

30V, 30A DUAL N-CHANNEL POWER MOSFET

GENERAL DESCRIPTION

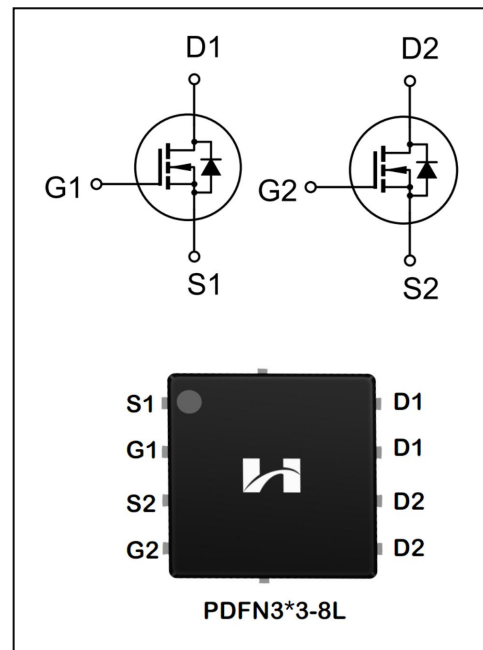
The SFN0330T2 uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge. It can be used in a wide variety applications.

Features

- ◆ $V_{DS}=30V, I_D=30A$
- ◆ $R_{DS(on)}$
TYP: $8.3m\Omega @ V_{GS}=10V$

Applications

- ◆ Power faction correction (PFC)
- ◆ Switched mode power supplies (SMPS)
- ◆ Uninterruptible power supply (UPS)
- ◆ LED lighting power



ORDERING INFORMATION

Part No.	Package	Marking	Material	Packing
SFN0330T2	PDFN3*3-8L	SFN0330T2	Pb Free	Reel

ABSOLUTE MAXIMUM RATINGS (T_J=25°C unless otherwise noted)

Characteristics		Symbol	Ratings	Unit
Drain-Source Voltage		V _{DS}	30	V
Gate-Source Voltage		V _{GS}	±20	V
Drain Current	T _C = 25°C	I _D	30	A
	T _C = 100°C		21.5	
Drain Current Pulsed(Note 1)		I _{DM}	120	A
Power Dissipation(T _C =25°C) -Derate above 25°C		P _D	32	W
Single Pulsed Avalanche Energy (Note 2)		E _{AS}	81	mJ
Operation Junction Temperature Range		T _J	-55~+150	°C
Storage Temperature Range		T _{stg}	-55~+150	°C
Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds		TL	300	°C

THERMAL CHARACTERISTICS

Characteristics	Symbol	MAX	Unit
Thermal Resistance, Junction-to-Case	R _{θJC}	4.15	°C/W
Thermal Resistance, Junction-to-Ambient	R _{θJA}	43.5	°C/W

ELECTRICAL CHARACTERISTICS

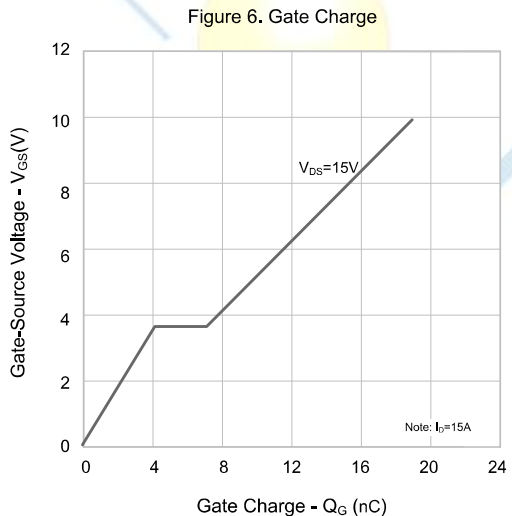
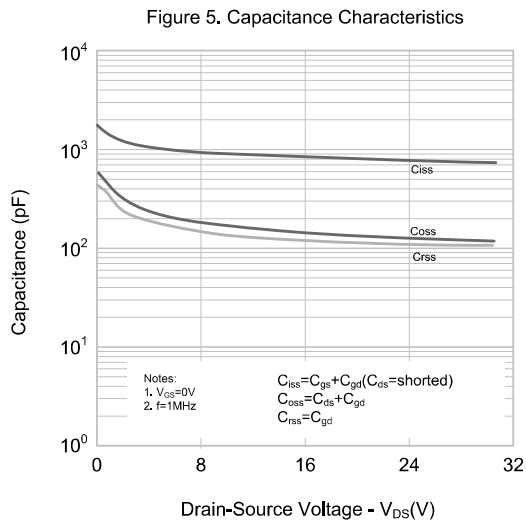
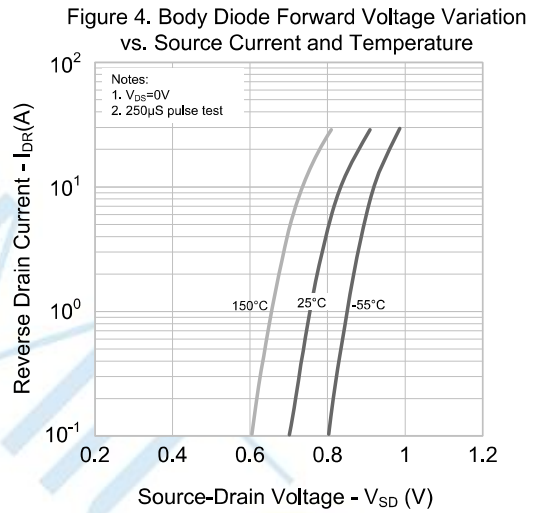
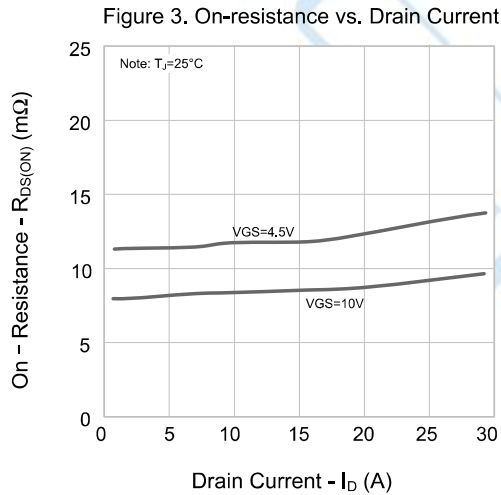
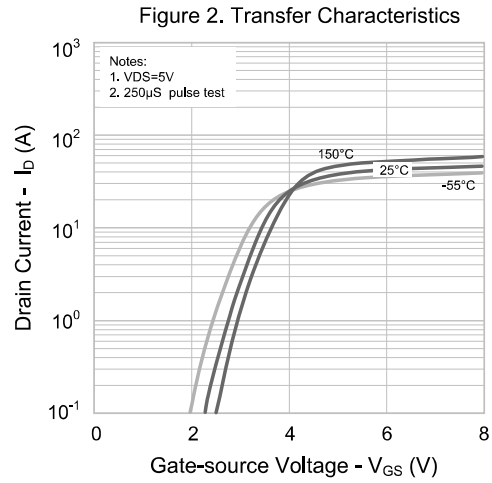
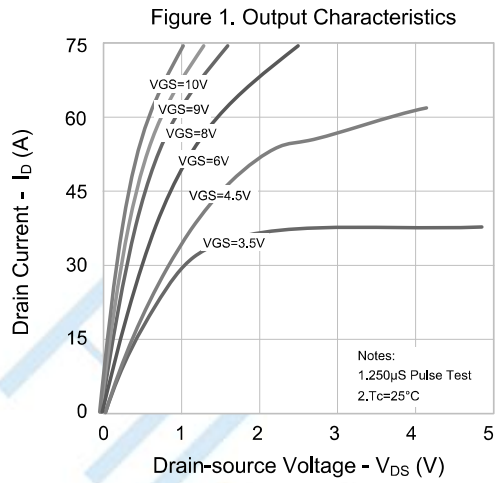
Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain -Source Breakdown Voltage	B _{VDS}	V _{GS} =0V, I _D =250μA	30	--	--	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	--	--	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =20V, V _{DS} =0V	--	--	100	nA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =-20V, V _{DS} =0V	--	--	-100	
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{GS} = V _{DS} , I _D =250μA	1.2	1.45	1.8	V
Static Drain- Source On State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =15A	--	8.3	10.5	mΩ
		V _{GS} =4.5V, I _D =10A	--	12.0	16.5	
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =15V V _{GS} =0V f=1.0MHZ	--	853	--	pF
Output Capacitance	C _{oss}		--	165	--	
Reverse Transfer Capacitance	C _{rss}		--	130	--	
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =15V, R _G =10Ω I _D =15A (Note 3.4)	--	7.3	--	ns
Turn-on Rise Time	t _r		--	6.2	--	
Turn-off Delay Time	t _{d(off)}		--	25.6	--	
Turn-off Fall Time	t _f		--	8.5	--	
Total Gate Charge	Q _g	V _{DS} =15V, I _D =15A V _{GS} =10V (Note 3.4)	--	18.1	--	nc
Gate-Source Charge	Q _{gs}		--	5.3	--	
Gate-Drain Charge	Q _{gd}		--	6.5	--	

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

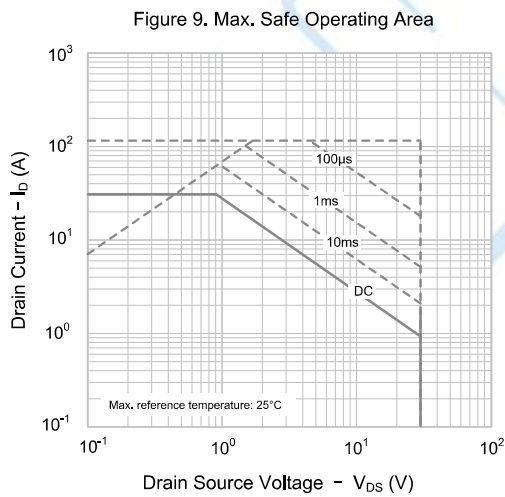
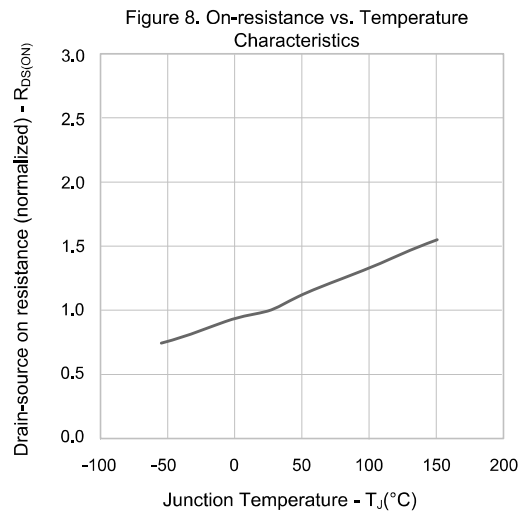
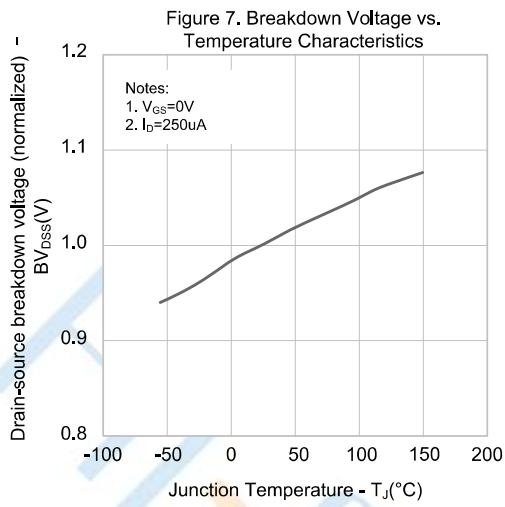
Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	I_S	Integral Reverse P-N Junction Diode in the MOSFET	--	--	30	A
Pulsed Source Current	I_{SM}		--	--	120	
Diode Forward Voltage	V_{SD}	$I_S=15A, V_{GS}=0V$	--	0.83	1.2	V
Reverse Recovery Time	T_{rr}	$I_F=15A$ $dI_F/dt=100A/\mu S$	--	18.3	--	ns
Reverse Recovery Charge	Q_{rr}		--	11	--	nC

1. Pulse width limited by maximum junction temperature
2. $L=0.5mH$, $V_{DD}=20V$, $V_G=10V$, $R_G=25\Omega$, starting $T_J=25^\circ C$
3. Pulse Test: Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
4. Essentially independent of operating temperature

Typical Performance Characteristics

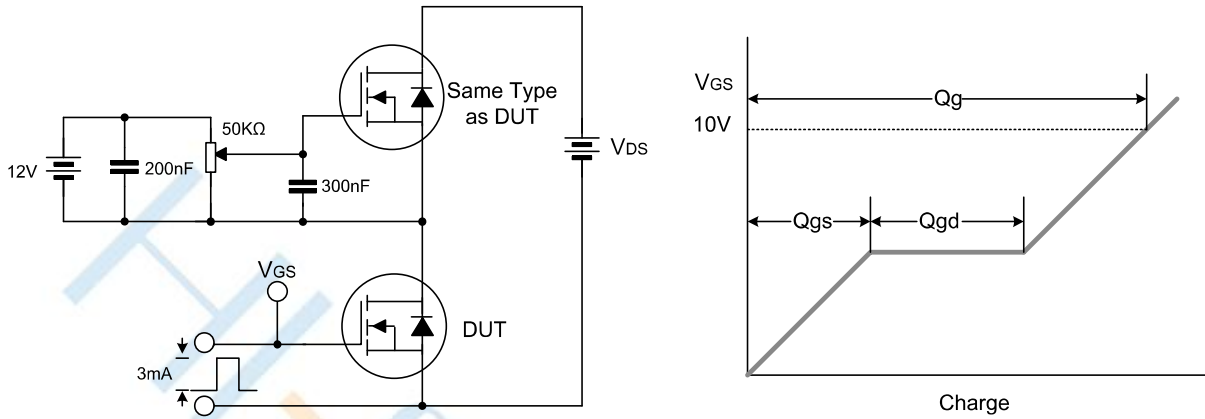


Typical Performance Characteristics

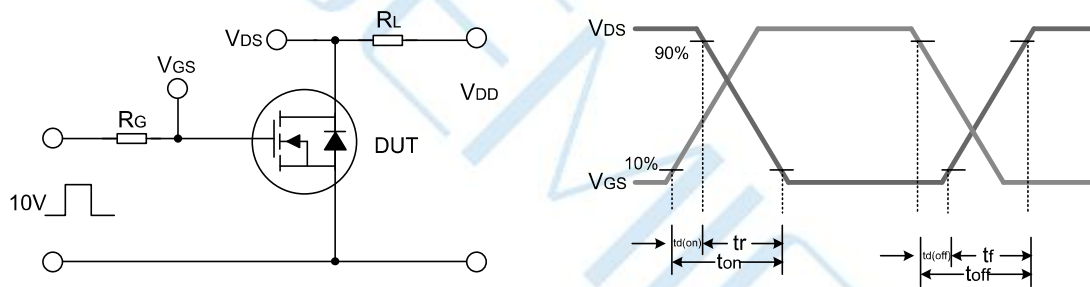


Test Circuit

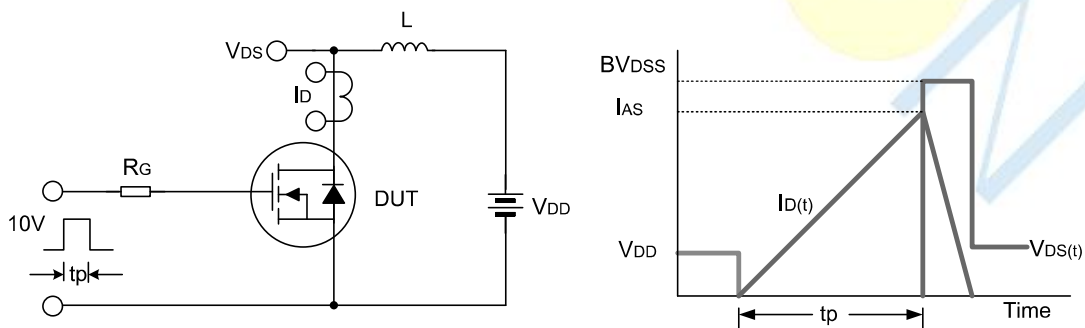
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveform

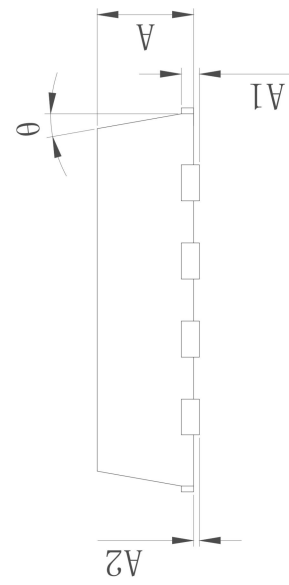
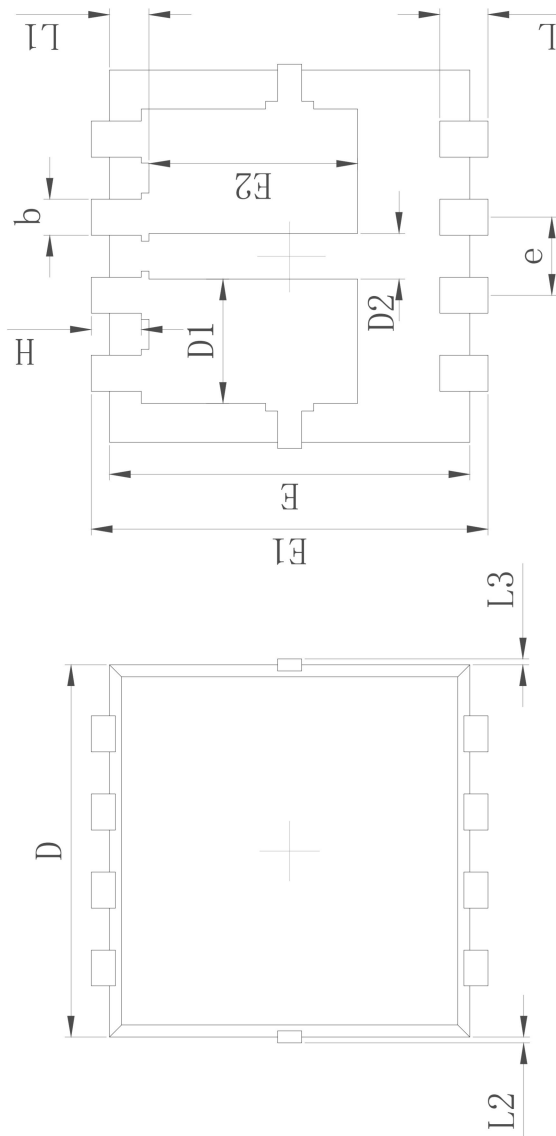


Undamped Inductive Switching Test Circuit & Waveform



Package Dimensions of PDFN3*3-8L

SYMBOL	MILLIMETER	
	MIN	MAX
A	0.700	0.900
A1	0.152 REF.	
A2	0 [~] 0.05	
D	3.000	3.200
D1	0.935	1.135
D2	0.280	0.480
E	2.900	3.100
E1	3.150	3.450
E2	1.535	1.935
b	0.200	0.400
e	0.550	0.750
L	0.300	0.500
L1	0.180	0.480
L2	0 [~] 0.100	
L3	0 [~] 0.100	
H	0.315	0.515
θ	8°	12°



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