



**Dual N-Channel Enhancement Mode MOSFET**

20V ,  $R_{DS(ON)}=8m\Omega(max)$  ,  $I_D=7.8A$



RoHS COMPLIANT

**Features**

- Reliable and Rugged
- ROHS Compliant & Halogen-Free
- Lower  $Q_g$  and  $Q_{gd}$  for high-speed switching
- Lower  $R_{DS(ON)}$  to Minimize Conduction Losses

**Applications**

- Power Management in Notebook Computer, Portable Equipment and Battery Powered systems.

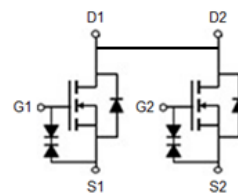
DFN2\*3

S2 S2 G2



S1 S1 G1

**Symbol**



**Absolute Maximum Ratings** ( $T_J=25^\circ C$  Unless Otherwise Noted)

Symbol	Parameter	Rating	Unit
$V_{DSS}$	Drain-Source Voltage	20	V
$V_{GSS}$	Gate-Source Voltage	$\pm 8$	V
$T_J$	Maximum Junction Temperature	150	$^\circ C$
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ C$
$I_{DM}^{(1)}$	Pulse Drain Current Tested	$T_A=25^\circ C$	19.5 A
$I_D^{(2)}$	Continuous Drain Current	$T_A=25^\circ C$	7.8 A
		$T_A=70^\circ C$	6.3 A
$P_D^{(2)}$	Maximum Power Dissipation	$T_A=25^\circ C$	0.98 W
		$T_A=70^\circ C$	0.63 W

**Thermal Characteristics**

Symbol	Parameter	Rating	Unit
$R_{\theta JA}^{(2)}$	Thermal Resistance-Junction to Ambient	Steady State	127 $^\circ C/W$

Note ① : Max. current is limited by junction temperature.

Note ② : Surface Mounted on 1in<sup>2</sup> FR-4 board with 1oz.



# HMQ08N02CZ

Electrical Characteristics (T <sub>J</sub> =25°C Unless Otherwise Noted)						
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
<b>Static Electrical Characteristics</b>						
B <sub>V</sub> DSS	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	20	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =16V, V <sub>GS</sub> =0V	-	-	1	μA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.35	0.6	0.85	V
I <sub>GSS</sub>	Gate Leakage Current	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0V	-	-	±10	μA
R <sub>DS(ON)</sub> ③	Drain-Source On-state Resistance	V <sub>GS</sub> =4.5V, I <sub>D</sub> =5.5A	-	6	8	mΩ
		V <sub>GS</sub> =4V, I <sub>D</sub> =5.5A	-	6	8.5	
		V <sub>GS</sub> =3.7V, I <sub>D</sub> =5.5A	-	6.2	9	
		V <sub>GS</sub> =3.1V, I <sub>D</sub> =5.5A	-	6.7	9.4	
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =5.5A	-	7.8	11	
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =5.5A	-	19	-	S
<b>Dynamic Characteristics</b> ④						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =10V, Freq.=1MHz	-	1340	-	pF
C <sub>oss</sub>	Output Capacitance		-	180	-	
C <sub>rss</sub>	Reverse Transfer Capacitance		-	150	-	
t <sub>d(ON)</sub>	Turn-on Delay Time	V <sub>DD</sub> =16V, I <sub>D</sub> =5.5A, V <sub>GS</sub> =4.5V, R <sub>GEN</sub> =6Ω	-	26	-	nS
t <sub>r</sub>	Turn-on Rise Time		-	60	-	
t <sub>d(OFF)</sub>	Turn-off Delay Time		-	58	-	
t <sub>f</sub>	Turn-off Fall Time		-	50	-	
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =10V, V <sub>GS</sub> =2.5V, I <sub>D</sub> =11A	-	6	-	nC
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =10V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =11A	-	14	-	
Q <sub>gs</sub>	Gate-Source Charge		-	2.8	-	
Q <sub>gd</sub>	Gate-Drain Charge		-	3.3	-	
<b>Source-Drain Characteristics</b>						
V <sub>SD</sub> ③	Diode Forward Voltage	I <sub>S</sub> =5.5A, V <sub>GS</sub> =0V	-	7.5	1.1	V
Note ③ : Pulse test (pulse width≤300us, duty cycle≤2%). Note ④ : Guaranteed by design, not subject to production testing.						



## Typical Characteristics

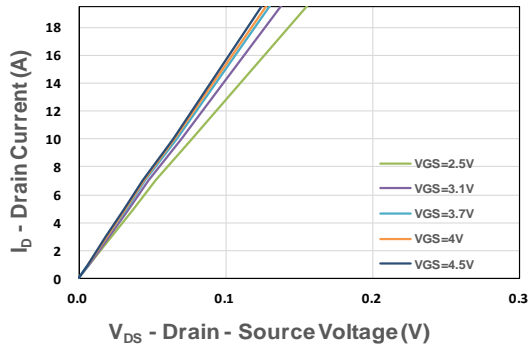


Figure 1. Output Characteristics

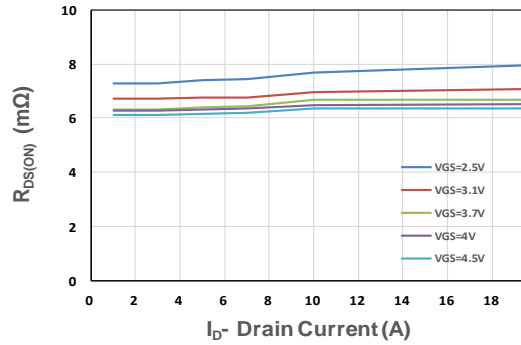


Figure 2. On-Resistance vs.  $I_D$

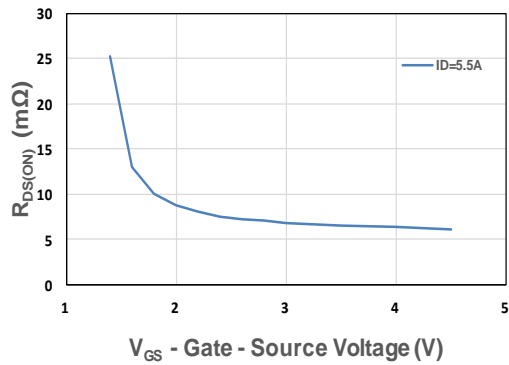


Figure 3. On-Resistance vs.  $V_{GS}$

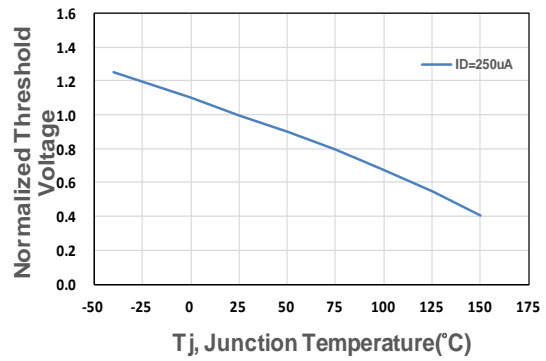


Figure 4. Gate Threshold Voltage

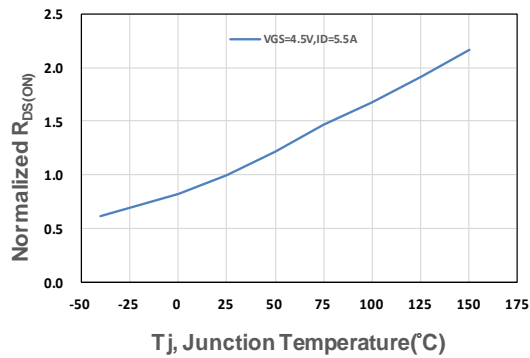


Figure 5. Drain-Source On Resistance

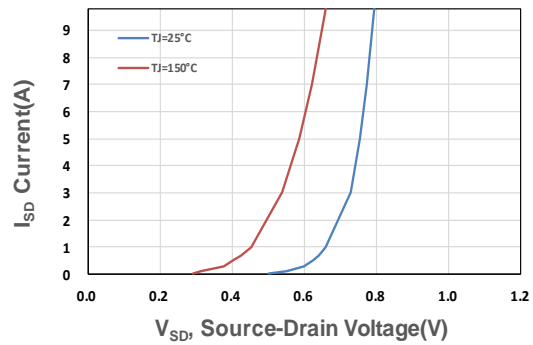


Figure 6. Source-Drain Diode Forward



## Typical Characteristics

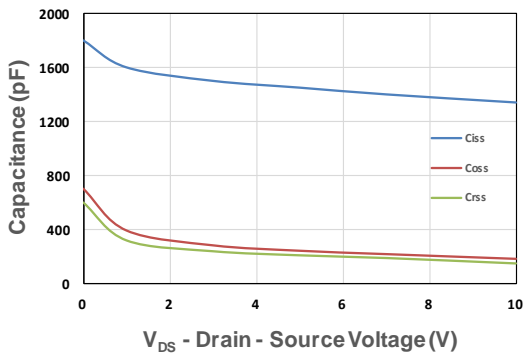


Figure 7. Capacitance

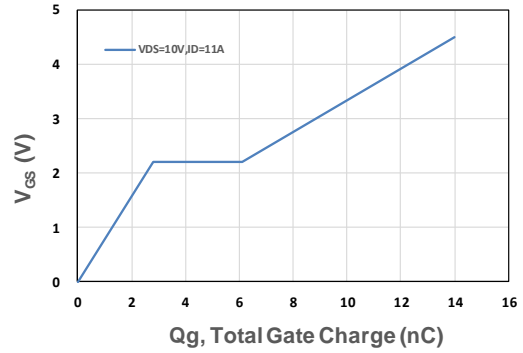


Figure 8. Gate Charge Characteristics

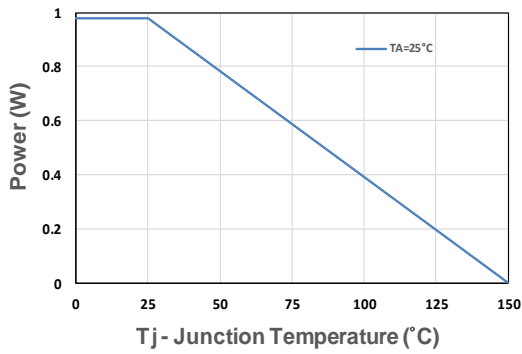


Figure 9. Power Dissipation

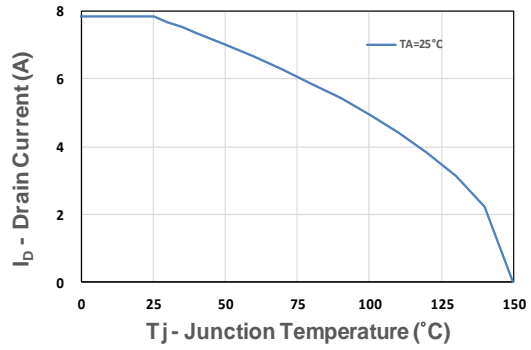


Figure 10. Drain Current

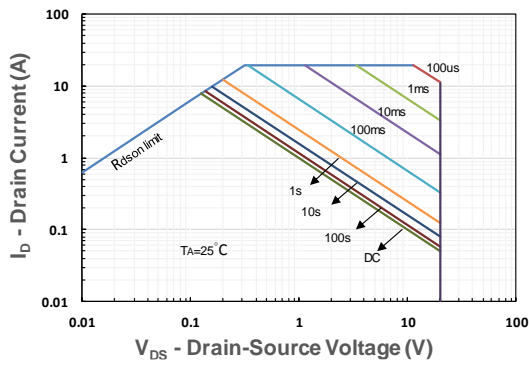


Figure 11. Safe Operating Area

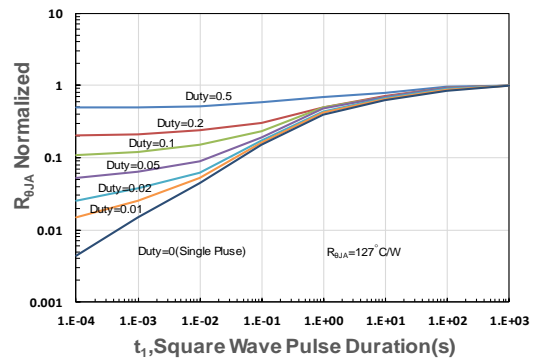


Figure 12.  $R_{\theta JA}$  Transient Thermal Impedance



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