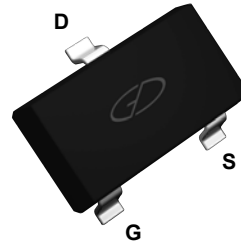
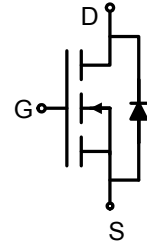


Main Product Characteristics

BV_{DSS}	100V
$R_{DS(ON)}$	240m Ω
I_D	2A



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 GSF0102 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}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	2	A
Drain Current-Pulsed ¹	I_{DM}	5	A
Maximum Power Dissipation	P_D	1.25	W
Thermal Resistance, Junction-to-Ambient ²	$R_{\theta JA}$	100	$^\circ\text{C}/\text{W}$
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	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100	110	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics³						
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=1A$	-	210	240	m Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	1.8	2.5	V
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=1A$	1	-	-	S
Dynamic and Switching Characteristics⁴						
Total Gate Charge	Q_g	$V_{DS}=50V, I_D=1.3A, V_{GS}=10V$	-	5.2	-	nC
Gate-Source Charge	Q_{gs}		-	0.75	-	
Gate-Drain Charge	Q_{gd}		-	1.4	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=50V, R_L=39\Omega, V_{GS}=10V, I_D=1.3A, R_G=1\Omega$	-	6	-	nS
Turn-On Rise Time	t_r		-	10	-	
Turn-Off Delay Time	$t_{d(off)}$		-	10	-	
Turn-Off Fall Time	t_f		-	6	-	
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V, F=1MHz$	-	190	-	pF
Output Capacitance	C_{oss}		-	22	-	
Reverse Transfer Capacitance	C_{rss}		-	13	-	
Drain-Source Diode Characteristics						
Continuous Source Current ²	I_S	-	-	-	2	A
Diode Forward Voltage ³	V_{SD}	$V_{GS}=0V, I_S=1.3A$	-	-	1.2	V

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

Typical Electrical and Thermal Characteristic Curves

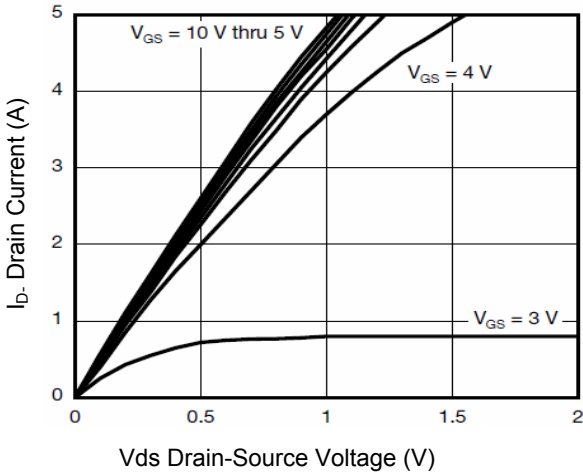


Figure 1. Output Characteristics

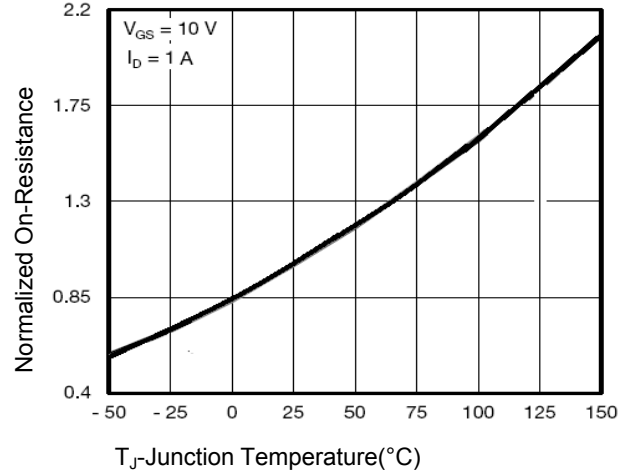


Figure 2. R_{dson} -Junction Temperature

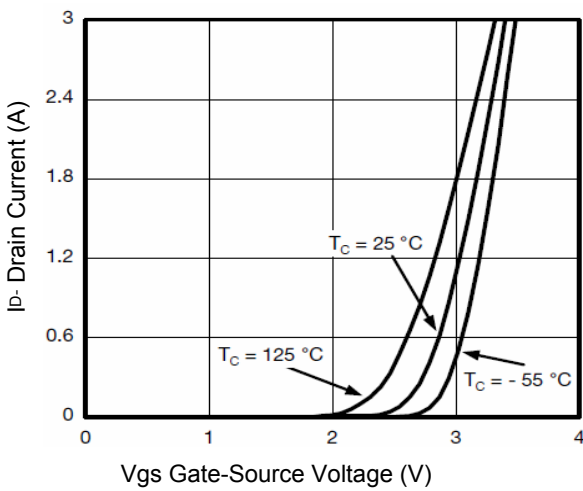


Figure 3. Transfer Characteristics

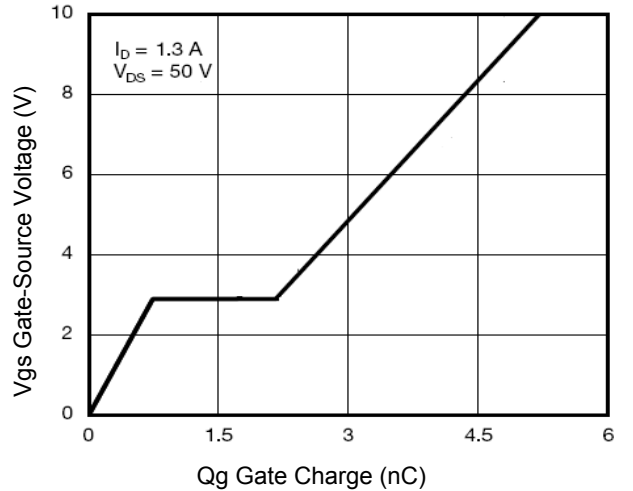


Figure 4. Gate Charge

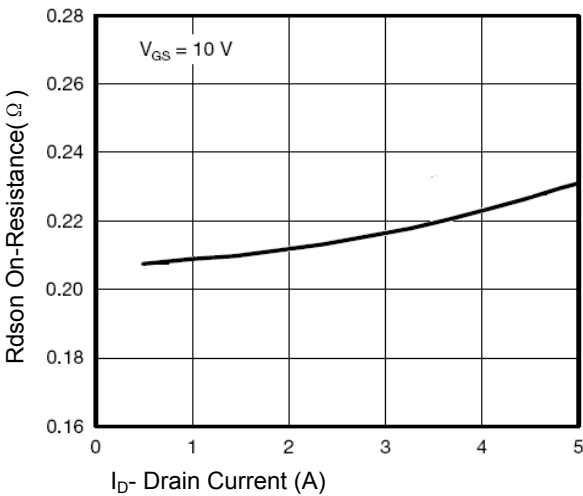


Figure 5. R_{dson} - Drain Current

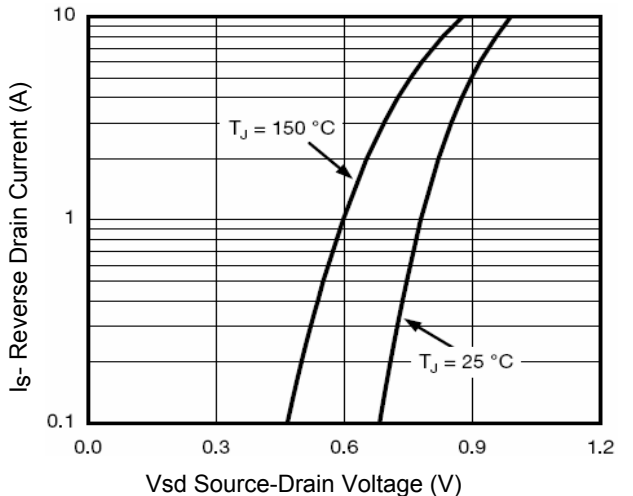


Figure 6. Source- Drain Diode Forward

Typical Electrical and Thermal Characteristic Curves

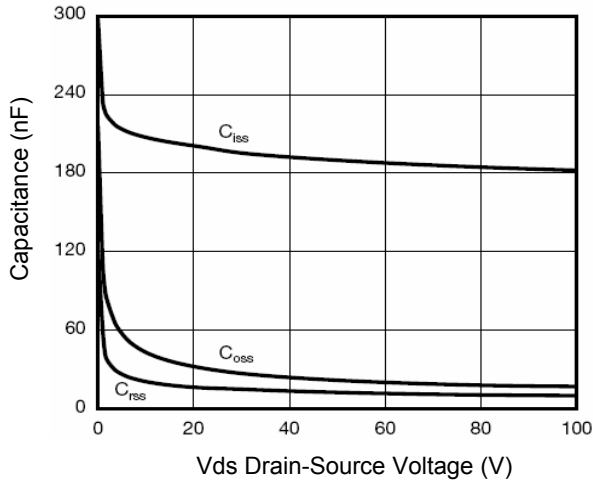


Figure 7. Capacitance vs Vds

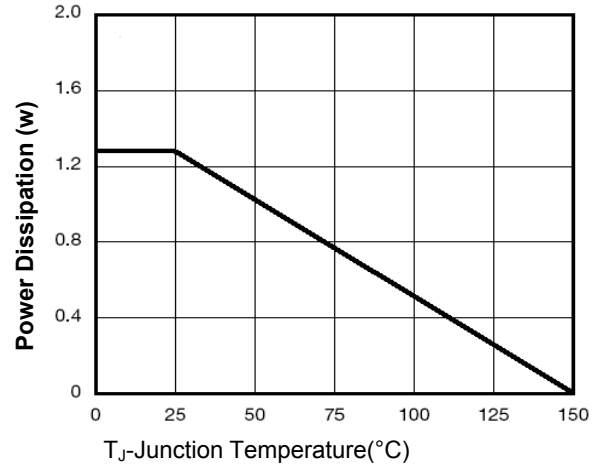


Figure 8. Power De-rating

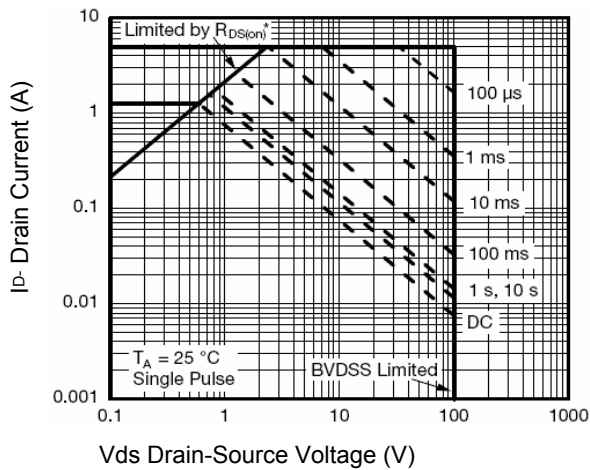


Figure 9. Safe Operation Area

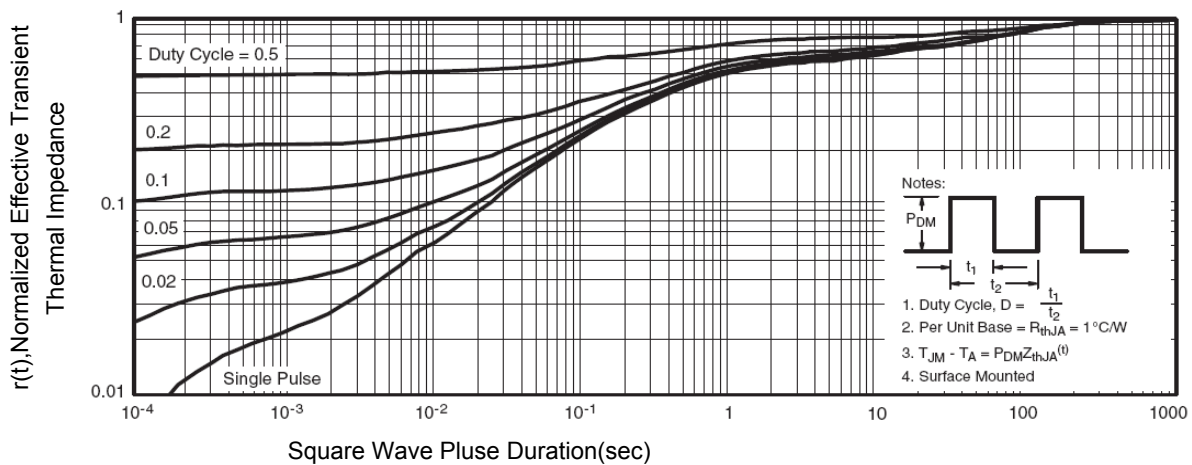


Figure 10. Normalized Maximum Transient Thermal Impedance

Typical Electrical and Thermal Characteristic Curves

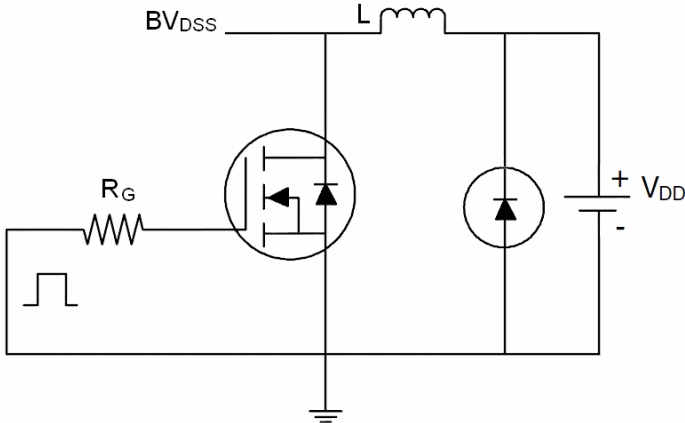


Figure 11. E_{AS} Test Circuit

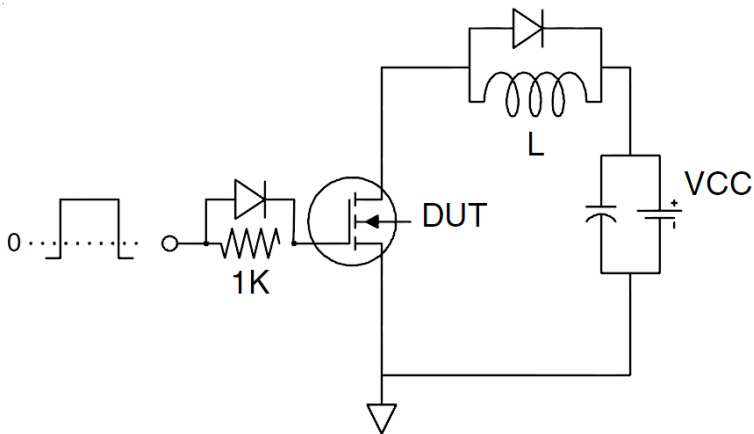


Figure 12. Gate Charge Test Circuit

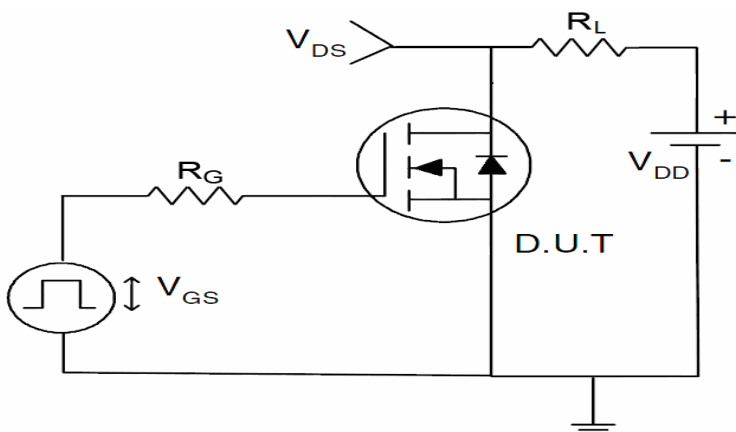
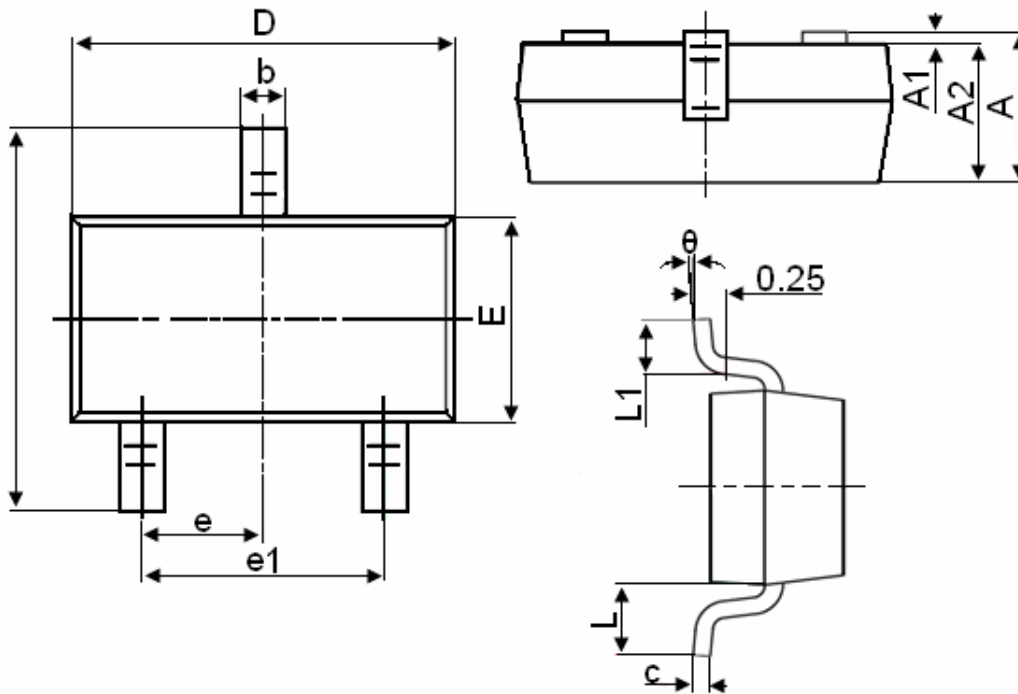


Figure 13. Switch Time Test Circuit

Package Outline Dimensions (SOT-23)



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

Notes

1. All dimensions are in millimeters.
2. Tolerance $\pm 0.10\text{mm}$ (4 mil) unless otherwise specified
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.
4. Dimension L is measured in gauge plane.