

TN70N60DN

N-Channel Enhancement Mode Power MOSFET

PDFN5x6-8L

Product Summary

- $V_{DS} = 60V, I_D = 70A$
- $R_{DS(on)} < 7m\Omega @ V_{GS} = 10V$
- $R_{DS(on)} < 8m\Omega @ V_{GS} = 4.5V$

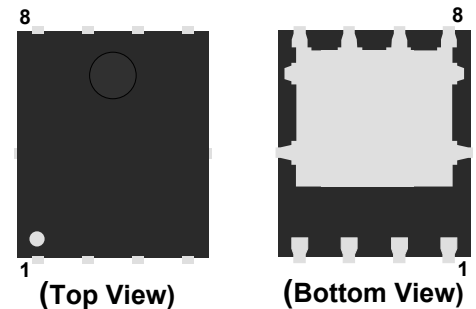
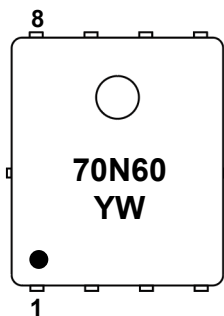
Features

- Advanced Trench Technology
- RoHS Compliant
- Halogen and Antimony Free
- Moisture Sensitivity Level 3

Application

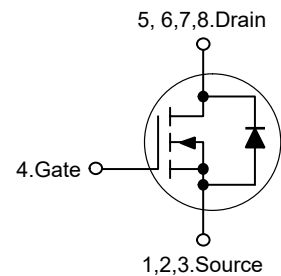
- Load Switch
- PWM Application
- Power Management

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}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	70	A
Drain Current-Pulsed ^{Note1}	I_{DM}	280	A
Maximum Power Dissipation	P_D	50	W
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.5	°C/W
--------------------------------------	-----------------	-----	------

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	60	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V	--	--	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
Gate Threshold Voltage ^{Note2}	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	--	2.5	V
Drain-Source On-Resistance ^{Note2}	R _{DS(on)}	V _{GS} =10V, I _D =30A	--	--	7	mΩ
		V _{GS} =4.5V, I _D =20A	--	--	8	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz	--	4800	--	pF
Output Capacitance	C _{oss}		--	280	--	pF
Reverse Transfer Capacitance	C _{rss}		--	250	--	pF
Total Gate Charge	Q _g	V _{DS} =30V, I _D =10A, V _{GS} =10V	--	98	--	nC
Gate-Source Charge	Q _{gs}		--	12.5	--	nC
Gate-Drain Charge	Q _{gd}		--	32	--	nC
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =30V, I _D =15A, V _{GS} =10V, R _{GEN} =1.8Ω	--	9	--	nS
Turn-on Rise Time	t _r		--	6.1	--	nS
Turn-off Delay Time	t _{d(off)}		--	33.2	--	nS
Turn-off Fall Time	t _f		--	7.5	--	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.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.

Typical Characteristic Curves

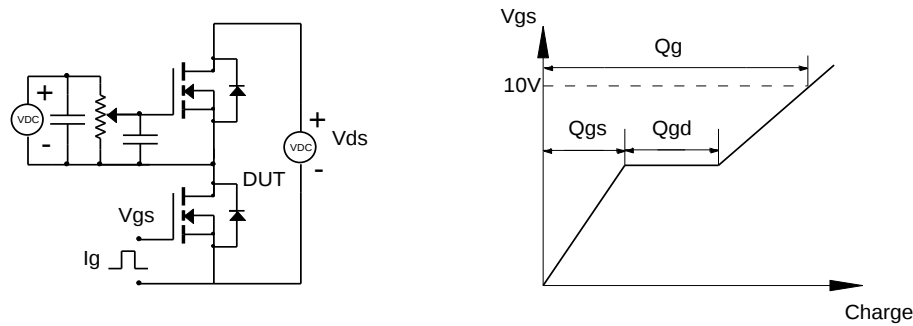


Figure 1: Gate Charge Test Circuit & Waveform

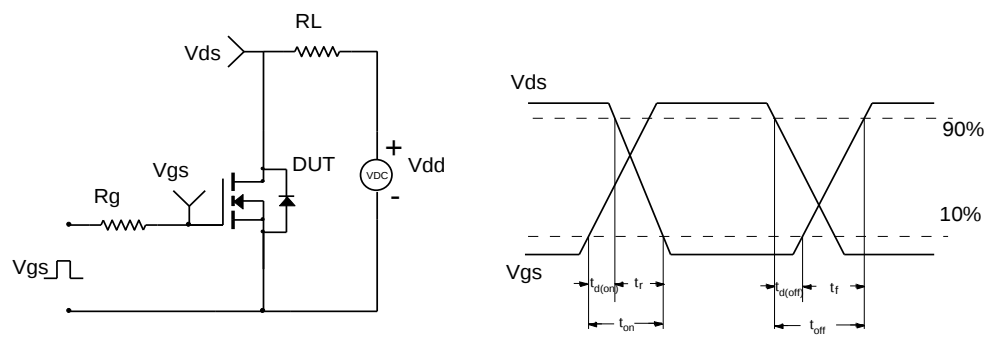


Figure 2: Resistive Switching Test Circuit & Waveform

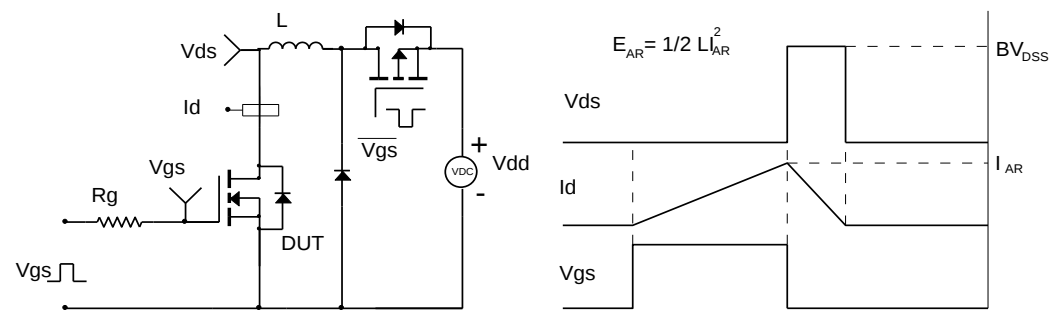


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

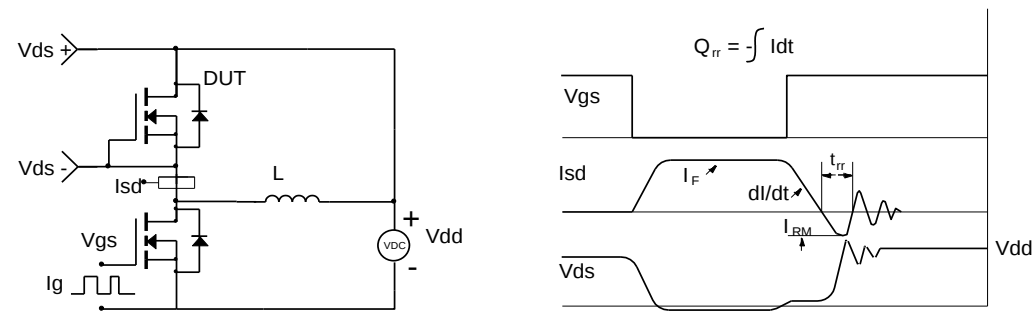


Figure 4: Diode Recovery Test Circuit & Waveform

