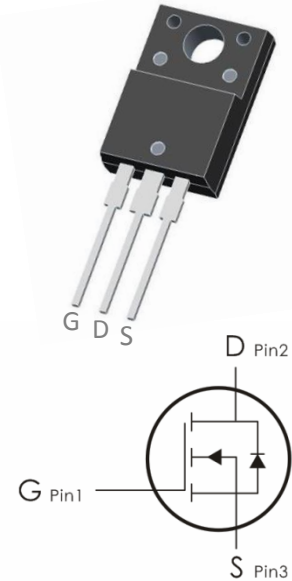


Description:

This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge. It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=100V, I_D=30A, R_{DS(ON)} \leq 70m\Omega @ V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra $R_{DS(ON)}$.
- 5) Excellent package for good heat dissipation.



Absolute Maximum Ratings: ($T_C=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^\circ C$	30	A
	Continuous Drain Current- $T_C=100^\circ C$	21	
	Pulsed Drain Current	---	
E_{AS}	Single Pulse Avalanche Energy ¹	240	mJ
P_D	Power Dissipation	75	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	2.8	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	65	

Package Marking and Ordering Information:

Part NO.	Marking	Package
FH070NR	H070N	TO-220F

Electrical Characteristics: ($T_c=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	100	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=100V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	± 100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	1	1.8	2	V
$R_{DS(ON)}$	Drain-Source On Resistance	$V_{GS}=10V, I_D=10A$	---	---	70	$\text{m}\Omega$
G_{FS}	Forward Transconductance	---	---	---	---	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	---	---	1500	μF
C_{oss}	Output Capacitance		---	---	160	
C_{rss}	Reverse Transfer Capacitance		---	---	45	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time ^{3,4}	$V_{DD}=30V, I_D=2A,$ $R_{GEN}=15\ \Omega$	---	11	---	ns
t_r	Rise Time ^{3,4}		---	7.4	---	ns
$t_{d(off)}$	Turn-Off Delay Time ^{3,4}		---	35	---	ns
t_f	Fall Time ^{3,4}		---	9.1	---	ns
Q_g	Total Gate Charge ^{3,4}	$V_{GS}=10V, V_{DS}=30V,$ $I_D=3A$	---	15.5	26	nC
Q_{gs}	Gate-Source Charge ^{3,4}		---	3.2	---	nC
Q_{gd}	Gate-Drain "Miller" Charge ^{3,4}		---	4.7	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage	$V_{GS}=0V, I_d=30A$	---	---	1.2	V

Notes:

- 1, L=0.5mH, IAS=30A, VDD=50V, RG=25Ω, Starting TJ =25°C
- 2, Repetitive Rating : Pulse width limited by maximum junction temperature
- 3, Pulse Test : Pulse Width ≤ 300 μ s, Duty Cycle ≤ 2%
- 4, Essentially Independent of Operating Temperature.

Typical Characteristics: (T_c=25°C unless otherwise noted)

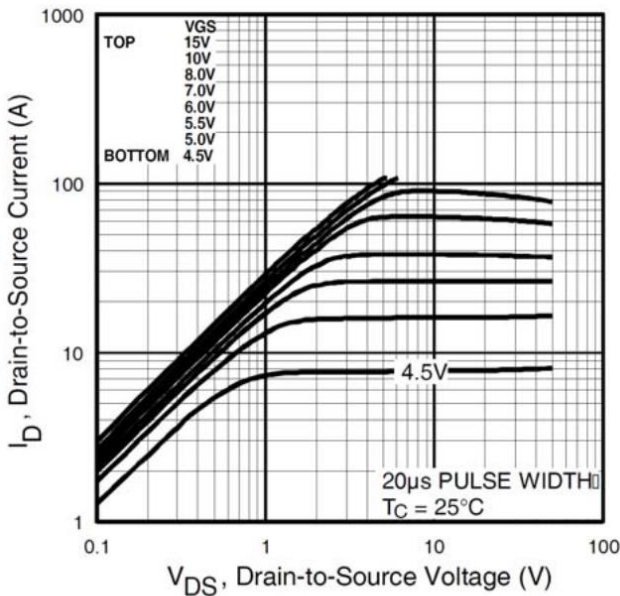


Fig 1. Typical Output Characteristics(25°C)

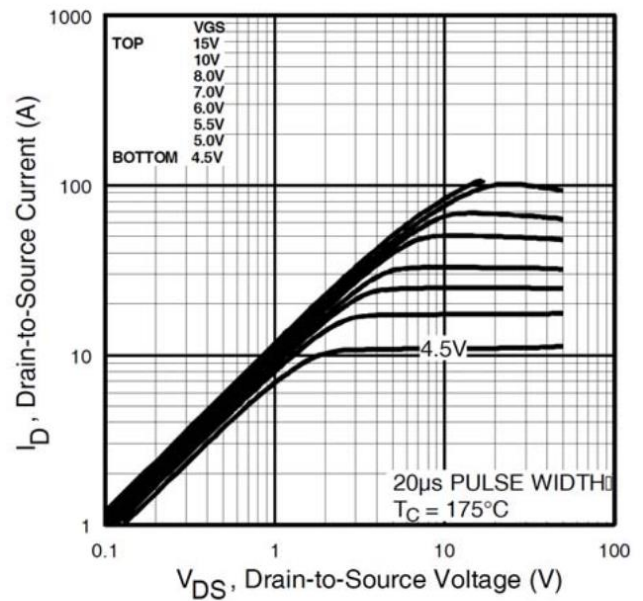


Fig 2. Typical Output Characteristics(175°C)

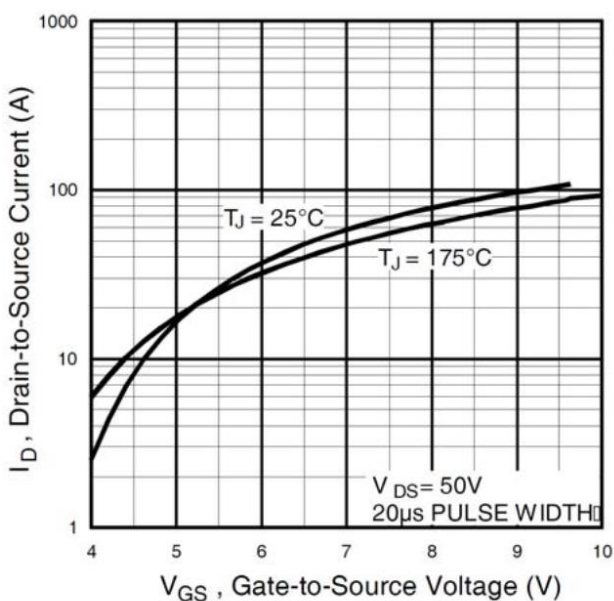


Fig 3. Transfer Characteristics

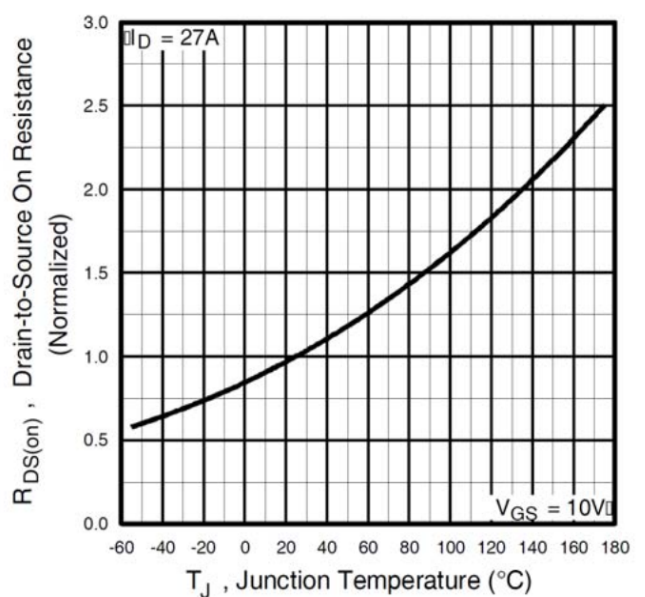


Fig 4. On-Resistance Variation vs Temperature

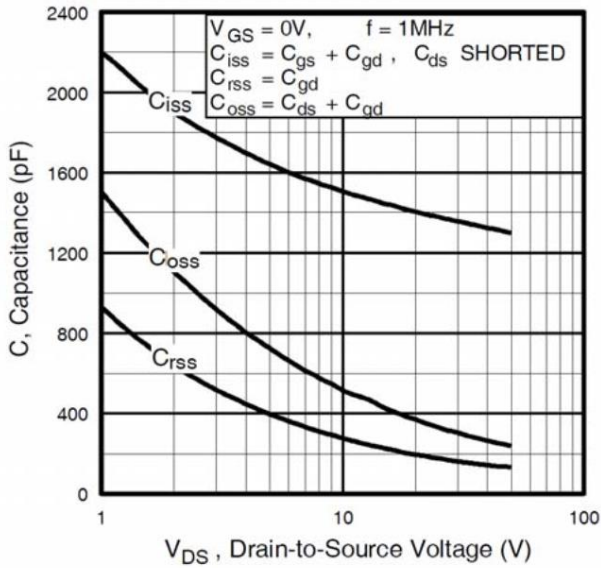


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

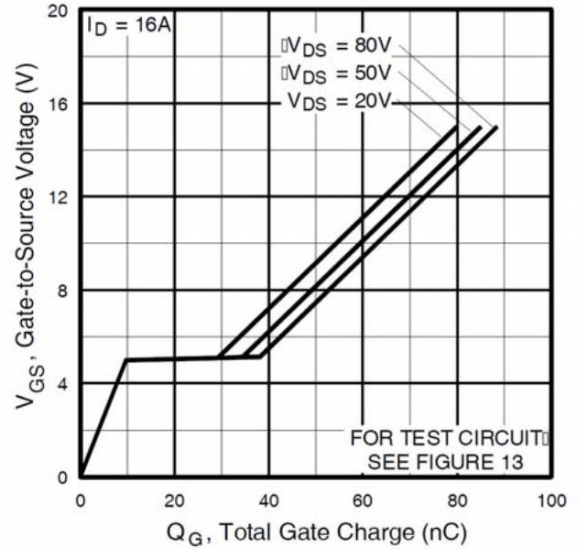


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

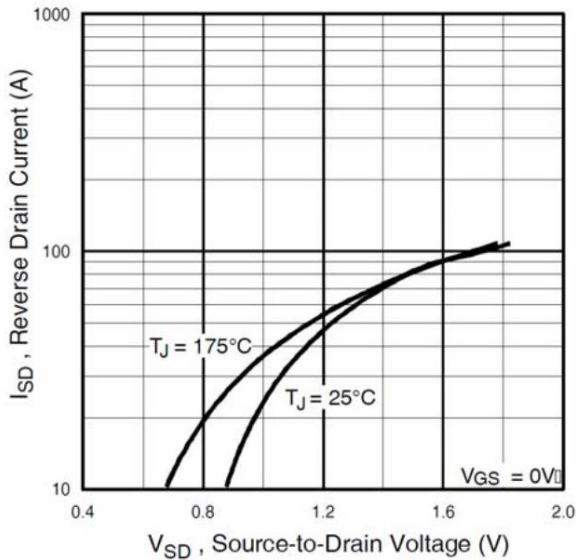


Fig 7. Typical Source- Drain Diode forward Voltage

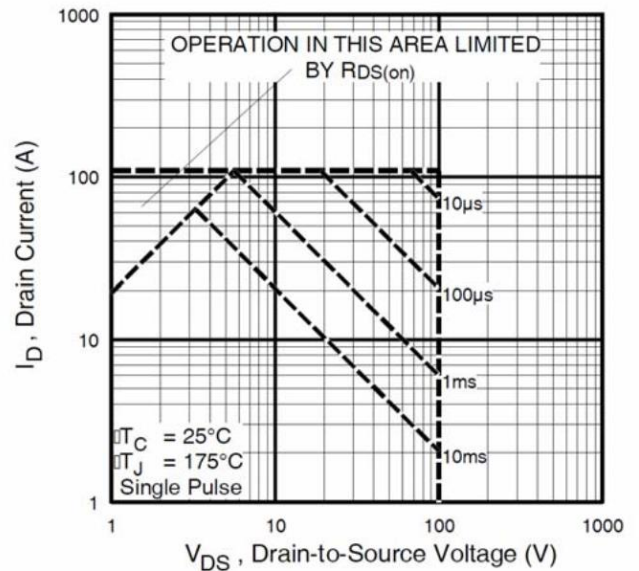


Fig 8. Maximum Safe Operating Area

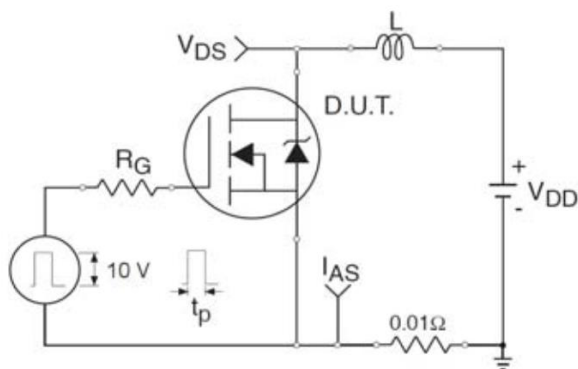


Fig 9a. Unclamped Inductive Test Circuit

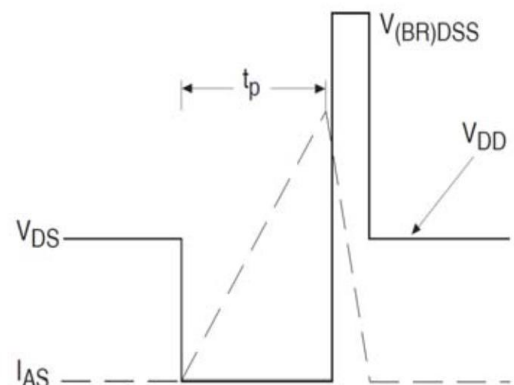


Fig 9b. Unclamped Inductive Waveforms

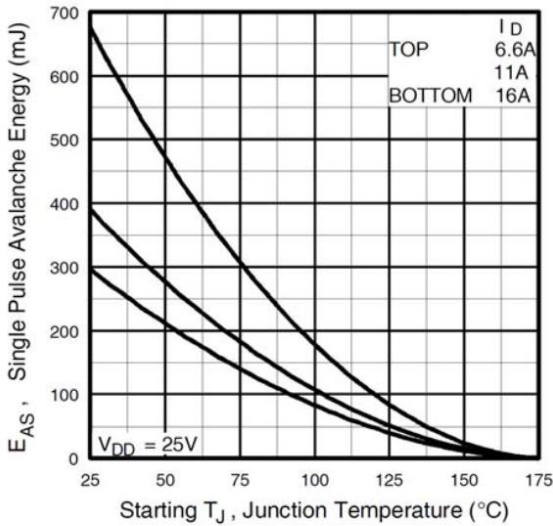


Fig 9c. Maximum Avalanche Energy Vs. Drain Current

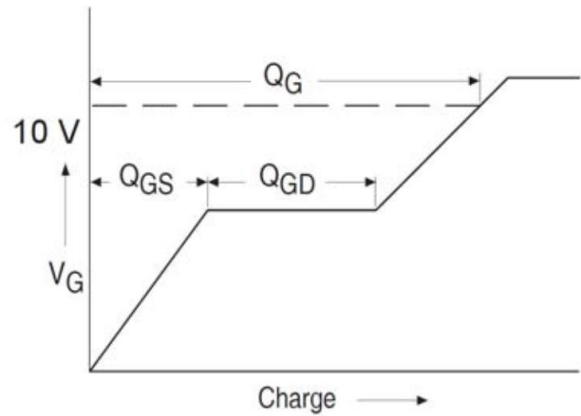


Fig 10a. Basic Gate Charge Waveform

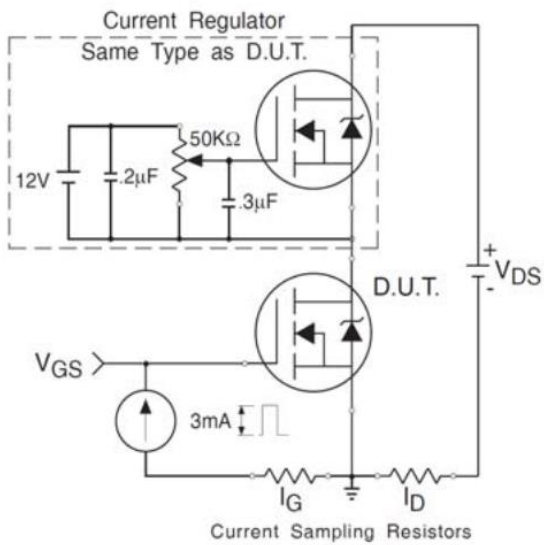


Fig 10b. Gate Charge Test Circuit