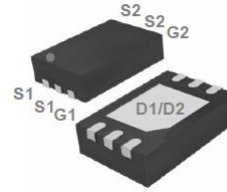
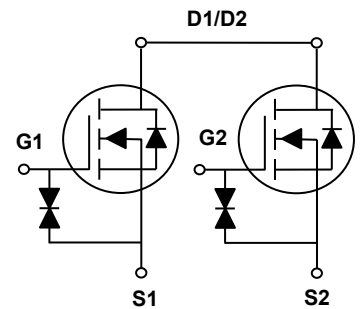


Main Product Characteristics

BV_{DSS}	20V
$R_{DS(ON)}$	6.7m Ω
I_D	32A



DFN2X3



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 GSFN0232 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}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous($T_A=25^\circ\text{C}$)	I_D	32	A
Drain Current-Continuous($T_A=70^\circ\text{C}$)		20.2	A
Drain Current-Pulsed ¹	I_{DM}	128	A
Power Dissipation($T_C=25^\circ\text{C}$)	P_D	20	W
Power Dissipation-Derate Above 25 $^\circ\text{C}$		0.16	W/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	6.1	$^\circ\text{C}/\text{W}$
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}	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V, T_J=25^\circ\text{C}$	-	-	1	μA
		$V_{DS}=16V, V_{GS}=0V, T_J=85^\circ\text{C}$	-	-	10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$	-	-	± 20	nA
On Characteristics						
Static Drain-Source On-Resistance ³	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=5.5A$	4.5	5.6	6.7	m Ω
		$V_{GS}=4.0V, I_D=5.5A$	4.8	5.8	7.2	
		$V_{GS}=3.7V, I_D=2.4A$	5	6	7.6	
		$V_{GS}=3.1V, I_D=2.4A$	5.5	6.5	8.2	
		$V_{GS}=2.5V, I_D=2.4A$	6	7.4	9.6	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.75	1.5	V
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=5A$	-	15	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q_g	$V_{DS}=16V, I_D=5A, V_{GS}=4.5V$	-	19.9	30	nC
Gate-Source Charge ^{2,3}	Q_{gs}		-	2.3	3.8	
Gate-Drain Charge ^{2,3}	Q_{gd}		-	8.2	12.3	
Turn-On Delay Time ^{2,3}	$t_{d(on)}$	$V_{DD}=15V, R_G=6\Omega, V_{GS}=10V, I_D=5A$	-	31	60	nS
Rise Time ^{2,3}	t_r		-	69	140	
Turn-Off Delay Time ^{2,3}	$t_{d(off)}$		-	66	132	
Fall Time ^{2,3}	t_f		-	58	119	
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V, F=1\text{MHz}$	-	780	1180	pF
Output Capacitance	C_{oss}		-	237	356	
Reverse Transfer Capacitance	C_{rss}		-	90	136	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_S	$V_G=V_D=0V, \text{Force Current}$	-	-	32	A
Pulsed Source Current	I_{SM}		-	-	64	A
Diode Forward Voltage ²	V_{SD}	$V_{GS}=0V, I_S=1A, T_J=25^\circ\text{C}$	-	-	1	V
Reverse Recovery Time	T_{rr}	$V_R=20V, I_S=5A, di/dt=100A/\mu s$	-	670	-	nS
Reverse Recovery Charge	Q_{rr}	$T_J=25^\circ\text{C}$	-	9.8	-	μC

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

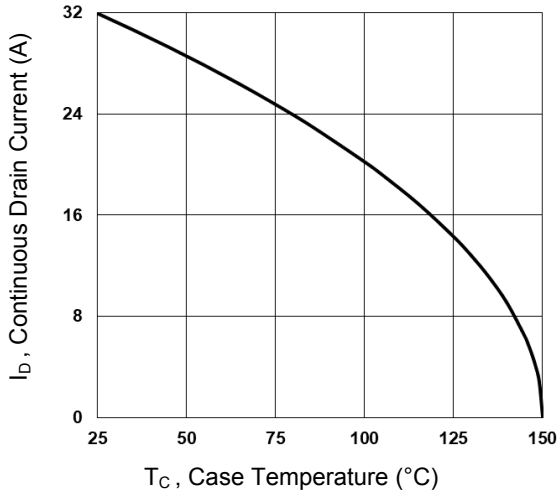


Figure 1. Continuous Drain Current vs. T_c

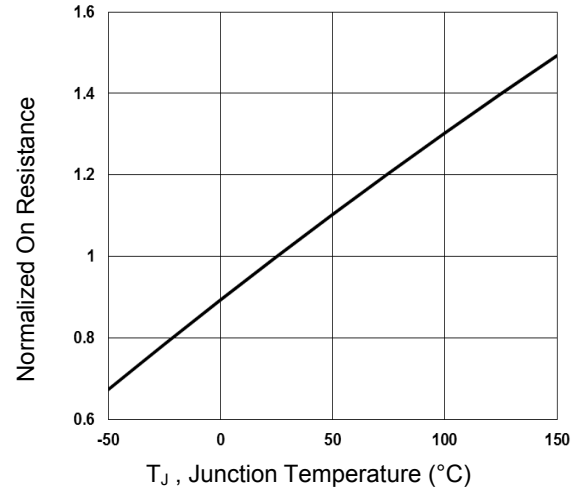


Figure 2. Normalized R_{DS(on)} vs. T_J

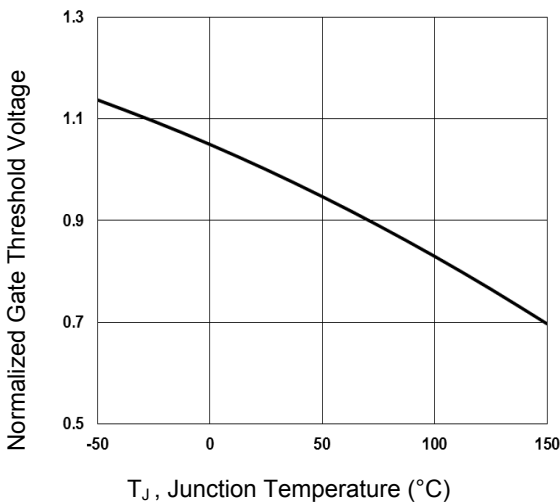


Figure 3. Normalized V_{th} vs. T_J

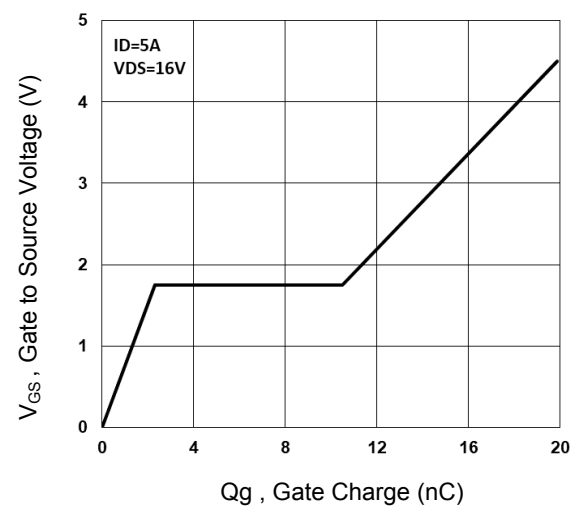


Figure 4. Gate Charge Characteristics

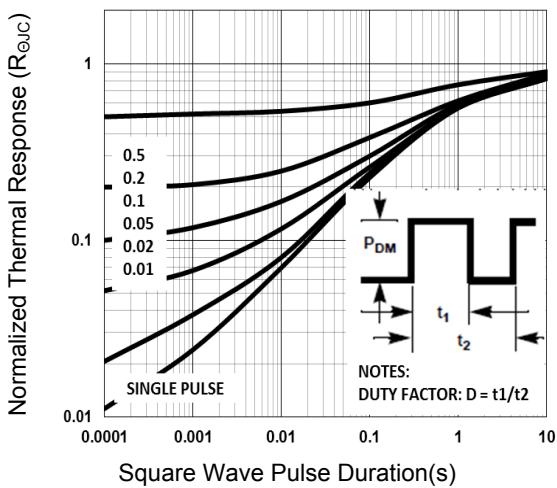


Figure 5. Normalized Transient Response

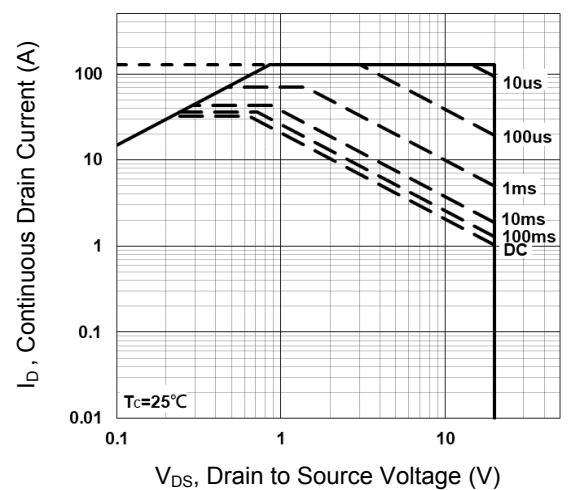


Figure 6. Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

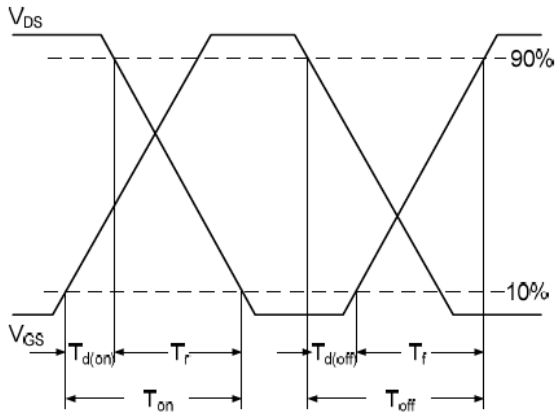


Figure 7. Switching Time Waveform

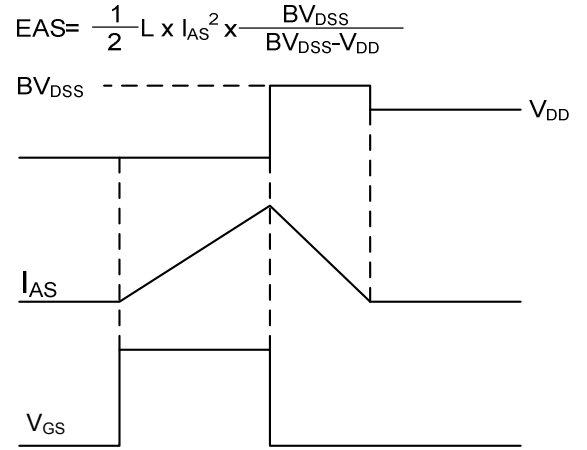
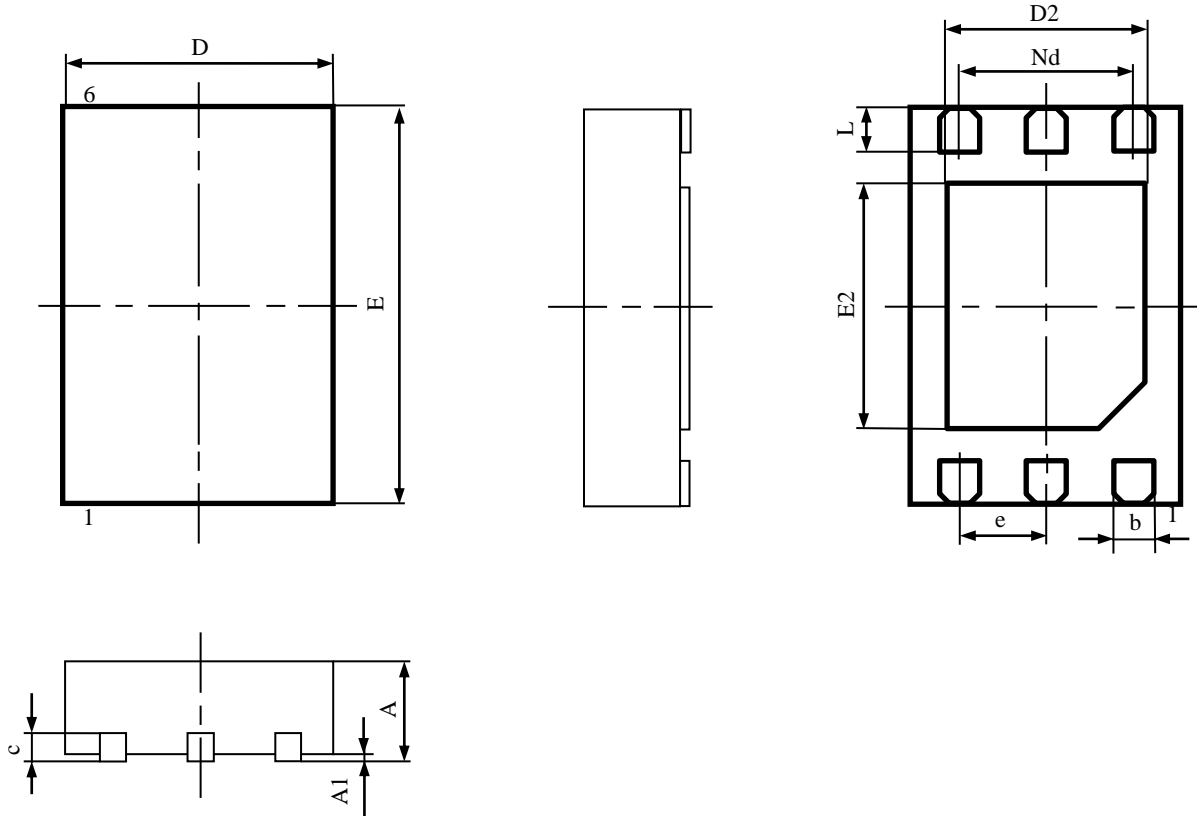


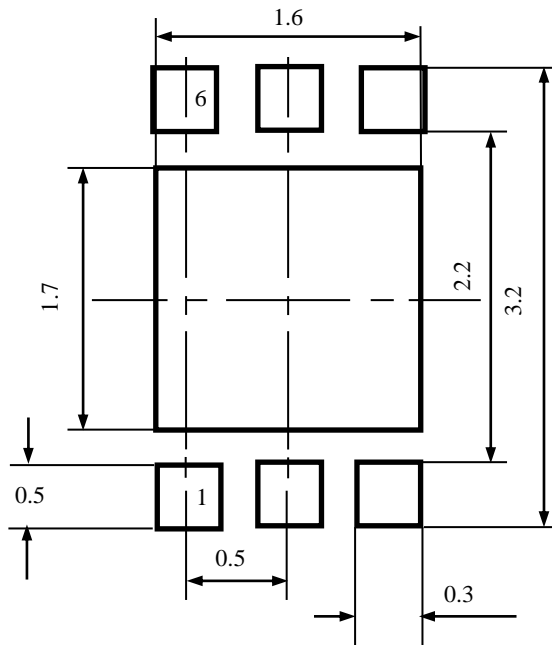
Figure 8. E_{AS} Waveform

Package Outline Dimensions (DFN2X3)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	0.800	0.700	0.031	0.028
A1	0.050	0.02typ.	0.002	0.001typ.
b	0.350	0.200	0.014	0.008
c	0.250	0.180	0.010	0.007
D	2.100	1.900	0.083	0.075
D2	1.600	1.400	0.063	0.055
e	0.5BSC		0.02BSC	
Nd	1.0BSC		0.04BSC	
E	3.100	2.900	0.122	0.114
E2	1.750	1.650	0.069	0.065
L	0.400	0.300	0.016	0.012

Recommended Pad Layout (DFN2X3)



unit : mm