-30V P-channel enhancement mode MOSFET

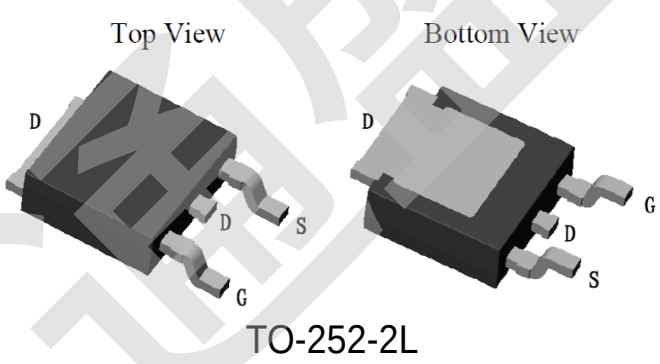
General Description

Features			Applications
VDS（max）	**ID (max)**	**Typ.RDS(on)**	● Industrial power supplies ● Boost converters ● Rectifier ● UPS ● Power switching
-30V	-50A	6.5mΩ@V_{GS}=-10 V	
● P-channel, optimized for high speed smooth switching ● Excellent Gate charge×RDS(on) (FOM) ● Very low on-resistance RDS(on) ● 100% UIS Tested			

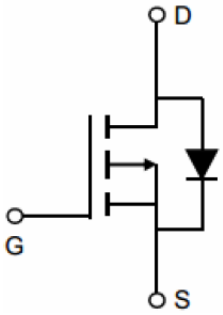
Ordering Information

Device	Package	Pin count	Marking
PAP3050	TO252-2L	2	PAP3050

Pin Configurations



TO-252-2L



Main Parameters

Symbol	Parameter	Value	Units
V_{DS}	Drain-Source Voltage	-30	V
I_D	Drain Current - Continuous (TC= 25°C)	-50	A
	- Continuous (TC= 100°C)	-35	A

电话:0755-83387360 手机：13826508770（王先生） 邮箱：3007605919@qq.com 网址：www.sztssd.com 地址:深圳市福田区中航路鼎诚国际南座18楼1814室

I_{DM}	Drain Current - Pulsed (Note 1)	-200	A
V_{GS}	Gate-Source Voltage	± 20	V
E_{AS}	Single Pulsed Avalanche Energy (Note 2)	151.25	mJ
P_D	Power Dissipation (TC = 25°C)	112	W
T_j ,T_{stg}	Operating and Storage Temperature Range	-55 to +175	°C

* Drain current limited by maximum junction temperature

Thermal Characteristics

Symbol	Parameter	Value	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	1.35	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	45	°C/W

Electrical Characteristics TC = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_D = -250μA	-30			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =-30 V, V_{GS} = 0 V			100	nA
I_{GSS}	Gate Leakage Current, Forward	V_{GS} = ±20V, V_{DS} = 0 V			±100	nA
On Characteristics						
$V_{GS(TH)}$	Gate Threshold voltage	V_{DS} = V_{GS}, I_D =- 250 uA	-1	-1.5	-2	V
$R_{DS(On)}$	Drain-Source on-state resistance	V_{GS} = -10 V, I_D =-25 A		6.5	8.2	mΩ
		V_{GS} = -4.5 V, I_D =-20A		9.5	12	mΩ
g_{FS}	Forward Transconductance	V_{DS} =-5 V, I_D =-20A (Note 3)		30		S
Dynamic Characteristics						
C_{iss}	Input capacitance	V_{DS}=-15V, V_{GS}=0V, F=1.0Mhz		3745		pF
C_{oss}	Output capacitance			478		pF
C_{rss}	Reverse transfer capacitance			436		pF
Switching Characteristics						
$t_{d(on)}$	Turn On Delay Time	V_{DS}=-15V, I_D=-20A,		15.8		ns

t_r	Rising Time	V_{GS}=-0V, Rg=3Ohm (Note 3, 4)		12		ns
$t_{d(off)}$	Turn Off Delay Time			47		ns
t_f	Fall Time			23		ns
Q_g	Total Gate Charge	V_{DD}=-15V, I_D=-20A, V_{GS}=-10V (Note 3, 4)		71		nC
Q_{gs}	Gate-Source Charge			8.1		nC
Q_{gd}	Gate-Drain Charge			16.9		nC
R_g	Gate Resistance	V_{DS}=0V, Scan F mode		1.5		Ω
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain-Source Diode Forward Current				-50	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current				-200	A
V_{SD}	Diode Forward Voltage	V_{GS}= 0 V, I_S =-50 A			-1.2	V

NOTE:

1. Repetitive Rating : Pulse width limited by maximum junction temperature
2. L = 0.1 mH, IAS =-55A, VDD = -24V, RG = 25 Ω, Starting Tj = 25°C
3. ISD ≤-30A, di/dt = 100A/us, VDD ≤ BVDSS, Staring Tj =25°C
4. Pulse Test : Pulse width ≤ 300us, Duty cycle ≤ 2%
5. Essentially independent of operating temperature

Typical Performance Characteristics

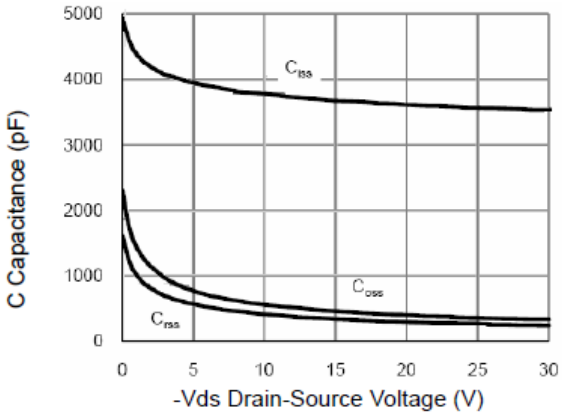


Figure 7 Capacitance vs Vds

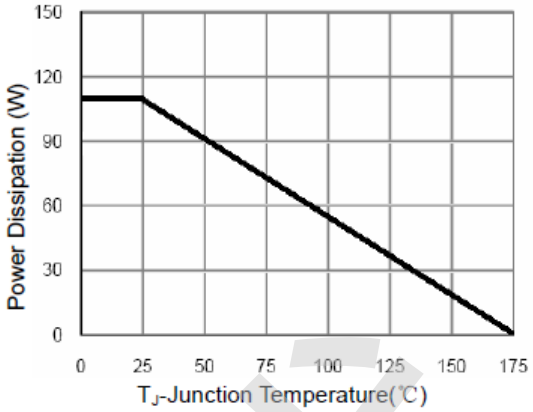


Figure 9 Power De-rating

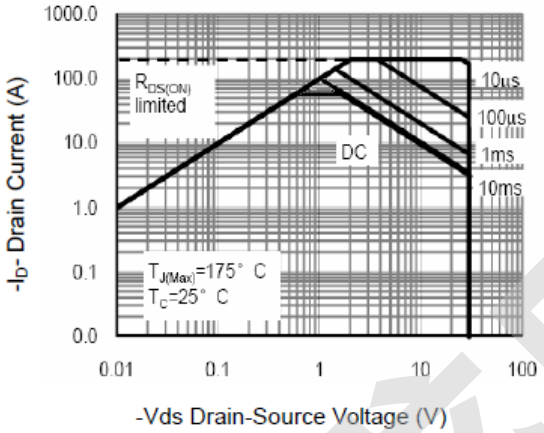


Figure 8 Safe Operation Area

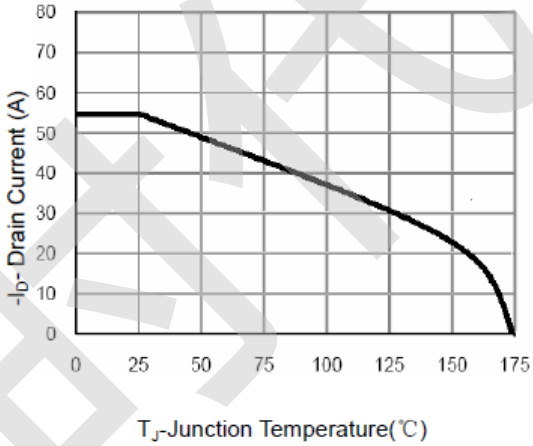


Figure 10 ID Current Derating

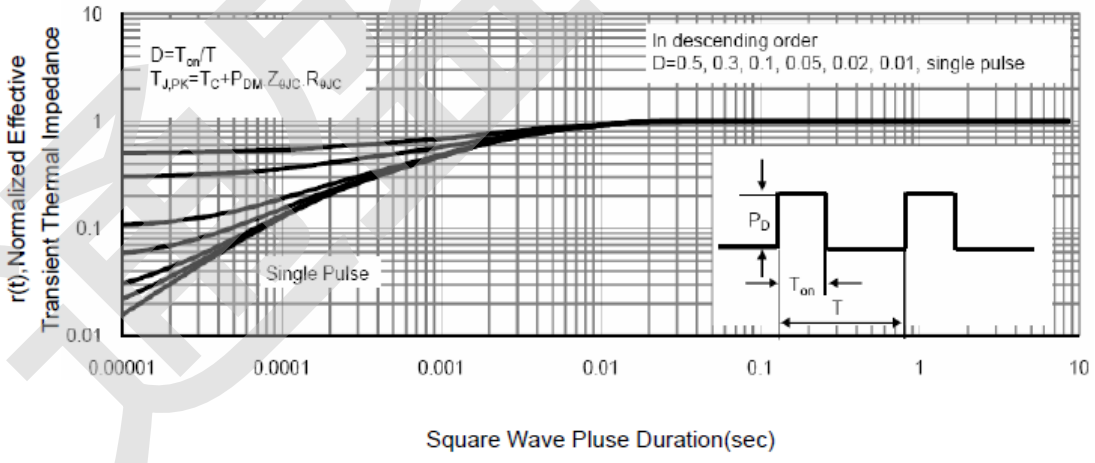


Figure 11 Normalized Maximum Transient Thermal Impedance

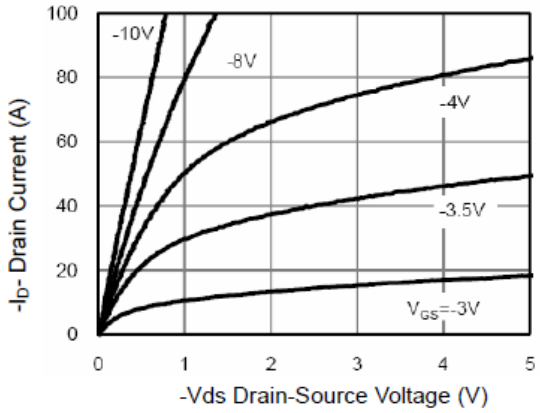


Figure 1 Output Characteristics

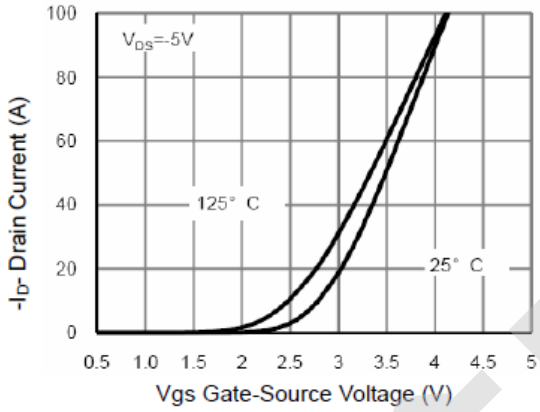


Figure 2 Transfer Characteristics

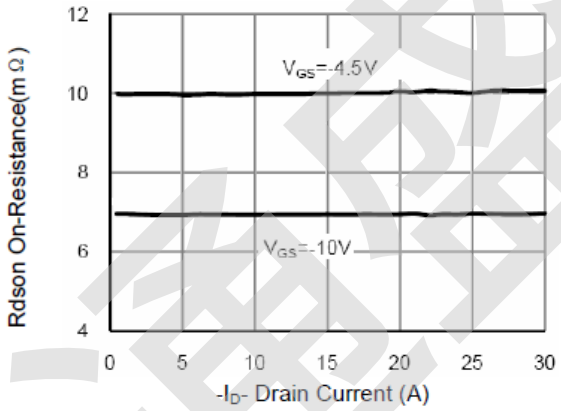


Figure 3 Rdson- Drain Current

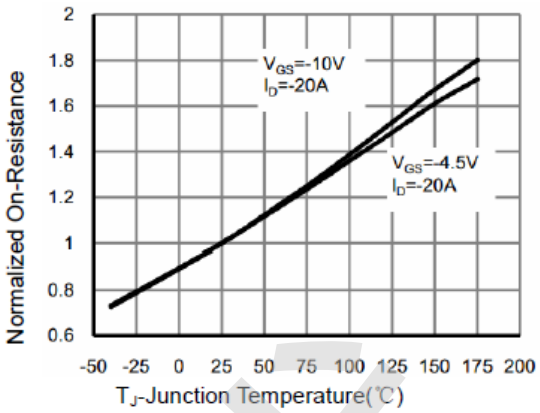


Figure 4 Rdson-Junction Temperature

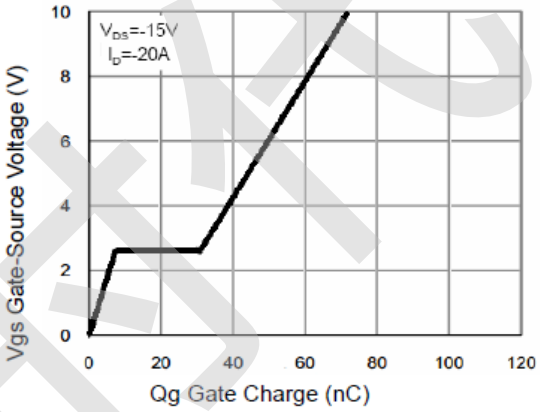


Figure 5 Gate Charge

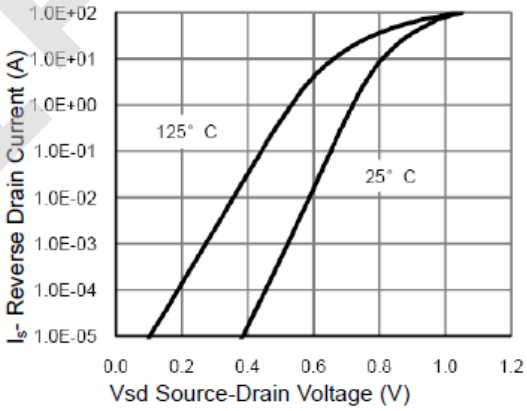
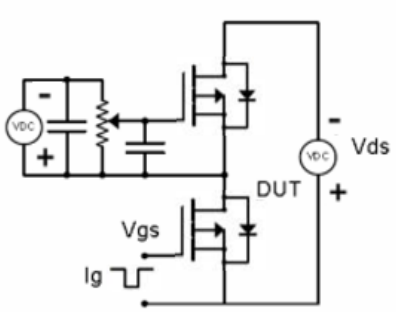
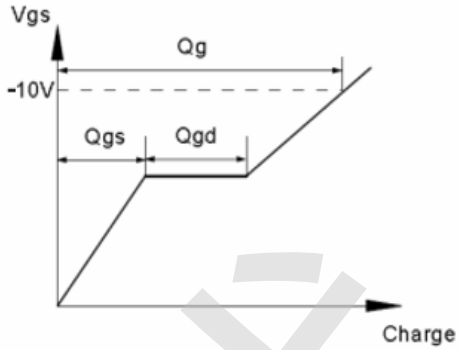


Figure 6 Source- Drain Diode Forward

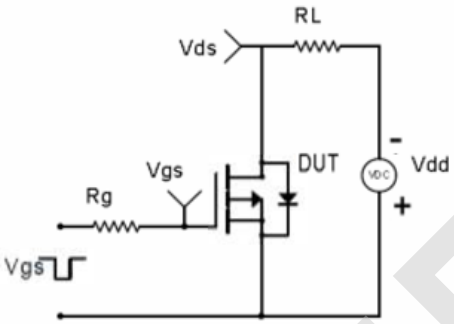
Test Circuit & Waveform

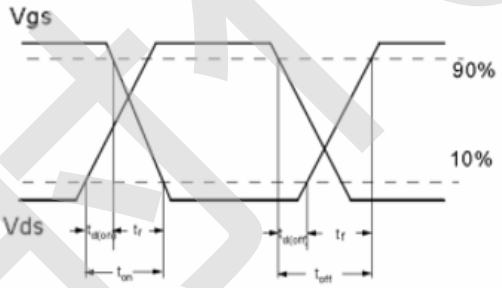
Gate Charge Test Circuit & Waveform



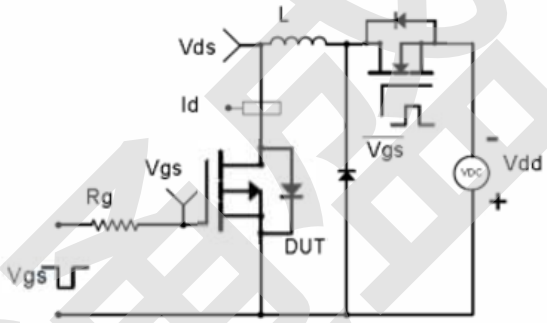


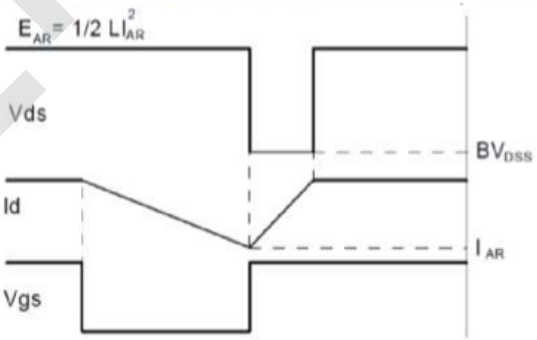
Resistive Switching Test Circuit & Waveforms



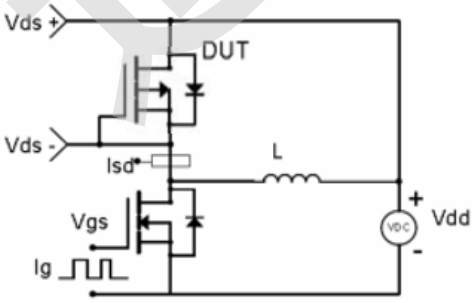


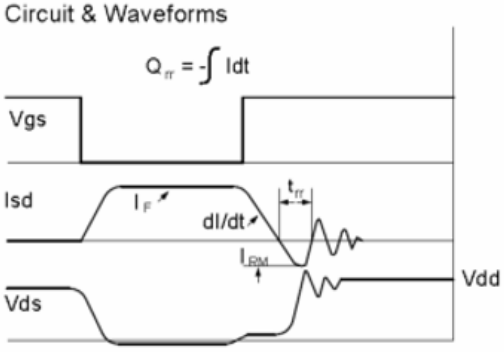
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



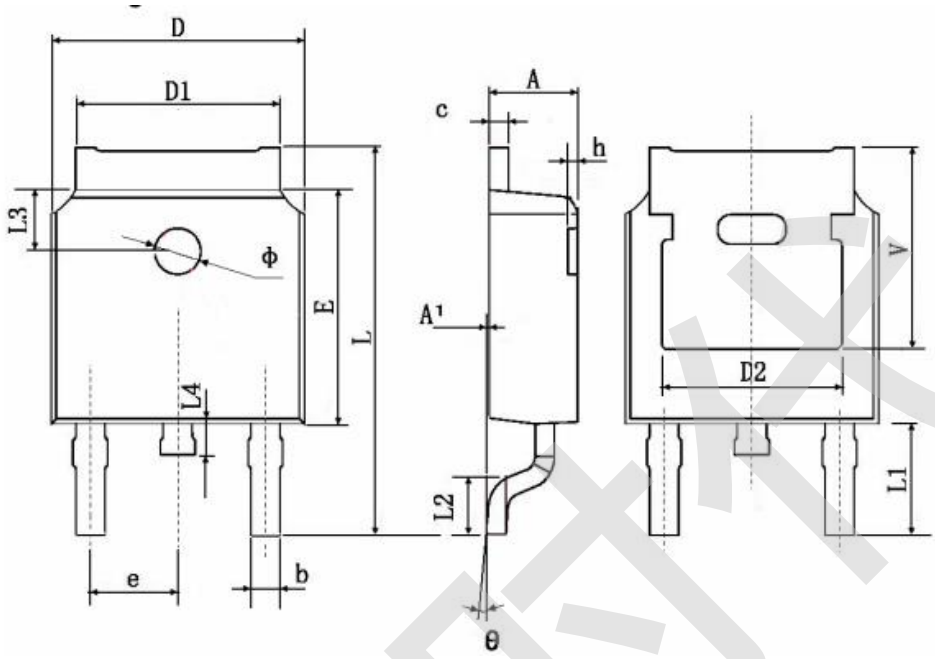


Diode Recovery Test Circuit & Waveforms





Package Dimensions ： TO-252-2L PACKAGE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.250	2.350	0.089	0.093
A1	0.050	0.150	0.002	0.006
b	0.660	0.860	0.026	0.034
c	0.458	0.558	0.018	0.022
D	6.550	6.650	0.259	0.263
D1	5.234	5.434	0.207	0.215
D2	4.826 TYP.		0.191 TYP.	
E	6.050	6.150	0.239	0.243
e	2.236	2.336	0.088	0.092
L	9.820	10.220	0.388	0.404
L1	3.000 TYP.		0.119 TYP.	
L2	1.400	1.600	0.055	0.063
L3	1.800 TYP.		0.071 TYP.	
L4	0.700	0.900	0.028	0.036
Φ	1.150	1.250	0.045	0.049
θ	0°	3°	0°	3°
h	0.000	0.300	0.000	0.012
V	5.399 TYP		0.213 TYP	

电话:0755-83387360 手机：13826508770（王先生） 邮箱: 3007605919@qq.com 网址：www.sztssd.com 地址:深圳市福田区中航路鼎诚国际南座18楼1814室