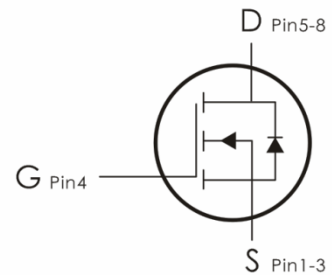
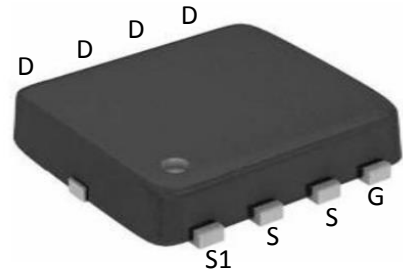


Description:

This N-Channel MOSFET uses advanced trench technology to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

Features:

- 1) $V_{DS}=40V, I_D=35A, R_{DS(ON)}=9m\Omega @ V_{GS}=10V$
- 2) Improved dv/dt capability
- 3) Fast switching
- 4) 100% EAS Guaranteed
- 5) Green Device Available.



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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current-Continuous ($T_C=25^\circ\text{C}$)	35	A
	Continuous Drain Current- $T_C=100^\circ\text{C}$	22.1	
I_{DM}	Drain Current – Pulsed ¹	140	A
P_D	Power Dissipation ($T_C=25^\circ\text{C}$)	27	W
	Power Dissipation – Derate above 25°C	0.21	W/ $^\circ\text{C}$
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	2.8	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	62	

Package Marking and Ordering Information:

Part NO.	Marking	Package
HAQ4035	Q4035	DNF3*3-8

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourtce Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	40	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{GS} =0V, V _{DS} =40V, T _J =25℃	---	---	1	μ A
		V _{GS} =0V, V _{DS} =32V, T _J =125℃			10	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V, V _{DS} =0A	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	1.2	1.8	2.5	V
R _{DS(ON)}	Drain-Source On Resistance ³	V _{GS} =10V, I _D =8A	---	7.4	9	m Ω
		V _{GS} =4.5V, I _D =4A	---	10.6	13.5	
G _{FS}	Forward Transconductance	V _{DS} =10V, I _D =2A	---	13	---	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	---	1220	2200	pF
C _{oss}	Output Capacitance		---	130	250	
C _{rss}	Reverse Transfer Capacitance		---	55	110	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time ^{3,4}	V _{DD} =15V , V _{GS} =10V , R _G =3.3 Ω ,I _D =1A	---	13.2	25	ns
t _r	Rise Time ^{3,4}		---	2.2	5	ns
t _{d(off)}	Turn-Off Delay Time ^{3,4}		---	72	130	ns
t _f	Fall Time ^{3,4}		---	4.5	10	ns
Q _g	Total Gate Charge ^{3,4}	V _{DS} =20V , V _{GS} =10V , I _D =8A	---	19.7	30	nC
Q _{gs}	Gate-Source Charge ^{3,4}		---	2.8	4.2	nC
Q _{gd}	Gate-Drain “Miller” Charge ^{3,4}		---	5.1	7.6	nC
Drain-Source Diode Characteristics						

V_{SD}	Source-Drain Diode Forward Voltage ²	V _{GS} =0V , I _S =1A , T _J =25°C	---	---	1	V
LS	Reverse Recovery Time	V _G =V _D =0V , Force Current	---	---	35	A
LSM_r	Reverse Recovery Charge				70	A
T_{rr}	Reverse Recovery Time ³	V _{GS} =0V, I _S =1A , dI/dt=100A/μs T _J =25°C	17	---	---	Ns
Q_{rr}	Reverse Recovery Charge					nc

Notes:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

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

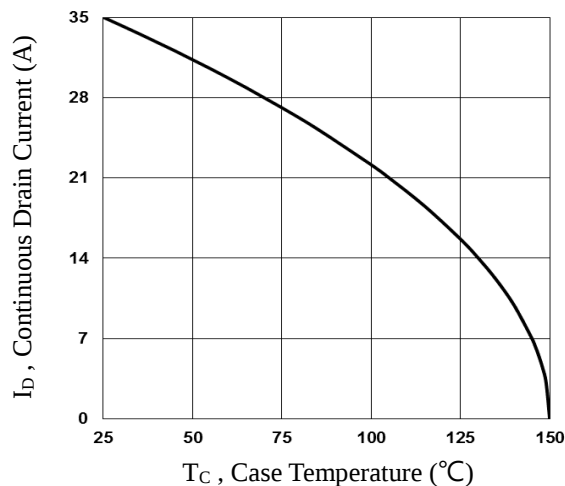


Fig.1 Continuous Drain Current vs. T_C

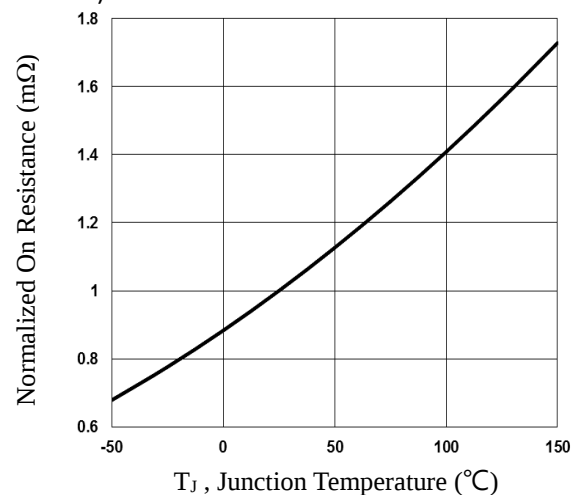


Fig.2 Normalized R_{DS(on)} vs. T_J

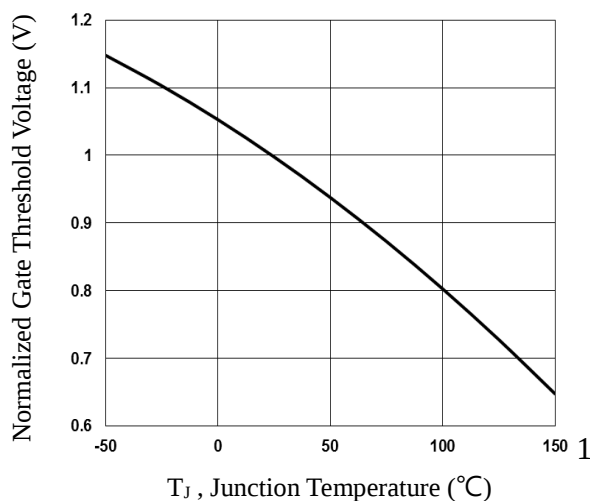


Fig.3 Normalized V_{th} vs. T_J

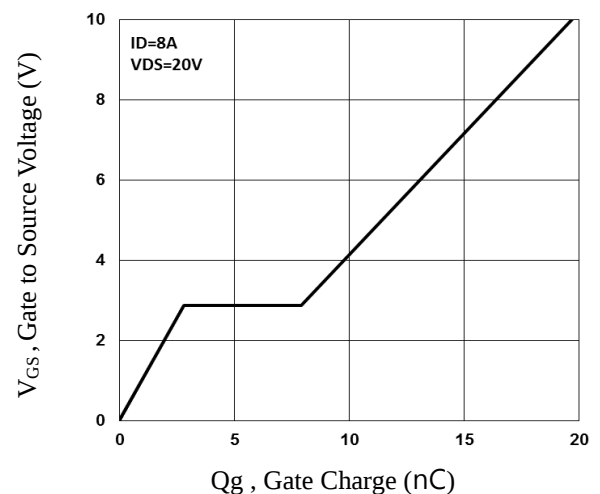


Fig.4 Gate Charge Waveform

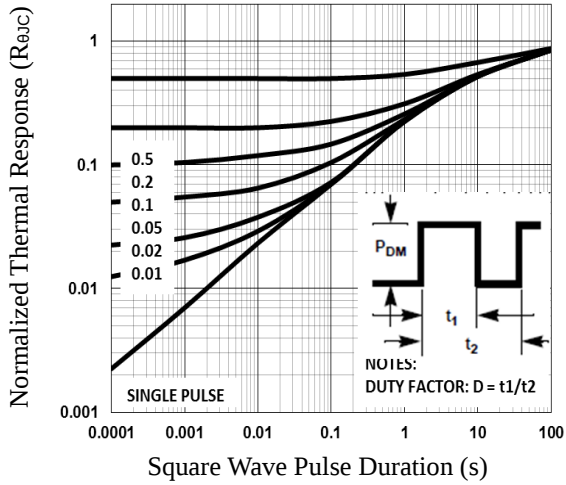


Fig.5 Normalized Transient Impedance

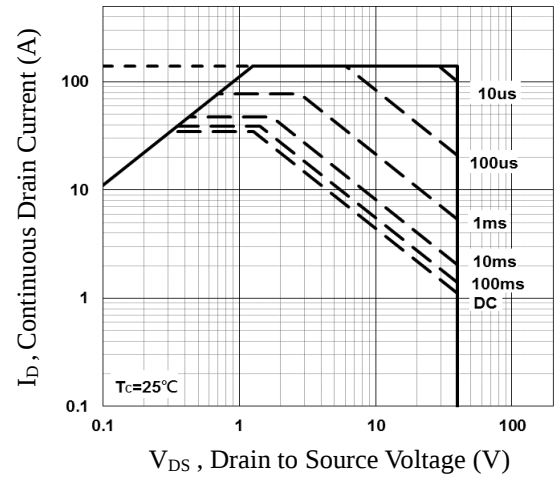


Fig.6 Maximum Safe Operation Area

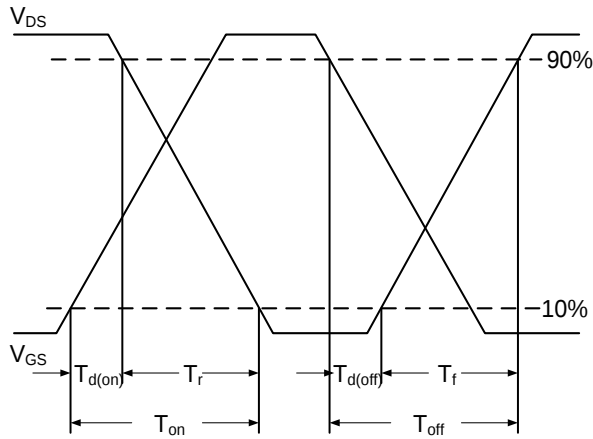


Fig.7 Switching Time Waveform

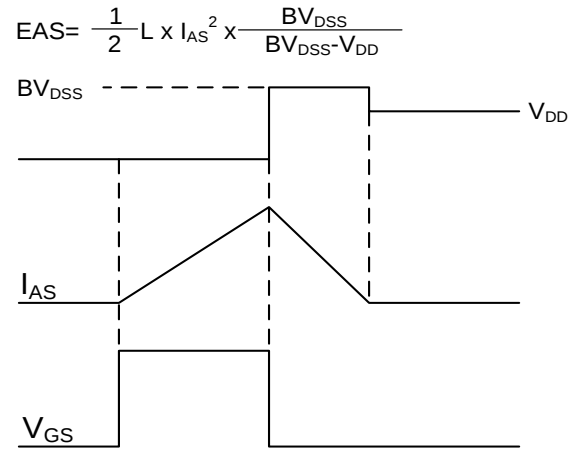


Fig.8 EAS Waveform