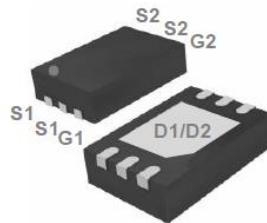
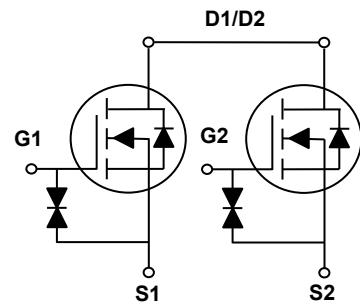


Main Product Characteristics

$V_{(BR)DSS}$	20V
$R_{DS(ON)}$	8.2mΩ
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	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 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 ¹	I_{DM}	70	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	1.56	W
Power Dissipation—Derate above 25°C		0.0125	W/°C
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	80	°C/W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-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}	$\text{V}_{\text{GS}}=0\text{V}, \text{I}_D=250\mu\text{A}$	20	-	-	V
Drain-Source Leakage Current	I_{DSS}	$\text{V}_{\text{DS}}=18\text{V}, \text{V}_{\text{GS}}=0\text{V}, \text{T}_J=25^\circ\text{C}$	-	-	1	μA
		$\text{V}_{\text{DS}}=16\text{V}, \text{V}_{\text{GS}}=0\text{V}, \text{T}_J=70^\circ\text{C}$	-	-	10	μA
Gate-Source Leakage Current	I_{GSS}	$\text{V}_{\text{GS}}=\pm 12\text{V}, \text{V}_{\text{DS}}=0\text{V}$	-	-	± 10	μA
Static Drain-Source On-Resistance ³	$\text{R}_{\text{DS}(\text{ON})}$	$\text{V}_{\text{GS}}=4.5\text{V}, \text{I}_D=5.5\text{A}$	4.5	6	8.2	$\text{m}\Omega$
		$\text{V}_{\text{GS}}=4\text{V}, \text{I}_D=5.5\text{A}$	4.7	6.2	8.5	
		$\text{V}_{\text{GS}}=3.7\text{V}, \text{I}_D=5.5\text{A}$	5	6.5	9	
		$\text{V}_{\text{GS}}=3.1\text{V}, \text{I}_D=5.5\text{A}$	5.5	7	9.4	
		$\text{V}_{\text{GS}}=2.5\text{V}, \text{I}_D=5.5\text{A}$	6	8.2	11	
Gate Threshold Voltage	$\text{V}_{\text{GS}(\text{th})}$	$\text{V}_{\text{GS}}=\text{V}_{\text{DS}}, \text{I}_D=250\mu\text{A}$	0.5	0.72	1.5	V
Forward Transconductance	g_{fs}	$\text{V}_{\text{DS}}=5\text{V}, \text{I}_D=5.5\text{A}$	-	20	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q_g	$\text{V}_{\text{DS}}=15\text{V}, \text{I}_D=11\text{A}, \text{V}_{\text{GS}}=4.5\text{V}$	-	15	30	nC
Gate-Source Charge ^{2,3}	Q_{gs}		-	2.8	5.6	
Gate-Drain Charge ^{2,3}	Q_{gd}		-	4.4	8.8	
Turn-On Delay Time ^{2,3}	$\text{t}_{\text{d}(\text{on})}$	$\text{V}_{\text{DD}}=15\text{V}, \text{R}_G=6\Omega, \text{V}_{\text{GS}}=10\text{V}, \text{I}_D=5.5\text{A}$	-	28	56	nS
Rise Time ^{2,3}	t_r		-	64	128	
Turn-Off Delay Time ^{2,3}	$\text{t}_{\text{d}(\text{off})}$		-	60	120	
Fall Time ^{2,3}	t_f		-	55	110	
Input Capacitance	C_{iss}	$\text{V}_{\text{DS}}=10\text{V}, \text{V}_{\text{GS}}=0\text{V}, \text{F}=1\text{MHz}$	-	1350	2500	pF
Output Capacitance	C_{oss}		-	185	350	
Reverse Transfer Capacitance	C_{rss}		-	160	300	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_s	$\text{V}_G=\text{V}_D=0\text{V}$, Force Current	-	-	11	A
Diode Forward Voltage ²	V_{SD}	$\text{V}_{\text{GS}}=0\text{V}, \text{I}_s=1\text{A}, \text{T}_J=25^\circ\text{C}$	-	-	1	V

Note:

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

Typical Electrical and Thermal Characteristic Curves

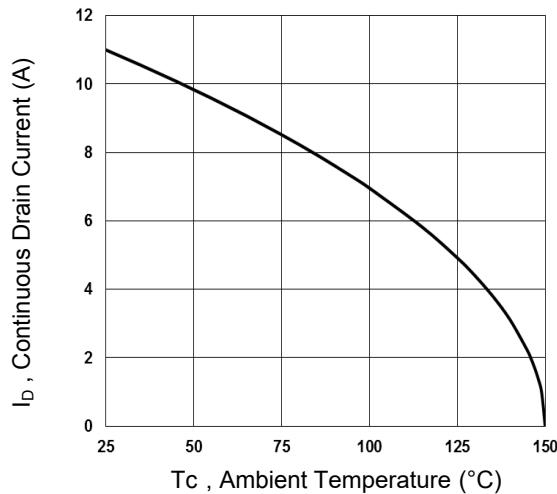


Figure.1 Continuous Drain Current vs. T_c

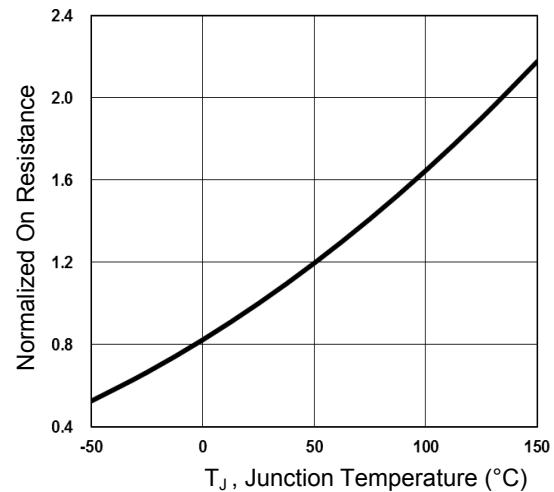


Figure.2 Normalized $R_{DS(ON)}$ vs. T_J

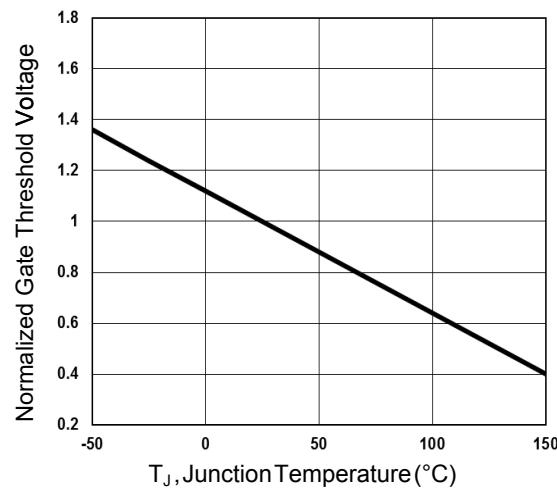


Figure.3 Normalized V_{th} vs. T_J

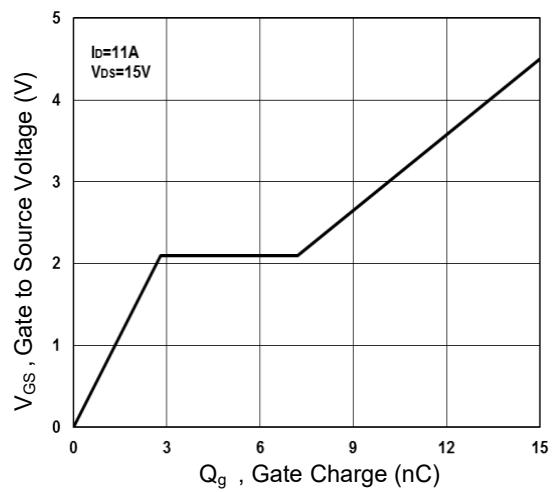


Figure.4 Gate Charge Waveform

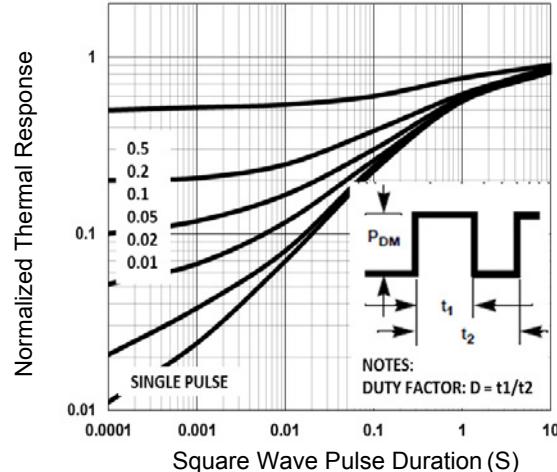


Figure.5 Normalized Transient Response

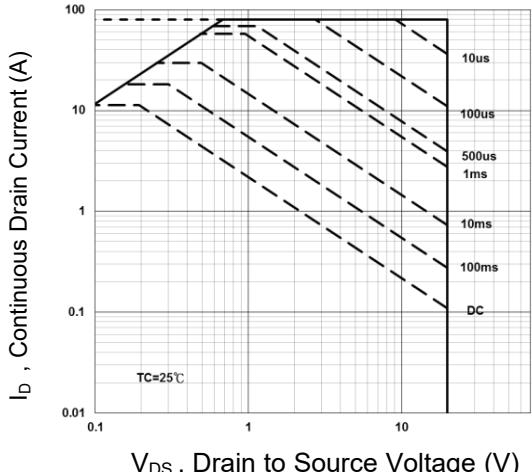


Figure.6 Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

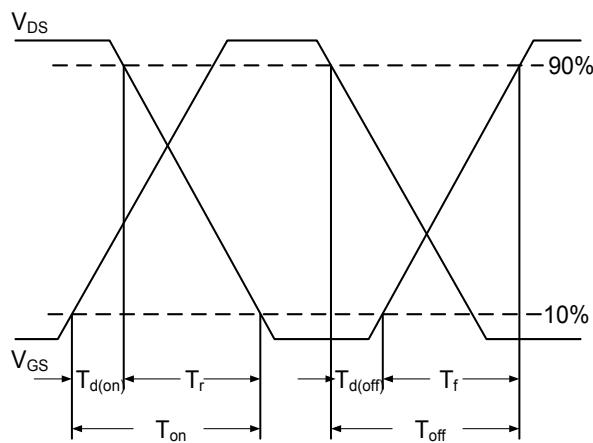


Figure.7 Switching Time Waveform

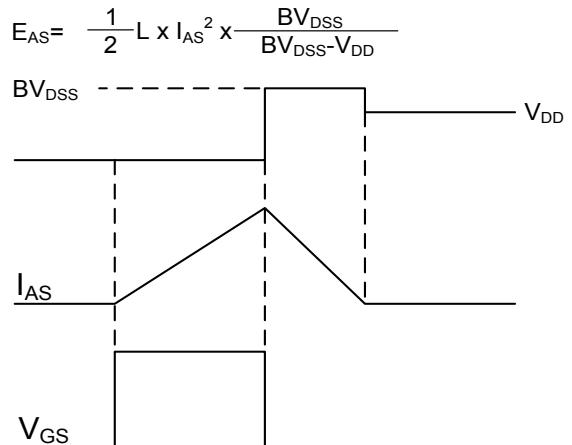
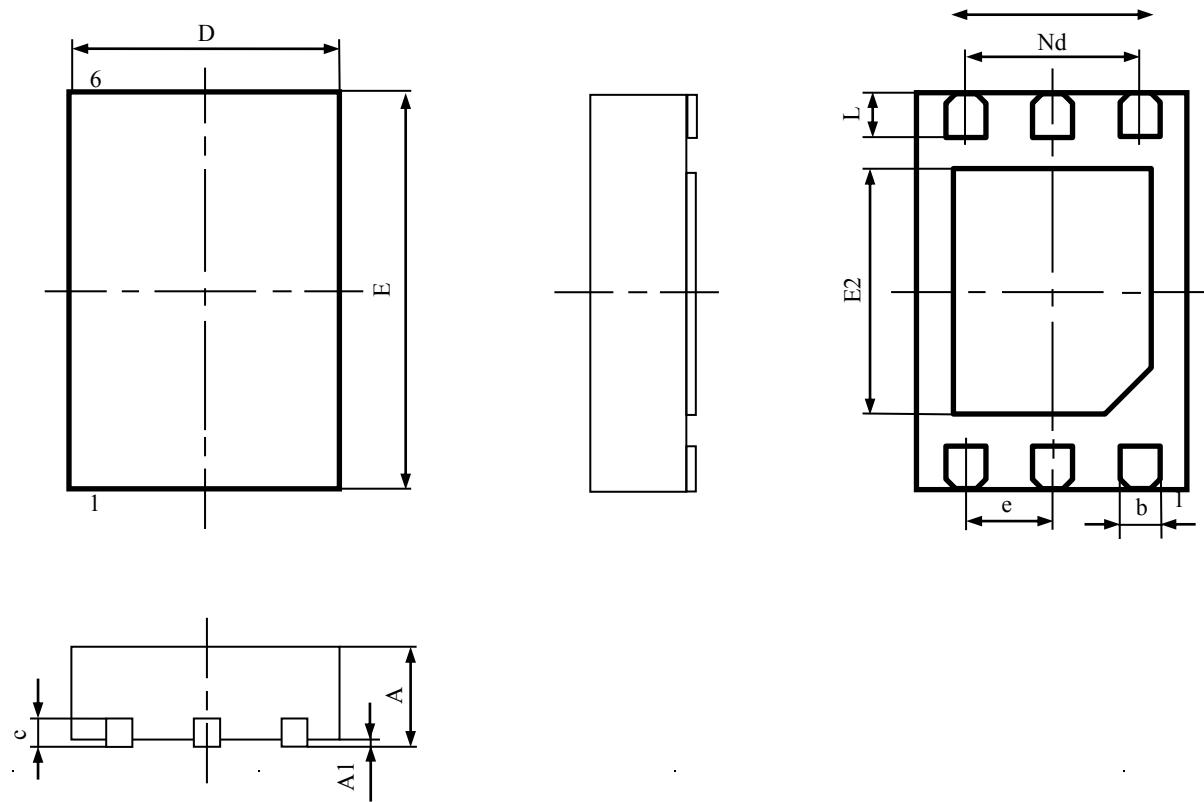


Figure.8 E_{AS} Waveform

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

