SVT078R0ND

General Description

These N-channel enhancement mode power mosfets used advanced trench technology design, provided excellent Rdson and low gate charge. Which accords with the RoHS standard.

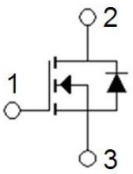
Features

- V_{DS} = 68V,ID =88A
  $R_{DS(ON)}$,6.3mΩ (Typ) @ VGS =10V
- Low On-Resistance
- Low gate charge
- Fast switching
- Low reverse transfer capacitances
- 100% single pulse avalanche energy test
- 100% ΔVDS test

Application

- Power switching applications
- DC-DC converters
- UPS power supply

TO-252(DPAK) top view



1 Gate
2 Drain
3 Source

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
SVT078R0ND	SVT078R0ND	TO-252	330mm	12mm	2500

Absolute Maximum Ratings(TA=25℃ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	68	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current-Continuous[Note3]	TC=25℃	I_D	88	A
	TC=100℃		61	A
Drain Current-Pulsed[Note1]		I_{DM}	292	A
Avalanche Energy[Note4]		E_{AS}	550	mJ
Maximum Power Dissipation	TC=25℃	P_D	167	W
Storage Temperature Range		T_{STG}	-55 to +150	℃
Operating Junction Temperature Range		T_J	-55 to +150	℃

Thermal Resistance

Parameter	Symbol	Min.	Typ.	Max	Unit
Thermal Resistance,Junction to Case-sink	$R_{\theta JC}$	-	-	0.9	℃/W
Thermal Resistance,Junction to Ambient	$R_{\theta JA}$	-	-	75	℃/W

Electrical Characteristics(TJ=25℃ unless otherwise noted)

OFF CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_{DS}=250uA	68	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=68V,V_{GS}=0V	-	-	1.0	uA
Gate-Body Leakage	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA

ON CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Gate Threshold Voltage	VGS(TH)	V_{DS}=VGS,I_{DS}=250uA	2.5	3.0	3.5	V
Drain-Source On-State Resistance	RDS(ON)	V_{GS}=10V,I_{DS}=30A	-	6.3	7.5	mΩ

DYNAMIC CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input Capacitance	C_{iss}	V_{DS}=30V,V_{GS}=0V, f=1MHz	-	4100	-	pF
Output Capacitance	C_{oss}		-	323	-	
Reverse Transfer Capacitance	C_{rss}		-	242	-	

SWITCHING CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Turn-On Delay Time	$T_{d(on)}$	V_{DS}=30V,I_D=30A, V_{GS}=10V, R_{GEN}=6Ω	-	25.5	-	ns
Rise Time	t_r		-	92.9	-	
Turn-Off Delay Time	$T_{d(off)}$		-	74.3	-	
Fall Time	t_f		-	70.4	-	
Total Gate Charge at 10V	Q_g	V_{DS}=30V,I_{DS}=20A, V_{GS}=10V	-	86	-	nC
Gate to Source Gate Charge	Q_{gs}		-	24.3	-	
Gate to Drain“Miller”Charge	Q_{gd}		-	26.4	-	

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_{DS}=30A	-	-	1.3	V
Reverse Recovery Time	trr	I_F=50A,dI/dt=100A/us	-	27.9	-	nS
Reverse Recovery Charge	Qrr		-	33.6	-	nC

Notes:

1: Repetitive rating, pulse width limited by maximum junction temperature.

2: Surface mounted on FR4 Board, t≤10sec.

3: Pulse width ≤ 300μs, duty cycle ≤ 2%.

Typical characteristics diagrams

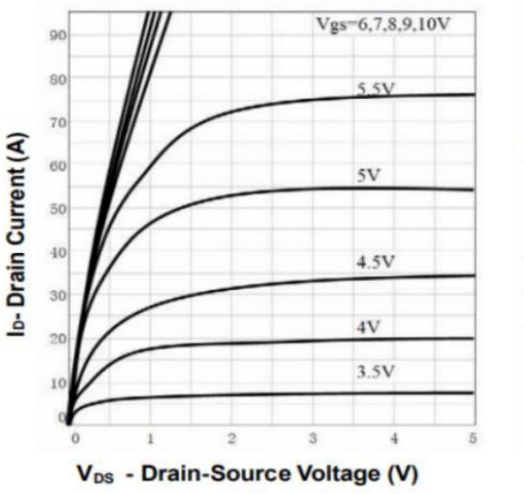


Fig 1. Output Characteristics

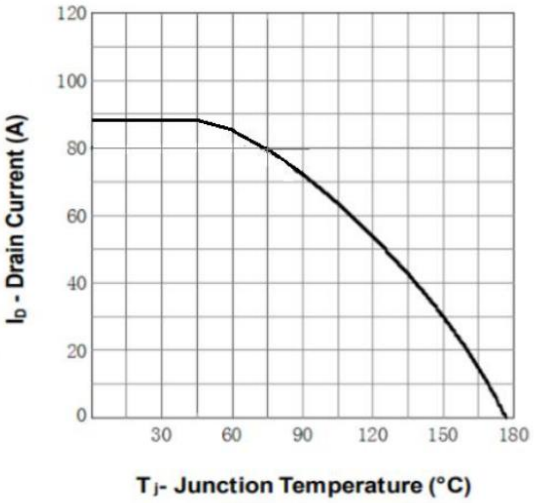


Fig 2. Drain Current

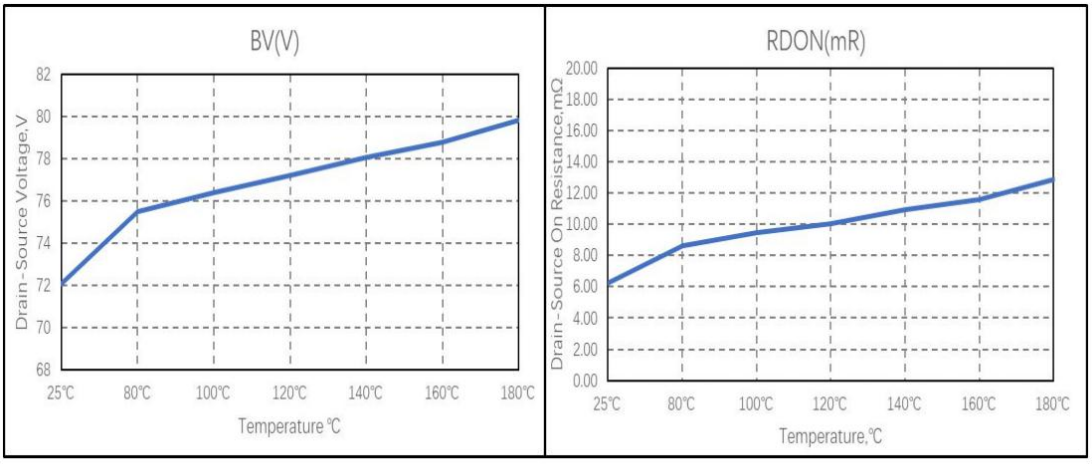


Fig 3 BVDSS vs Junction Temperature

Fig 4 RDSON vs Junction Temperature

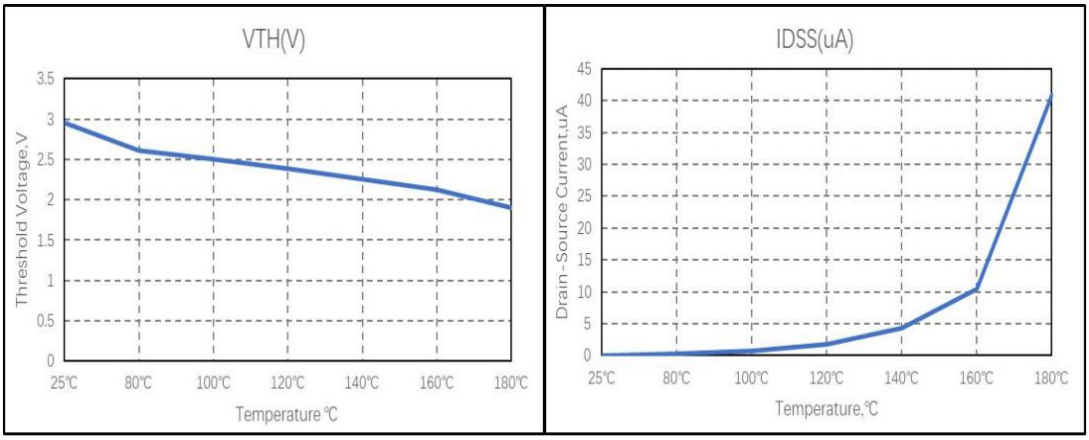


Fig 5 VTH vs Junction Temperature

Fig 6 IDSS vs Junction Temperature

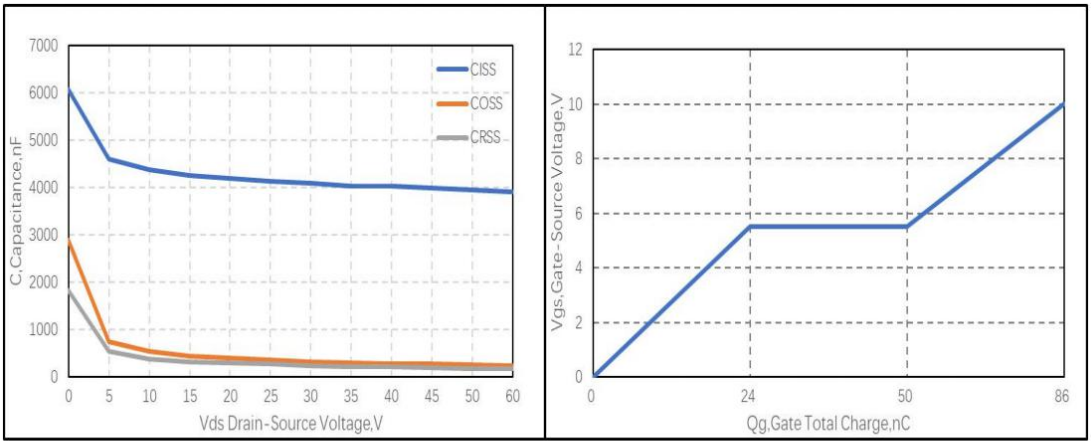


Fig 7 Capacitances vs Vds

Fig 8 Gate Charge

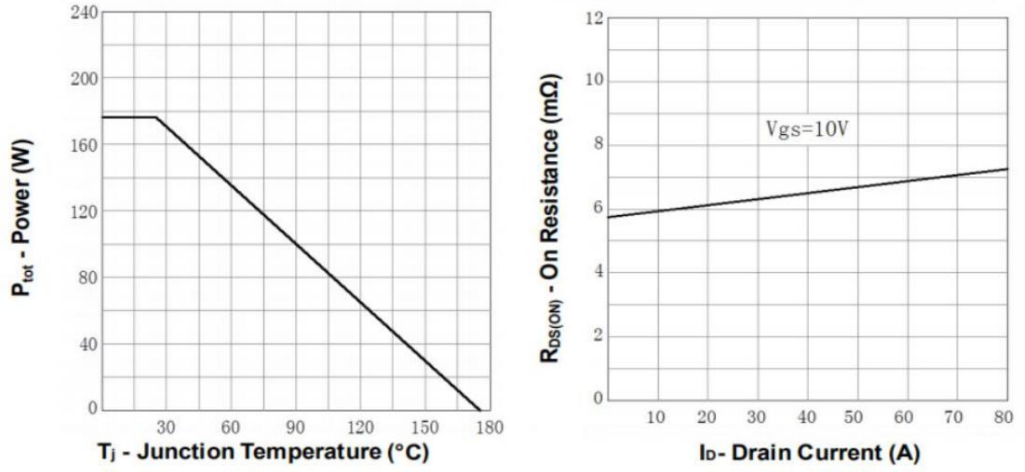


Fig 9. Power Dissipation

Fig 10. Drain-Source On Resistance

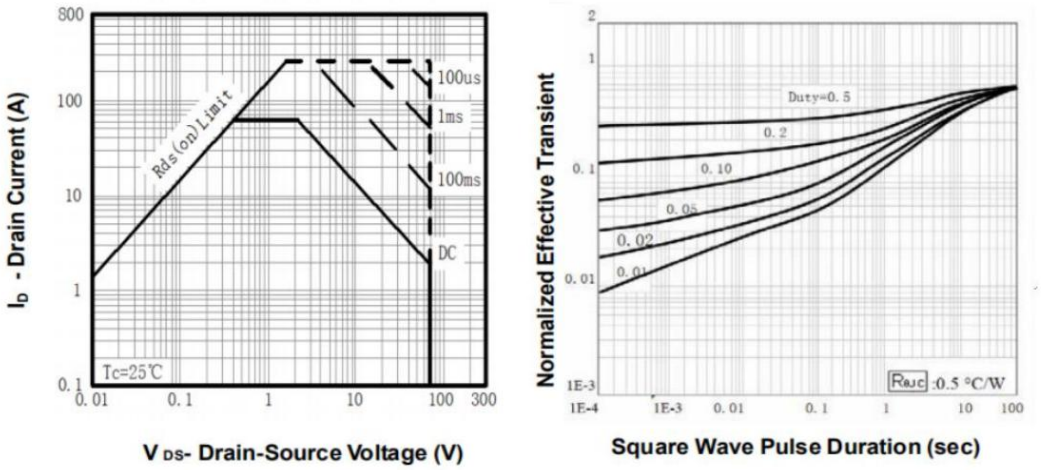
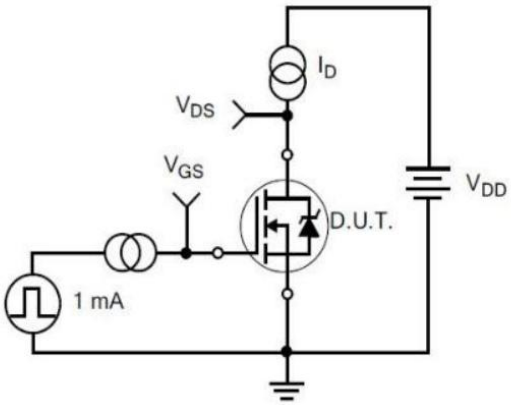


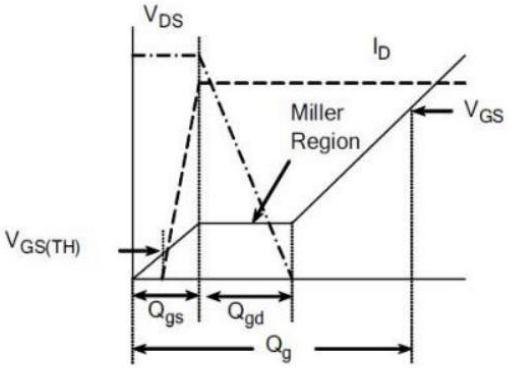
Fig 11. Safe Operation Area

Fig 12. Thermal Transient Impedance

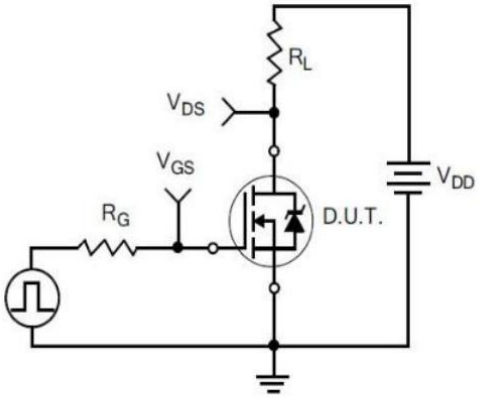
Typical Test Circuit and Waveform



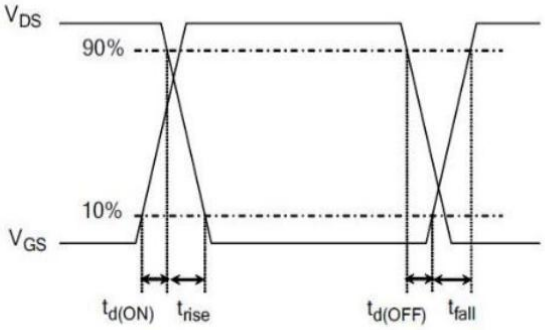
1) Gate Charge Test Circuit



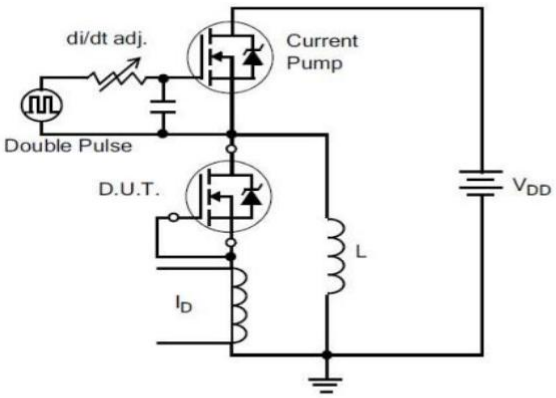
2) . Gate Charge Waveform



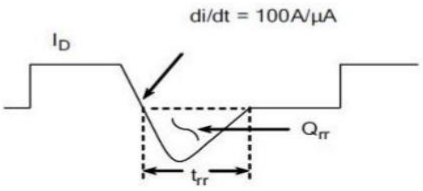
3) Resistive Switching Test Circuit



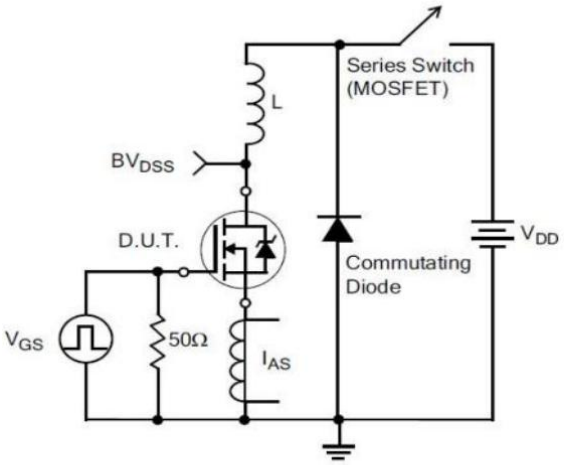
4) Resistive Switching Waveforms



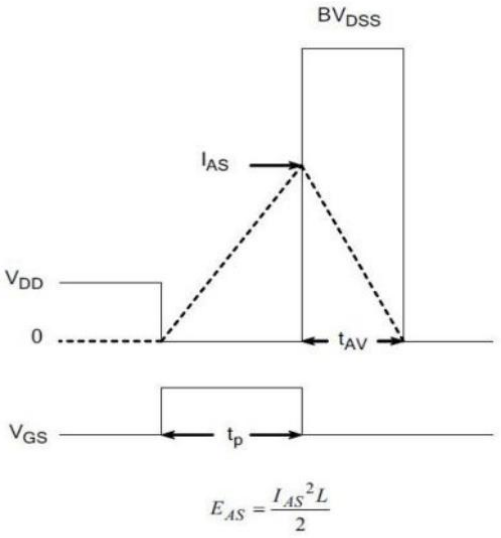
5) Diode Reverse Recovery Test Circuit



6) Diode Reverse Recovery Waveform

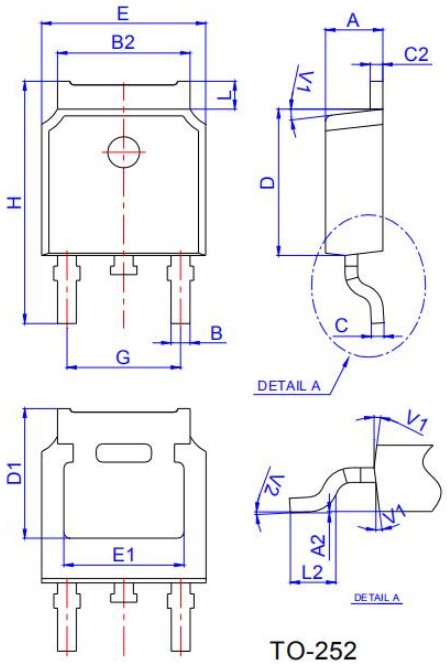


7) . Unclamped Inductive Switching Test Circuit



8) Unclamped Inductive Switching Waveforms

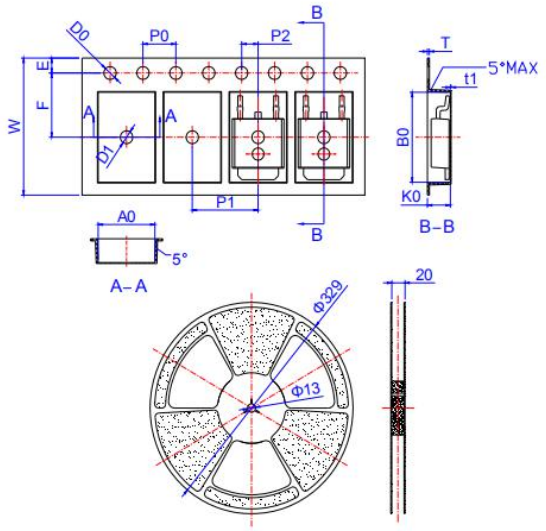
Package Mechanical Data



TO-252

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

Reel Spectification-TO-252



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.90	16.00	16.10	0.626	0.630	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
D0	1.40	1.50	1.60	0.055	0.059	0.063
D1	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
A0	6.85	6.90	7.00	0.270	0.271	0.276
B0	10.45	10.50	10.60	0.411	0.413	0.417
K0	2.68	2.78	2.88	0.105	0.109	0.113
T	0.24		0.27	0.009		0.011
t1	0.10			0.004		
10P0	39.80	40.00	40.20	1.567	1.575	1.583