

SE2145

**P-Channel Enhancement-Mode MOSFET**

Revision: A

**General Description**

Advanced trench technology to provide excellent  $R_{DS(ON)}$ , low gate charge and low operation voltage. This device is suitable for using as a load switch or in PWM applications.

- Simple Drive Requirement
- Small Package Outline
- Surface Mount Device

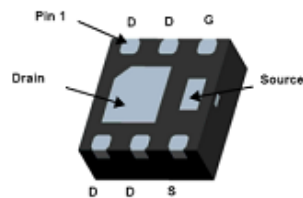
**Features**

For a single MOSFET

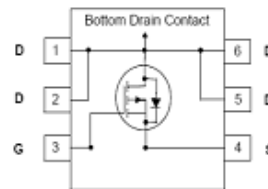
- $V_{DS} = -12V$
- $R_{DS(ON)} = 18.9m\Omega @ V_{GS}=-4.5 @ I_{DS}=-10A$
- $R_{DS(ON)} = 26m\Omega @ V_{GS}=-2.5 @ I_{DS}=-8.9A$

**Pin configurations**

See Diagram below



DFN2x2-6L Pin Assignment



Schematic diagram

**Absolute Maximum Ratings**

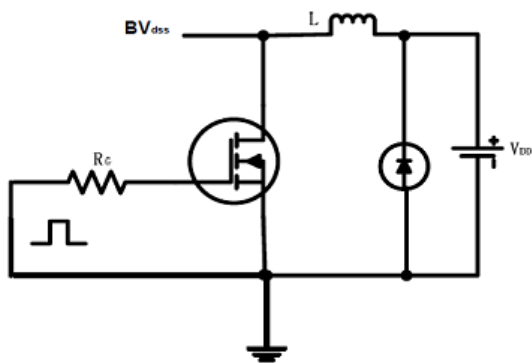
Parameter		Symbol	Rating	Units
Drain-Source Voltage		$V_{DS}$	-12	V
Gate-Source Voltage		$V_{GS}$	$\pm 8$	V
Drain Current	Continuous	$I_D$	-12	A
	Pulsed		-28	
Total Power Dissipation	@TA=25°C	$P_D$	2.4	W
Operating Junction Temperature Range		$T_J$	-55 to 150	°C

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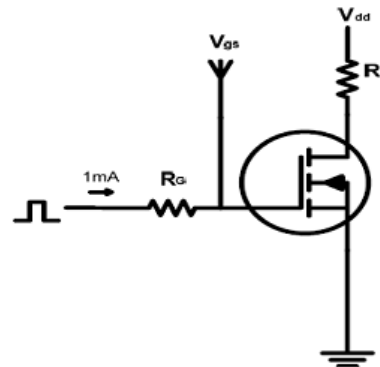
Electrical Characteristics (T <sub>J</sub> =25°C unless otherwise noted)						
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
<b>OFF CHARACTERISTICS (Note 2)</b>						
B <sub>V</sub> DSS	Drain-Source Breakdown Voltage	I <sub>D</sub> =250μA, V <sub>GS</sub> =0 V	-12			V
I <sub>DSS</sub>	Drain to Source Leakage Current	V <sub>DS</sub> = -12V, V <sub>GS</sub> =0V			-1	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> = 8V			100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =250μA	-0.4		-1	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance <sup>2</sup>	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-10A	-	18.9	-	mΩ
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-8.9A		26		
<b>DYNAMIC PARAMETERS</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =-6V, f=1MHz	-	2138	-	pF
C <sub>oss</sub>	Output Capacitance		-	685	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	650	-	pF
<b>SWITCHING PARAMETERS</b>						
Q <sub>g</sub>	Total Gate Charge <sup>2</sup>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-6V, I <sub>D</sub> =-10A	-	21	-	nC
Q <sub>gs</sub>	Gate Source Charge		-	2.5	-	nC
Q <sub>gd</sub>	Gate Drain Charge		-	6	-	nC
t <sub>d(on)</sub>	Turn-On Delay Time	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-6V, R <sub>GEN</sub> =6Ω, I <sub>D</sub> =-10A		30		ns
t <sub>d(off)</sub>	Turn-Off Delay Time			97		ns
t <sub>d(r)</sub>	Turn-On Rise Time			48		ns
t <sub>d(f)</sub>	Turn-Off Fall Time			65		ns
<b>Thermal Resistance</b>						
Symbol	Parameter		Typ	Max		Units
R <sub>θJC</sub>	Junction to Case		6.9	8		°C/W
R <sub>θJA</sub>	Junction to Ambient (t ≤ 10s)		52	62.5		°C/W

Test Circuits and Waveform

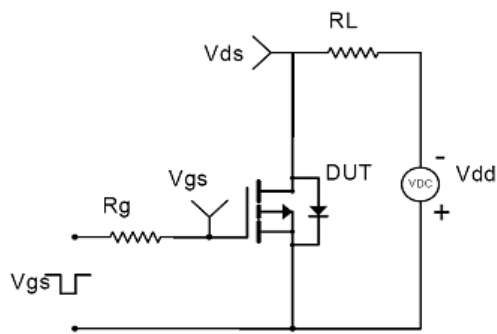
EAS test circuits:



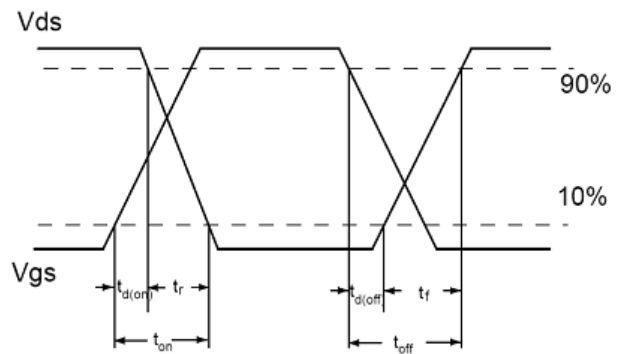
Gate charge test circuit:



Switch time test circuit:



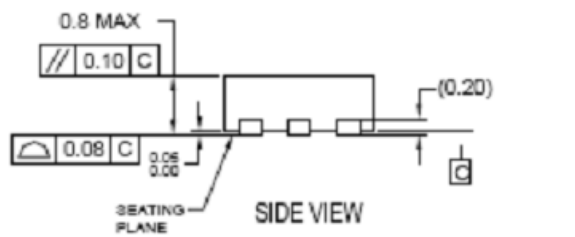
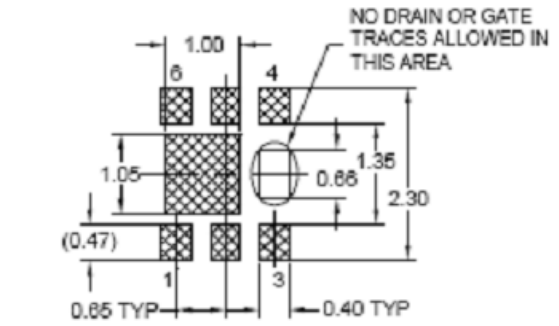
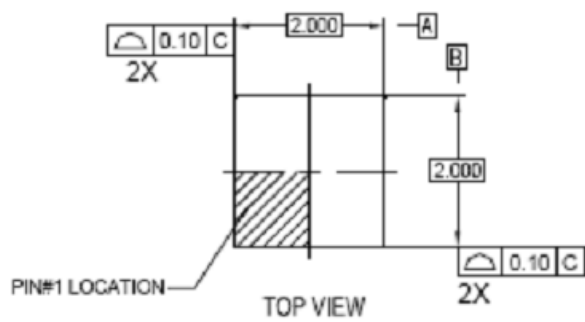
Switch Waveforms:



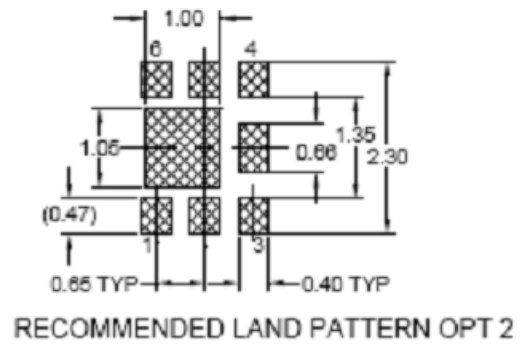
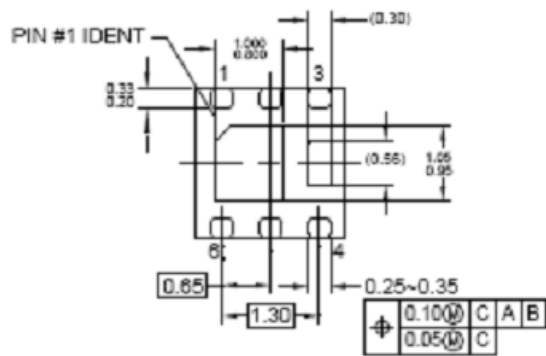
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## Package Outline Dimension

DFN2 x 2-6L



RECOMMENDED LAND PATTERN OPT 1



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