



## N-Channel Enhancement Mode Field Effect Transistor

### Product Summary

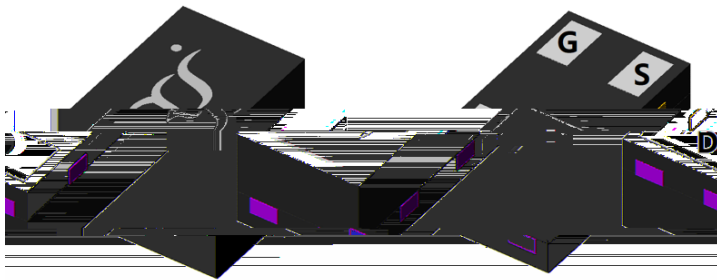
$V_{DS}$	30V
$I_D$	1.4A
$R_{DS(ON)}$ (at $V_{GS}=4.5V$ )	240m
$R_{DS(ON)}$ (at $V_{GS}=2.5V$ )	300m
$R_{DS(ON)}$ (at $V_{GS}=1.8V$ )	500m
ESD Protected Up to 3.0KV (HBM)	

### General Description

Trench Power MV MOSFET technology  
Voltage controlled small signal switch  
Low input Capacitance  
Fast Switching Speed  
Moisture Sensitivity Level 1  
Epoxy Meets UL 94 V-0 Flammability Rating  
Halogen Free

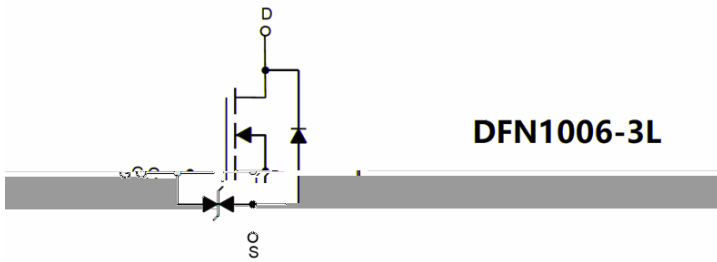
### Applications

Battery operated systems  
Solid-state relays  
Direct logic-level interface TTL/CMOS



Bottom View

Top View



DFN1006-3L

### Absolute Maximum Ratings ( $T_A=25$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-source Voltage	$V_{DS}$	30	V
Gate-source Voltage	$V_{GS}$	$\pm 10$	V
Drain Current	$I_D$	$T_A=25^\circ C$	1.4
		$T_A=100^\circ C$	0.9
Pulsed Drain Current <sup>A</sup>	$I_{DM}$	5	A
Total Power Dissipation <sup>B</sup>	$P_D$	$T_A=25^\circ C$	0.8
		$T_A=100^\circ C$	0.3
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 +150	$^\circ C$

### Thermal resistance

Parameter	Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient <sup>C</sup>	$R_{JA}$	125	150	$^\circ C/W$

### Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJA01N03KA	F1	13	10000	100000	400000	7" reel



# YJA01N03KA

## Electrical Characteristics ( $T_J=25$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>Static Parameter</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V$	-	-	1	$\mu A$
		$V_{DS}=30V, V_{GS}=0V, T_J=150^\circ C$	-	-	100	
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 10V, V_{DS}=0V$	-	-	$\pm 10$	$\mu A$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.45	0.75	1	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=1.4A$	-	180	240	m
		$V_{GS}=2.5V, I_D=1.2A$	-	225	300	
		$V_{GS}=1.8V, I_D=1.0A$	-	330	500	
Diode Forward Voltage	$V_{SD}$	$I_S=1.4A, V_{GS}=0V$	-	0.9	1.2	V
Maximum Body-Diode Continuous Current	$I_S$		-	-	1.4	A
<b>Dynamic Parameters</b>						

Input Capacitance

$C_{iss}$



## Typical Electrical and Thermal Characteristics Diagrams

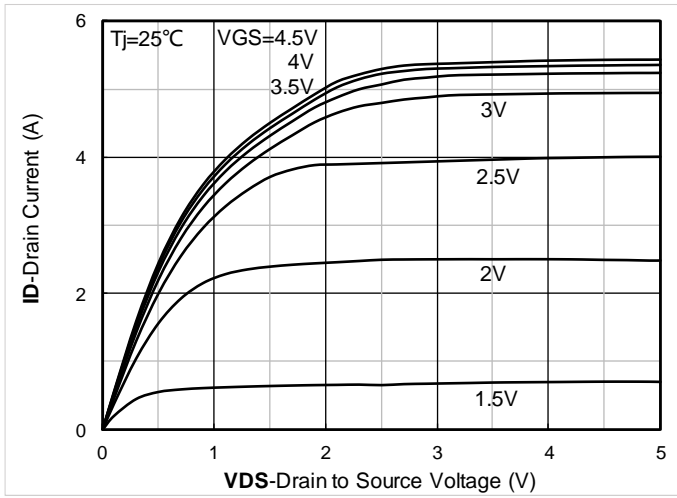


Figure 1. Output Characteristics

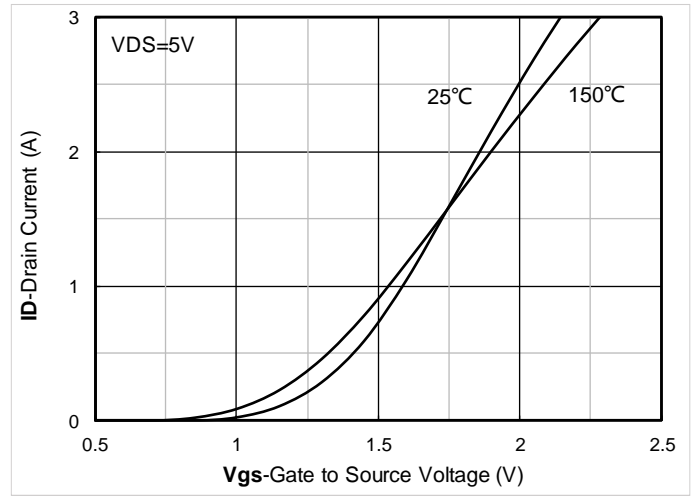


Figure 2. Transfer Characteristics

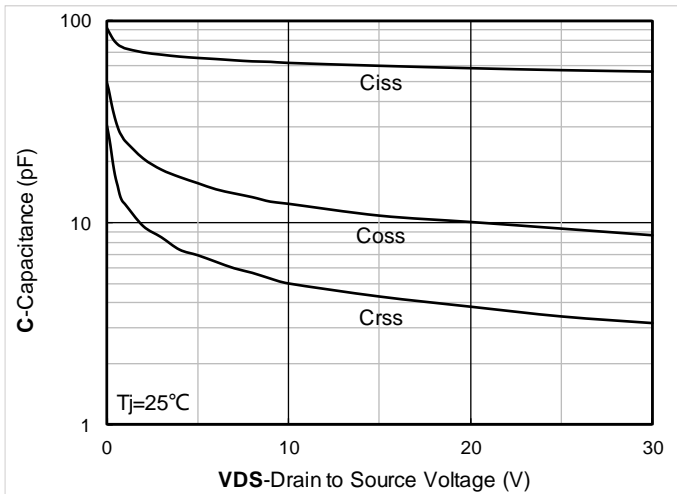


Figure 3. Capacitance Characteristics

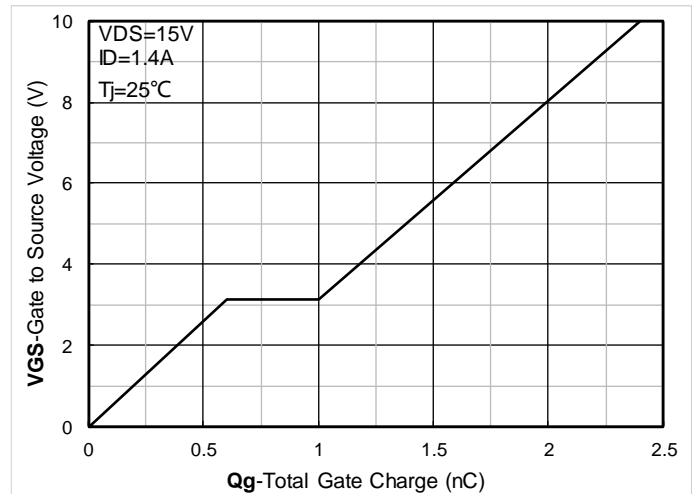


Figure 4. Gate Charge

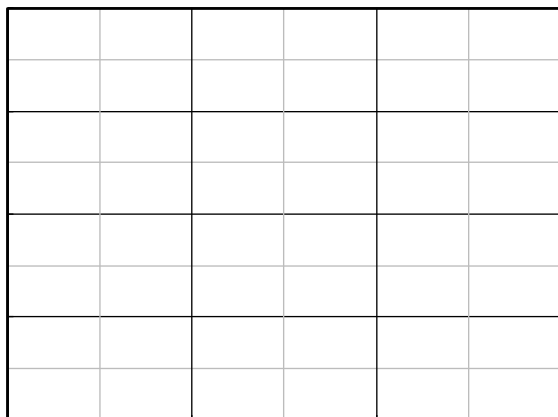


Figure 5. On-Resistance vs Gate to Source Voltage

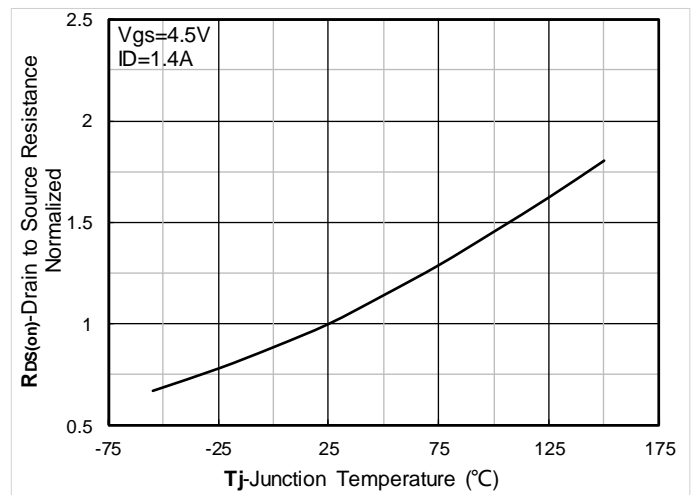


Figure 6. Normalized On-Resistance

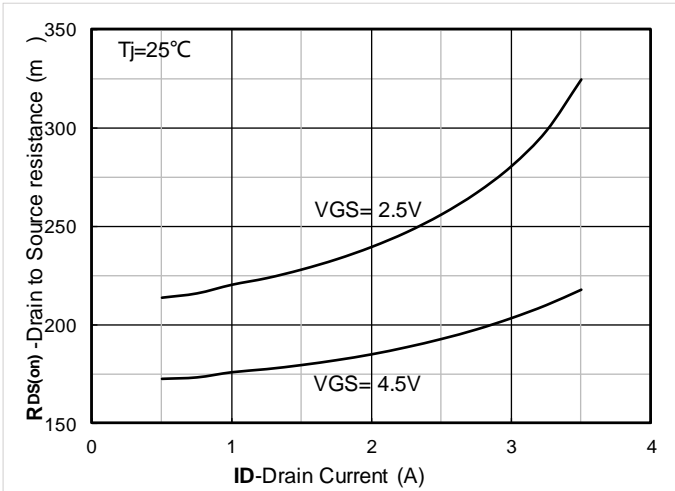


Figure 7. RDS(on) VS Drain Current

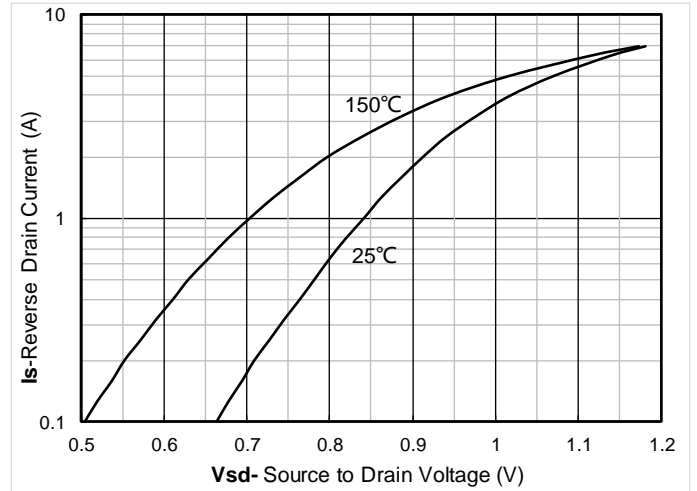


Figure 8. Forward characteristics of reverse diode

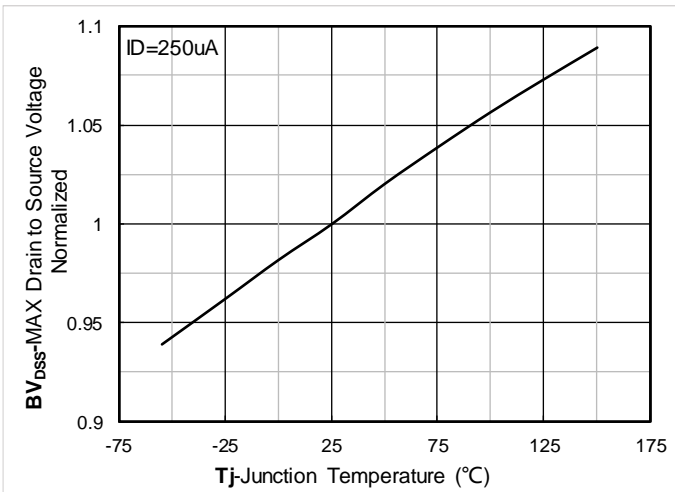


Figure 9. Normalized breakdown voltage

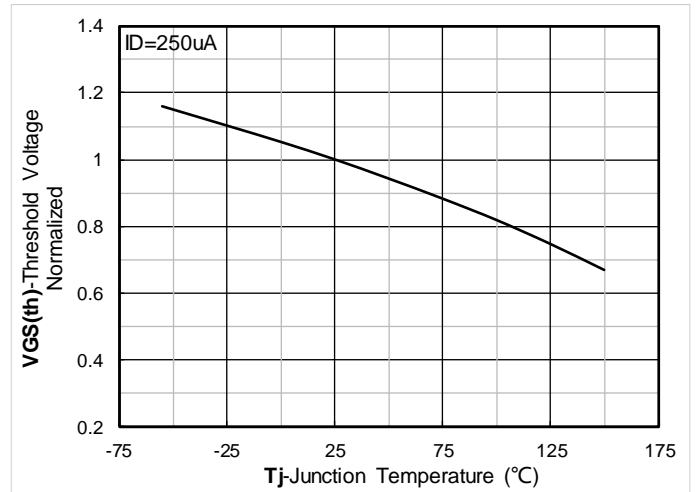


Figure 10. Normalized Threshold voltage

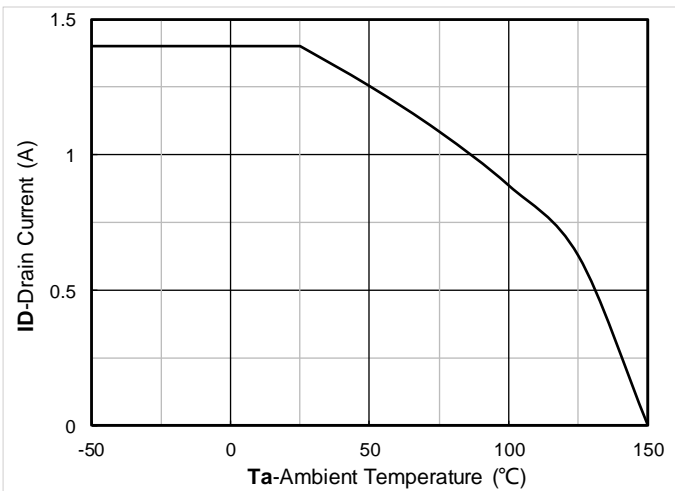


Figure 11. Current dissipation

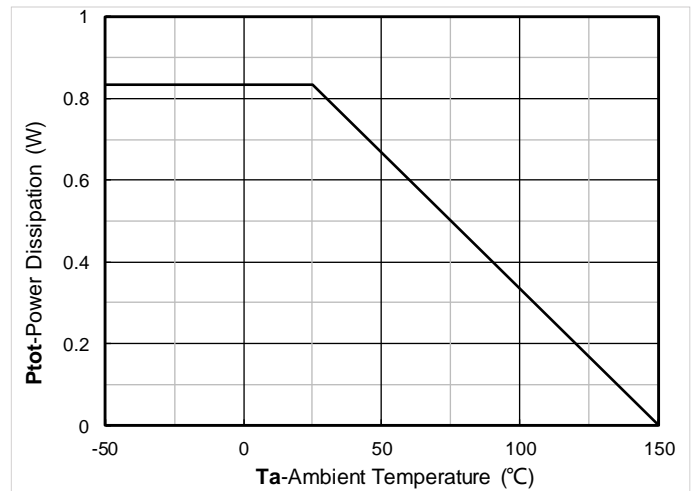


Figure 12. Power dissipation

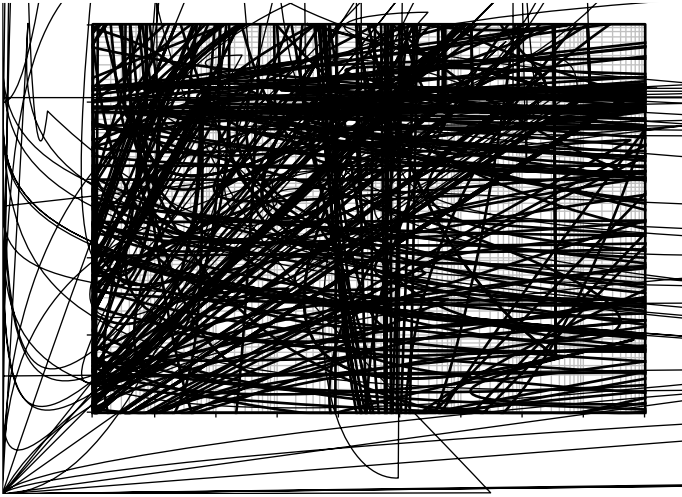


Figure 13. Maximum Transient Thermal Impedance

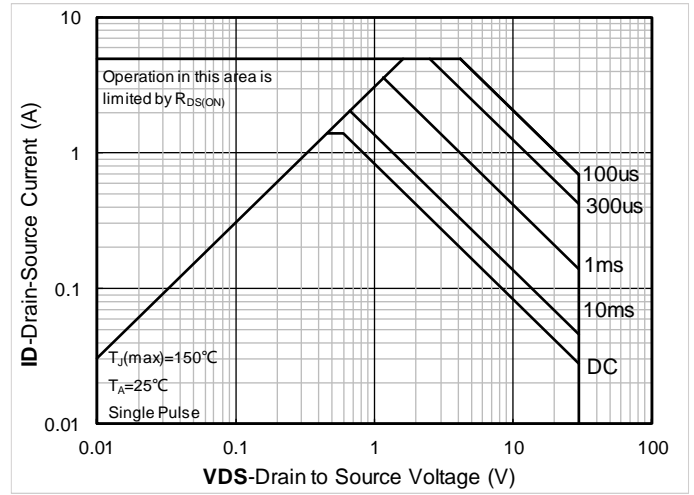


Figure 14. Safe Operation Area

## Test Circuits & Waveforms

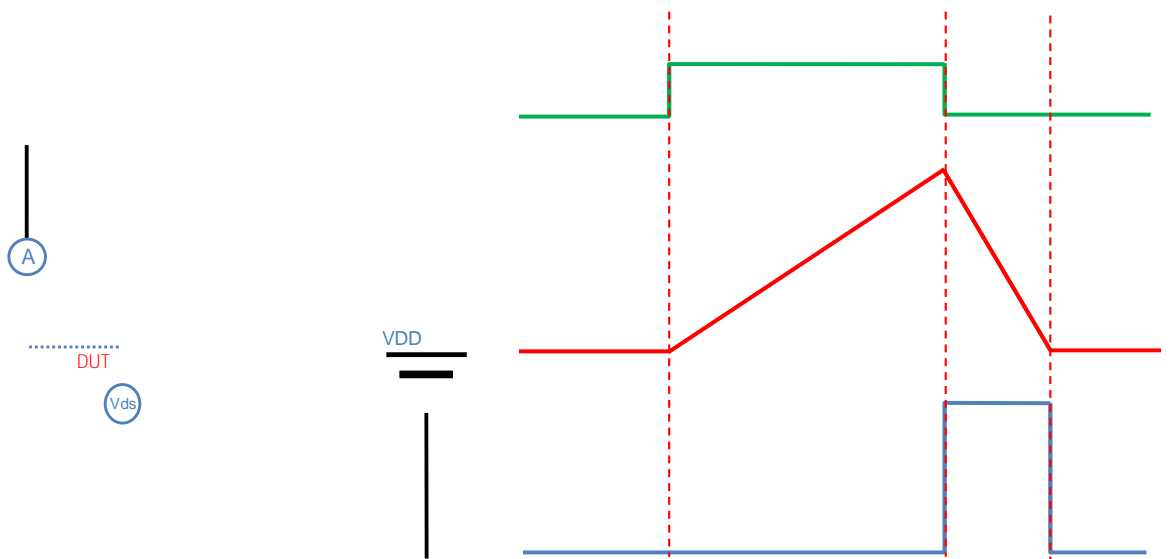


Figure A. Unclamped Inductive Switching (UIS) Test Circuit & Waveform

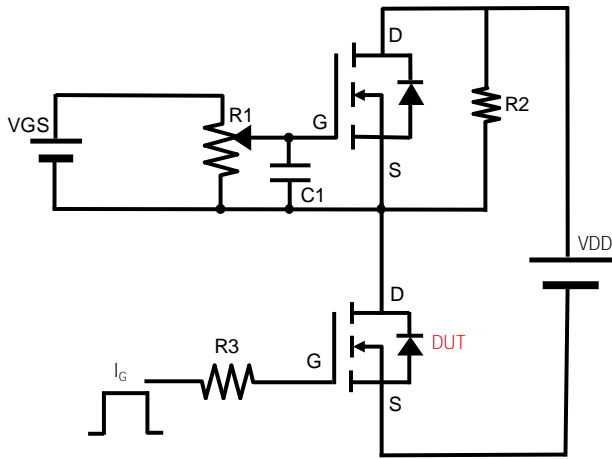


Figure B. Gate Charge Test Circuit & Waveform

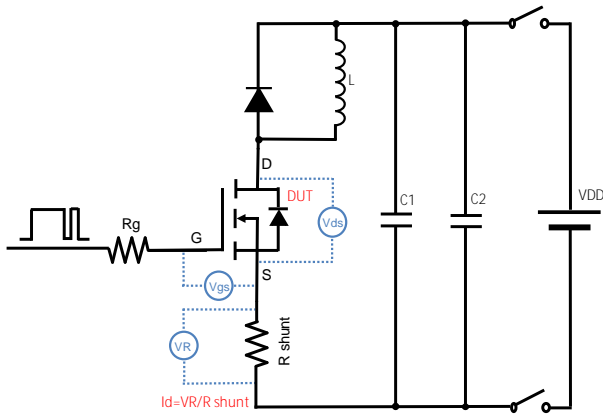


Figure C. Resistive Switching Test Circuit & Waveform

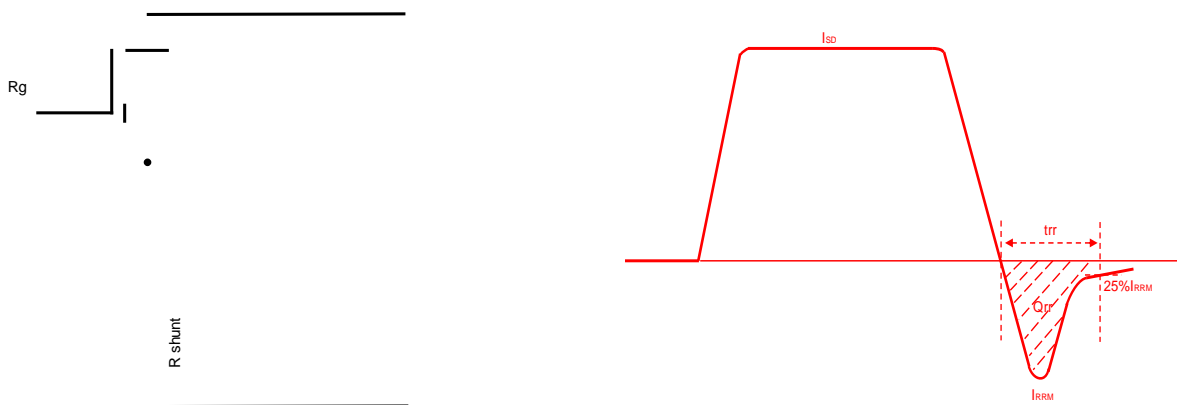
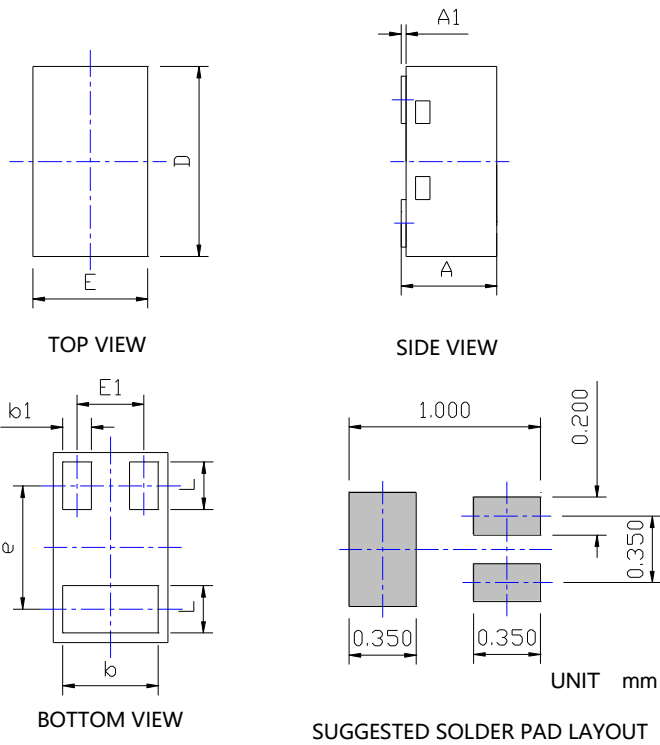


Figure D. Diode Recovery Test Circuit & Waveform



# YJA01N03KA

## DFN1006-3L Package information



SYMBOL	DIMENSIONS		
	Millimeter		
	MIN.	NOM.	MAX.
A	0.42	---	0.55
A1	0.025REF		
b	0.45	0.50	0.55
b1	0.10	0.15	0.20
D	0.95	1.00	1.05
E	0.55	0.60	0.65
E1	0.35BSC		
e	0.65BSC		
L	0.20	0.25	0.30

**NOTE:**  
1.PACKAGE BODY SIZES EXCLUDE LEAD BURRS.  
2.TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.  
3.THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.

