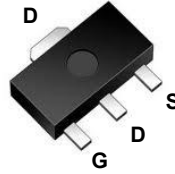
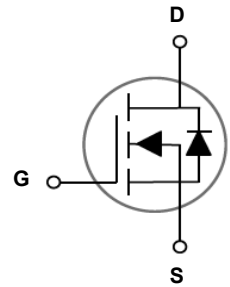


Main Product Characteristics

BV_{DSS}	30V
$R_{DS(ON)}$	15.5mΩ
I_D	7.5A



SOT-89



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 GSFX0308 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 ($T_C=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous ($T_A=25^{\circ}C$)	I_D	7.5	A
Drain Current-Continuous ($T_A=70^{\circ}C$)		6	
Drain Current-Pulsed ¹	I_{DM}	30	A
Power Dissipation ($T_A=25^{\circ}C$)	P_D	1.47	W
Power Dissipation-Derate above 25°C		0.012	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	85	°C/W
Operating Junction Temperature Range	T_J	-55 To +150	°C
Storage Temperature Range	T_{STG}	-55 To +150	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On/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 , $I_D=1mA$	-	0.04	-	$V/^{\circ}\text{C}$
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}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=4A$	-	13	15.5	$m\Omega$
		$V_{GS}=4.5V, I_D=3A$	-	17	22	$m\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.2	1.6	2.5	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		-	-4	-	$mV/^{\circ}\text{C}$
Forward Transconductance	g_{fs}	$V_{DS}=10V, I_D=10A$	-	18	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q_g	$V_{DS}=15V, I_D=4A,$ $V_{GS}=10V$	-	16.7	32	nC
Gate-Source Charge ^{2,3}	Q_{gs}		-	1.3	3	
Gate-Drain Charge ^{2,3}	Q_{gd}		-	4.5	9	
Turn-On Delay Time ^{2,3}	$t_{d(on)}$	$V_{DD}=15V, R_G=3.3\Omega,$ $V_{GS}=10V, I_D=1A$	-	4.8	9	nS
Rise Time ^{2,3}	t_r		-	12.5	25	
Turn-Off Delay Time ^{2,3}	$t_{d(off)}$		-	27.6	50	
Fall Time ^{2,3}	t_f		-	8.2	16	
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V,$ $F=1MHz$	-	750	1350	pF
Output Capacitance	C_{oss}		-	150	300	
Reverse Transfer Capacitance	C_{rss}		-	110	200	
Gate Resistance	R_g	$V_{GS}=0V, V_{DS}=0V,$ $F=1MHz$	-	2.7	4.5	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_S	$V_G=V_D=0V,$ Force Current	-	-	7.5	A
Pulsed Source Current	I_{SM}		-	-	15	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=1A,$ $T_J=25^{\circ}\text{C}$	-	-	1	V

Note:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Essentially independent of operation temperature.

Typical Electrical and Thermal Characteristic Curves

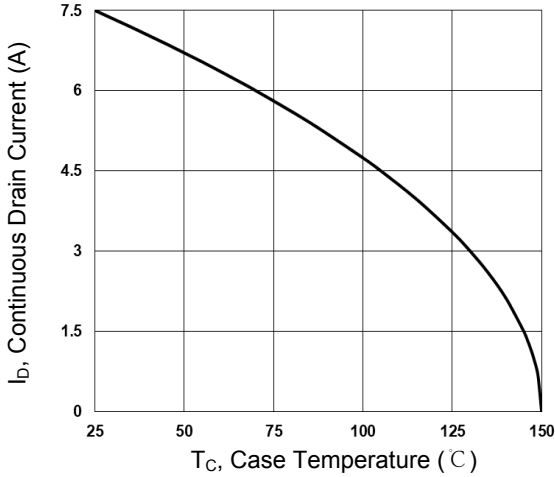


Figure 1. Continuous Drain Current vs. T_c

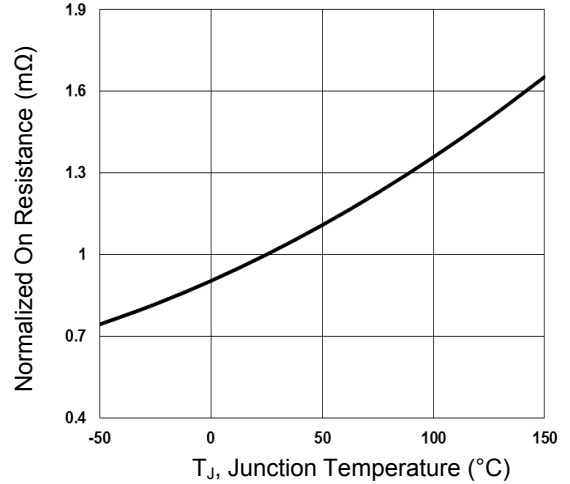


Figure 2. Normalized R_{DS(on)} vs. T_j

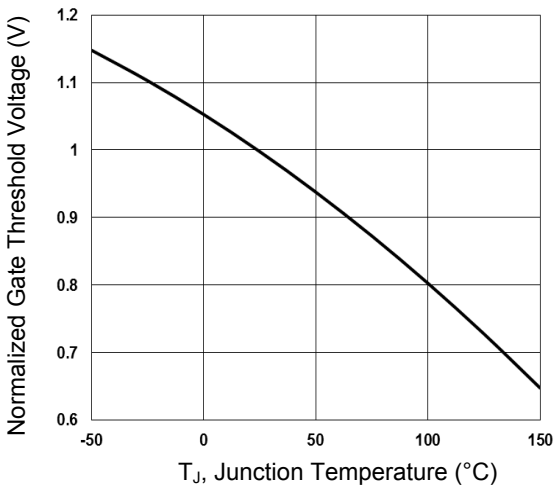


Figure 3. Normalized V_{th} vs. T_j

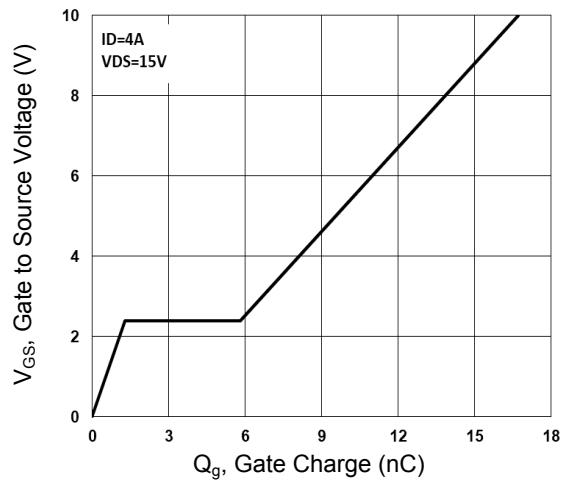


Figure 4. Gate Charge Waveform

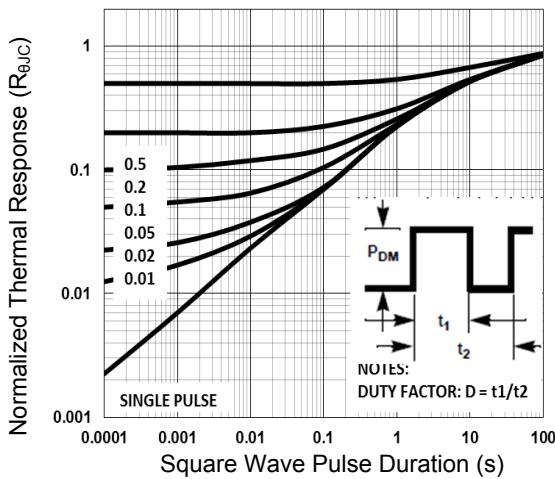


Figure 5. Normalized Transient Impedance

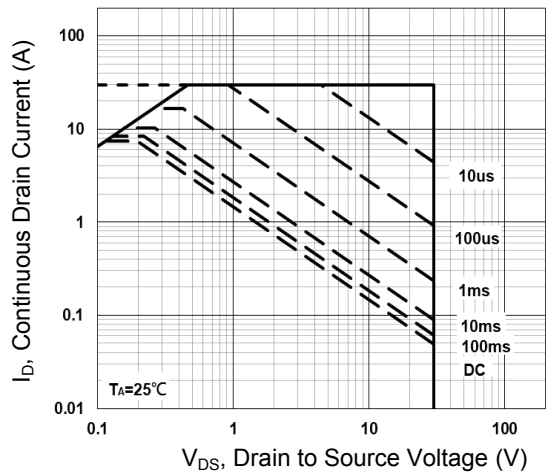


Figure 6. Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

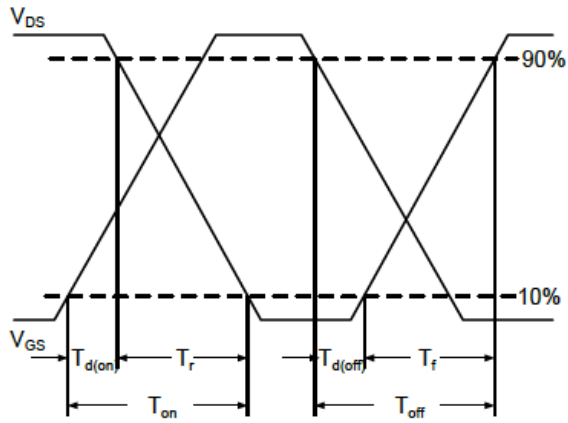


Figure 7. Switching Time Waveform

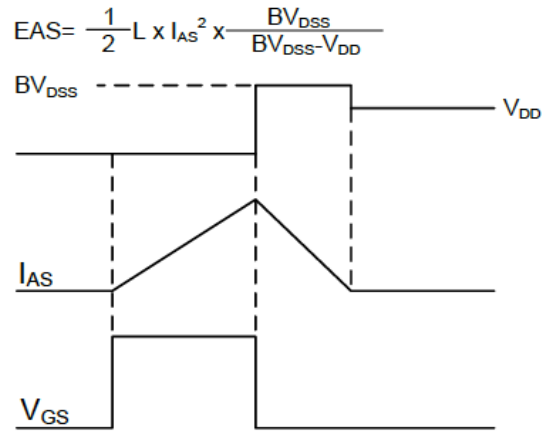
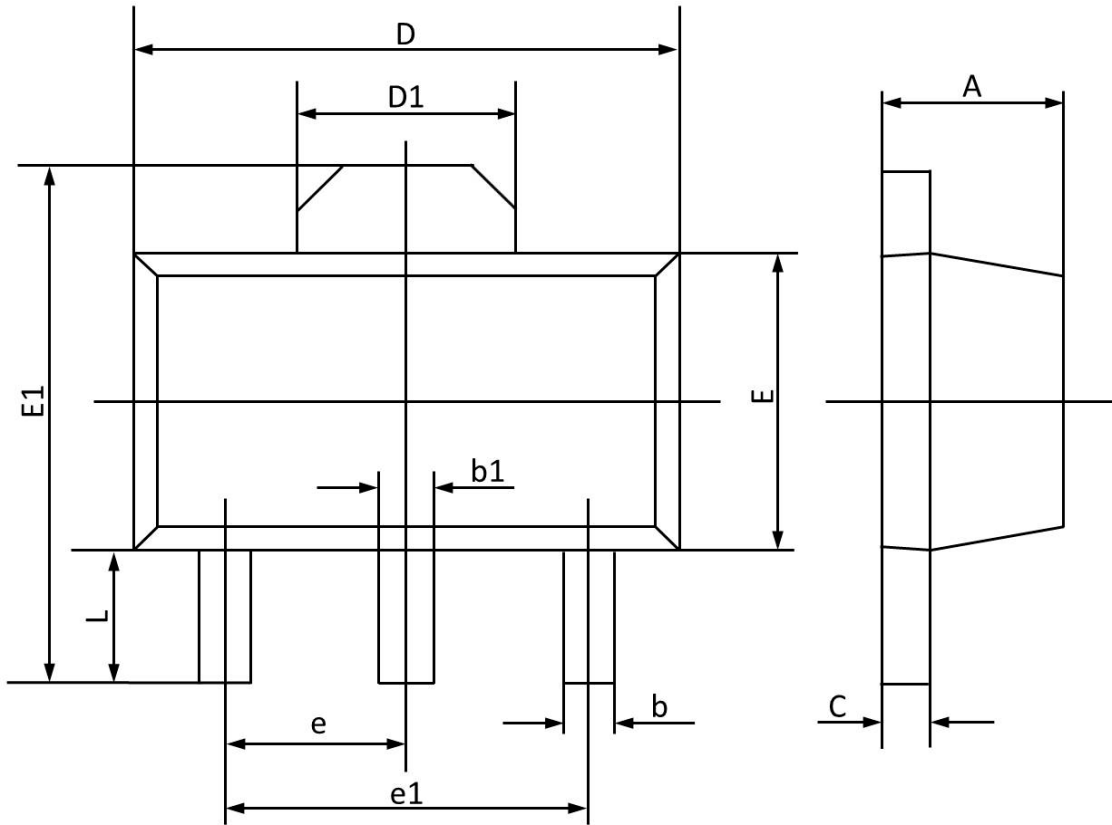


Figure 8. E_{AS} Waveform

Package Outline Dimensions (SOT-89)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF		0.061 REF	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP		0.118 TYP	
L	0.900	1.200	0.035	0.047