

- ★ 100% EAS Guaranteed
- ★ Green Device Available
- ★ Excellent CdV/dt effect decline
- ★ Advanced VD MOSFETS

Product Summary



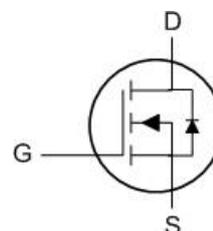
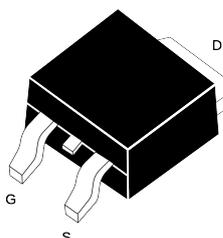
BVDSS	RDSON	ID
500V	2.8Ω	3A

Description

The RP3P50FR is the Advanced VD N-ch MOSFETS, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The RP3P50FR meet the RoHS and Green Product requirement 100% EAS guaranteed with full function reliability approved.

TO-252 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Value	Units
V _{DSS}	Drain-Source Voltage	500	V
I _D	Drain Current - Continuous (TC= 25°C)	3	A
	- Continuous (TC= 100°C)	1.8	A
I _{DM}	Drain Current - Pulsed (Note 1)	12	A
V _{GSS}	Gate-Source Voltage	± 30	V
E _{AS}	Single Pulsed Avalanche Energy (Note 2)	67	mJ
I _{AR}	Avalanche Current (Note 1)	5	A
E _{AR}	Repetitive Avalanche Energy (Note 1)	63	mJ
dv/dt	Peak Diode Recovery dv/dt (Note 3)	5	V/ns
P _D	Power Dissipation (TC = 25°C)	100	W
	- Derate above 25°C	0.2	W/°C
T _j , T _{stg}	Operating and Storage Temperature Range	-55 to +150	°C
T _L	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	300	°C

Thermal Characteristics

Symbol	Parameter	Value	Units
R _{θJC}	Thermal Resistance, Junction-to-Case	1.25	°C/W
R _{θJS}	Thermal Resistance, Case-to-Sink Typ.	--	°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient	110	°C/W

Electrical Characteristics (T_J=25°C, unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V(BR)DSS	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	500	550	--	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} = 500V, V _{GS} = 0V, T _J = 25°C	--	--	1	μA
IGSS	Gate-Source Leakage	V _{GS} = ±30V	--	--	±100	nA
VGS(th)	Gate-Source Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2.0	3.0	4.0	V
RDS(on)	Drain-Source On-Resistance (Note3)	V _{GS} = 10V, I _D = 1.5A	--	2.8	3.5	Ω
C _{iss}	Input Capacitance	V _{GS} = 0V, V _{DS} = 25V, f = 1.0MHz	--	250	--	pF
C _{oss}	Output Capacitance		--	45	--	
C _{rss}	Reverse Transfer Capacitance		--	5	--	
Q _g	Total Gate Charge	V _{DD} = 480V, I _D = 1A, V _{GS} = 10V	--	6.5	--	nC
Q _{gs}	Gate-Source Charge		--	1.6	--	
Q _{gd}	Gate-Drain Charge		--	2.4	--	
td(on)	Turn-on Delay Time	V _{DD} = 250V, I _D = 3A, R _G = 25Ω	--	7.8	--	ns
t _r	Turn-on Rise Time		--	33	--	
td(off)	Turn-off Delay Time		--	13	--	
t _f	Turn-off Fall Time		--	59	--	
IS	Continuous Body Diode Current	T _C = 25 °C	--	--	3	A
ISM	Pulsed Diode Forward Current		--	--	12	A
V _{SD}	Body Diode Voltage	T _J = 25°C, I _{SD} = 3A, V _{GS} = 0V	--	--	1.4	V
trr	Reverse Recovery Time	V _{GS} = 0V, I _S = 3A, di _F /dt = 100A / μs	--	190	--	ns
Q _{rr}	Reverse Recovery Charge		--	0.53	--	μC

Note :

- 1、 The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2、 The EAS data shows Max. rating . I_{AS} = 2.4A, V_{DD} = 50V, R_G = 25 Ω, Starting T_J = 25 °C
- 3、 The test condition is Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 2%
- 4、 The power dissipation is limited by 150°C junction temperature
- 5、 The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

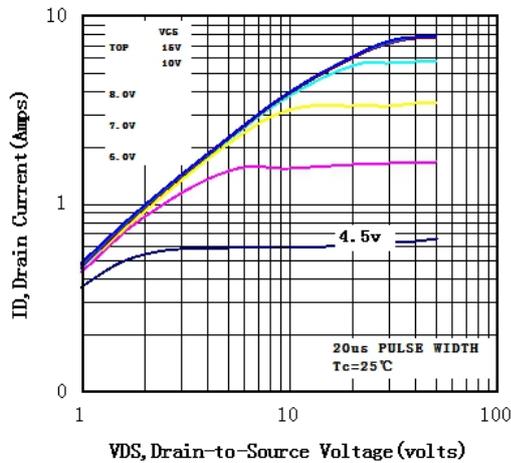


Fig1 Typical Output Characteristics, $T_c=25^\circ\text{C}$

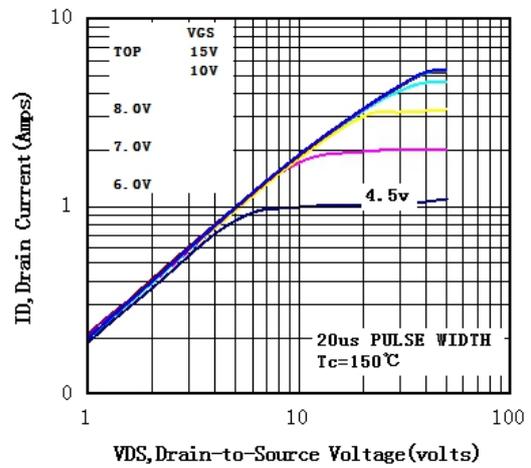


Fig2 Typical Output Characteristics, $T_c=150^\circ\text{C}$

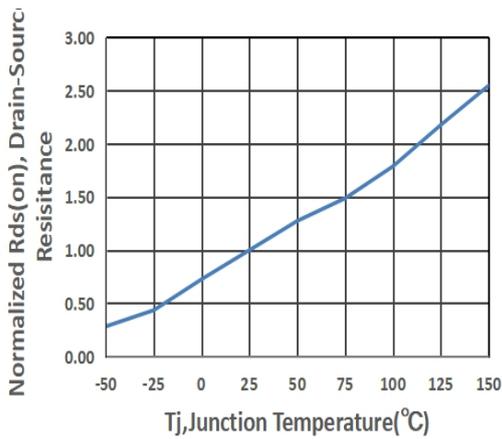


Fig3 Normalized On-Resistance Vs. Temperature

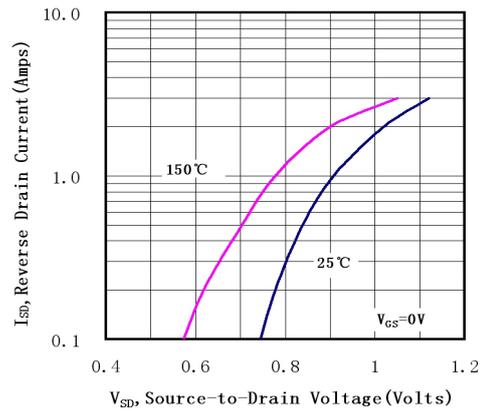


Fig4 Typical Source-Drain Diode Forward Voltage

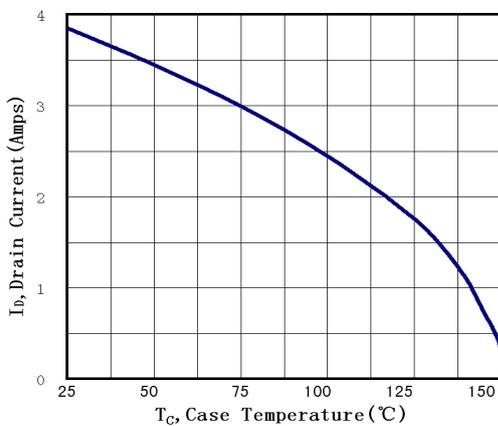


Fig5 Maximum Drain Current Vs. Case Temperature

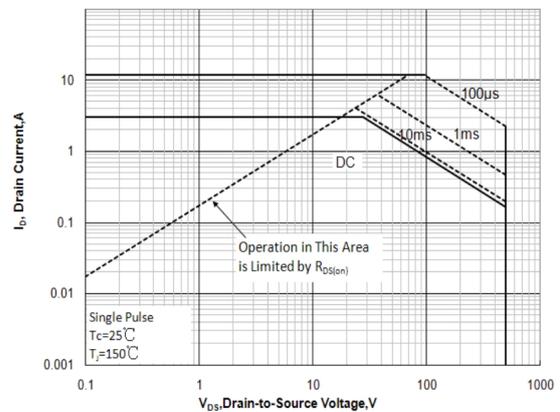
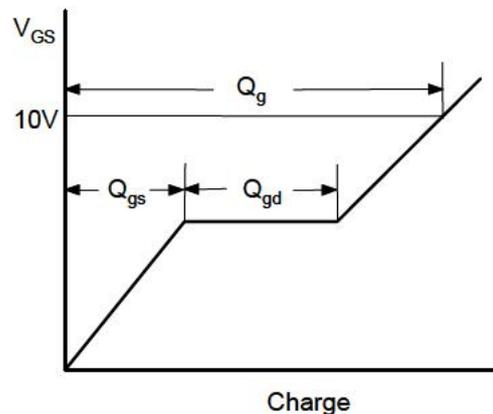
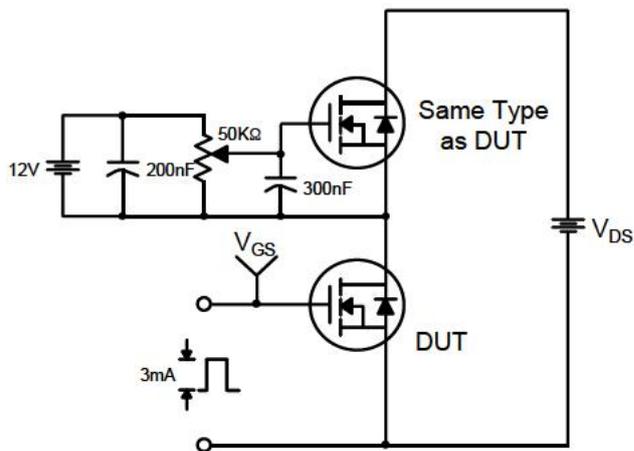
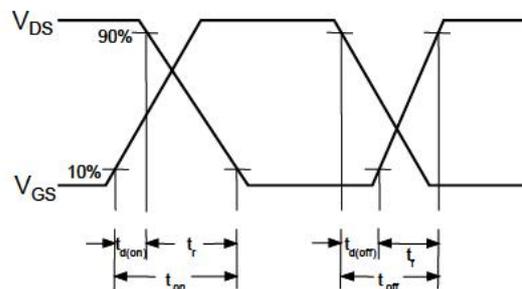
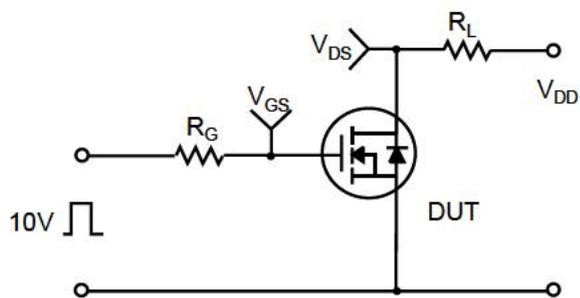


Fig6 Maximum Safe Operating Area

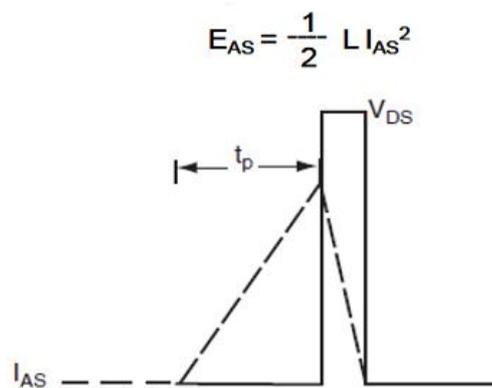
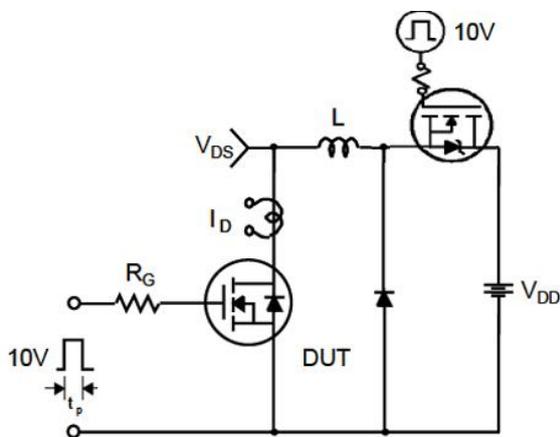
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

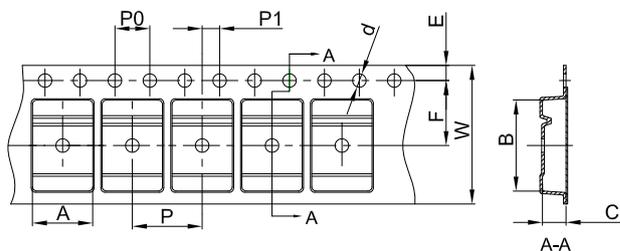


Unclamped Inductive Switching Test Circuit & Waveforms



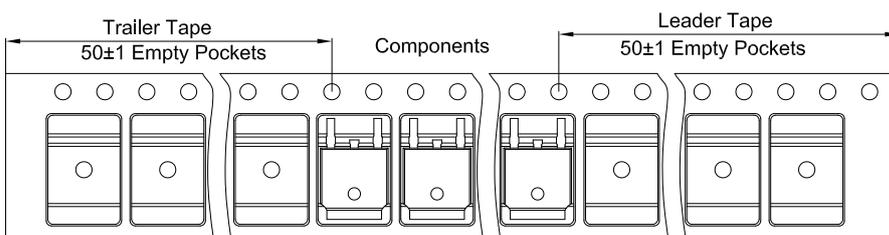
TO-252-2L Tape and Reel

TO-252 Embossed Carrier Tape

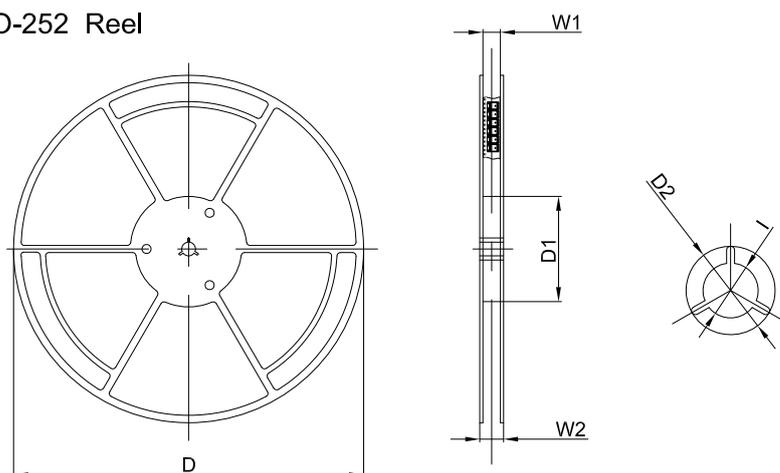


Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
TO-252	6.90	10.50	2.70	Ø1.55	1.75	7.50	4.00	8.00	2.00	16.00

TO-252 Tape Leader and Trailer

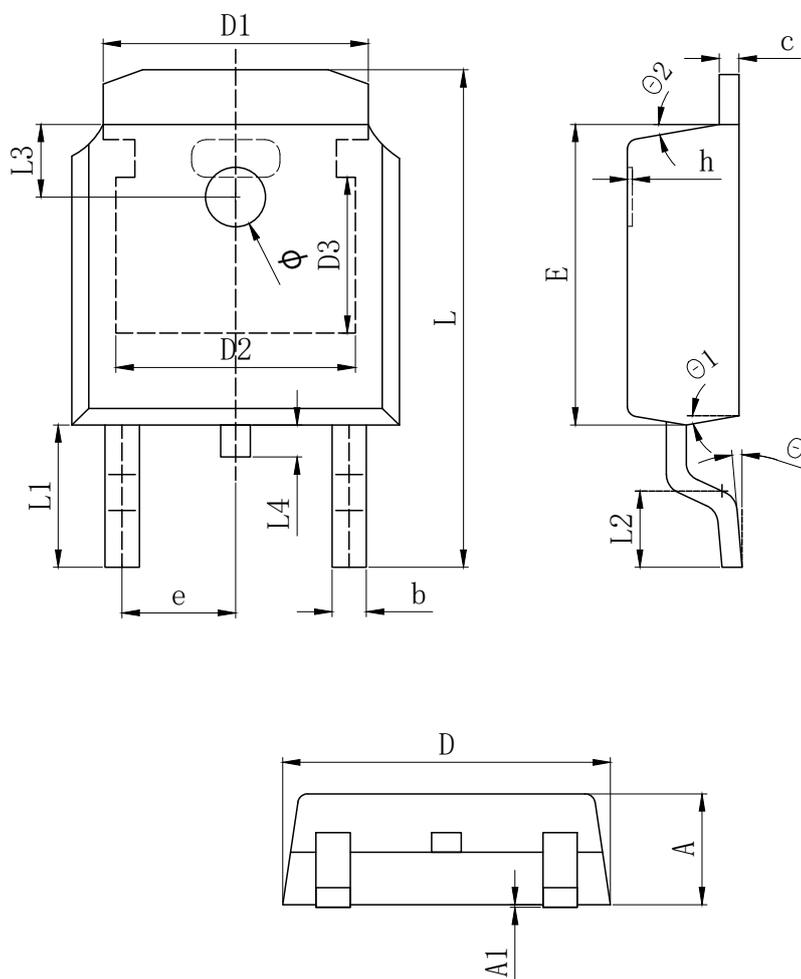


TO-252 Reel



Dimensions are in millimeter						
Reel Option	D	D1	D2	W1	W2	I
13" Dia	330.00	100.00	Ø21.00	16.40	21.00	Ø13.00

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
2,500 pcs	13inch	2,500 pcs	340×336×29	25,000 pcs	353×346×365	



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	2.200	2.300	2.400
A1	0.000		0.127
b	0.640	0.690	0.740
c (电镀后)	0.460	0.520	0.580
D	6.500	6.600	6.700
D1	5.334 REF		
D2	4.826 REF		
D3	3.166 REF		
E	6.000	6.100	6.200
e	2.286 TYP		
h	0.000	0.100	0.200
L	9.900	10.100	10.300
L1	2.888 REF		
L2	1.400	1.550	1.700
L3	1.600 REF		
L4	0.600	0.800	1.000
ϕ	1.100	1.200	1.300
θ	0°		8°
$\theta 1$	9° TYP		
$\theta 2$	9° TYP		

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