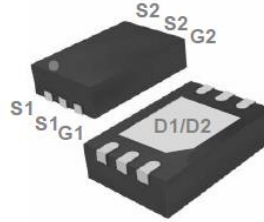
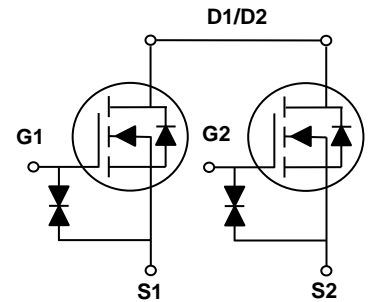


### Main Product Characteristics

$V_{(BR)DSS}$	20V
$R_{DS(ON)}$	8.2m $\Omega$
$I_D$	11A



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



### Descriptions

The SSFN2516 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	Rating	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Drain Current – Continuous ( $T_C=25^\circ\text{C}$ )	$I_D$	11	A
Drain Current – Continuous ( $T_C=70^\circ\text{C}$ )		8.8	A
Drain Current – Pulsed <sup>1</sup>	$I_{DM}$	70	A
Power Dissipation ( $T_C=25^\circ\text{C}$ )	$P_D$	1.56	W
Power Dissipation – Derate above $25^\circ\text{C}$		0.0125	W/ $^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 to +150	$^\circ\text{C}$
Operating Junction Temperature Range	$T_J$	-55 to +150	$^\circ\text{C}$

### Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	---	80	$^\circ\text{C/W}$

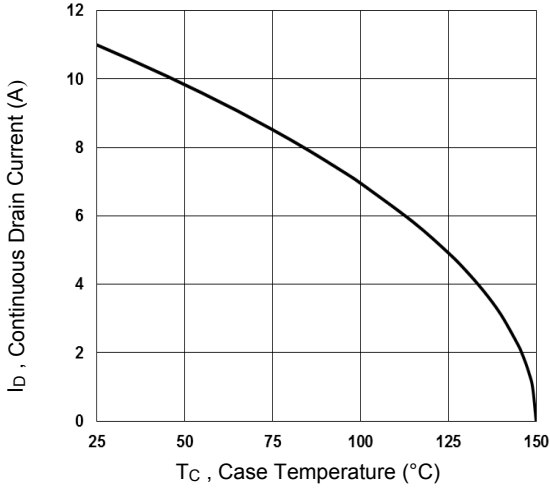
### Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	20	---	---	V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =18V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C	---	---	1	uA
		V <sub>DS</sub> =16V, V <sub>GS</sub> =0V, T <sub>J</sub> =70°C	---	---	10	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V	---	---	±10	uA
<b>On characteristics</b>						
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =5.5A	4.5	6	8.2	mΩ
		V <sub>GS</sub> =4V, I <sub>D</sub> =5.5A	4.7	6.2	8.5	mΩ
		V <sub>GS</sub> =3.7V, I <sub>D</sub> =5.5A	5	6.5	9	mΩ
		V <sub>GS</sub> =3.1V, I <sub>D</sub> =5.5A	5.5	7	9.4	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =5.5A	6	8.2	11	mΩ
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	0.5	0.72	1.5	V
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =5.5A	---	20	---	S
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>2,3</sup>	Q <sub>g</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =11A	---	15	30	nC
Gate-Source Charge <sup>2,3</sup>	Q <sub>gs</sub>		---	2.8	5.6	
Gate-Drain Charge <sup>2,3</sup>	Q <sub>gd</sub>		---	4.4	8.8	
Turn-On Delay Time <sup>2,3</sup>	T <sub>d(on)</sub>	V <sub>DD</sub> =15V, V <sub>GS</sub> =10V, R <sub>G</sub> =6Ω I <sub>D</sub> =5.5A	---	28	56	nS
Rise Time <sup>2,3</sup>	T <sub>r</sub>		---	64	128	
Turn-Off Delay Time <sup>2,3</sup>	T <sub>d(off)</sub>		---	60	120	
Fall Time <sup>2,3</sup>	T <sub>f</sub>		---	55	110	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, F=1MHz	---	1350	2500	pF
Output Capacitance	C <sub>oss</sub>		---	185	350	
Reverse Transfer Capacitance	C <sub>rss</sub>		---	160	300	
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	I <sub>S</sub>	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current	---	---	11	A
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =1A, T <sub>J</sub> =25°C	---	---	1	V

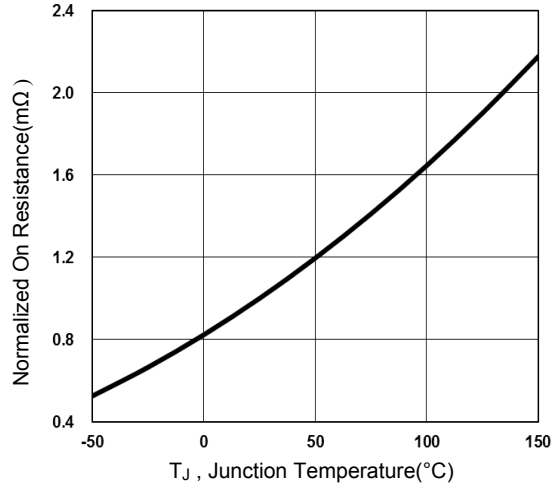
Note:

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width ≤ 300uS, duty cycle ≤ 2%.
3. Essentially independent of operating temperature.

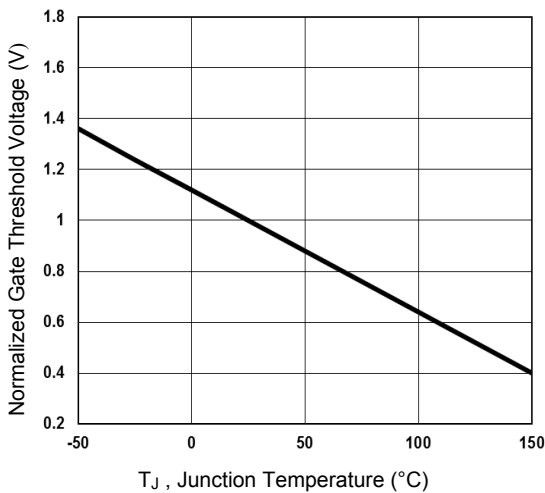
### Typical Electrical and Thermal Characteristic Curves



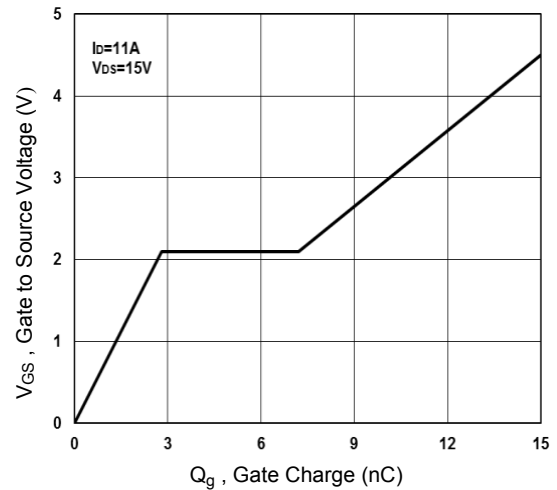
**Fig.1** Continuous Drain Current vs. T<sub>c</sub>



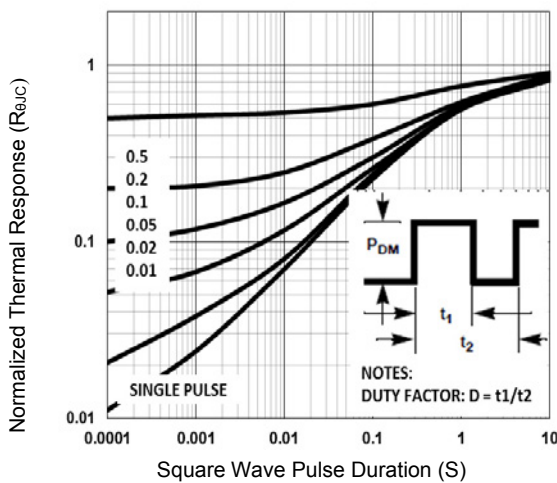
**Fig.2** Normalized R<sub>DS(ON)</sub> vs. T<sub>J</sub>



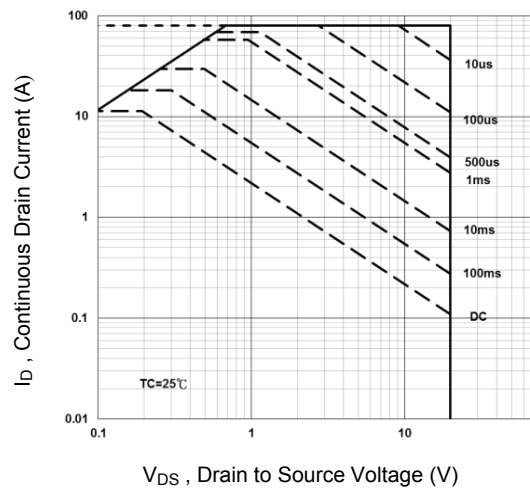
**Fig.3** Normalized V<sub>th</sub> vs. T<sub>J</sub>



**Fig.4** Gate Charge Waveform



**Fig.5** Normalized Transient Impedance



**Fig.6** Maximum Safe Operation Area

## Typical Electrical and Thermal Characteristic Curves

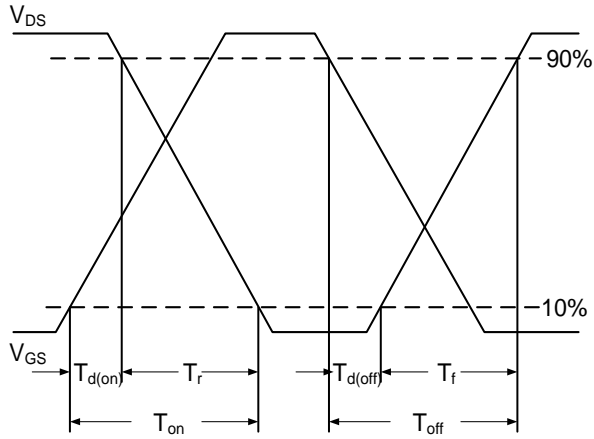


Fig.7 Switching Time Waveform

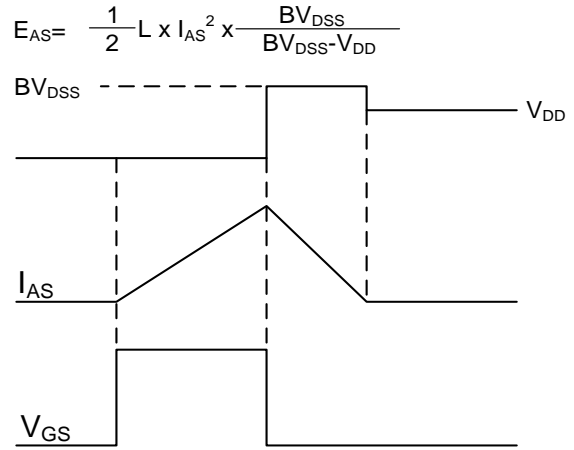
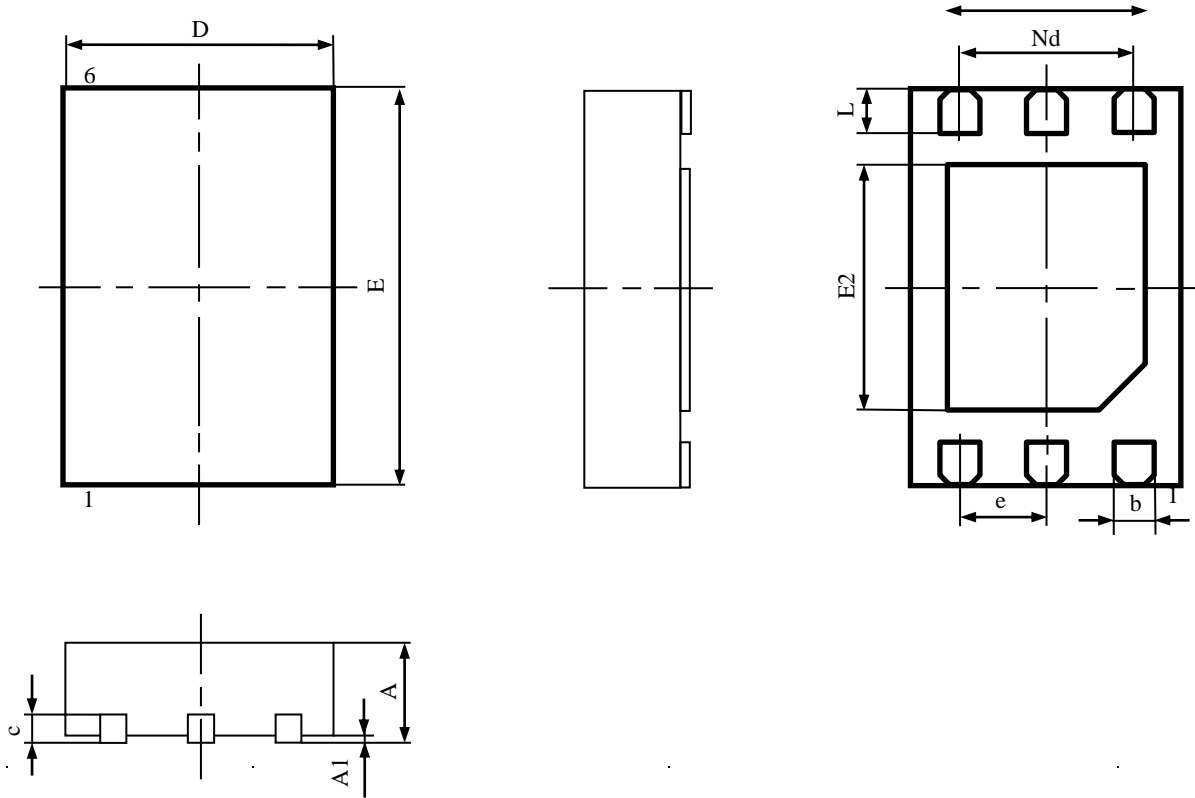


Fig.8  $E_{AS}$  Waveform

## 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