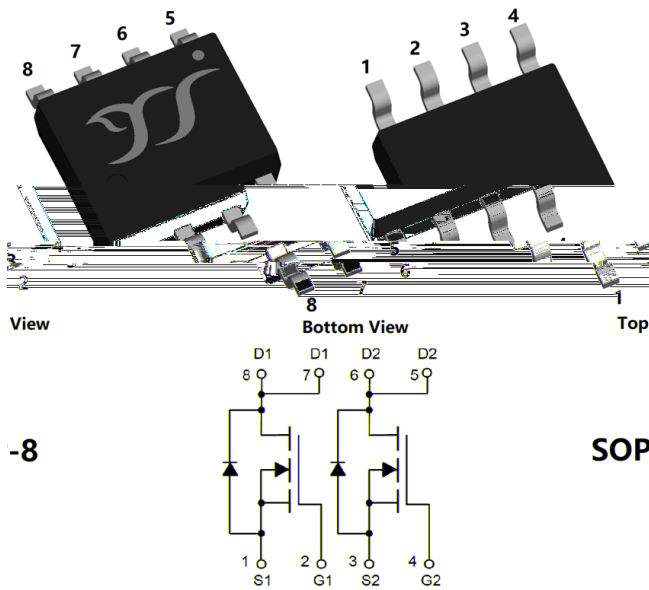


## N-Channel and N-Channel Complementary MOSFET



### Product Summary

- $V_{DS}$  40V
- $I_D$  7A
- $R_{DS(ON)}$  (at  $V_{GS}=10V$ )  $< 32m\Omega$
- $R_{DS(ON)}$  (at  $V_{GS}=4.5V$ )  $< 50m\Omega$
- 100% EAS Tested

### General Description

- Trench Power MV MOSFET technology
- High Speed switching
- Moisture Sensitivity Level 3
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

### Applications

- Power switching application
- Uninterruptible power supply
- Load switch

### ■ Absolute Maximum Ratings ( $T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-source Voltage	$V_{DS}$	40	V
Gate-source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current	$I_D$	$T_A=25$	7
		$T_A=100$	4
Pulsed Drain Current <sup>A</sup>	$I_{DM}$	30	A
Avalanche energy <sup>B</sup>	EAS	14	mJ
Total Power Dissipation <sup>C</sup>	$P_D$	$T_A=25$	2
		$T_A=100$	0.8
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~+150	

### ■ Thermal resistance

Parameter	Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient <sup>D</sup>	$R_{\theta JA}$	50	60	/W

### ■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJSD07N04B	F2	Q07N04B	4000	8000	64000	13" reel



# YJSD07N04B

## ■ Electrical Characteristics ( $T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>Static Parameter</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	40	-	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=40V, V_{GS}=0V$	-	-	1	$\mu A$
		$V_{DS}=40V, V_{GS}=0V, T_J=150$	-	-	100	
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.5	2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=7A$	-	25	32	m $\Omega$
		$V_{GS}=4.5V, I_D=5A$	-	35	50	
Diode Forward Voltage	$V_{SD}$	$I_S=7A, V_{GS}=0V$	-	0.9	1.2	V
Gate resistance	$R_G$	f=1MHz, Open drain	-	2	-	$\Omega$
Maximum Body-Diode Continuous Current	$I_S$		-	-	7	A
<b>Dynamic Parameters</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=20V, V_{GS}=0V, f=1MHz$	-	390	-	pF
Output Capacitance	$C_{oss}$		-	50	-	
Reverse Transfer Capacitance	$C_{rss}$		-	40	-	
<b>Switching Parameters</b>						
Total Gate Charge	$Q_g$	$V_{GS}=10V, V_{DS}=20V, I_D=7A$	-	11	-	nC
Gate-Source Charge	$Q_{gs}$		-	3	-	
Gate-Drain Charge	$Q_{gd}$		-	3	-	



## Typical Electrical and Thermal Characteristics Diagrams

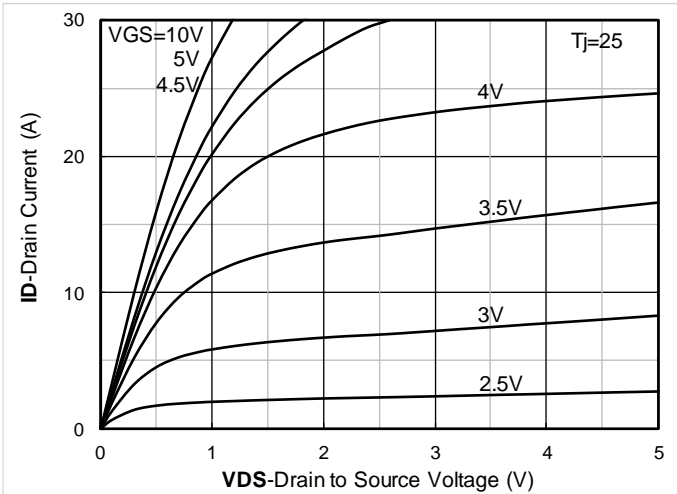


Figure 1. Output Characteristics

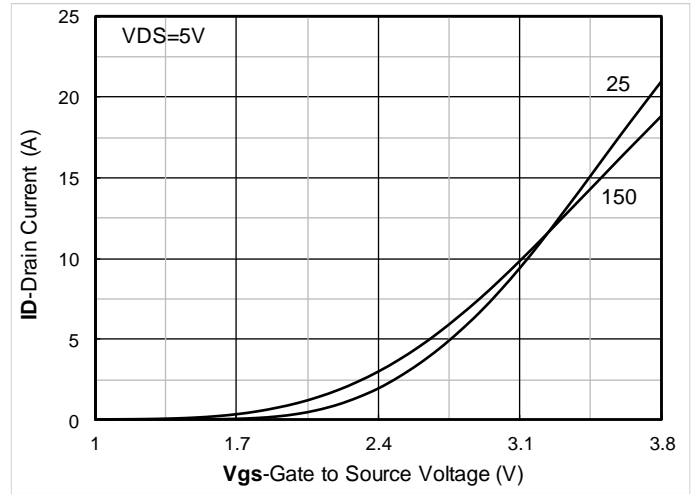


Figure 2. Transfer Characteristics

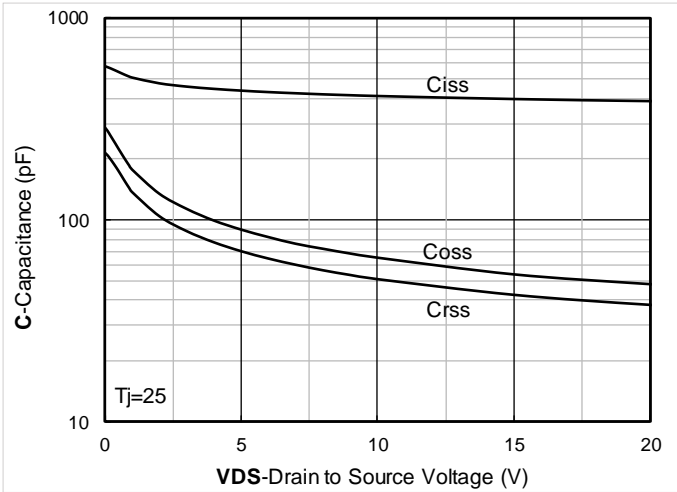


Figure 3. Capacitance Characteristics

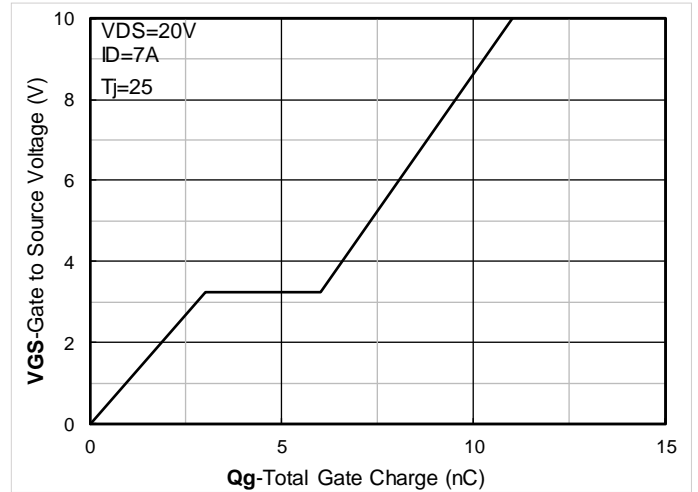


Figure 4. Gate Charge

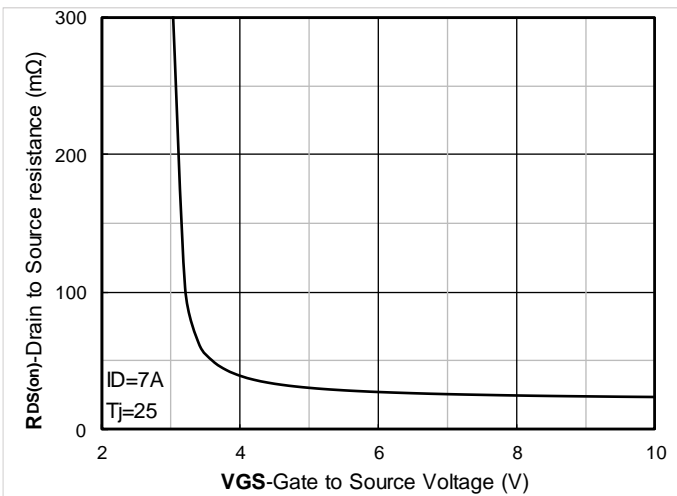


Figure 5. On-Resistance vs Gate to Source Voltage

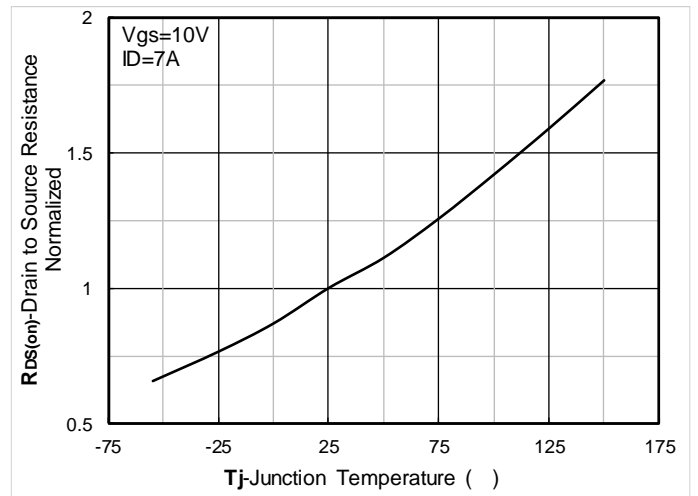


Figure 6. Normalized On-Resistance



# YJSD07N04B

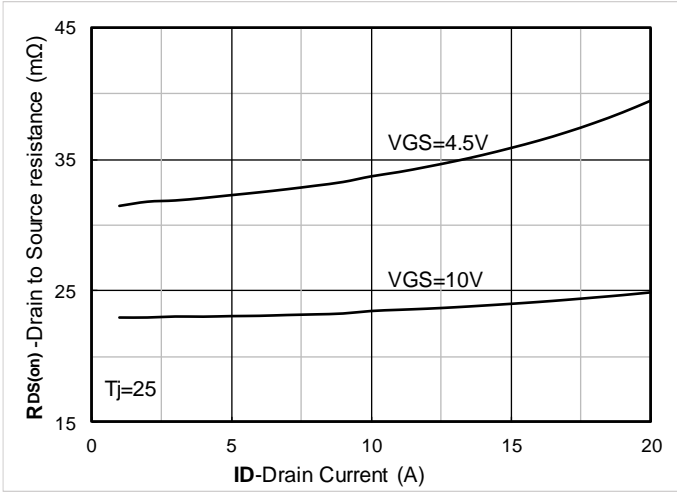


Figure 7.  $R_{DS(on)}$  VS Drain Current

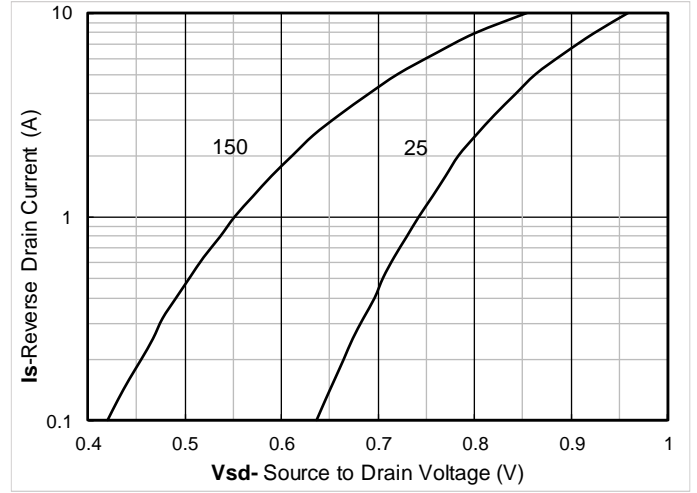


Figure 8. Forward characteristics of reverse diode

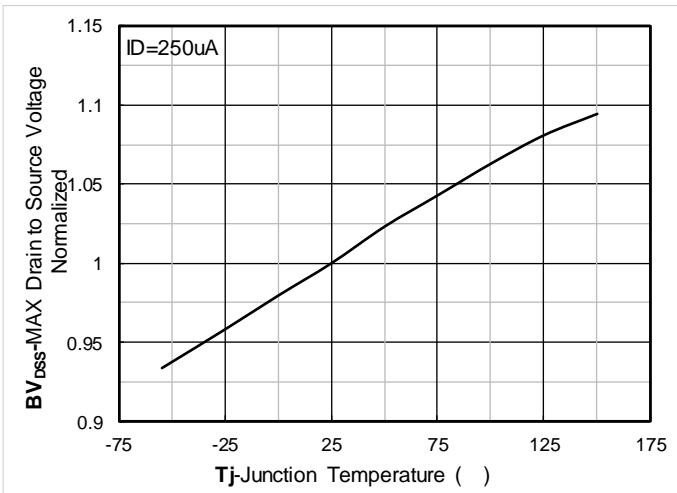


Figure 9. Normalized breakdown voltage

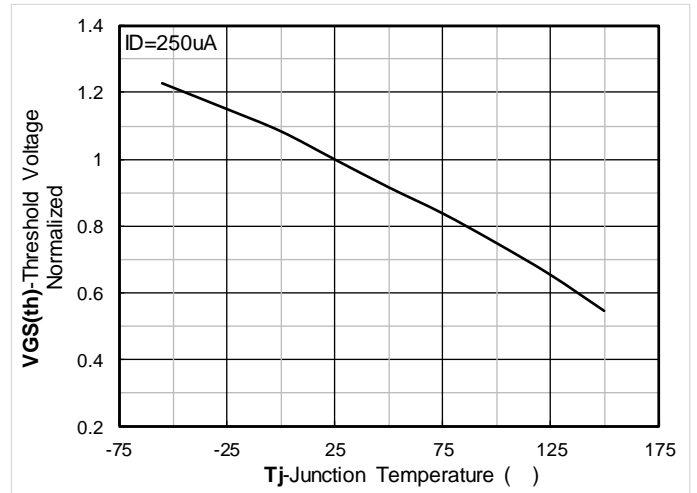


Figure 10. Normalized Threshold voltage

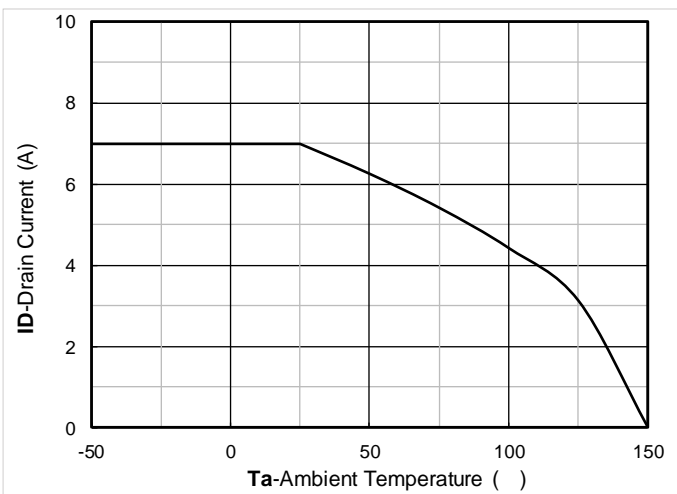


Figure 11. Current dissipation

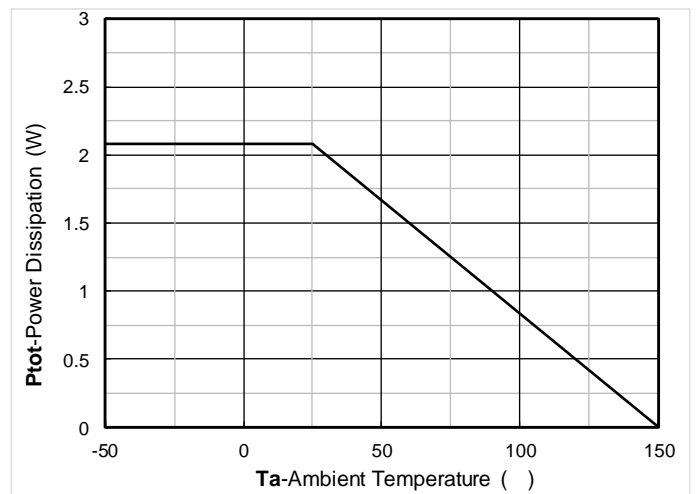


Figure 12. Power dissipation

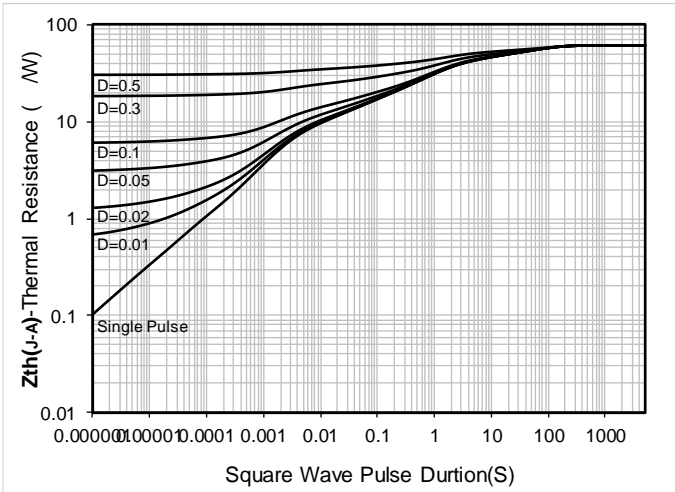


Figure 13. Maximum Transient Thermal Impedance

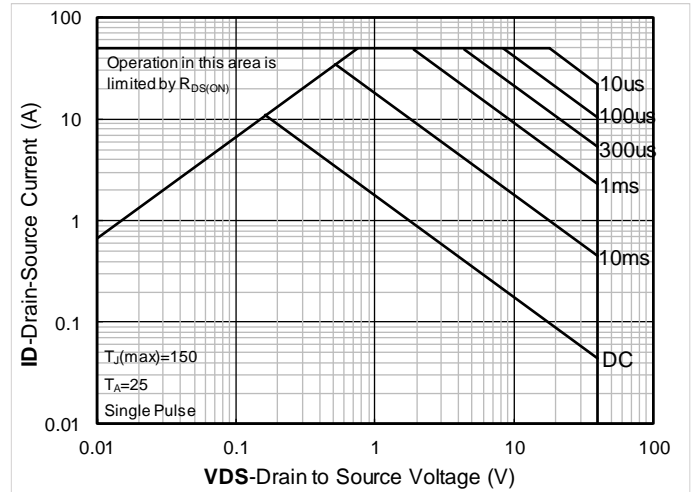


Figure 14. Safe Operation Area

## ■ Test Circuits & Waveforms

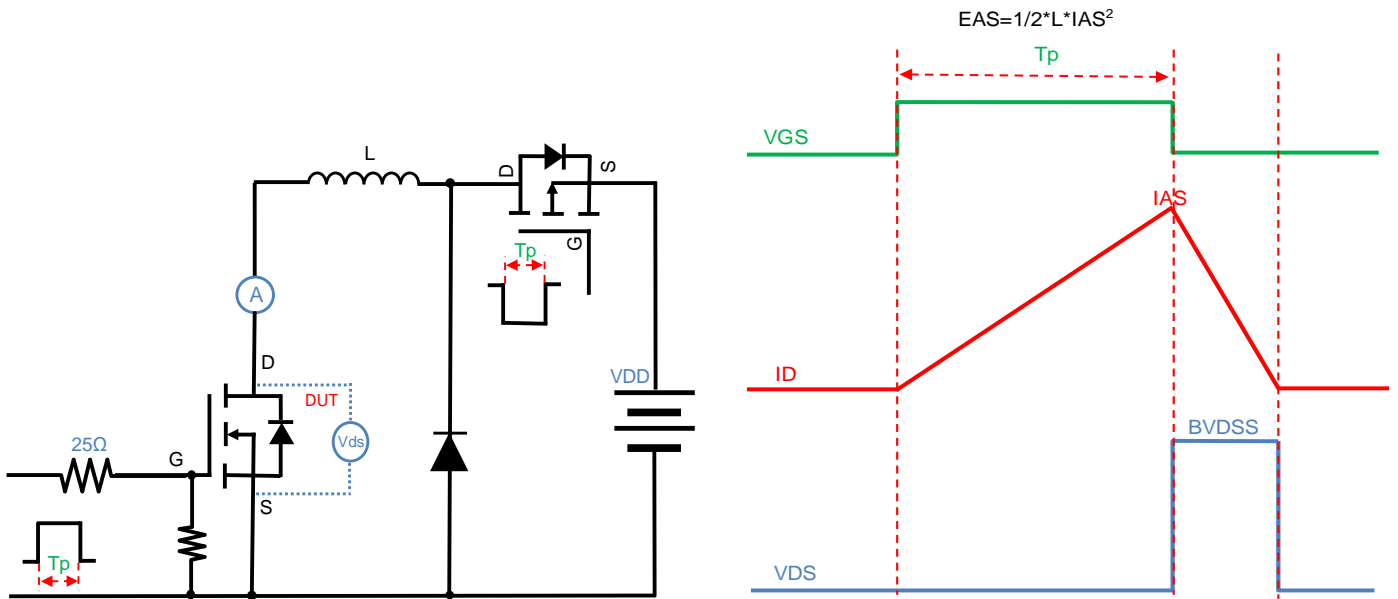


Figure A. Unclamped Inductive Switching (UIS) Test Circuit & Waveform

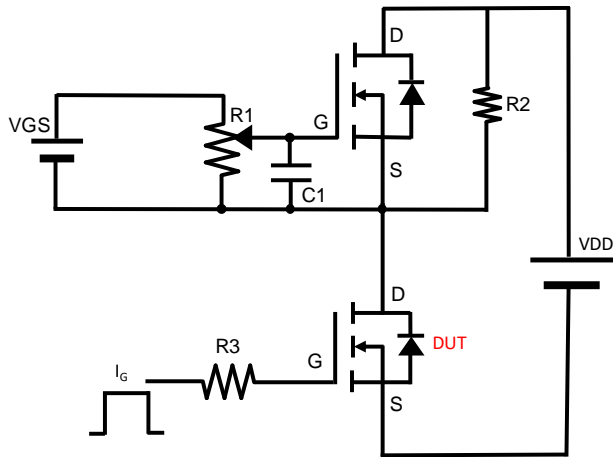


Figure B. Gate Charge Test Circuit & Waveform



Figure C. Resistive Switching Test Circuit & Waveform

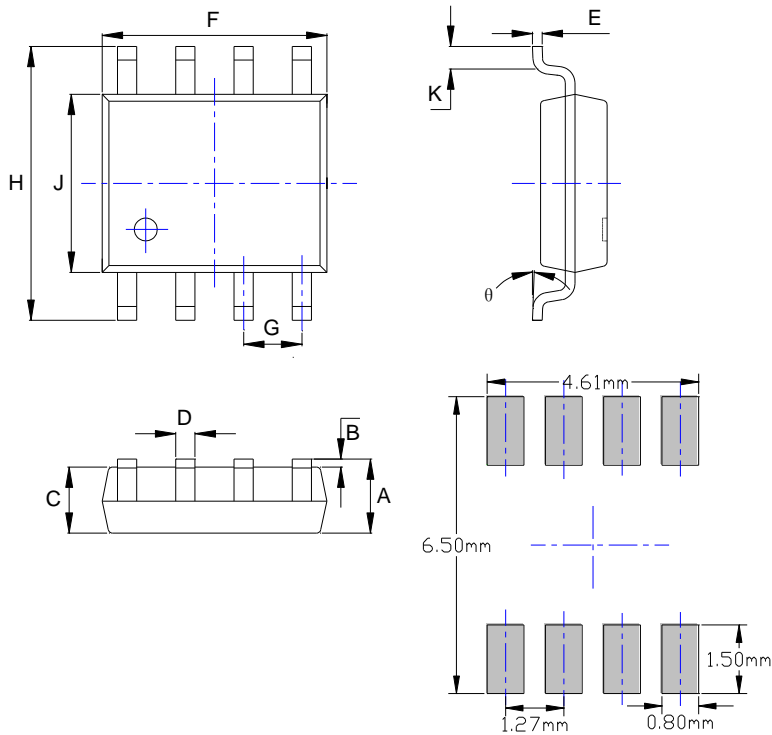


Figure D. Diode Recovery Test Circuit & Waveform



# YJSD07N04B

## ■ SOP8 Package information



DIMENSIONS				
SYMBOL	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.053	0.069	1.350	1.750
B	0.004	0.010	0.100	0.250
C	0.053	0.061	1.350	1.550
D	0.013	0.020	0.330	0.510
E	0.007	0.010	0.170	0.250
F	0.189	0.197	4.800	5.000
G	0.050BSC		1.270BSC	
H	0.228	0.244	5.800	6.200
J	0.150	0.157	3.800	4.000
K	0.016	0.050	0.400	1.270
θ	0°	8°	0°	8°

**Note:**  
1. Controlling dimension: in millimeters.  
2. General tolerance:  $\pm 0.05\text{mm}$ .  
3. The pad layout is for reference purposes only.



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