

TN70N30DN

N-Channel Enhancement Mode Power MOSFET

PDFN5x6-8L

Product Summary

- $V_{DS} = 30V, I_D = 70A$
- $R_{DS(on)} < 5.2m\Omega @ V_{GS} = 10V$
- $R_{DS(on)} < 8.2m\Omega @ V_{GS} = 4.5V$

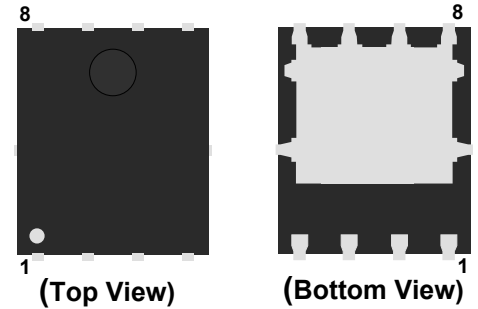
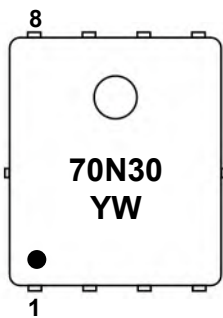
Features

- Advanced Trench Technology
- 100% Avalanche Tested
- RoHS Compliant
- Halogen and Antimony Free
- Moisture Sensitivity Level 3

Application

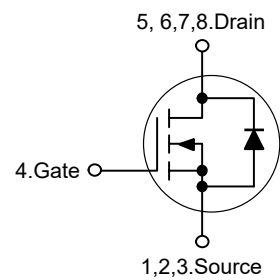
- Battery Protection
- Load Switch
- Uninterruptible Power Supply

Marking Code



Pin	Description
1,2,3	Source
4	Gate
5,6,7,8	Drain

Schematic Diagram



Absolute Maximum Ratings

Ratings at 25°C case temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	70	A
Drain Current-Pulsed ^{Note1}	I_{DM}	268	A
Maximum Power Dissipation	P_D	40	W
Single Pulse Avalanche Energy ^{Note2}	E_{AS}	76.5	mJ
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.72	°C/W
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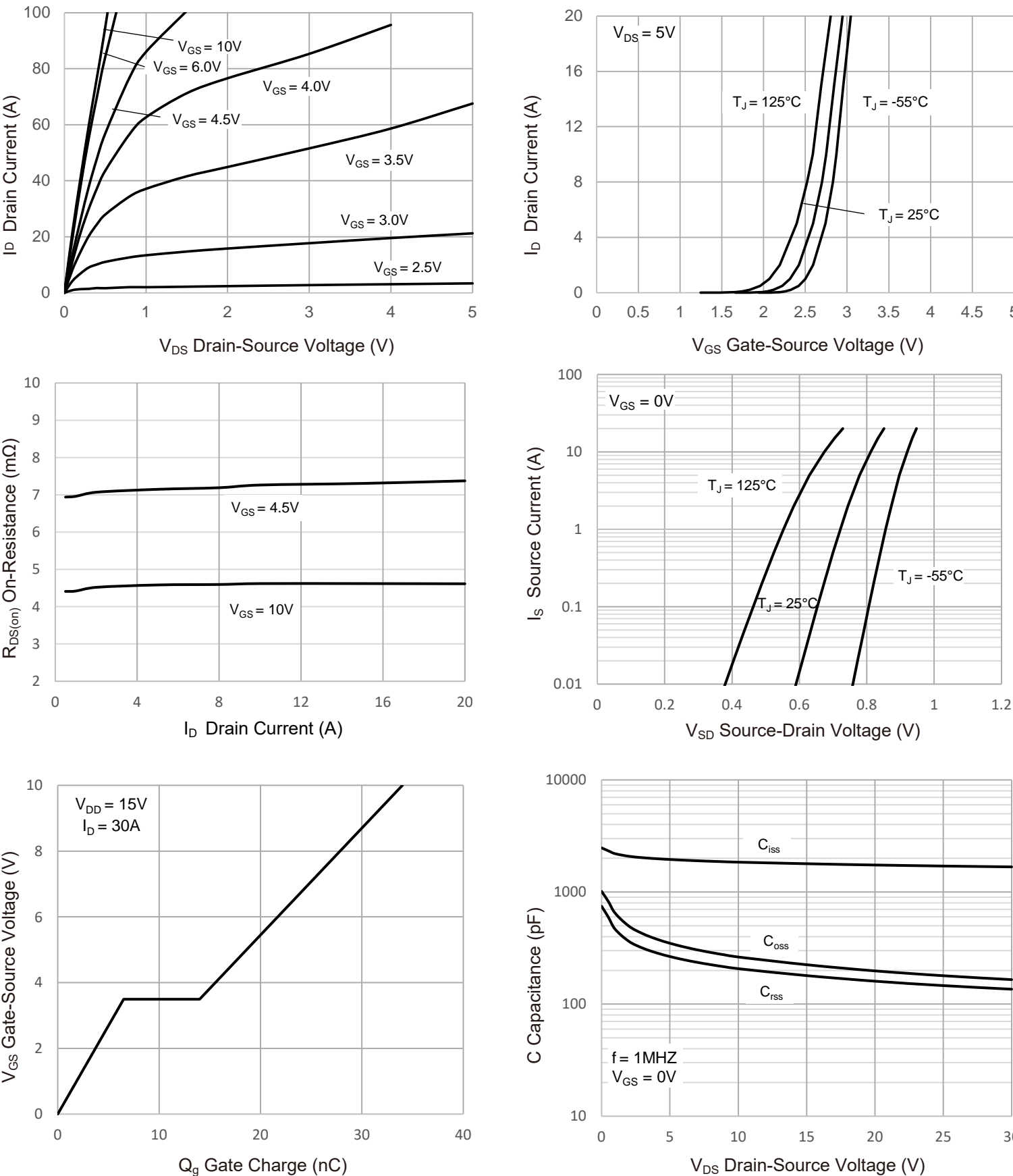
Electrical Characteristics

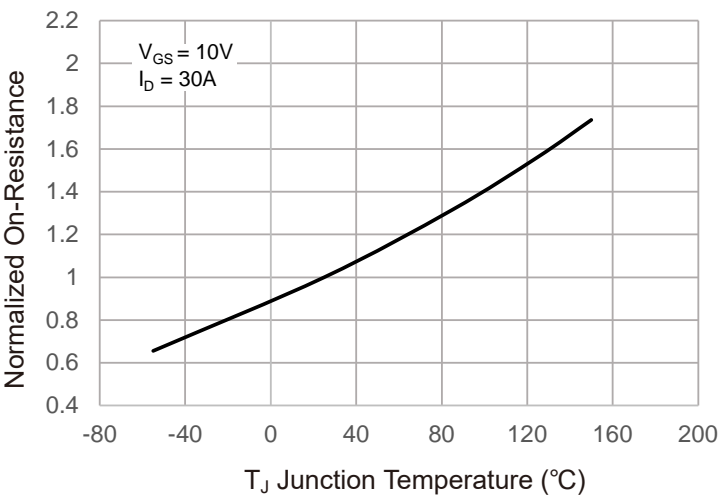
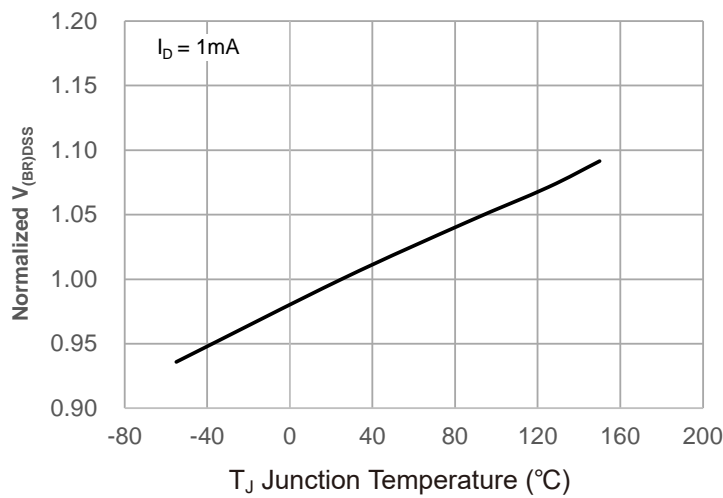
(T_J=25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	30	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	--	--	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
Gate Threshold Voltage ^{Note3}	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	1.5	2.5	V
Drain-Source On-Resistance ^{Note3}	R _{DS(on)}	V _{GS} =10V, I _D =30A	--	--	5.2	mΩ
		V _{GS} =4.5V, I _D =20A	--	--	8.2	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHz	--	1916	--	pF
Output Capacitance	C _{oss}		--	217	--	pF
Reverse Transfer Capacitance	C _{rss}		--	183	--	pF
Total Gate Charge	Q _g	V _{DS} =15V, I _D =30A, V _{GS} =4.5V	--	37	--	nC
Gate-Source Charge	Q _{gs}		--	7.4	--	nC
Gate-Drain Charge	Q _{gd}		--	8.6	--	nC
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =15V, I _D =30A, V _{GS} =10V, R _{GEN} =3Ω	--	8.4	--	nS
Turn-on Rise Time	t _r		--	20	--	nS
Turn-off Delay Time	t _{d(off)}		--	32	--	nS
Turn-off Fall Time	t _f		--	9	--	nS
Source-Drain Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =30A	--	--	1.2	V
Diode Forward Current	I _S		--	--	70	A

Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2.EAS Condition: T_J=25 °C, V_{DD}=15V, V_G=10V, R_G=25Ω, L=0.5mH, I_{AS}=17.5A.
3.Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

Typical Characteristic Curves





Test Circuit

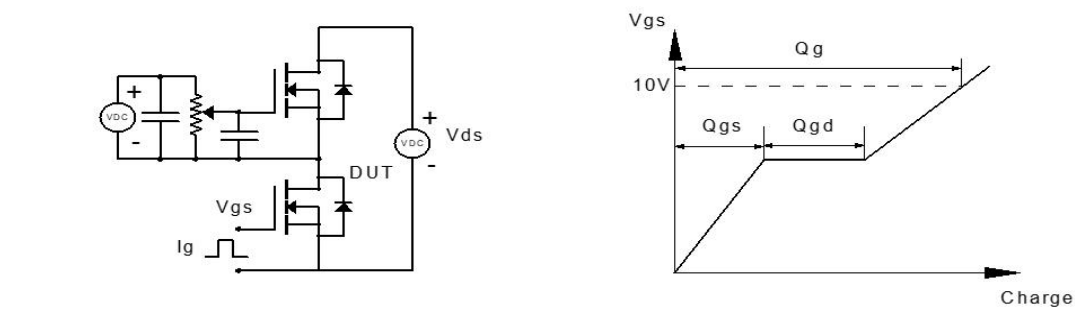


Figure 1: Gate Charge Test Circuit & Waveform

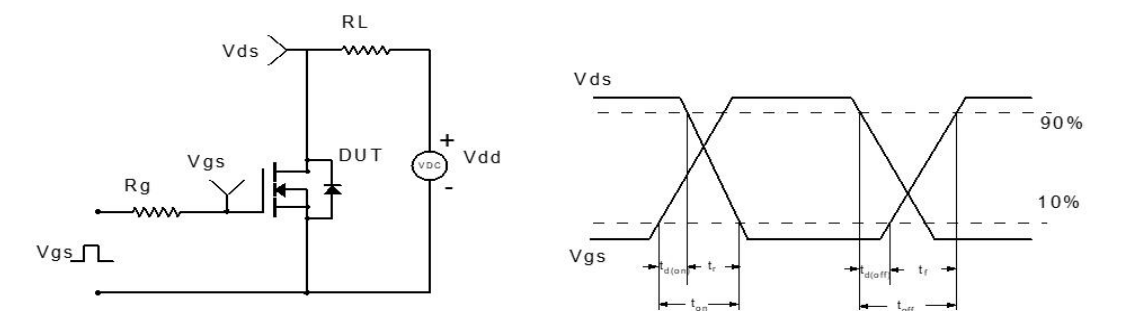


Figure 2: Resistive Switching Test Circuit & Waveform

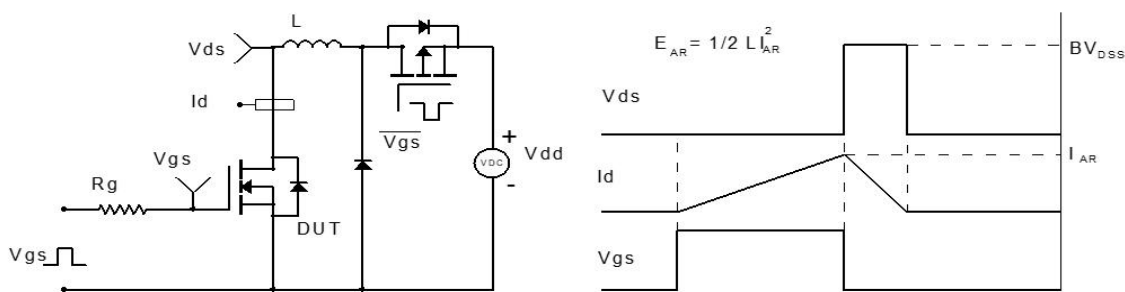


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

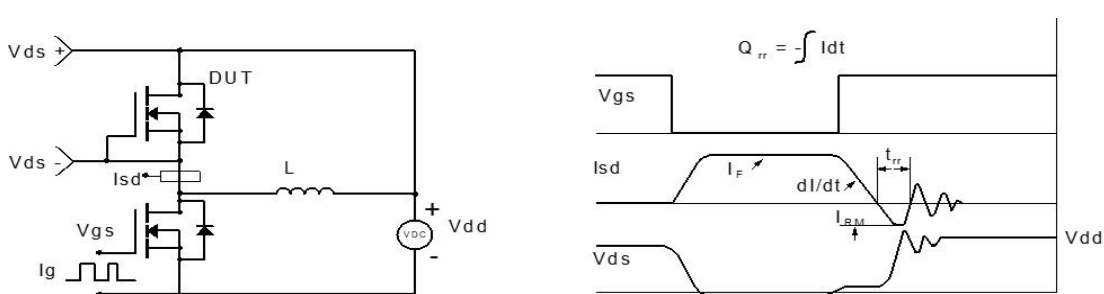
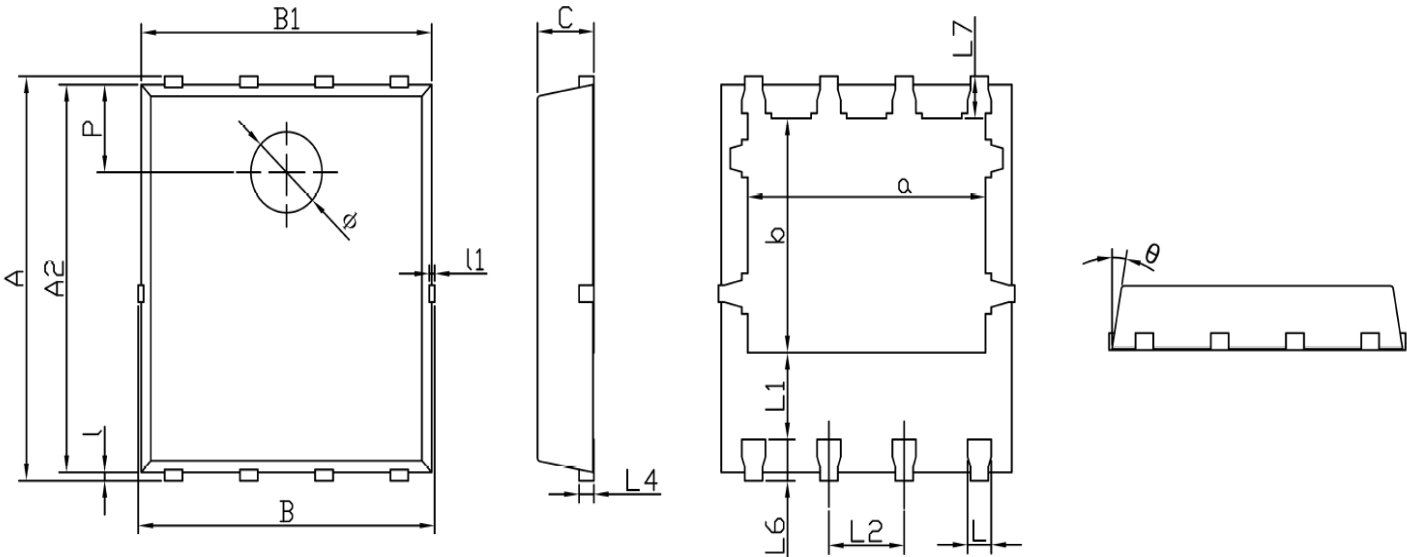


Figure 4: Diode Recovery Test Circuit & Waveform

Package Outline

PDFN5x6-8L Dimensions in mm




Symbol	Dimensions		Symbol	Dimensions	
	Min.	Max.		Min.	Max.
A	5.90	6.10	L1	1.10	-
a	3.91	4.11	l1	-	0.10
A2	5.70	5.80	L2	1.17	1.37
B	4.90	5.10	L4	0.21	0.34
b	3.375	3.575	L6	0.51	0.71
B1	4.80	5.00	L7	0.51	0.71
C	0.90	1.00	P	1.15	1.45
L	0.30	0.50	θ	8°	12°
l	0.06	0.20	Φ	1.10	1.30

Contact Information

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For additional information, please contact your local Sales Representative.

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