

**FH3080G**
**N-Channel Trench Power MOSFET**
**Description**

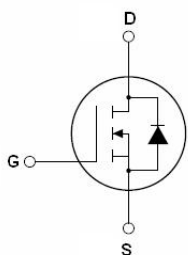
These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on state resistance, provide superior switching performance, and with stand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

**General Features**

- ◆  $V_{DSS}=30V$  ,  $I_D=75A$   
 $R_{DS(ON)}=4.3m\Omega$  (Typ) @ $V_{GS}=10V$   
 $R_{DS(ON)}=7.2m\Omega$  (Typ) @ $V_{GS}=4.5V$
- ◆ Improved dv/dt capability
- ◆ Fast switching
- ◆ 100% EAS Guaranteed
- ◆ Green device available

**Applications**

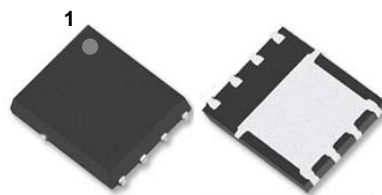
- ◆ Motor Drives
- ◆ UPS
- ◆ DC-DC Converter



Schematic diagram



Marking and pin Assignment



PDFN5X6-8L top and bottom view

Symbol	Parameter	Value	Units
$V_{DS}$	Drain-Source Voltage	30	V
$I_D$	Drain Current - Continuous (TC= 25°C)	75	A
	- Continuous (TC= 100°C)	47*	A
$I_{DM}$	Drain Current - Pulsed (Note 1)	220*	A
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$E_{AS}$	Single Pulsed Avalanche Energy (Note 2)	95	mJ
$P_D$	Power Dissipation (TC = 25°C)	46	W
	- Derate above 25°C		
$T_j, T_{stg}$	Operating and Storage Temperature Range	-55 to +150	°C

\* Drain current limited by maximum junction temperature

**Thermal Characteristics**

Symbol	Parameter	Value	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	2.741	°C/W

Electrical Characteristics  $T_C = 25^\circ\text{C}$  unless otherwise noted

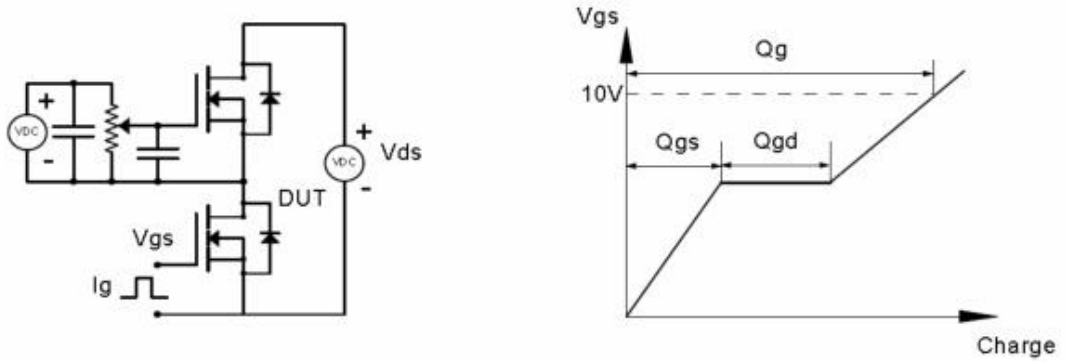
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$	30			V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = 29.5\text{ V}, V_{GS} = 0\text{ V}$			1	$\mu\text{A}$
$I_{GSSF}$	Gate Leakage Current, Forward	$V_{GS} = 20\text{ V}, V_{DS} = 0\text{ V}$			100	nA
$I_{GSSR}$	Gate Leakage Current, Reverse	$V_{GS} = -20\text{ V}, V_{DS} = 0\text{ V}$			-100	nA
<b>On Characteristics</b>						
$V_{GS(TH)}$	Gate Threshold voltage	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	1.0	1.5	2.0	V
$R_{DS(on)}$	Drain-Source on-state resistance	$V_{GS} = 10\text{ V}, I_D = 30\text{ A}$		4.3	6.5	m $\Omega$
		$V_{GS} = 4.5\text{ V}, I_D = 20\text{ A}$		7.2	10	m $\Omega$
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input capacitance	$V_{DS}=15\text{V}, V_{GS}=0\text{V},$ $F=1.0\text{MHz}$		1560		pF
$C_{oss}$	Output capacitance			246		pF
$C_{riss}$	Reverse transfer capacitance			225		pF
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn On Delay Time	$V_{DD}=20\text{V}, I_D=54\text{A},$ $V_{GS}=10\text{V}, R_G=4.7\Omega$ (Note 3, 4)		3.2		ns
$t_r$	Rising Time			19.6		ns
$t_{d(off)}$	Turn Off Delay Time			29.2		ns
$t_f$	Fall Time			18.8		ns
$Q_g$	Total Gate Charge	$V_{DD}=15\text{V}, I_D=30\text{A},$ $V_{GS}=10\text{V}$ (Note 3, 4)		33.7		nC
$Q_{gs}$	Gate-Source Charge			4.5		nC
$Q_{gd}$	Gate-Drain Charge			7.4		nC
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
$I_S$	Maximum Continuous Drain-Source Diode Forward Current				50	A
$I_{SM}$	Maximum Pulsed Drain-Source Diode Forward Current				200	A
$V_{SD}$	Diode Forward Voltage	$V_{GS} = 0\text{ V}, I_S = 30\text{ A}$			1.2	V
$t_{rr}$	Body Diode Reverse Recovery Time	$V_{ds}=32\text{V}, I_{ds}=20\text{A},$ $di/dt=100\text{A}/\mu\text{s}$		13		ns
$Q_{rr}$	Body Diode Reverse Recovery Charge			6		nC

**Notes:**

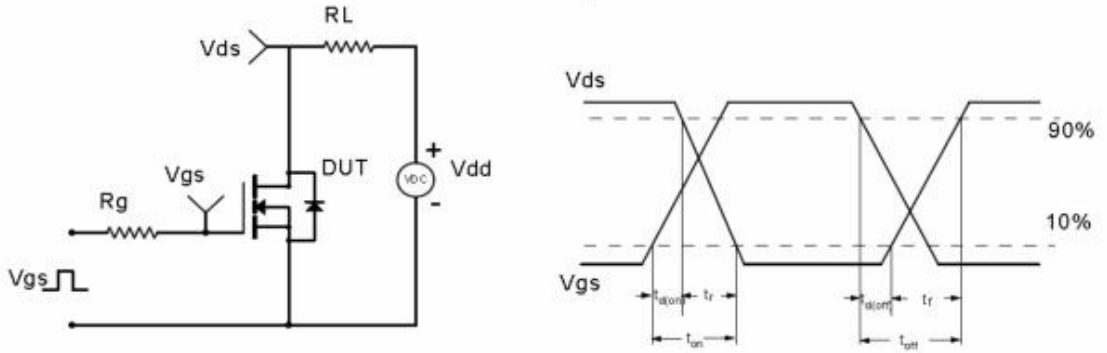
1. Repetitive Rating : Pulse width limited by maximum junction temperature
2.  $L = 0.5\text{ mH}, V_{DD} = 20\text{ V}, R_G = 25\ \Omega$ , Starting  $T_j = 25^\circ\text{C}$
3.  $I_{SD} \leq 100\text{ A}, di/dt = 100\text{ A}/\mu\text{s}, V_{DD} \leq BV_{DSS}$ , Starting  $T_j = 25^\circ\text{C}$
4. Pulse Test : Pulse width  $\leq 300\ \mu\text{s}$ , Duty cycle  $\leq 2\%$
5. Essentially independent of operating temperature

Test Circuit & Waveform

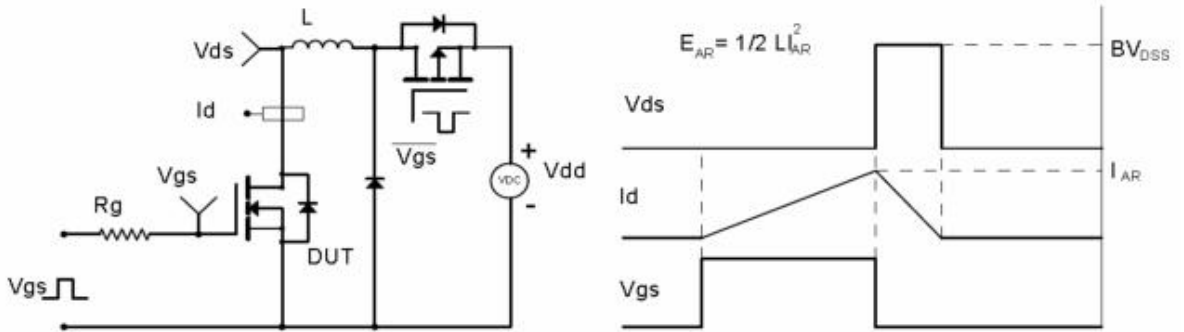
Gate Charge Test Circuit & Waveform



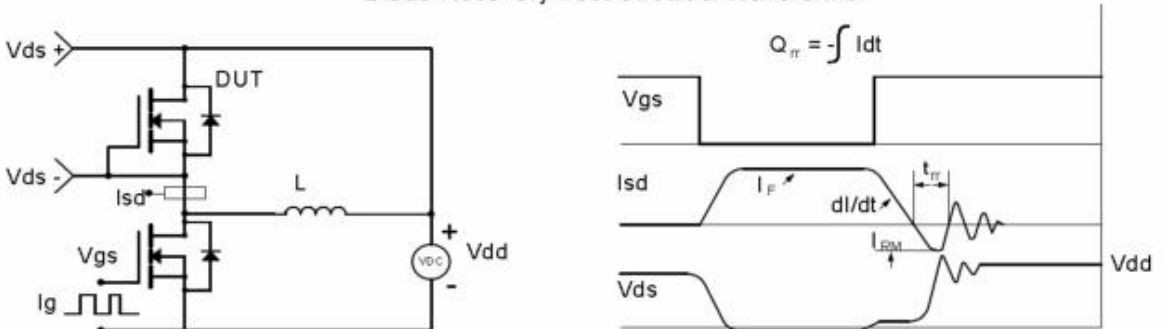
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Typical Performance Characteristics

Fig.1 Power Dissipation Derating Curve

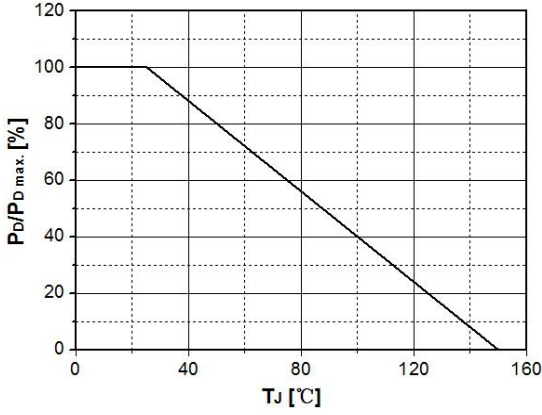


Fig.2 Avalanche Energy Derating Curve vs. Junction Temperature

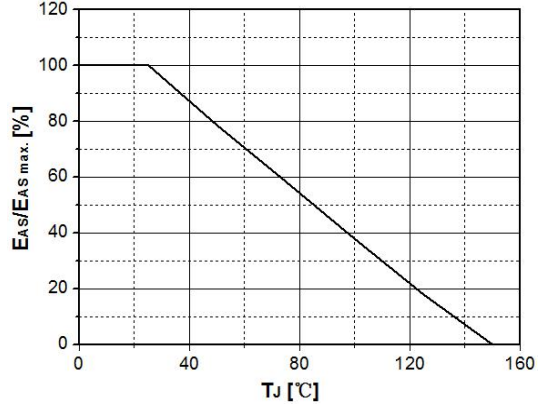


Fig.3 Typical Output Characteristics

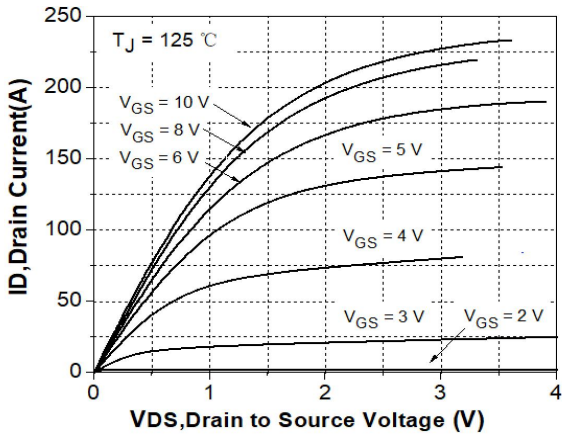


Fig. 4 Transconductance vs. Drain Current

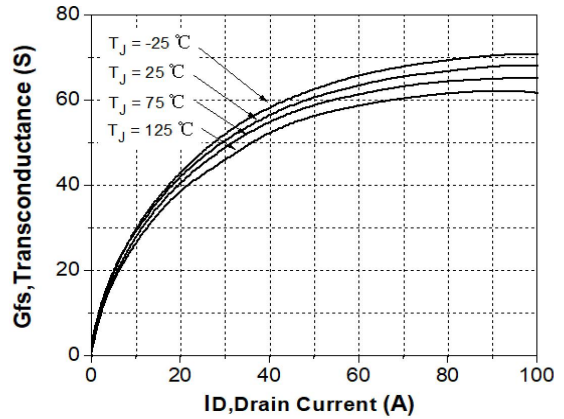


Fig.5 Typical Transfer Characteristics

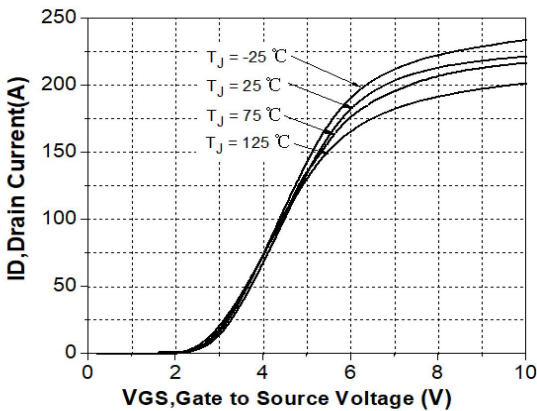


Fig. 6 State Resistance vs. Drain Current @-25°C

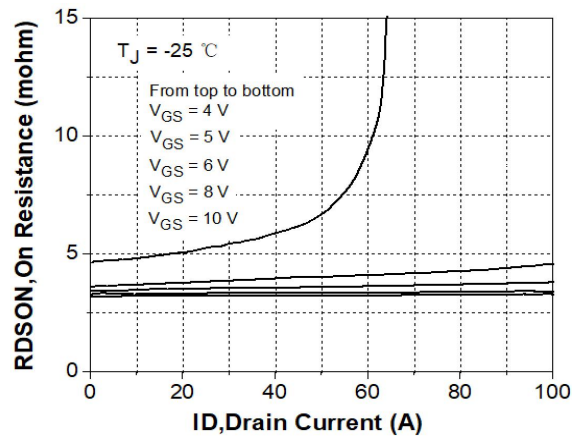


Fig.7 State Resistance vs. Drain Current @25°C

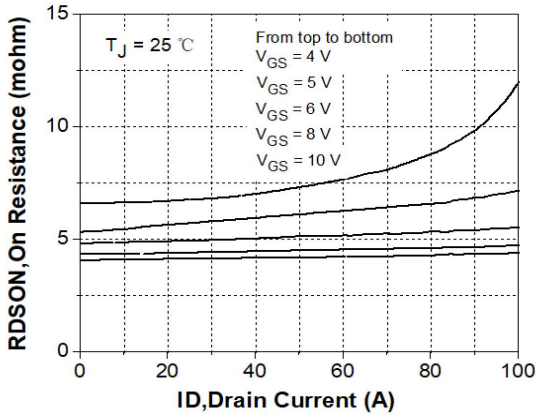


Fig. 8 State Resistance vs. Drain Current @125°C

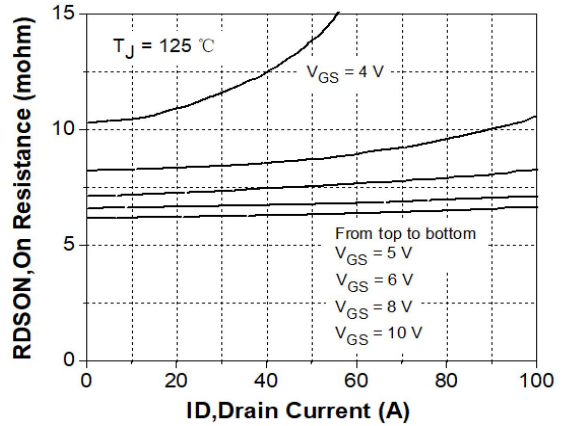


Fig.9 Typical Capacitance vs. Drain Source Voltage

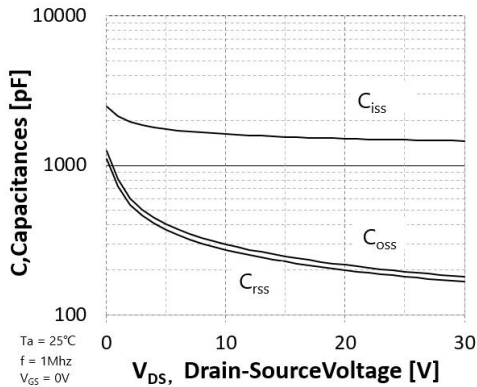


Fig.10 Dynamic Input Characteristics

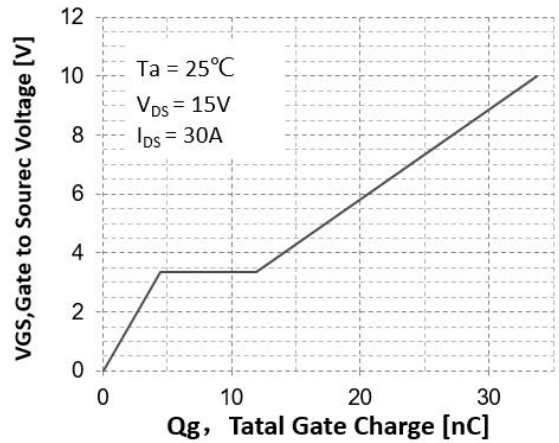


Fig.11 Breakdown Voltage vs. Junction Temperature

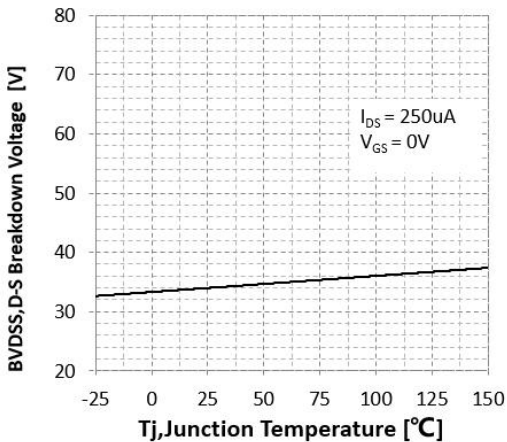


Fig. 12 Gate Threshold Voltage vs. Junction Temperature

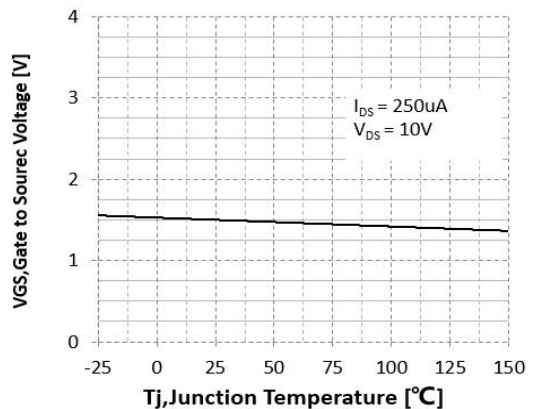


Fig.13 On-Resistance Variation vs. Junction Temperature

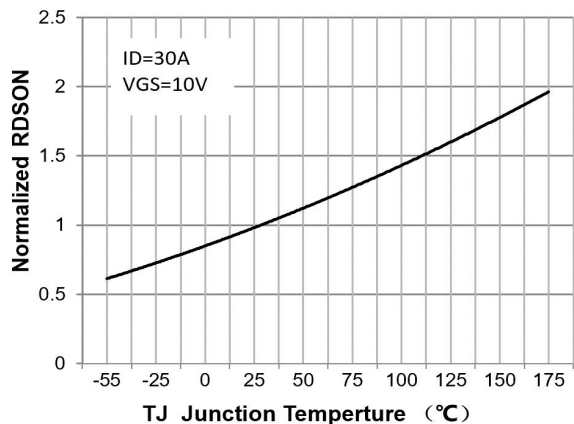


Fig.14 Maximum Drain Current vs. Case Temperature

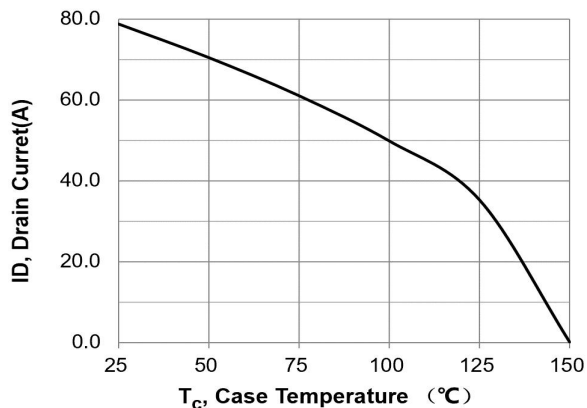


Fig.15 Body Diode Forward Voltage Vs Reverse Drain Current

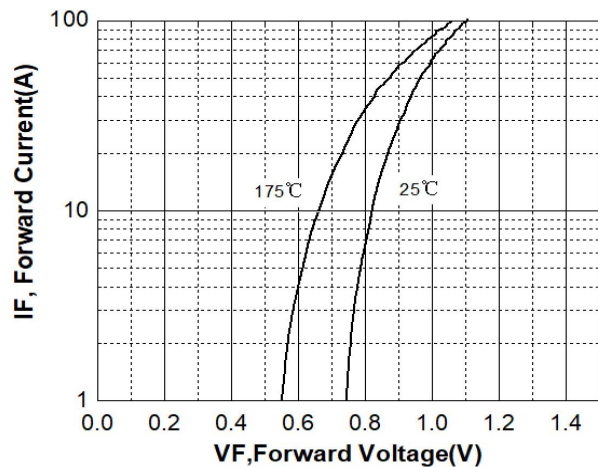


Fig.16 Safe Operating Area

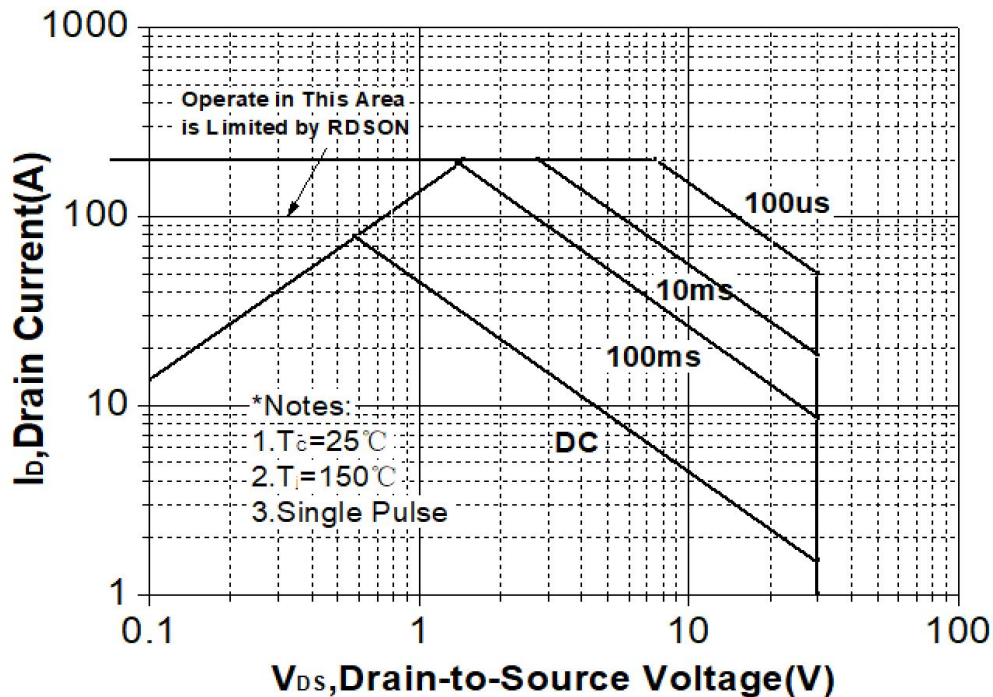
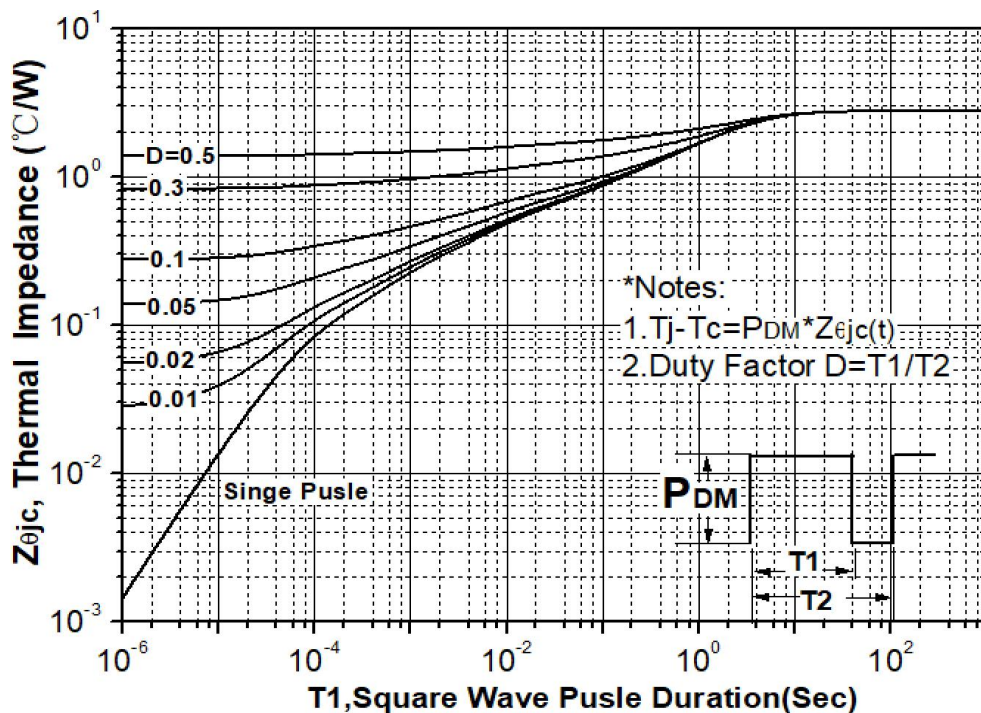
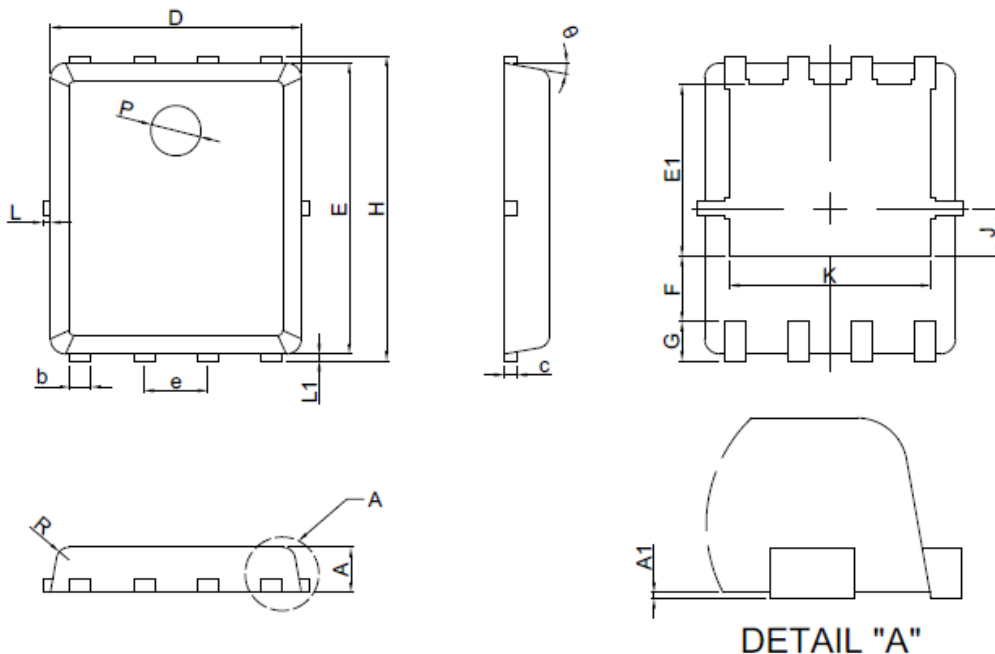


Fig. 17 Transient Thermal Response Curve



Package Information : PDFN5x6-8L



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	0.80	1.00
A1	0.00	0.05
b	0.35	0.49
c	0.254REF	
D	4.80	5.20
F	1.40REF	
E	5.60	5.90
e	1.27BSC	
H	5.80	6.20
L1	0.10	0.18
G	0.60REF	
K	4.00REF	
L	-	0.15
J	0.95BSC	
P	1.00REF	
E1	3.40REF	
$\theta$	6°	14°
R	0.25REF	



## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [MOSFET](#) category:*

*Click to view products by [Xinfeihong](#) manufacturer:*

Other Similar products are found below :

[614233C](#) [648584F](#) [MCH3443-TL-E](#) [MCH6422-TL-E](#) [NTNS3A92PZT5G](#) [IRFD120](#) [IRFF430](#) [JANTX2N5237](#) [2N7000](#) [AOD464](#)  
[2SK2267\(Q\)](#) [2SK2545\(Q,T\)](#) [405094E](#) [423220D](#) [MIC4420CM-TR](#) [VN1206L](#) [614234A](#) [715780A](#) [SSM6J414TU,LF\(T](#) [751625C](#)  
[IPS70R2K0CEAKMA1](#) [BSF024N03LT3 G](#) [PSMN4R2-30MLD](#) [TK31J60W5,S1VQ\(O](#) [2SK2614\(TE16L1,Q\)](#) [DMN1017UCP3-7](#)  
[EFC2J004NUZTDG](#) [FCAB21350L1](#) [P85W28HP2F-7071](#) [DMN1053UCP4-7](#) [NTE2384](#) [NTE2969](#) [NTE6400A](#) [DMC2700UDMQ-7](#)  
[DMN2080UCB4-7](#) [DMN61D9UWQ-13](#) [US6M2GTR](#) [DMN31D5UDJ-7](#) [SSM6P54TU,LF](#) [DMP22D4UFO-7B](#) [IPS60R3K4CEAKMA1](#)  
[DMN1006UCA6-7](#) [DMN16M9UCA6-7](#) [STF5N65M6](#) [IRF40H233XTMA1](#) [IPSA70R950CEAKMA1](#) [IPSA70R2K0CEAKMA1](#) [STU5N65M6](#)  
[C3M0021120D](#) [DMN6022SSD-13](#)