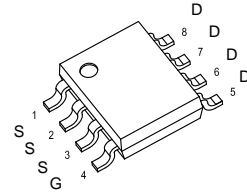


## Product Summary

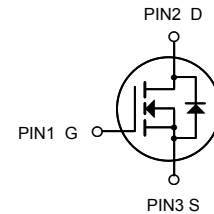
$V_{DS}$	60V
$I_D$ (at $V_{GS}=10V$ )	11A
$R_{DS(ON)}$ (at $V_{GS}=10V$ )	< 13.5m $\Omega$
$R_{DS(ON)}$ (at $V_{GS}=4.5V$ )	< 18m $\Omega$



SOP08

## General Description

- Trench Power AlphaSGT™ technology
- Low  $R_{DS(ON)}$
- Logic Level Gate Drive
- Excellent Gate Charge x  $R_{DS(ON)}$  Product (FOM)
- RoHS and Halogen-Free Compliant



N-Channel MOSFET

## Applications

- High Frequency Switching and Synchronous Rectification

Orderable Part Number	Package Type	Form	Minimum Order Quantity	
4266E	SOP08	Tape & Reel	3000	
<b>Absolute Maximum Ratings <math>T_A=25^\circ\text{C}</math> unless otherwise noted</b>				
Parameter	Symbol	Maximum	Units	
Drain-Source Voltage	$V_{DS}$	60	V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V	
Continuous Drain Current	$I_D$	$T_A=25^\circ\text{C}$	11	
		$T_A=70^\circ\text{C}$	8.5	
Pulsed Drain Current <sup>C</sup>	$I_{DM}$	44	A	
Avalanche Current <sup>C</sup>	$I_{AS}$	14	A	
Avalanche energy L=0.3mH <sup>C</sup>	$E_{AS}$	29	mJ	
$V_{DS}$ Spike <sup>G</sup>	10 $\mu\text{s}$	$V_{SPIKE}$	72	
Power Dissipation <sup>B</sup>	$P_D$	$T_A=25^\circ\text{C}$	3.1	
		$T_A=70^\circ\text{C}$	2.0	
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	$^\circ\text{C}$	
<b>Thermal Characteristics</b>				
Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient <sup>A</sup>	$R_{\theta JA}$	31	40	$^\circ\text{C/W}$
Maximum Junction-to-Ambient <sup>A,D</sup>		Steady-State	59	75
Maximum Junction-to-Lead	$R_{\theta JL}$	16	24	$^\circ\text{C/W}$

Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>STATIC PARAMETERS</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	I <sub>D</sub> =250μA, V <sub>GS</sub> =0V	60			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V T <sub>J</sub> =55°C			1 5	μA
I <sub>GSS</sub>	Gate-Body leakage current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±10	μA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.2	1.7	2.2	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =11A T <sub>J</sub> =125°C		11 17.8	13.5 21.9	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =9A		14.3	18	mΩ
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =11A		35		S
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =1A, V <sub>GS</sub> =0V		0.72	1	V
I <sub>S</sub>	Maximum Body-Diode Continuous Current				4	A
<b>DYNAMIC PARAMETERS</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =30V, f=1MHz		755		pF
C <sub>oss</sub>	Output Capacitance			220		pF
C <sub>riss</sub>	Reverse Transfer Capacitance			20		pF
R <sub>g</sub>	Gate resistance	f=1MHz	0.6	1.3	2.0	Ω
<b>SWITCHING PARAMETERS</b>						
Q <sub>g(10V)</sub>	Total Gate Charge	V <sub>GS</sub> =10V, V <sub>DS</sub> =30V, I <sub>D</sub> =11A		13.5	20	nC
Q <sub>g(4.5V)</sub>	Total Gate Charge			6.5	10	nC
Q <sub>gs</sub>	Gate Source Charge			2.5		nC
Q <sub>gd</sub>	Gate Drain Charge			3.0		nC
Q <sub>oss</sub>	Output Charge	V <sub>GS</sub> =0V, V <sub>DS</sub> =30V		11		nC
t <sub>D(on)</sub>	Turn-On DelayTime	V <sub>GS</sub> =10V, V <sub>DS</sub> =30V, R <sub>L</sub> =2.75Ω, R <sub>GEN</sub> =3Ω		5		ns
t <sub>r</sub>	Turn-On Rise Time			3		ns
t <sub>D(off)</sub>	Turn-Off DelayTime			19		ns
t <sub>f</sub>	Turn-Off Fall Time			3		ns
t <sub>rr</sub>	Body Diode Reverse Recovery Time	I <sub>F</sub> =11A, di/dt=500A/μs		15		ns
Q <sub>rr</sub>	Body Diode Reverse Recovery Charge	I <sub>F</sub> =11A, di/dt=500A/μs		45		nC

A. The value of R<sub>θJA</sub> is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub>=25° C. The value in any given application depends on the user's specific board design.

B. The power dissipation P<sub>D</sub> is based on T<sub>J(MAX)</sub>=150° C, using ≤ 10s junction-to-ambient thermal resistance.

C. Repetitive rating, pulse width limited by junction temperature T<sub>J(MAX)</sub>=150° C. Ratings are based on low frequency and duty cycles to keep initial T<sub>J</sub>=25° C.

D. The R<sub>θJA</sub> is the sum of the thermal impedance from junction to lead R<sub>θJL</sub> and lead to ambient.

E. The static characteristics in Figures 1 to 6 are obtained using <300μs pulses, duty cycle 0.5% max.

F. These curves are based on the junction-to-ambient thermal impedance which is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, assuming a maximum junction temperature of T<sub>J(MAX)</sub>=150° C. The SOA curve provides a single pulse rating.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

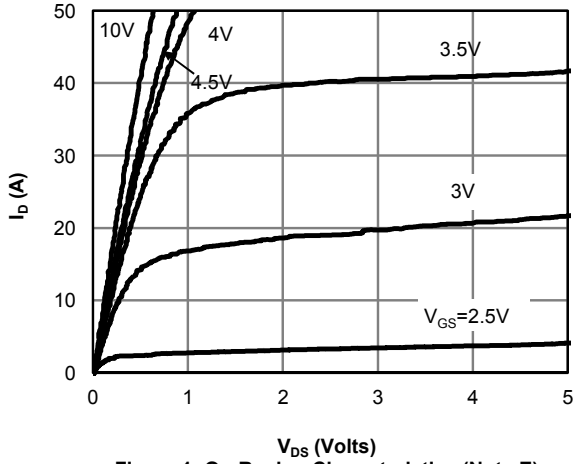


Figure 1: On-Region Characteristics (Note E)

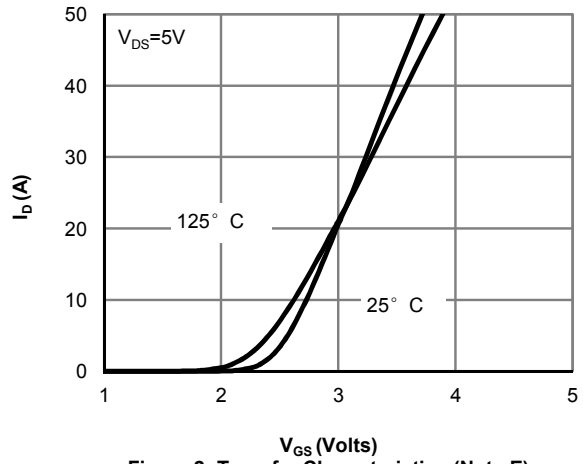


Figure 2: Transfer Characteristics (Note E)

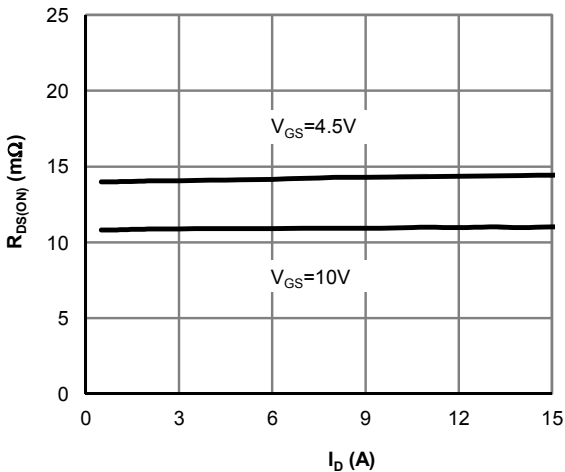


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

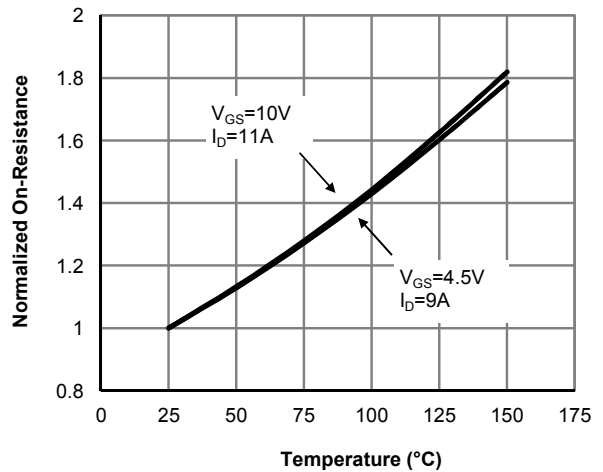


Figure 4: On-Resistance vs. Junction Temperature (Note E)

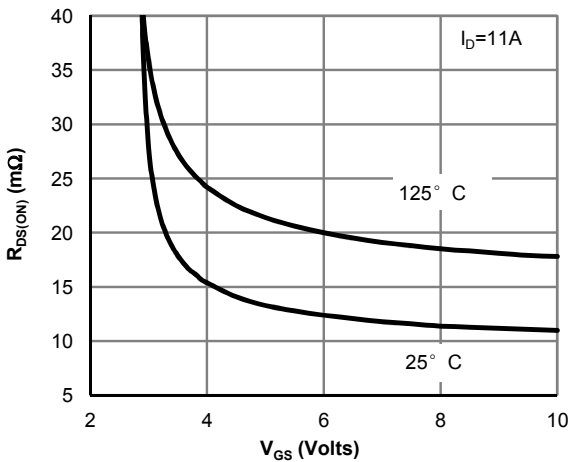


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

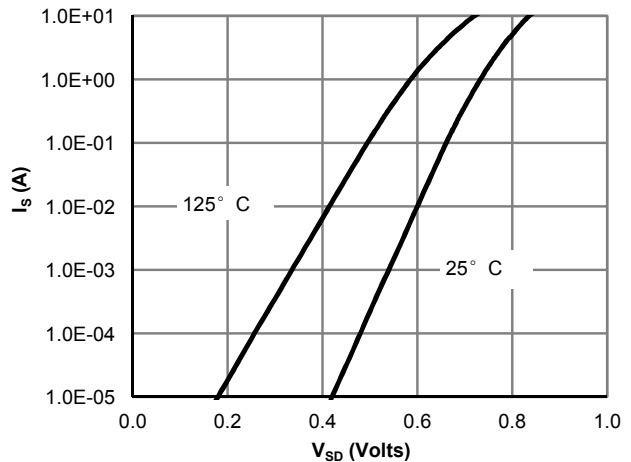


Figure 6: Body-Diode Characteristics (Note E)

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

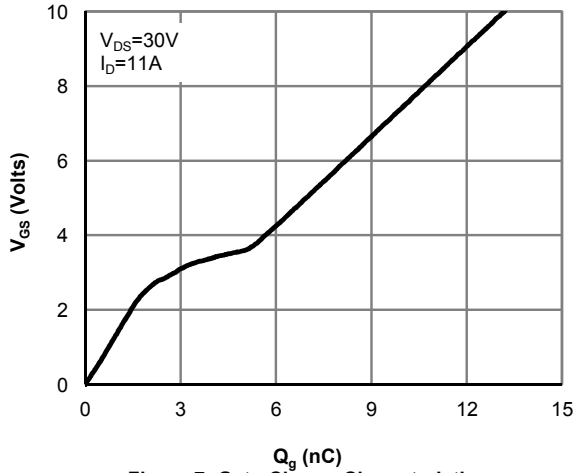


Figure 7: Gate-Charge Characteristics

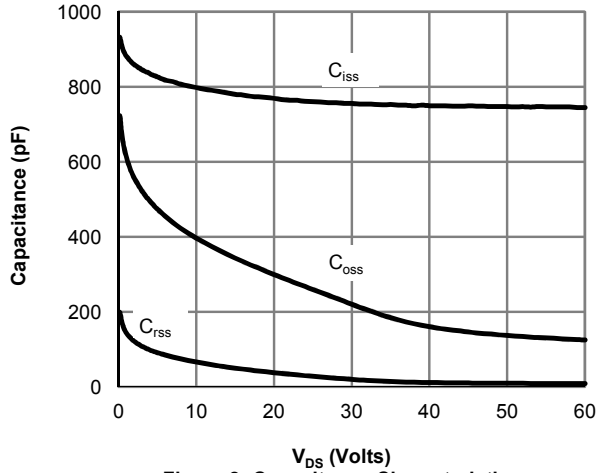


Figure 8: Capacitance Characteristics

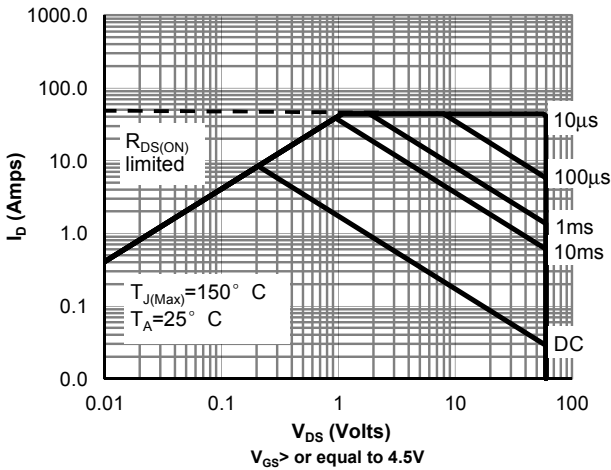


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

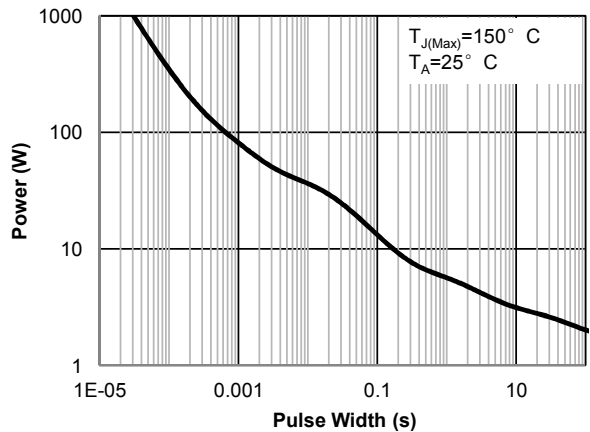


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

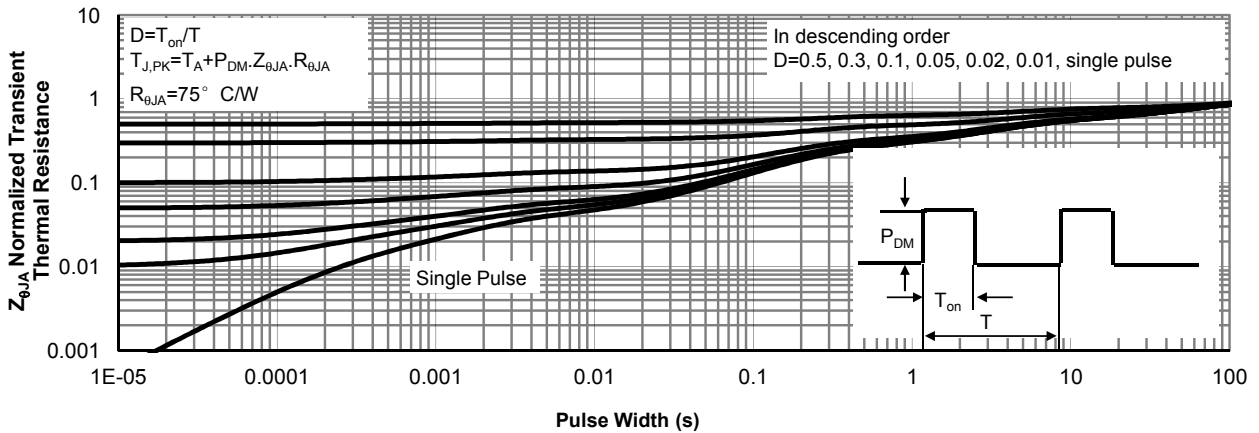


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

Figure A: Gate Charge Test Circuit & Waveforms

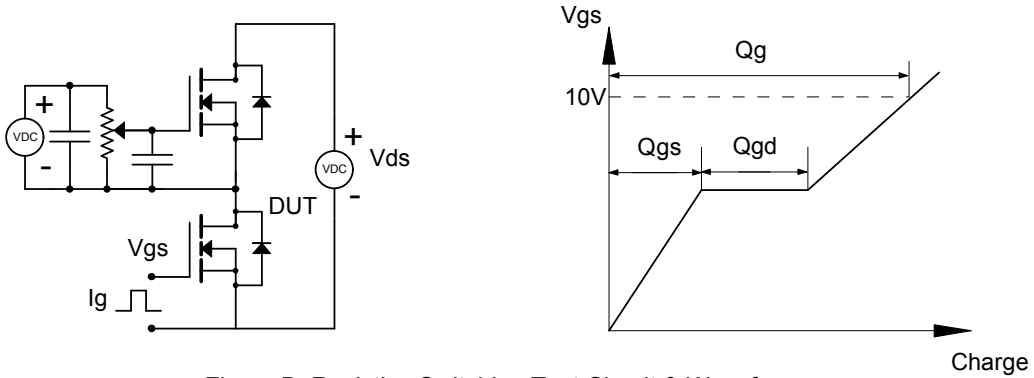


Figure B: Resistive Switching Test Circuit & Waveforms

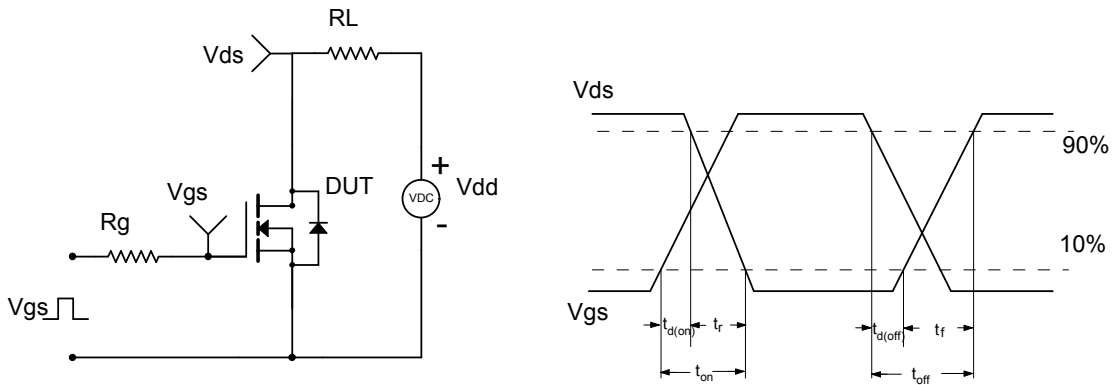


Figure C: Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

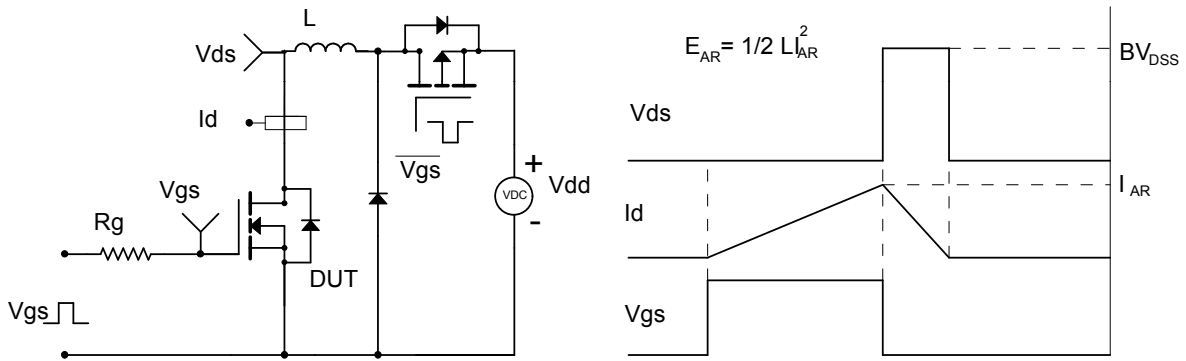
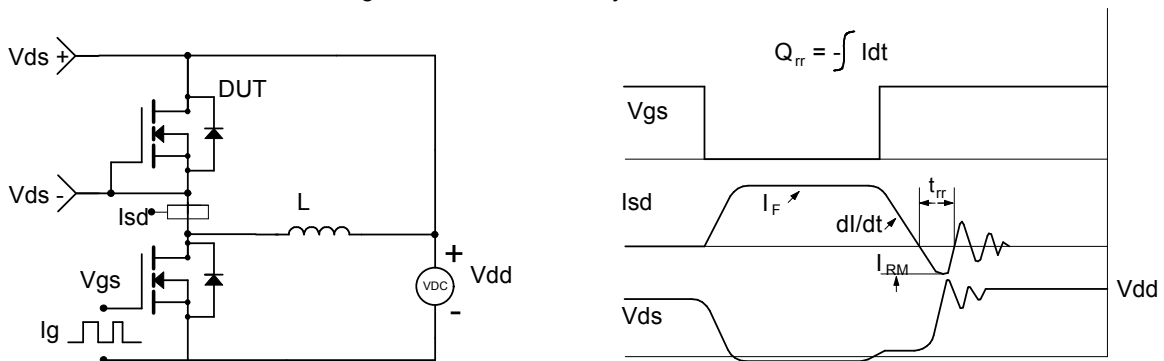
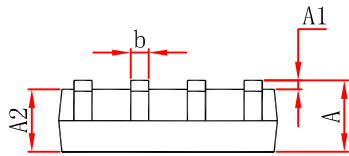
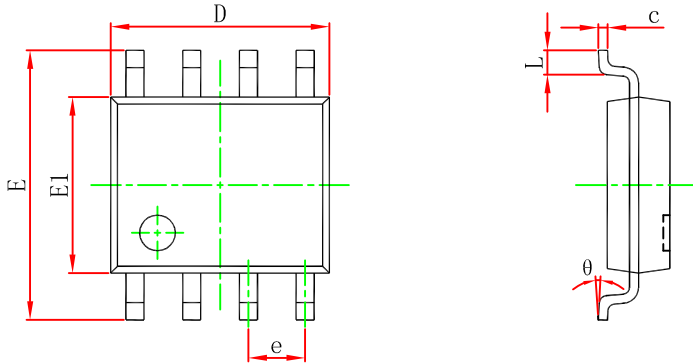


Figure D: Diode Recovery Test Circuit & Waveforms

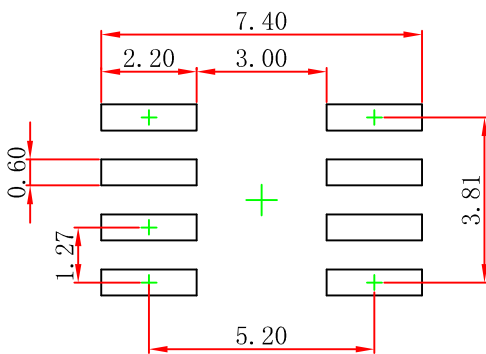




Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A				
A1				
A2				
b				
c				
D				
e	Ä % 6 & Ä		Ä % 6 & Ä	
E				
E1				
L				
	©	e	e	e

e

6P8 6XJJHVWHG 3DG /D\RXW



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05mm.
3. The pad layout is for reference purposes only.