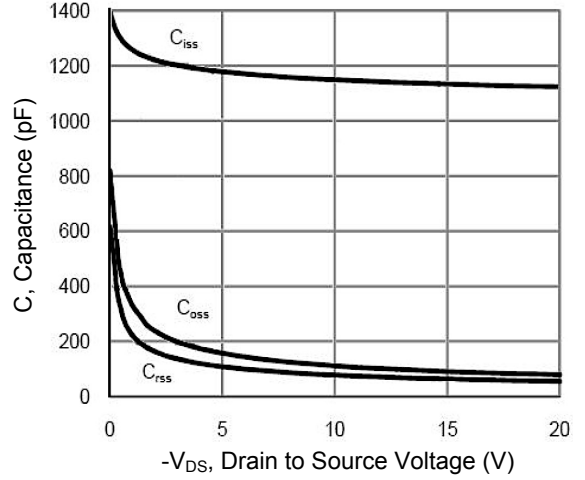


Figure 8. Capacitance vs. V_{DS}

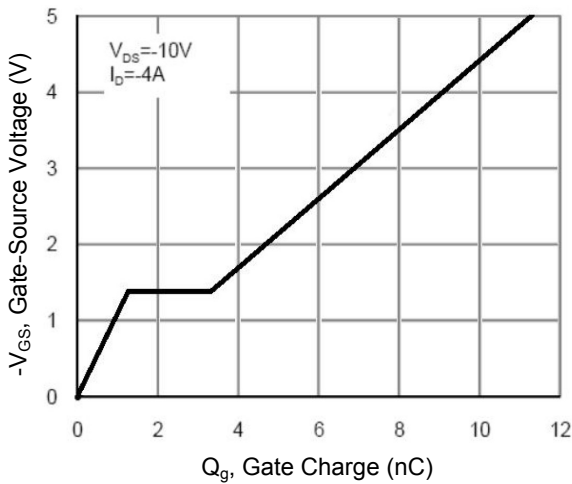


Figure 9. Gate Charge

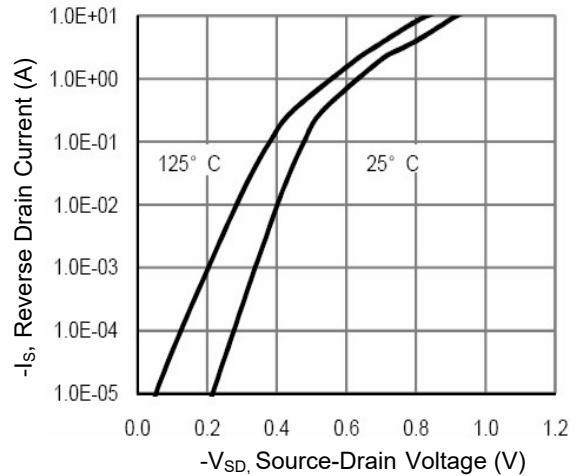


Figure 10. Source-Drain Diode Forward

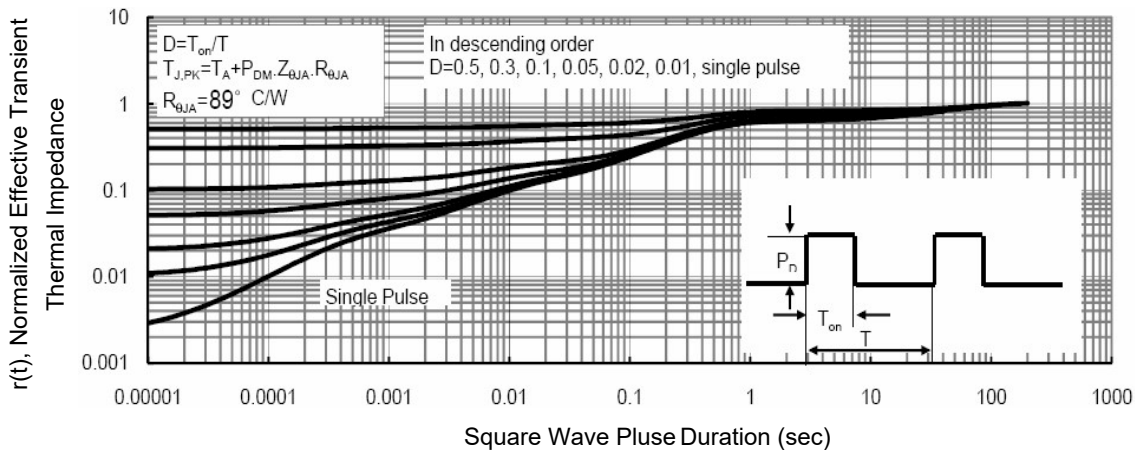
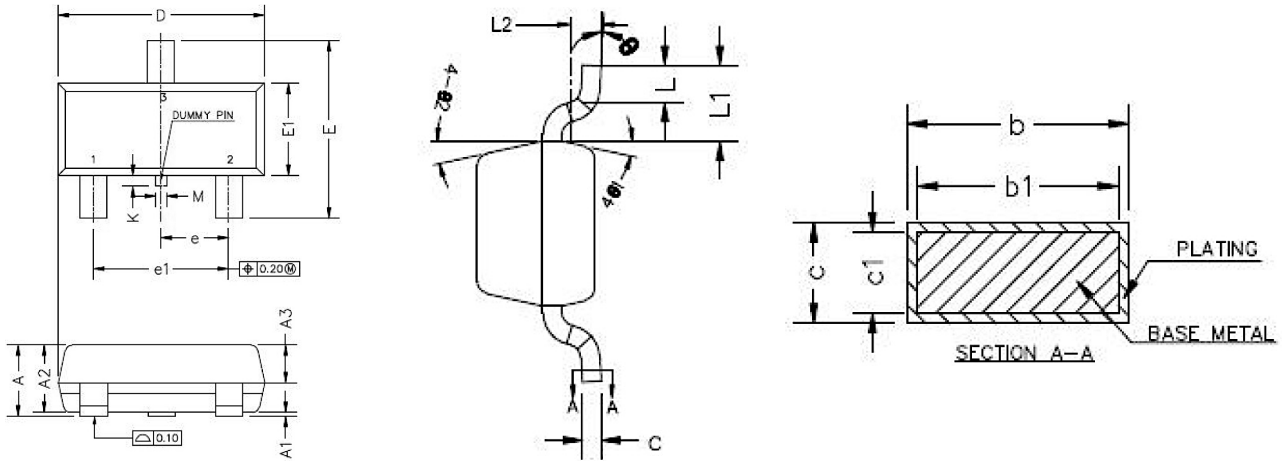


Figure 11. Normalized Maximum Transient Thermal Impedance

Package Outline Dimensions (SOT-23)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.890	1.120	0.035	0.044
A1	0.010	0.100	0.000	0.004
A2	0.880	1.020	0.035	0.040
A3	0.430	0.630	0.017	0.025
b	0.360	0.500	0.014	0.020
b1	0.350	0.450	0.014	0.018
c	0.140	0.200	0.006	0.008
c1	0.140	0.160	0.006	0.006
D	2.800	3.000	0.110	0.118
E	2.350	2.640	0.093	0.104
E1	1.200	1.400	0.047	0.055
e	0.900	1.000	0.035	0.039
e1	1.800	2.000	0.071	0.079
L	0.400	0.600	0.016	0.024
L1	0.600 REF		0.024 REF	
L2	0.250 BSC		0.010 BSC	
θ	0°	8°	0°	8°
θ1	10°	14°	10°	14°
θ2	10°	14°	10°	14°

Order Information

Device	Package	Marking	Packaging	SPQ
GSF3415B	SOT-23	3415	Tape & Reel	3,000 Pcs / Reel

For more information, please contact us at: inquiry@goodarksemi.com