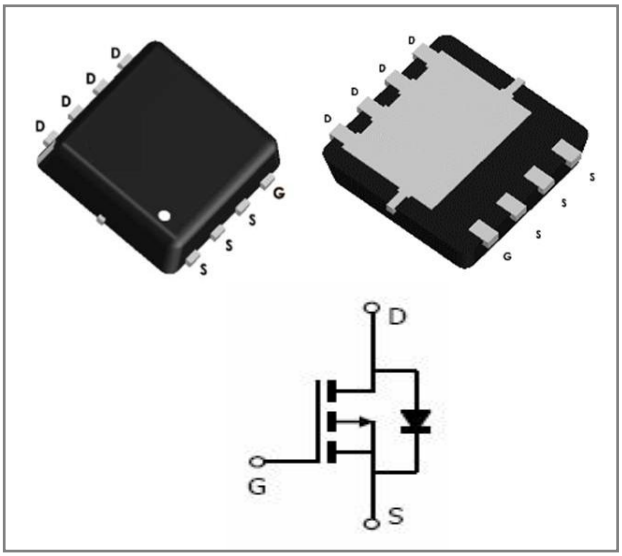
H50P3FA

30V Trench Single P-Channel MOSFET

VDSS	R_{DS}(ON)(Typ)	ID
-30V	9mΩ	-50A



Features:

- Fast switching speed
- 100% avalanche tested
- Improved dv/dt capability
- Enhanced Avalanche Ruggedness
- Lead Free

Applications:

- Synchronous Rectification in SMPS
- Hard Switching and High Speed Circuit
- Power Tools
- Motor Control

Ordering Information

Part Number	Package	Marking	Packing	Qty.
H50P3FA	DFN3*3	H50P3FA	Tape&reel	5000 PCS

Absolute Maximun Ratings (Tc= 2 5℃ unless otherwise specified)

Symbol	Parameter	Rating	Units
VDS	Drain-to-Source Voltage	-30	V
VGS	Gate- to- Source Voltage	±25	V
ID	Continuous Drain Current TC=25℃	-50	A
	Continuous Drain Current TC=100℃	-33	
IDM	Pulsed Drain Current	-200	
PD	Power Dissipation	20	W
EAS	Single Pulse Avalanche Engergy L = 0.5mH, RG = 25 Ω,TC=25℃	220	mJ
TJ, TSTG	Operating Junction and Storage Temperature Range	-55 to 150	℃

Thermal Characteristics

Symbol	Parameter	Typ	Max	Unit
RθJC	Thermal Resistance Junction-Case	6.25	--	℃/ W

Electrical Characteristics (TJ= 25℃ unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
V(BR)DSS	Drain- Source Breakdown Voltage	-30	--	--	V	VGS=0V,ID=-250μA
IDSS	Zero Gate Voltage Drain Current (25℃)	--	--	-1	μA	VDS=-30V,VGS=0V
IGSS	Gate to Source Forward Leakage	--	--	100	nA	VGS=20V ,VDS=0V
	Gate to Source Reverse Leakage	--	--	-100		VGS=-20V ,VDS=0V
VGS(TH)	Gate Threshold Voltage	-1.0	-1.5	-2.0	V	VGS=VDS,ID=-250μA
RDS(on)	Static Drain- to- Source On-Resistance(Note*2)	--	9	10.5	mΩ	VGS=-10V,ID=-12A
		--	14	17	mΩ	VGS=-4.5V,ID=-7A
Dynamic Electrical Characteristics						
Ciss	Input Capacitance	--	1770	--	pF	VGS=0V VDS=-15V f=1MHz
Coss	Output Capacitance	--	230			
Crss	Reverse Transfer Capacitance	--	215	--		
Rg	Gate Resistance	--	2.5	--	Ω	f=1MHz
Qg	Total Gate Charge	--	32		nC	VDS=-25V ID=-25A VGS=-10V
Qgs	Gate- to- Source Charge	--	6	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	10	--		
Switching Characteristics						
td(ON)	Turn- on Delay Time	--	13	--	nS	VDS=-15V ID= -25A RG=3Ω VGS=-10V
trise	Rise Time	--	9	--		
td(OFF)	Turn- OFF Delay Time	--	26	--		
tfall	Fall Time	--	12	--		
Source- Drain Diode Characteristics						
VSD	Diode Forward Voltage	--	--	-1.2	V	IF=-10A,VGS=0V
trr	Reverse Recovery Time	--	32	--	nS	VR=-15V,IF=-25A di/dt=100A/μs
Qrr	Reverse Recovery Charge	--	21	--	nC	

Notes:

* 1. Repetitive rating, pulse width limited by maximum junction temperature.
* 2. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%

Typical Characteristics

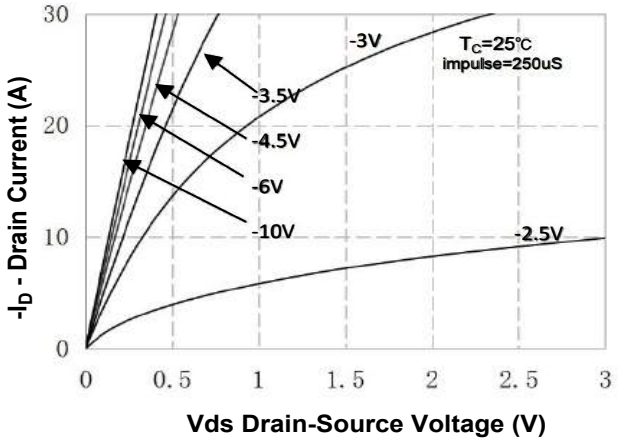


Figure 1. On-Region Characteristics

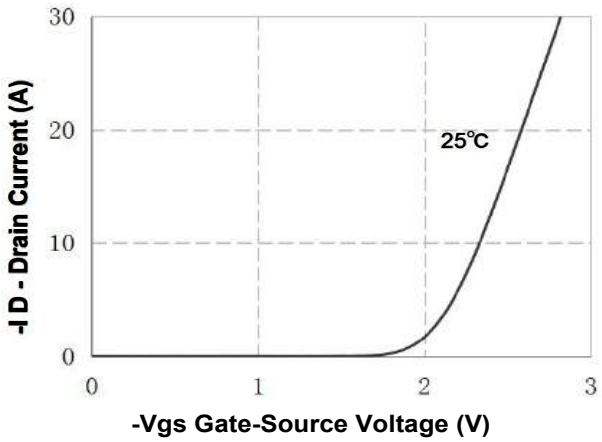


Figure 4. Transfer Characteristics

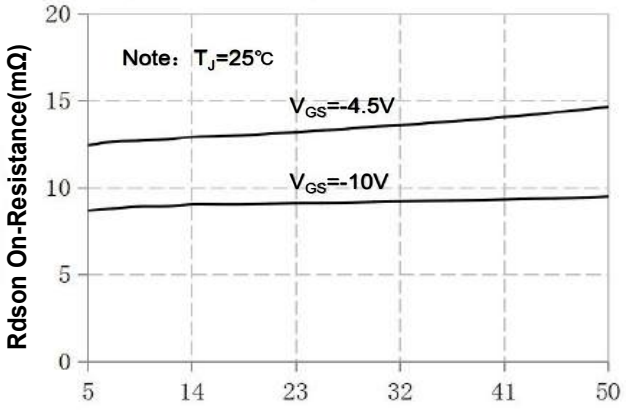


Figure 2. On-Resistance Variation vs Drain Current and Gate Voltage

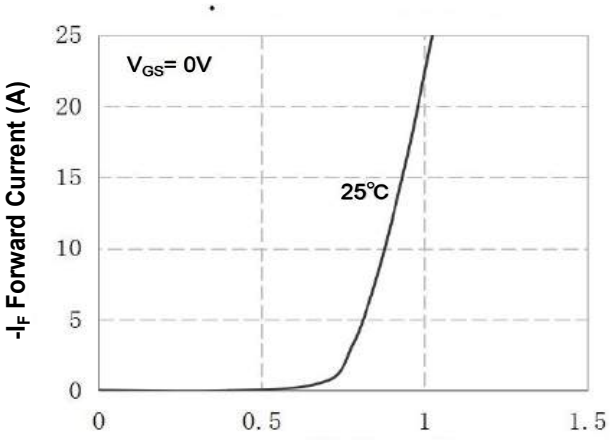


Figure 5. Body Diode Forward Voltage Variation with Source Current and Temperature

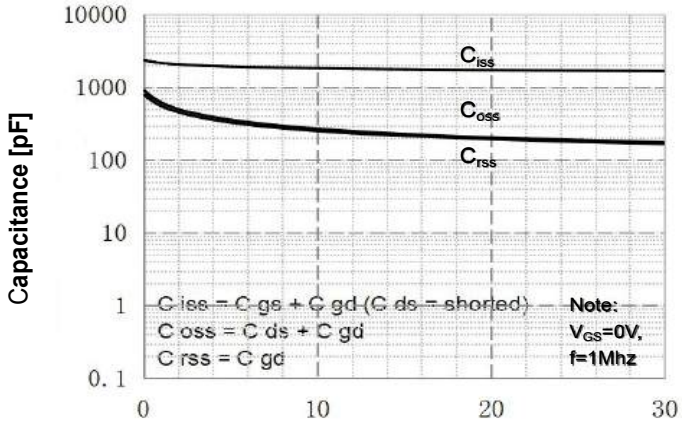


Figure 3. Capacitance Characteristics

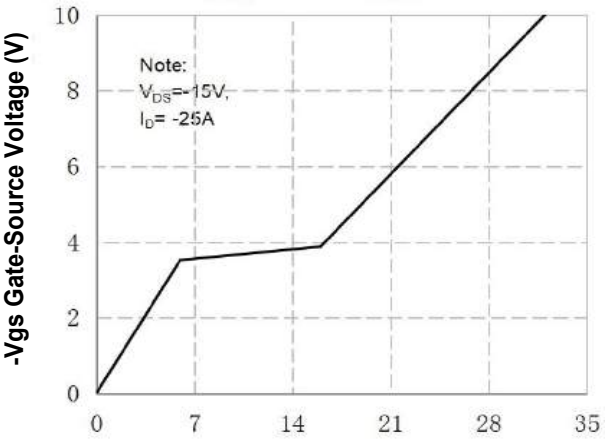


Figure 6. Gate Charge Characteristics

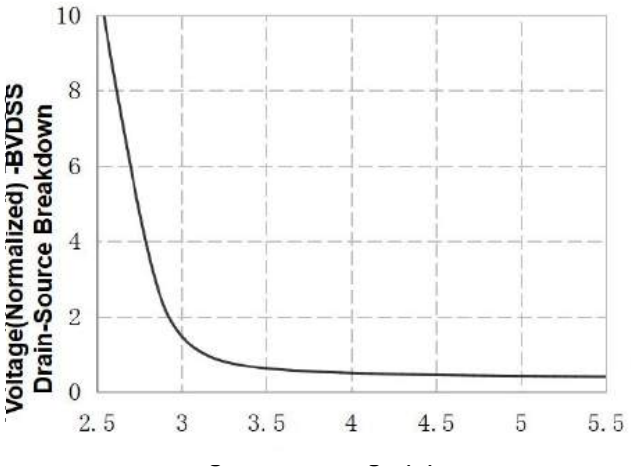


Figure 7. Breakdown Voltage Variation vs Gate-Voltage

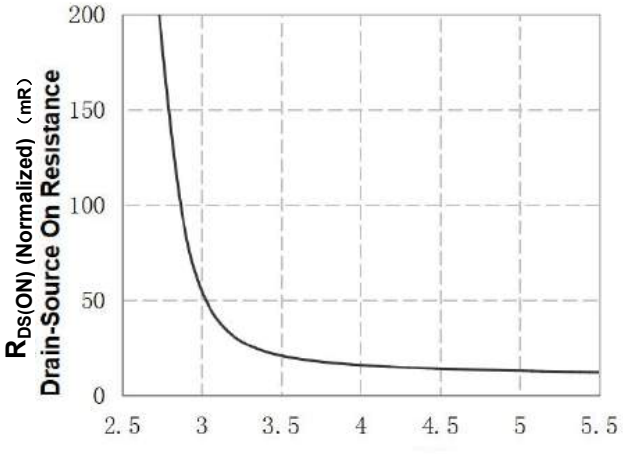


Figure 9. On-Resistance Variation vs Gate Voltage

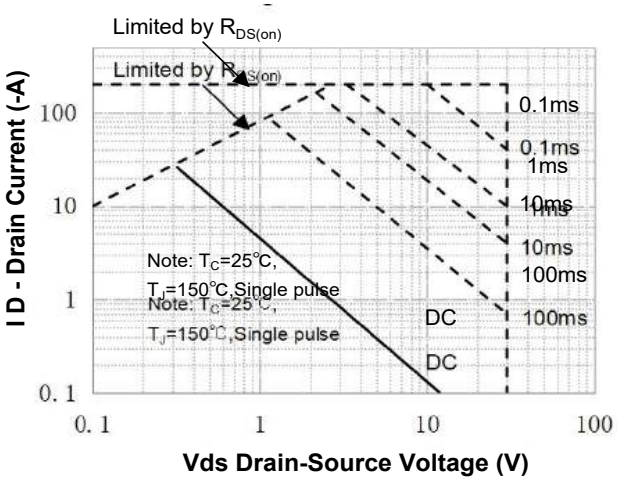


Figure 8. Maximum Safe Operating Area

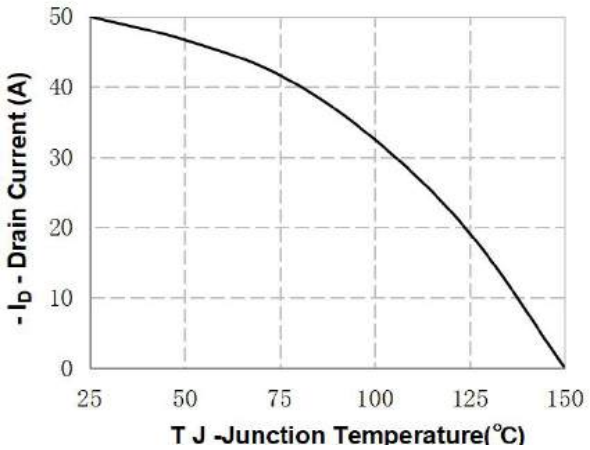


Figure 10. Maximum PContinuous Drain Currentvs Case Temperature

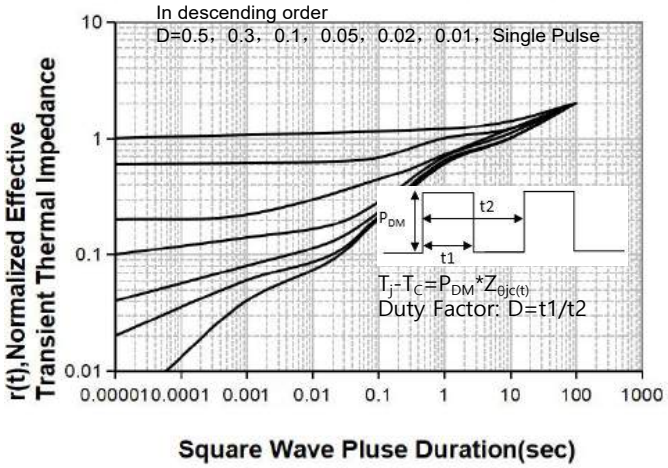


Figure 11 Transient Thermal Response Curve

Test ircuits and Waveforms

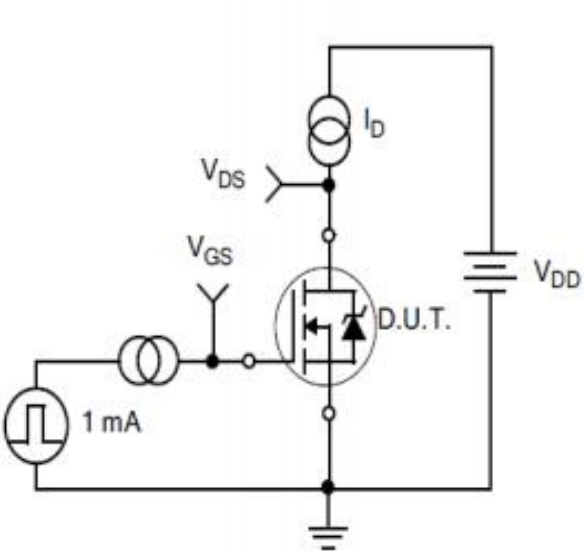


Figure A.
Gate Charge Test Circuit

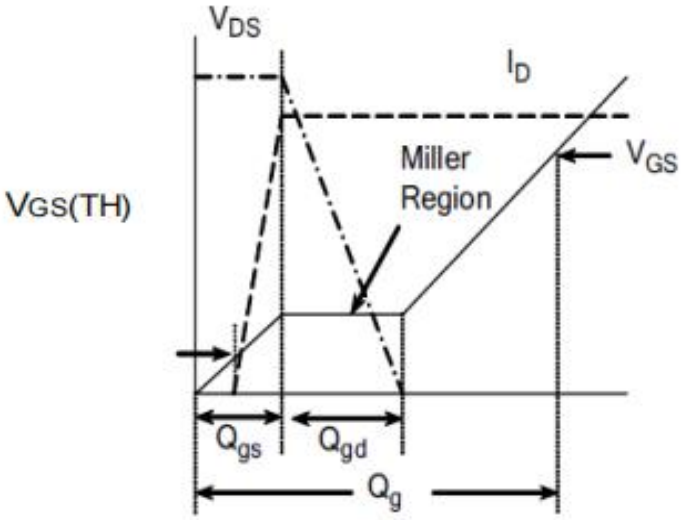


Figure B.
Gate Charge Waveform

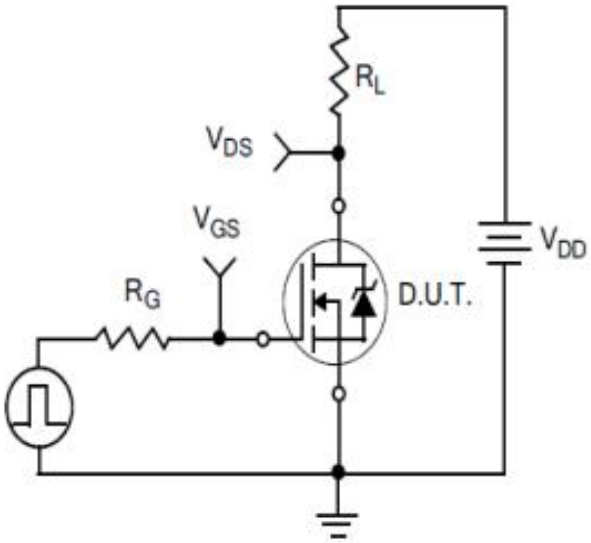


Figure C.
Resistive Switching Test Circuit

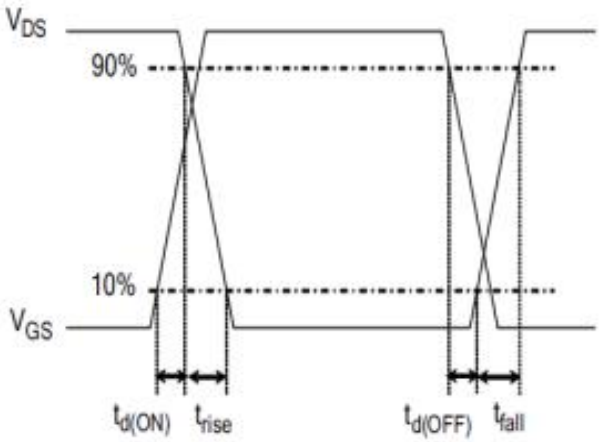
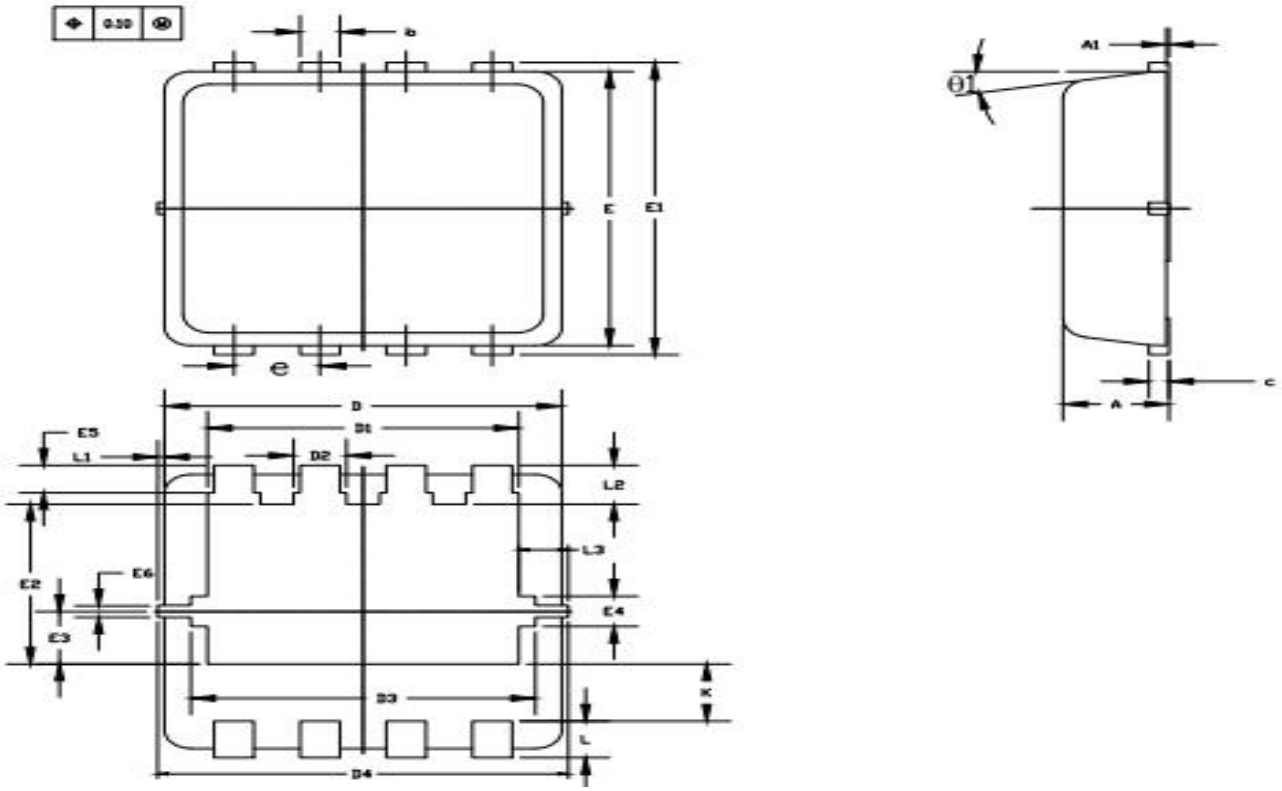


Figure D.
Resistive Switching Waveforms

Package outline drawing (DFN3*3 Unit: mm)



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.70	0.80	0.90	0.028	0.031	0.035
A1	0.00	0.025	0.05	0.000	0.001	0.002
b	0.24	0.30	0.35	0.009	0.012	0.014
c	0.10	0.15	0.25	0.004	0.006	0.010
D	2.90	3.00	3.10	0.114	0.118	0.122
D1	2.25	2.35	2.45	0.089	0.093	0.097
D2	0.30	0.40	0.50	0.012	0.016	0.020
D3	2.50	2.60	2.70	0.098	0.102	0.106
D4	3.00	3.10	3.20	0.118	0.122	0.126
E	2.90	3.00	3.10	0.114	0.118	0.122
E1	3.10	3.20	3.30	0.122	0.126	0.130
E2	1.65	1.75	1.85	0.065	0.069	0.073
E3	0.48	0.58	0.68	0.019	0.023	0.027
E4	0.23	0.33	0.43	0.009	0.013	0.017
E5	0.20	0.30	0.40	0.008	0.012	0.016
E6	0.075	0.125	0.175	0.003	0.005	0.007
e	0.60	0.65	0.70	0.024	0.026	0.028
K	0.52	0.62	0.72	0.020	0.024	0.028
L	0.30	0.40	0.50	0.012	0.016	0.020
L1	0	0.05	0.10	0	0.002	0.004
L2	0.33	0.43	0.53	0.013	0.017	0.021
L3	0.275	0.375	0.475	0.011	0.015	0.019
θ1	0°	10°	12°	0°	10°	12°