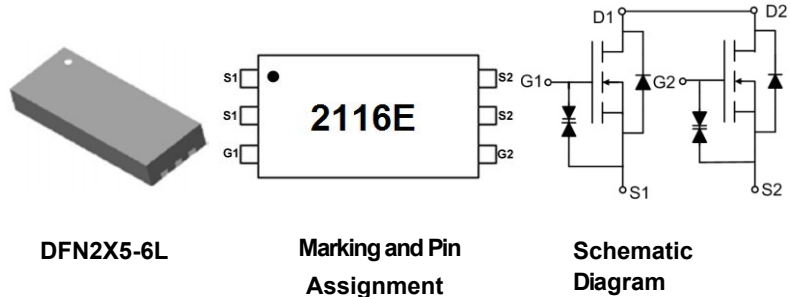


Main Product Characteristics

V_{DSS}	20V
$R_{DS(on)}$	14.5mΩ(typ.)
I_D	8.5A



Features and Benefits

- Advanced MOSFET Process Technology
- Ideal for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- 150°C operating temperature
- ESD protection



Description

The SSFN2116E utilizes the latest processing techniques to achieve high cell density, low on-resistance and high repetitive avalanche rating. These features make this device extremely efficient and reliable for use in power switching applications and a wide variety of other applications.

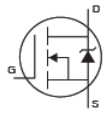
Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Max.	Units
$I_D @ T_C = 25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}$ (Silicon limited) ⁽¹⁾ (Package limited)	8.5	A
		7.5	
I_{DM}	Pulsed Drain Current ⁽²⁾	34	
$P_D @ T_C = 25^\circ\text{C}$	Power Dissipation ⁽³⁾	1.3	W
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-to-Source Voltage	± 10	V
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

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

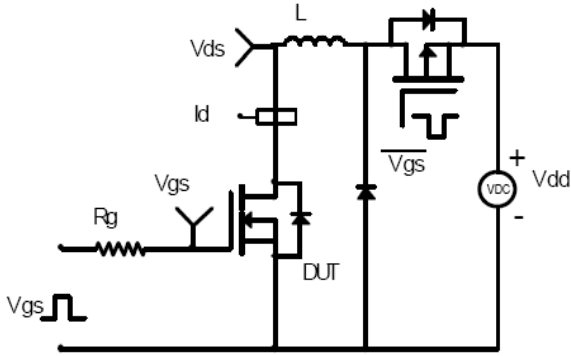
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	20	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	14.5	17.5	m Ω	$V_{GS} = 4.5V, I_D = 4A$
		—	15.2	18.5		$V_{GS} = 4V, I_D = 4A$
		—	17.3	20		$V_{GS} = 3.1V, I_D = 4A$
		—	20.3	27.5		$V_{GS} = 2.5V, I_D = 4A$
$V_{GS(th)}$	Gate Threshold Voltage	0.5	—	1.45	V	$V_{DS} = V_{GS}, I_D = 1mA$
I_{DSS}	Drain-to-Source Leakage Current	—	—	1	μA	$V_{DS} = 20V, V_{GS} = 0V$
I_{GSS}	Gate-to-Source Forward Leakage	—	—	10	μA	$V_{GS} = 10V$
		—	—	-10		$V_{GS} = -10V$
Q_g	Total Gate Charge	—	8	—	nC	$I_D = 6A,$ $V_{DS} = 10V,$ $V_{GS} = 4.5V$
Q_{gs}	Gate-to-Source Charge	—	1.5	—		
Q_{gd}	Gate-to-Drain('Miller') Charge	—	2	—		
$t_{d(on)}$	Turn-on Delay Time	—	20	—	ns	$V_{DD} = 10V,$ $I_D = 1A,$ $R_G = 10\Omega,$ $V_{GS} = 4.5V$
t_r	Rise Time	—	50	—		
$t_{d(off)}$	Turn-Off Delay Time	—	64	—		
t_f	Fall Time	—	40	—		
C_{iss}	Input Capacitance	—	650	—	pF	$V_{GS} = 0V$
C_{oss}	Output Capacitance	—	170	—		$V_{DS} = 10V$
C_{rss}	Reverse Transfer Capacitance	—	150	—		$f = 1MHz$

Source-Drain Ratings and Characteristics

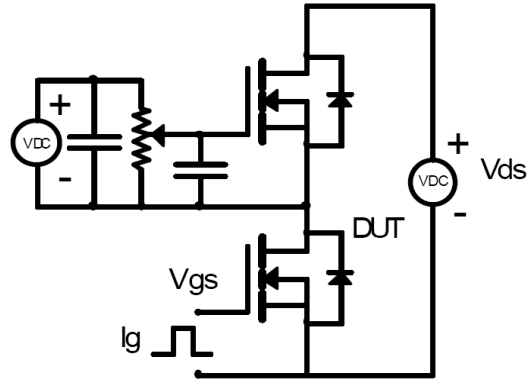
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	8.5	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	34	A	
V_{SD}	Diode Forward Voltage	—	0.7	1.3	V	$I_S = 1.5A, V_{GS} = 0V$

Test Circuits and Waveforms

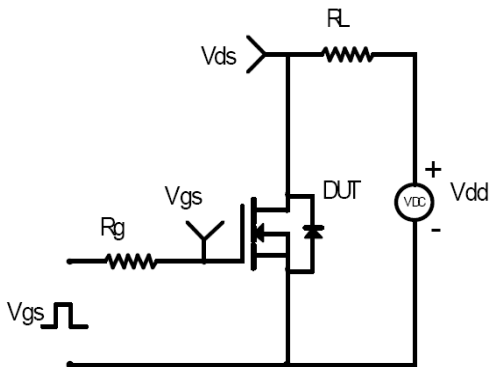
EAS Test Circuit



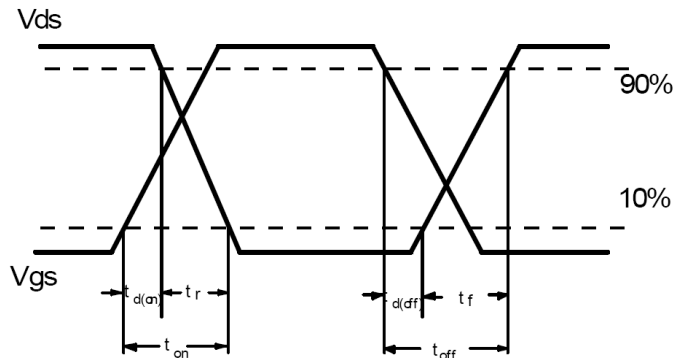
Gate charge test circuit



Switching Time Test Circuit



Switching Waveforms

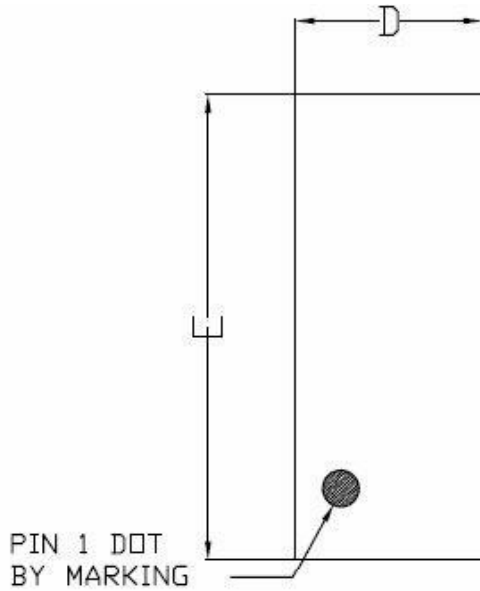


Notes

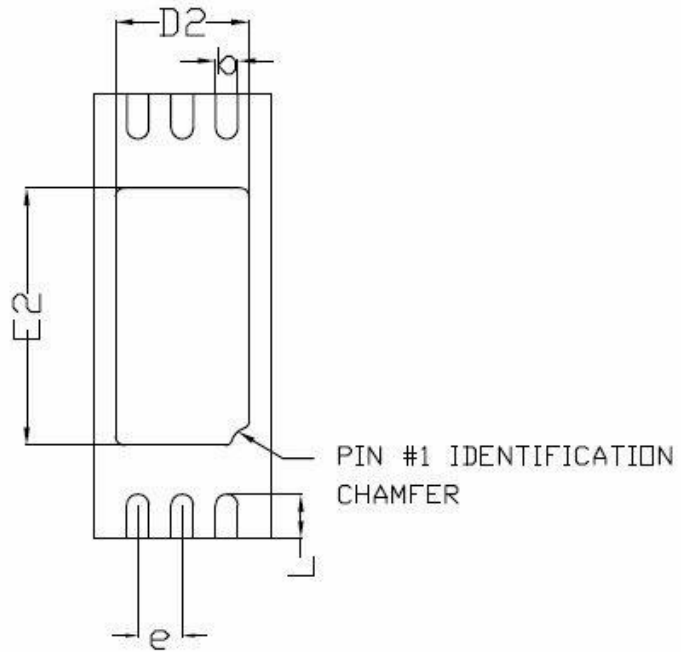
- (1) Calculated continuous current based on maximum allowable junction temperature.
- (2) Repetitive rating pulse width limited by max. junction temperature.
- (3) The power dissipation P_D is based on max. junction temperature, using junction-to-case thermal resistance.

Mechanical Data

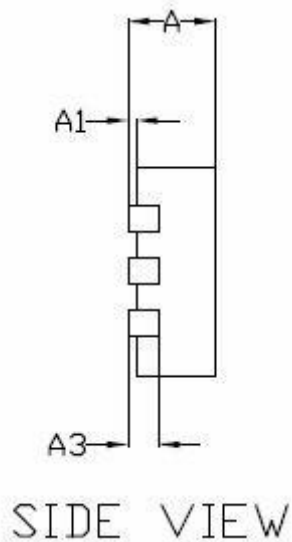
DFN2X5-6L



TOP VIEW



BOTTOM VIEW



SIDE VIEW

COMMON DIMENSIONS(mm)			
PKG.	W:VERY VERY THIN		
REF.	MIN.	NOM.	MAX.
A	0.70	0.75	0.80
A1	0.00	—	0.05
A3	0.2 REF.		
D	1.95	2.00	2.05
E	4.95	5.00	5.05
D2	1.35	1.50	1.60
E2	2.75	2.90	3.00
L	0.40	0.50	0.60
b	0.20	0.25	0.30
e	0.5 BCS.		

Ordering and Marking Information

<p>Device Marking: 2116E</p> <p style="text-align: center;"> Package (Available) DFN2x5-6L Operating Temperature Range -55 to 150 °C </p>

Devices per Unit

Package Type	Units/Tape	Tapes/Inner Box	Units/Inner Box	Inner Boxes/Carton Box	Units/Carton Box
DFN2x5-6L	3000	4	12000	4	48000

Reliability Test Program

Test Item	Conditions	Duration	Sample Size
High Temperature Reverse Bias(HTRB)	$T_j=150^{\circ}\text{C}$ @80% of Max $V_{DSS}/V_{CES}/VR$	168 hours 500 hours 1000 hours	3 lots x 77 devices
High Temperature Gate Bias(HTGB)	$T_j=150^{\circ}\text{C}$ @100% of Max V_{GSS}	168 hours 500 hours 1000 hours	3 lots x 77 devices