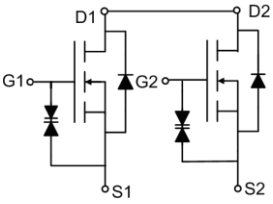
Main Product Characteristics:

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

DFN2X5-6L-EP

Marking and pin Assignment



Schematic diagram

Features and Benefits:

- Advanced MOSFET process technology
- Special designed for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- 150℃ operating temperature

Description:

It utilizes the latest trench processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in power switching application and a wide variety of other applications

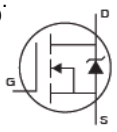
Absolute max Rating:

Symbol	Parameter	Max.	Units
I_D @ TC = 25°C	Continuous Drain Current, V_{GS} @ 10V (Silicon Limited)	8.5 ①	A
I_D @ TC = 25°C	Continuous Drain Current, V_{GS} @ 10V (Package Limited)	75 ①	
I_{DM}	Pulsed Drain Current ②	34	
V_{GS}	Gate to source voltage	±10	V
P_D @TC = 25°C	Power Dissipation ③	1.3	W
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 150	°C

Electrical Characterizes @T_A=25℃ unless otherwise specified

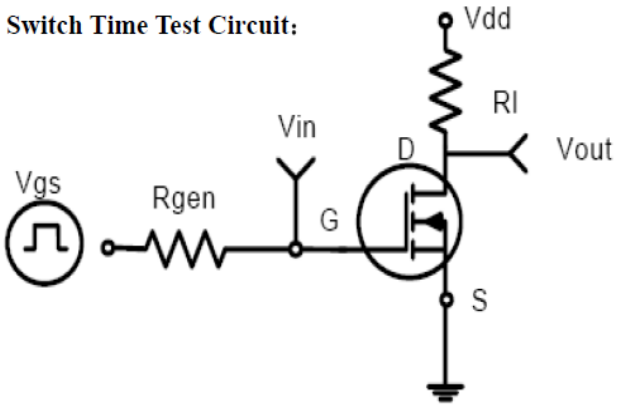
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	20	—	—	V	V_{GS} = 0V, I_D = 250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	14.5	17.5	mΩ	V_{GS}= 4.5V,I_D = 4A
		—	15.2	18.5		V_{GS}= 4V,I_D = 4A
		—	17.3	20		V_{GS}= 3.1V,I_D = 4A
		—	20.3	27.5		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,
Q_{gs}	Gate-to-Source charge	—	1.5	—		V_{DS}=10V,
Q_{gd}	Gate-to-Drain("Miller") charge	—	2	—		V_{GS} =4.5V
$t_{d(on)}$	Turn-on delay time	—	20	—	nS	V_{DD} =10V ,
t_r	Rise time	—	50	—		I_D = 1A ,
$t_{d(off)}$	Turn-Off delay time	—	64	—		RG=10 Ω ,
t_f	Fall time	—	40	—		V_{GS} =4.5V
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

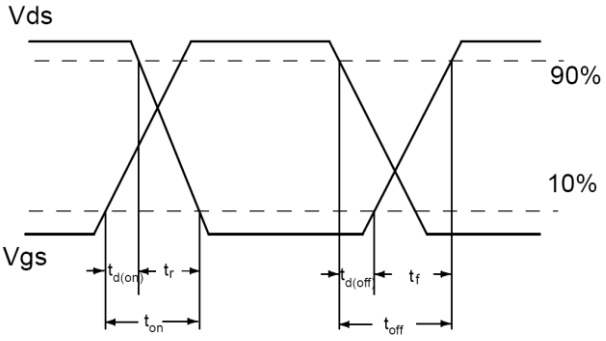
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_s	Continuous Source Current	—	—	8.5	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current	—	—	34	A	
V_{SD}	Diode Forward Voltage	—	0.7	1.3	V	I_S=1.5A, V_{GS}=0V

Test circuits and Waveforms

Switch Time Test Circuit:



Switching time waveform:

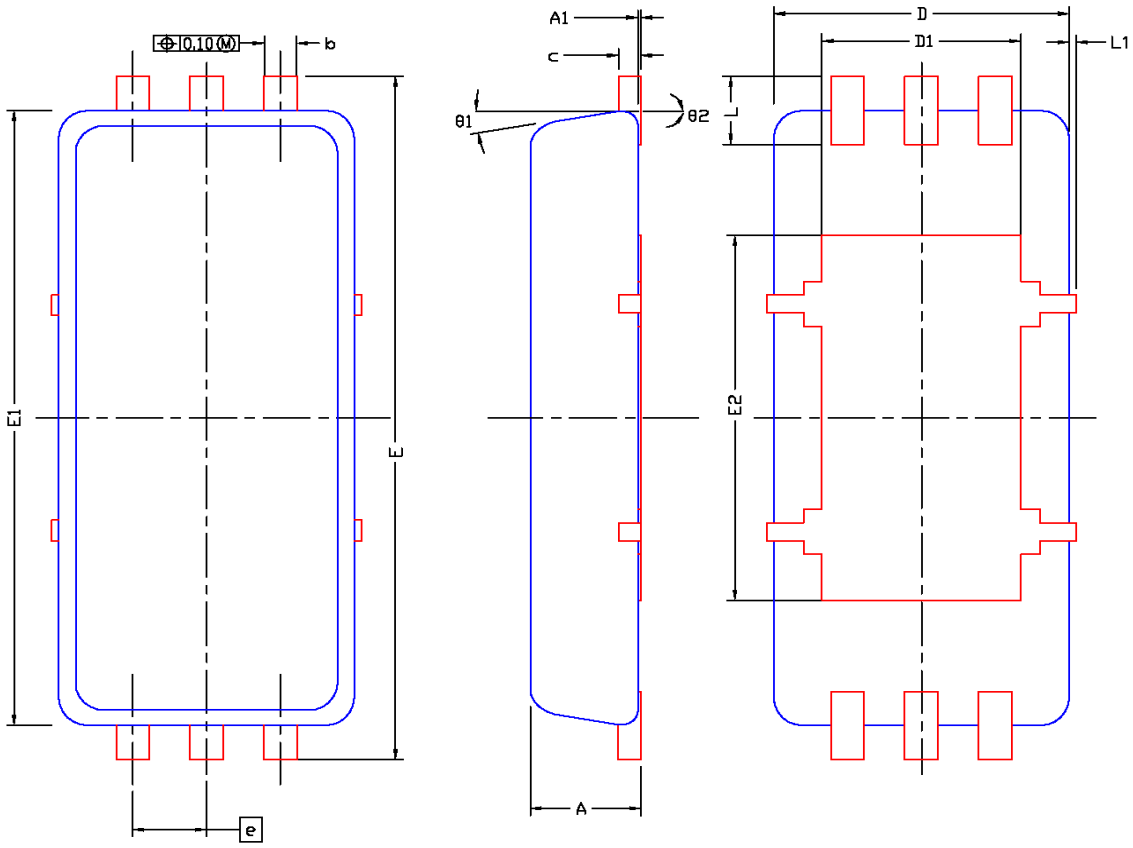


Notes:

①The maximum current rating is limited by bond-wires.
②Repetitive rating; pulse width limited by max. junction temperature.
③The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.

Mechanical Data：

DFN2X5-6L-EP PACKAGE OUTLINE DIMENSION :



Dim.	Millimeters			Inches		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.70	0.75	0.80	0.028	0.030	0.0315
A1	0.00	---	0.05	0.000	---	0.002
b	0.20	0.225	0.30	0.008	0.009	0.012
c	0.10	0.152	0.20	0.004	0.006	0.008
D	2.00 BSC			0.079 BSC		
D1	1.30	1.35	1.55	0.051	0.053	0.061
E	5.00 BSC			0.197 BSC		
E1	4.50 BSC			0.177 BSC		
E2	2.60	2.67	2.95	0.102	0.105	0.116
e	0.50 BSC			0.020 BSC		
L	0.40	0.50	0.60	0.016	0.0197	0.0236
L1	0	---	0.100	0	---	0.004
θ 1	0°	10°	12°	0°	10°	12°
θ 2	3° BSC			3° BSC		

Ordering and Marking Information

Device Marking: 2116EJ3

Package (Available)

DFN2X5-6L-EP

Operating Temperature Range

C : -55 to 150 ºC

Devices per Unit

Package Type	Units/ Tape	Tapes/ Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
DFN2X5-6L-EP	3000pcs	4pcs	12000pcs	4pcs	48000pcs

Reliability Test Program

Test Item	Conditions	Duration	Sample Size
High Temperature Reverse Bias(HTRB)	T_j=125℃ to 150℃ @ 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℃@ 100% of Max V_{GSS}	168 hours 500 hours 1000 hours	3 lots x 77 devices

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