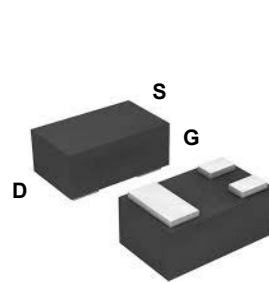
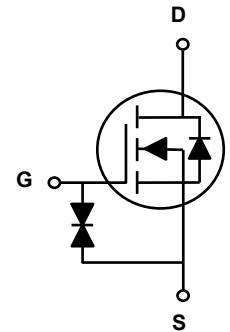


Main Product Characteristics

BV_{DSS}	30V
$R_{DS(ON)}$	560m Ω
I_D	400mA



SOT-883



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 GSF3004 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 ($T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous($T_C=25^\circ\text{C}$)	I_D	400	mA
Drain Current-Continuous($T_C=100^\circ\text{C}$)		250	mA
Drain Current-Pulsed ¹	I_{DM}	1600	mA
Power Dissipation($T_C=25^\circ\text{C}$)	P_D	155	mW
Power Dissipation-Derate Above 25°C		1.25	mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	800	$^\circ\text{C}/\text{W}$
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 ($T_J=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
BV_{DSS} Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C , $I_D=1mA$	-	-0.03	-	$V/^{\circ}\text{C}$
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V,$ $T_J=25^{\circ}\text{C}$	-	-	1	μA
		$V_{DS}=24V, V_{GS}=0V,$ $T_J=125^{\circ}\text{C}$	-	-	10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$	-	-	± 20	μA
On Characteristics						
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=0.2A$	-	465	560	m Ω
		$V_{GS}=2.5V, I_D=0.1A$	-	575	750	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.8	1.2	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		-	-1.74	-	mV/ $^{\circ}\text{C}$
Forward Transconductance	g_{FS}	$V_{DS}=4V, I_D=0.3A$	-	1	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q_g	$V_{DS}=15V, I_D=0.3A,$ $V_{GS}=4.5V$	-	2.6	5.2	nC
Gate-Source Charge ^{2,3}	Q_{gs}		-	0.9	1.8	
Gate-Drain Charge ^{2,3}	Q_{gd}		-	0.6	1.2	
Turn-On Delay Time ^{2,3}	$t_{d(on)}$	$V_{DD}=15V, R_G=10\Omega$ $V_{GS}=4.5V, I_D=0.3A$	-	5.5	11	nS
Rise Time ^{2,3}	t_r		-	4	8	
Turn-Off Delay Time ^{2,3}	$t_{d(off)}$		-	14.5	29	
Fall Time ^{2,3}	t_f		-	6.5	13	
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V,$ $F=1MHz$	-	72.9	146	PF
Output Capacitance	C_{oss}		-	18.3	36.6	
Reverse Transfer Capacitance	C_{rss}		-	7.4	14.8	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_S	$V_G=V_D=0V,$ Force Current	-	-	400	mA
Pulsed Source Current	I_{SM}		-	-	800	
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=0.2A,$ $T_J=25^{\circ}\text{C}$	-	-	1	V
Reverse Recovery Time	T_{rr}	$V_{GS}=0V, I_S=0.3A,$ $dI/dt=100A/\mu s,$ $T_J=25^{\circ}\text{C}$	-	13	-	nS
Reverse Recovery Charge	Q_{rr}		-	6	-	nC

- Note :
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
 2. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

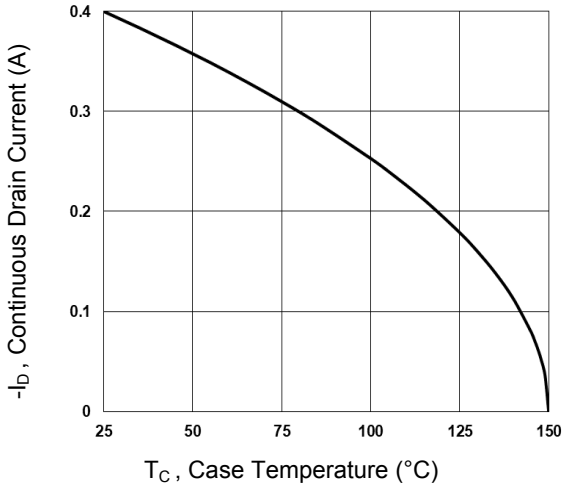


Figure 1. Continuous Drain Current vs. T_c

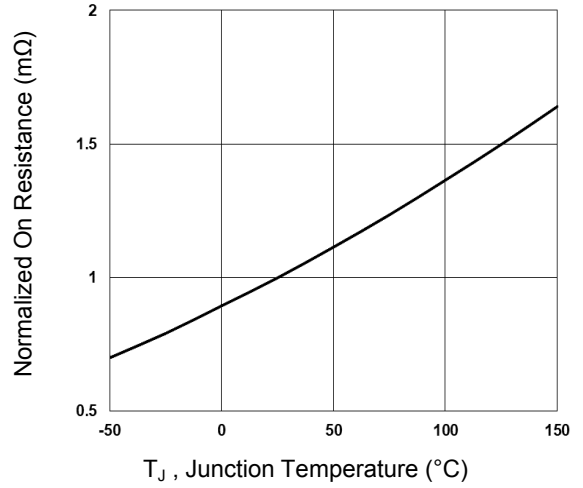


Figure 2. Normalized R_{DS(ON)} vs. T_J

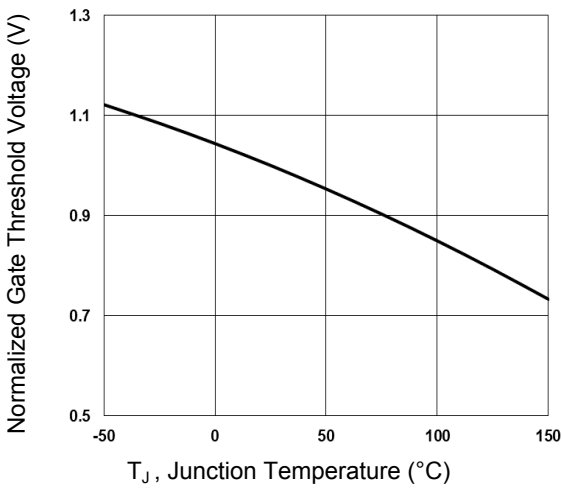


Figure 3. Normalized V_{th} vs. T_J

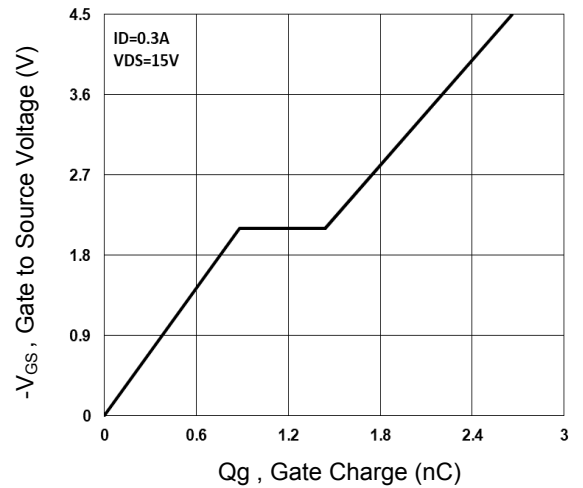


Figure 4. Gate Charge Waveform

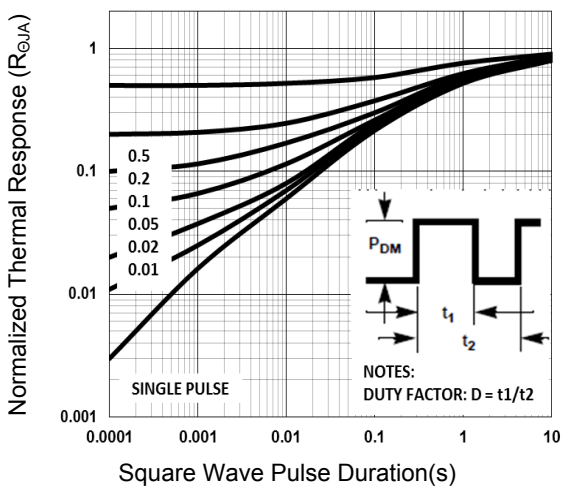


Figure 5. Normalized Transient Response

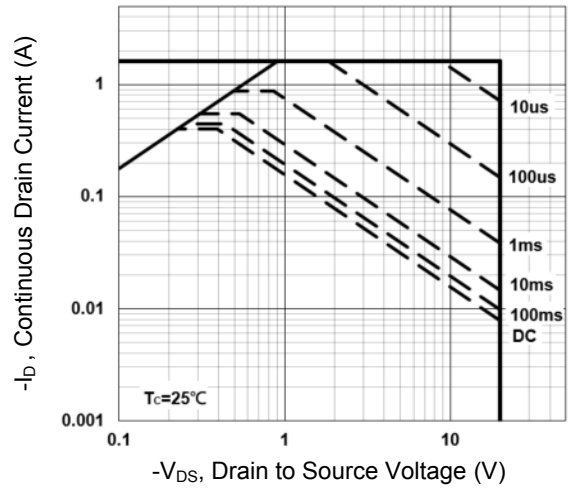


Figure 6. Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

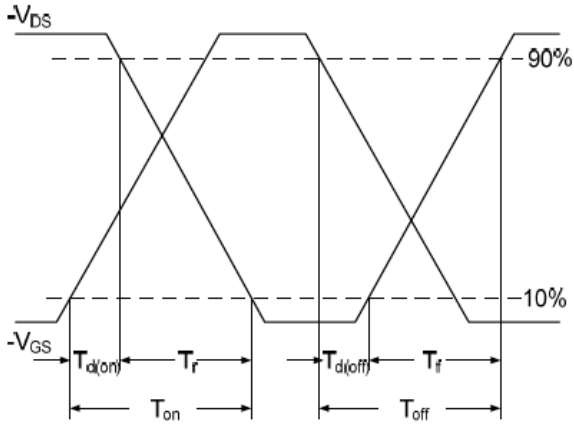


Figure 7. Switching Time Waveform

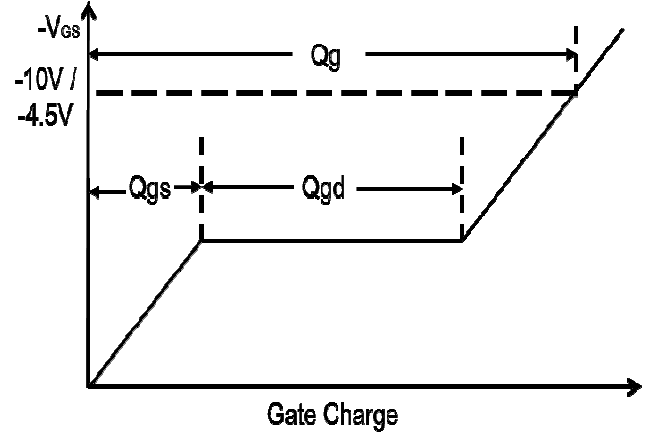
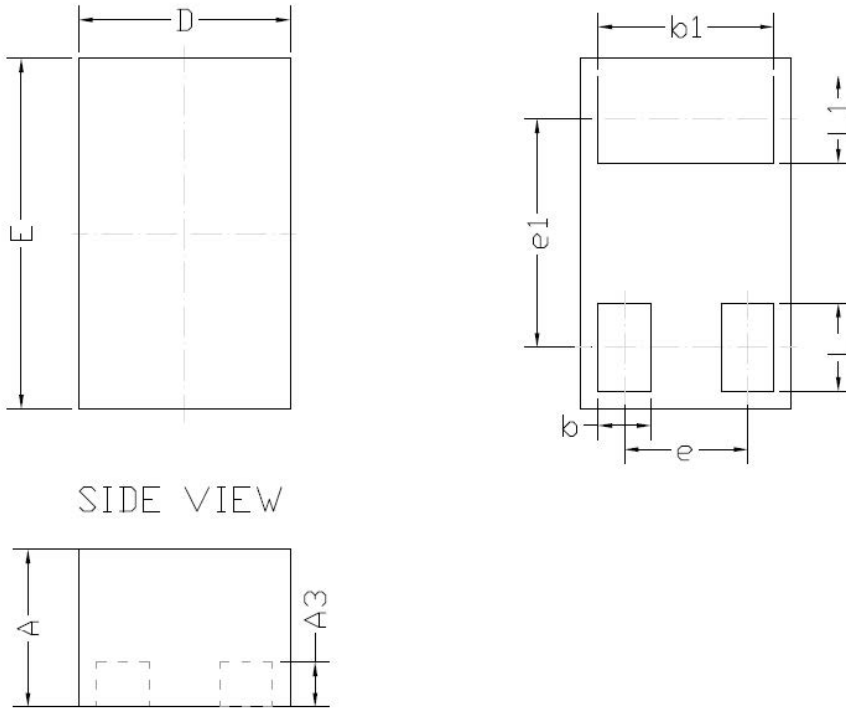


Figure 8. Gate Charge Waveform

Package Outline Dimensions (SOT-883)



SIDE VIEW

SYMBOL	COMMON		
	DIMENSIONS MILLIMETER		
	MIN	NOM.	MAX
A	0.40	0.45	0.50
A3	0.127 BSC		
D	0.55	0.60	0.65
E	0.95	1.00	1.05
e	0.35 BSC		
e1	0.65 BSC		
b	0.13	0.15	0.18
b1	0.45	0.50	0.55
L	0.20	0.25	0.30
L1	0.20	0.25	0.30