

## P-Channel 100 V (D-S) MOSFET

### PRODUCT SUMMARY

V <sub>DS</sub> (V)	R <sub>DS(on)</sub> (mΩ)(Typ.)	I <sub>D</sub> (A) <sup>a</sup>	Q <sub>g</sub> (Typ.)
- 100	66 at V <sub>GS</sub> = - 10 V	- 16	44 nC
	74 at V <sub>GS</sub> = - 4.5 V		

### FEATURES

- DT-Trench Power MOSFET
- 100 % R<sub>g</sub> and UIS Tested
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

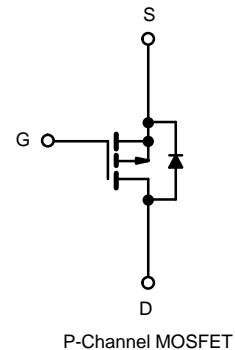
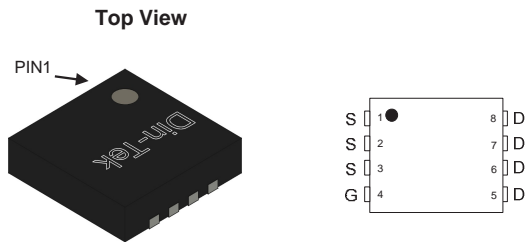


**RoHS**  
COMPLIANT

### APPLICATIONS

- Load switch
- Motor drive control
- DC-DC convertor

### DFN3.3X3.3-8L Pin Configuration



### ABSOLUTE MAXIMUM RATINGS (T<sub>C</sub> = 25 °C, unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V <sub>DS</sub>	- 100	V
Gate-Source Voltage	V <sub>GS</sub>	± 20	
Continuous Drain Current (T <sub>J</sub> = 150° C) <sup>a</sup>	I <sub>D</sub>	T <sub>C</sub> = 25 °C	- 16
		T <sub>C</sub> = 100 °C	- 10
Pulsed Drain Current <sup>b</sup>	I <sub>DM</sub>	- 60	A
Single Avalanche Energy	E <sub>AS</sub>	79	mJ
Maximum Power Dissipation <sup>c</sup>	P <sub>D</sub>	T <sub>C</sub> = 25 °C	56
		T <sub>C</sub> = 100 °C	22.4
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	- 55 to + 150	°C

### THERMAL RESISTANCE RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Junction-to-Ambient (PCB Mount) <sup>d</sup>	R <sub>thJA</sub>	65	°C/W
Junction-to-Case (Drain)	R <sub>thJC</sub>	2.23	

### Notes

- Calculated continuous current based on maximum allowable junction temperature.
- Repetitive rating; pulse width limited by max. junction temperature.
- P<sub>d</sub> is based on max. junction temperature, using junction-case thermal resistance.
- The value of R<sub>thJA</sub> is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T<sub>a</sub>=25 °C.

SPECIFICATIONS (T <sub>J</sub> = 25 °C, unless otherwise noted)						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
<b>Static</b>						
Drain-Source Breakdown Voltage	V <sub>DS</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = - 250 μA	- 100	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = - 250 μA	- 1.5	-	- 2.5	
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ± 10 V	-	-	± 100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -100 V, V <sub>GS</sub> = 0 V	-	-	- 1	μA
		V <sub>DS</sub> = -100V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 150 °C	-	-	- 100	
On-State Drain Current <sup>a</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> ≥ - 5 V, V <sub>GS</sub> = - 10 V	- 16	-	-	A
Drain-Source On-State Resistance <sup>a</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = - 10 V, I <sub>D</sub> = - 10 A	-	66	85	mΩ
		V <sub>GS</sub> = - 4.5 V, I <sub>D</sub> = - 10 A	-	74	102	
<b>Dynamic <sup>b</sup></b>						
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = - 50 V, f = 1 MHz	-	2040	-	pF
Output Capacitance	C <sub>oss</sub>		-	90	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	70	-	
Total Gate Charge <sup>c</sup>	Q <sub>g</sub>	V <sub>DS</sub> = - 50 V, V <sub>GS</sub> = - 10 V, I <sub>D</sub> = - 10 A	-	44	-	nC
Gate-Source Charge <sup>c</sup>	Q <sub>gs</sub>		-	4.7	-	
Gate-Drain Charge <sup>c</sup>	Q <sub>gd</sub>		-	5.5	-	
Gate Resistance	R <sub>g</sub>	f = 1 MHz	-	11.5	-	Ω
Turn-On Delay Time <sup>c</sup>	t <sub>d(on)</sub>	V <sub>DD</sub> = - 50 V, R <sub>g</sub> = 3 Ω, I <sub>D</sub> = - 10 A, V <sub>GS</sub> = - 10 V	-	9	-	ns
Rise Time <sup>c</sup>	t <sub>r</sub>		-	42	-	
Turn-Off Delay Time <sup>c</sup>	t <sub>d(off)</sub>		-	91	-	
Fall Time <sup>c</sup>	t <sub>f</sub>		-	31	-	
<b>Drain-Source Body Diode Ratings and Characteristics <sup>b</sup> (T<sub>C</sub> = 25 °C)</b>						
Continuous Source-Drain Diode Current	I <sub>S</sub>	T <sub>C</sub> = 25 °C	-	-	- 16	A
Pulsed Current	I <sub>SM</sub>		-	-	- 60	A
Forward Voltage <sup>a</sup>	V <sub>SD</sub>	I <sub>F</sub> = - 1 A, V <sub>GS</sub> = 0 V	-	-	-1.2	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = - 10 A, di/dt = 100 A/μs	-	30	-	ns
Reverse Recovery Charge	Q <sub>rr</sub>		-	45	-	nC

**Notes**

- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %.  
 b. Guaranteed by design, not subject to production testing.  
 c. Independent of operating temperature.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

**TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)**

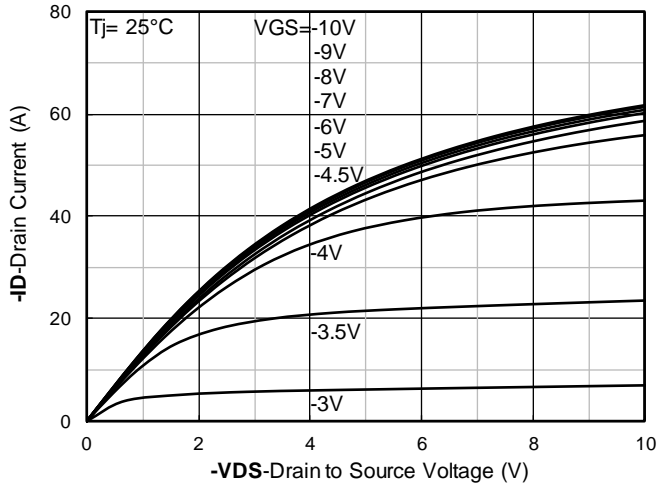


Figure 1. Output Characteristics

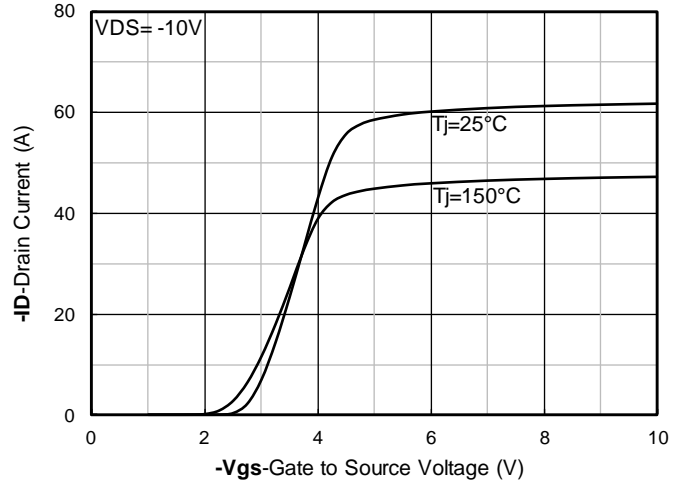


Figure 2. Transfer Characteristics

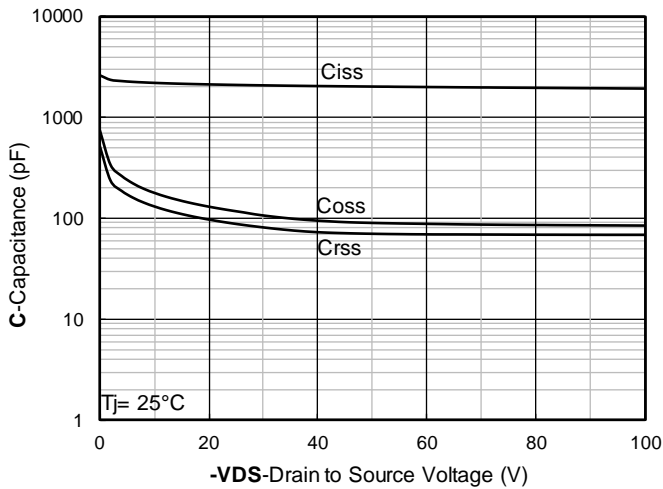


Figure 3. Capacitance Characteristics

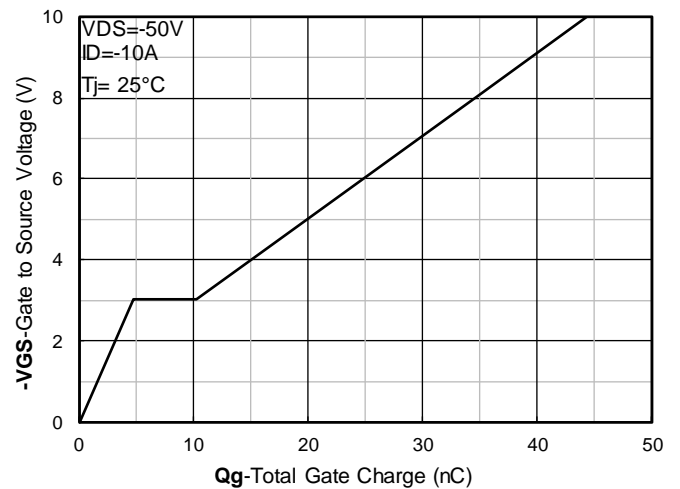


Figure 4. Gate Charge

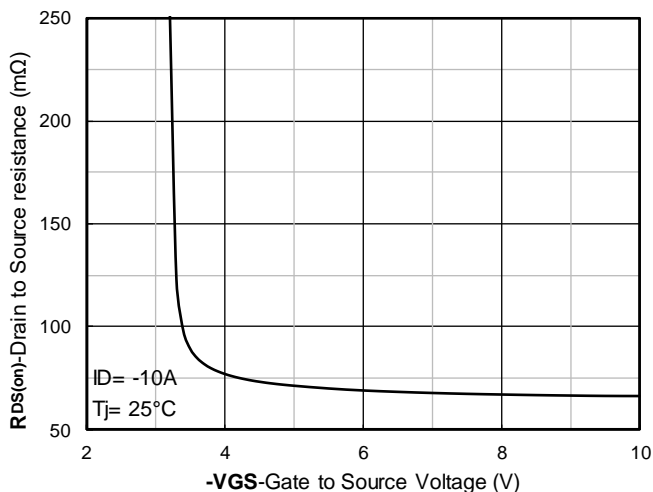


Figure 5. On-Resistance vs Gate to Source Voltage

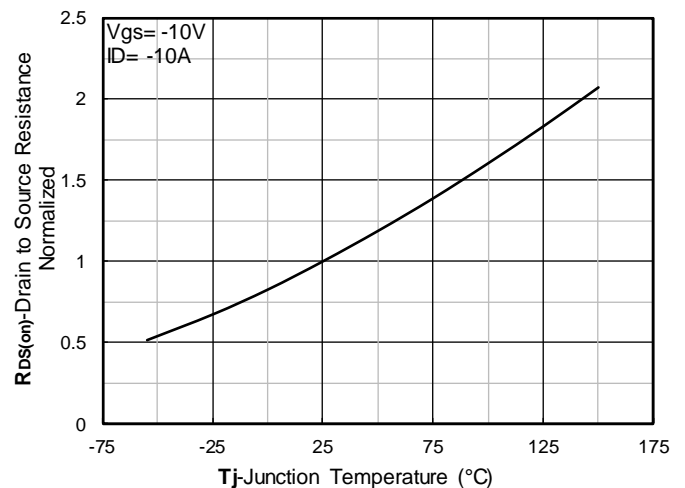


Figure 6. Normalized On-Resistance

**TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)**

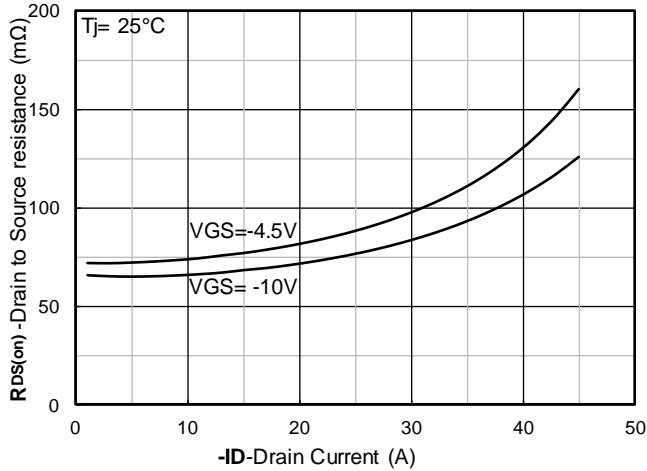


Figure 7. RDS(on) VS Drain Current

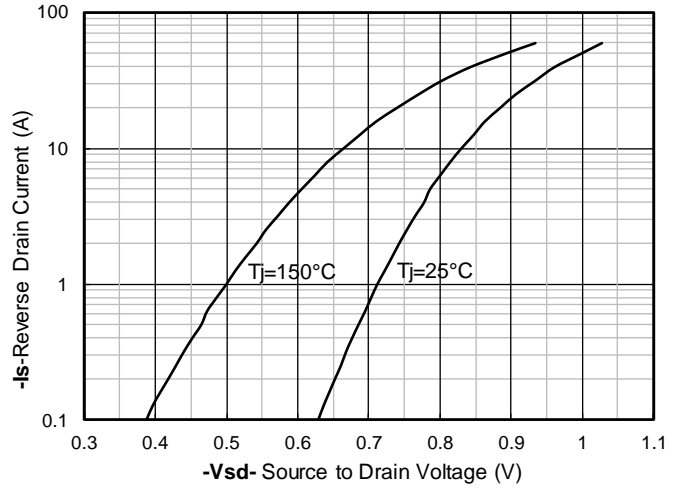


Figure 8. Forward characteristics of reverse diode

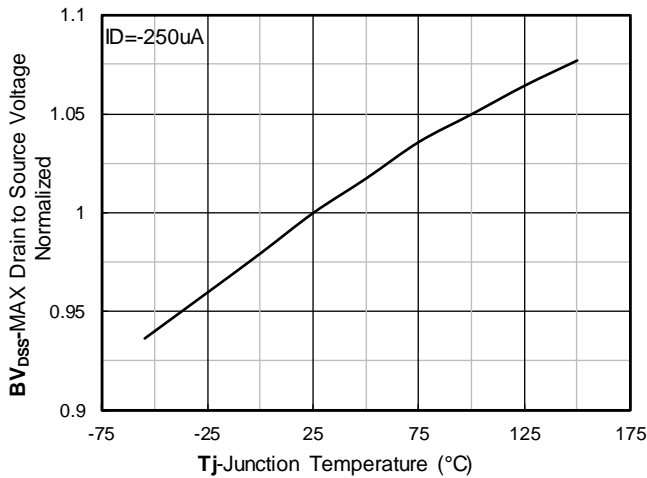


Figure 9. Normalized breakdown voltage

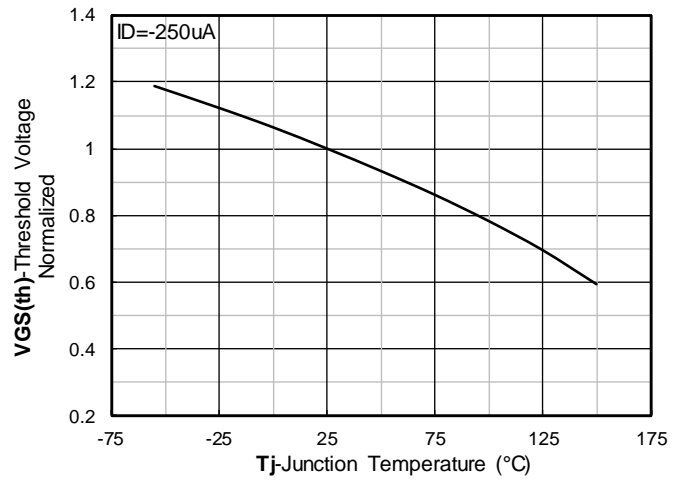


Figure 10. Normalized Threshold voltage

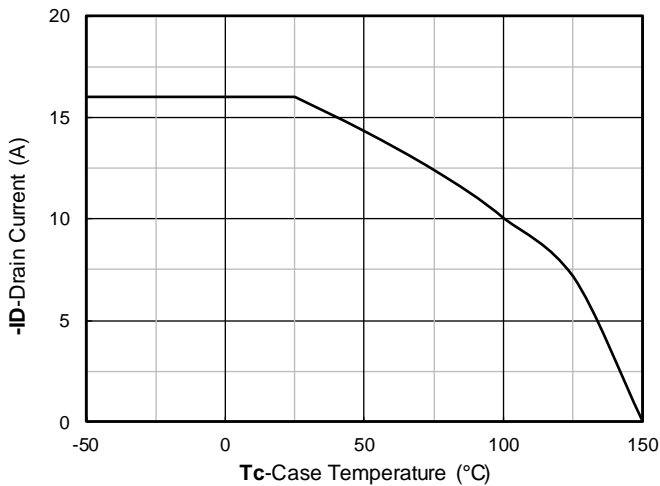


Figure 11. Current dissipation

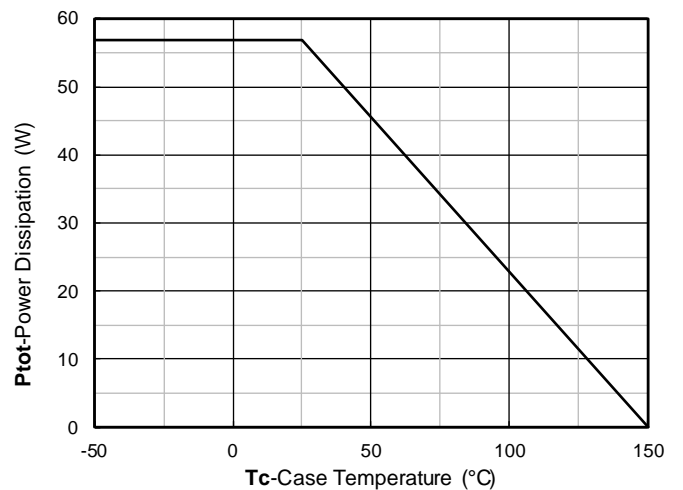


Figure 12. Power dissipation

TYPICAL CHARAC TERISTICS (25 °C, unless otherwise noted)

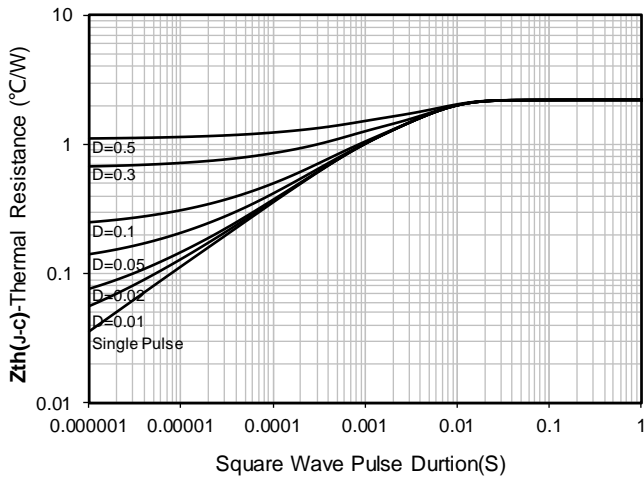


Figure 13. Maximum Transient Thermal Impedance

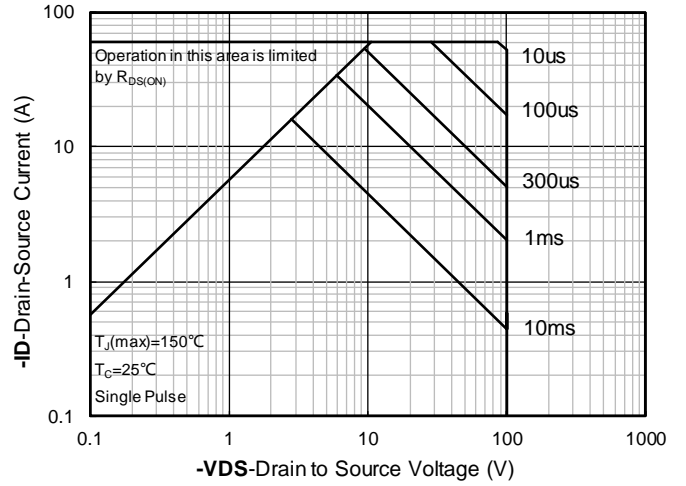
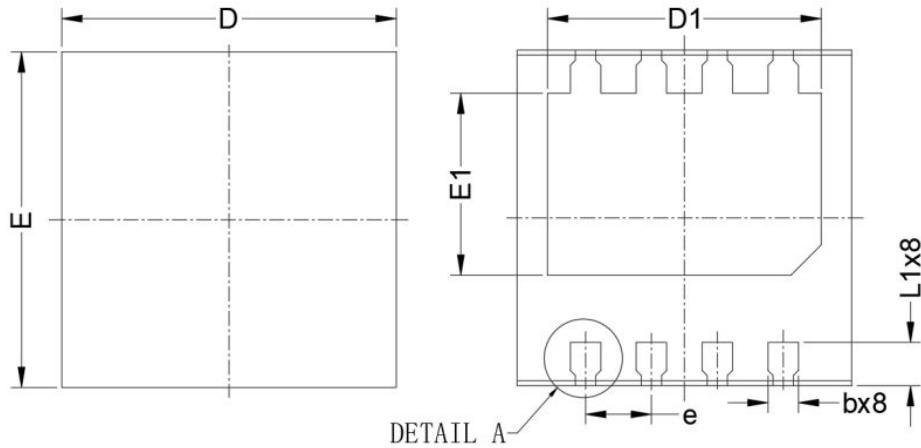


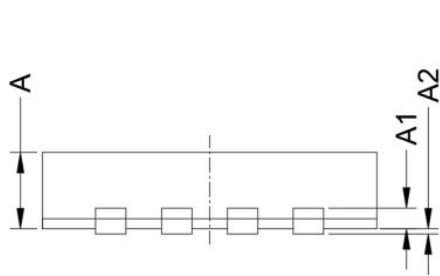
Figure 14. Safe Operation Area

**DFN3.3X3.3-8L PACKAGE OUTLINE**

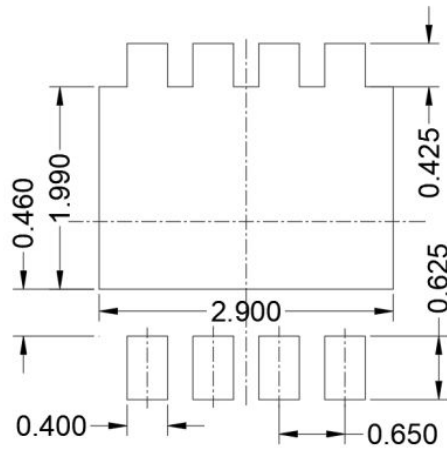


Top View

Bottom View



Side View



Suggested Solder Pad Layout  
Top View

SYMBOL	MILLIMETER		
	MIN	TYP	MAX
D	3.30 BSC		
E	3.30 BSC		
A	0.70	0.75	0.80
A1	0.203 BSC		
A2			0.10
D1	2.60	2.70	2.80
E1	1.69	1.79	1.89
L1	0.325	0.425	0.525
b	0.20	0.30	0.40
e	0.65 BSC		

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