Dual N-Channel Enhancement Mode MOSFET

Feature

Pin Description

- 100% Avalanche Tested
- Reliable and Rugged
- Halogen- Free Devices Available

Applications

- Synchronous Rectifiers
- Wireless Power
- H-bridge Motor Drive

Ordering and Marking Information

C1 G080NH03 XY XXXXXX	Package Code C1: DFN3*3-8L Date Code XY XXXXXX Z

Q1 Electrical Characteristics(Tc =25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Q1			Unit
			Min	Typ.	Max	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_{DS}=250μA	30	-	-	V
I_{DSS}	Drain-to-Source Leakage Current	V_{DS}=30V,V_{GS}=0V	-	-	1	μA
		T_j=125°C	-		50	μA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	1	1.6	3	V
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$*	Drain-Source On-State Resistance	V_{GS}=10V,I_{DS}= 10 A	-	8.8	11	m
		V_{GS}=4.5V,I_{DS}= 10A		12.4	15	m
Diode Characteristics						
V_{SD}*	Diode Forward Voltage	I_{SD}=1A,V_{GS}=0V	-	0.7	1.0	V
t_{rr}	Reverse Recovery Time	I_{SD}=10A,dI_{SD}/dt=100A/μs	-	8.2	-	ns
Q_{rr}	Reverse Recovery Charge		-	3.1	-	nC

Q1 Electrical Characteristics (Cont.) (Tc =25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Q1			Unit
			Min	Typ.	Max	
Dynamic Characteristics						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	1.2	-	
C_{iss}	Input Capacitance	V_{GS}=0V,	-	709.1	-	pF
C_{oss}	Output Capacitance	V_{DS}=25V,	-	87	-	
C_{rss}	Reverse Transfer Capacitance	Frequency=1.0MHz	-	70.7	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=10V,R_G=2.7Ω, I_{DS}=4A,V_{GS}=10V	-	5.8	-	ns
T_r	Turn-on Rise Time		-	14.5	-	
$t_{d(OFF)}$	Turn-off Delay Time		-	15.6	-	
T_f	Turn-off Fall Time		-	3.4	-	
Gate Charge Characteristics						
Q_g	Total Gate Charge V_{GS}=10V	V_{DS} =15V, I_D=10A		16		nC
Q_g	Total Gate Charge V_{GS}=4.5V		-	7.8	-	
Q_{gs}	Gate-Source Charge		-	2.9	-	
Q_{gd}	Gate-Drain Charge		-	3.3	-	

Note: *Pulse test pulse width ≤ 300us duty cycle ≤ 2%

Q1-Channel Typical Operating Characteristics

Figure 1: Power Dissipation

Tc-Case Temperature( )

Figure 2: Drain Current

I_D-Drain Current(A)

Tc-Case Temperature( )

Figure 3: Safe Operation Area

I_D-Drain Current(A)

V_{DS}-Drain-Source Voltage(V)

Figure 4: Thermal Transient Impedance

Figure 5: Output Characteristics

I_D-Drain Current(A)

V_{DS}-Drain-Source Voltage (V)

Figure 6: Drain-Source On Resistance

$R_{DS(ON)}$-ON-Resistance(mΩ)

I_D-Drain Current(A)

Q1-Channel Typical Operating Characteristics(Cont.)

Figure 7: On-Resistance vs. Temperature

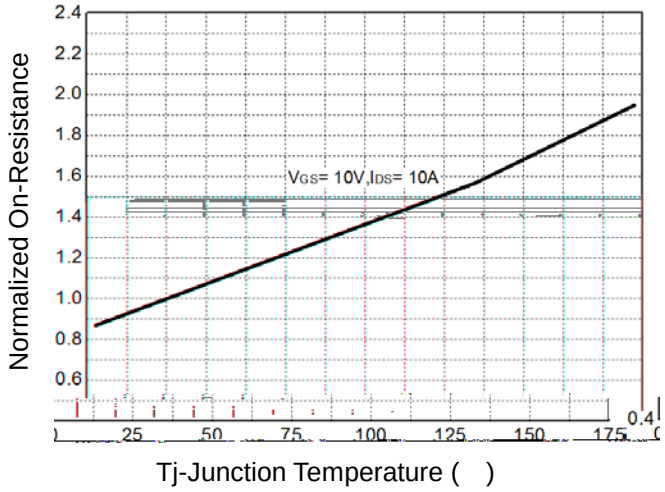


Figure 8: Source-Drain Diode Forward

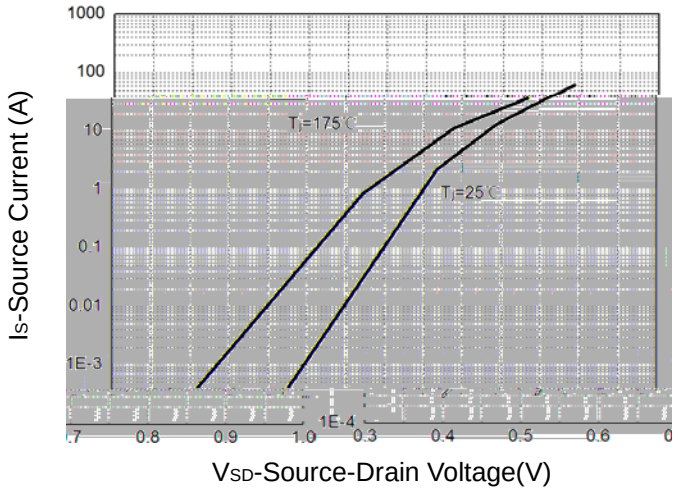


Figure 9: Capacitance Characteristics

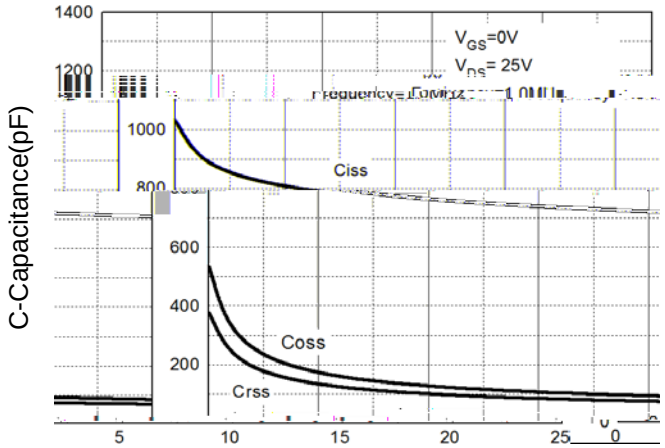
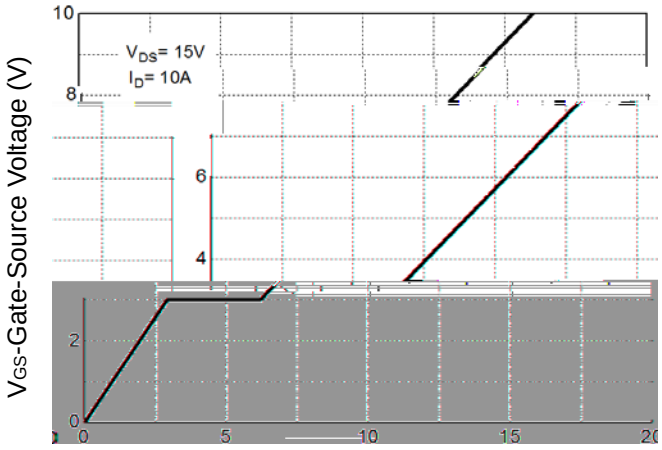


Figure 10: Gate Charge Characteristics



Q2 Electrical Characteristics(Tc =25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Q2			Unit
			Min	Typ.	Max	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_{DS}=250μA	30	-	-	V
I_{DSS}	Drain-to-Source Leakage Current	V_{DS}=30V,V_{GS}=0V	-	-	1	μA
		T_j=125°C	-		50	μA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	1	1.7	3	V
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$*	Drain-Source On-State Resistance	V_{GS}=10V,I_{DS}=10A	-	7.3	9.5	m
		V_{GS}=4.5V,I_{DS}=10A		10.3	12.5	m
Diode Characteristics						
V_{SD}*	Diode Forward Voltage	I_{SD}=1A,V_{GS}=0V	-	0.7	1.0	V
t_{rr}	Reverse Recovery Time	I_{SD}=10A,dI_{SD}/dt=100A/μs	-	10	-	ns
Q_{rr}	Reverse Recovery Charge		-	4.4	-	nC

Q2 Electrical Characteristics (Cont.) (Tc =25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Q2			Unit
			Min	Typ.	Max	
Dynamic Characteristics						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	1.0	-	
C_{iss}	Input Capacitance	V_{GS}=0V,	-	966	-	pF
C_{oss}	Output Capacitance	V_{DS}=25V,	-	117	-	
C_{rss}	Reverse Transfer Capacitance	Frequency=1.0MHz	-	101	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=10V,R_G=2.7Ω, I_{DS}=4A,V_{GS}=10V	-	6.8	-	ns
T_r	Turn-on Rise Time		-	16.6	-	
$t_{d(OFF)}$	Turn-off Delay Time		-	19.4	-	
T_f	Turn-off Fall Time		-	5.4	-	
Gate Charge Characteristics						
Q_g	Total Gate Charge V_{GS}=10V	V_{DS} =15V,I_D=10A		23.2		nC
Q_g	Total Gate Charge V_{GS}=4.5V		-	11.8	-	
Q_{gs}	Gate-Source Charge		-	4.0	-	
Q_{gd}	Gate-Drain Charge		-	5.0	-	

Note: *Pulse test pulse width ≤ 300us duty cycle ≤ 2%

Q2-Channel Typical Operating Characteristics(Cont.)

Figure 7: On-Resistance vs. Temperature

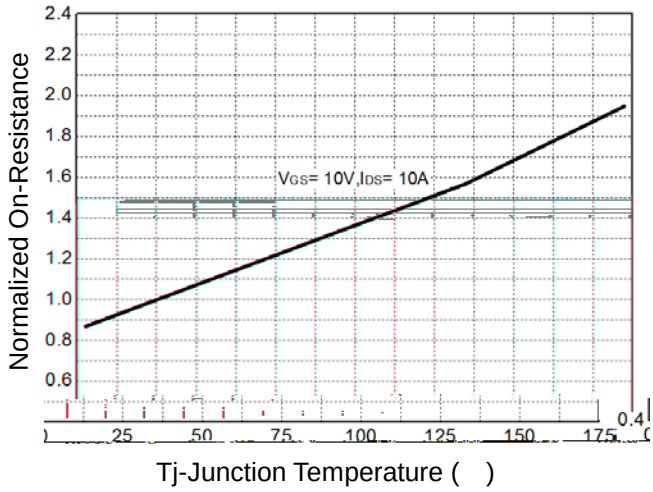


Figure 8: Source-Drain Diode Forward

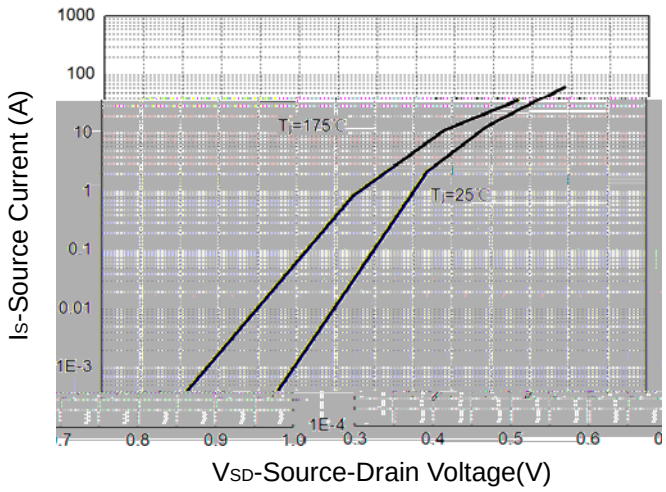


Figure 9: Capacitance Characteristics

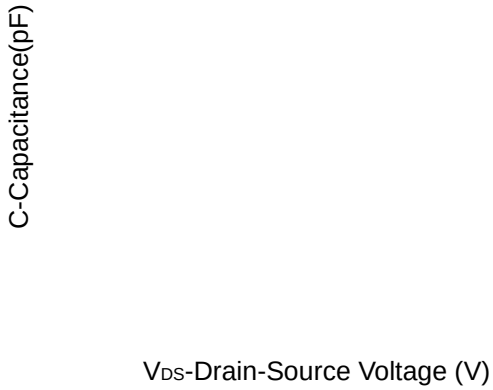


Figure 10: Gate Charge Characteristics

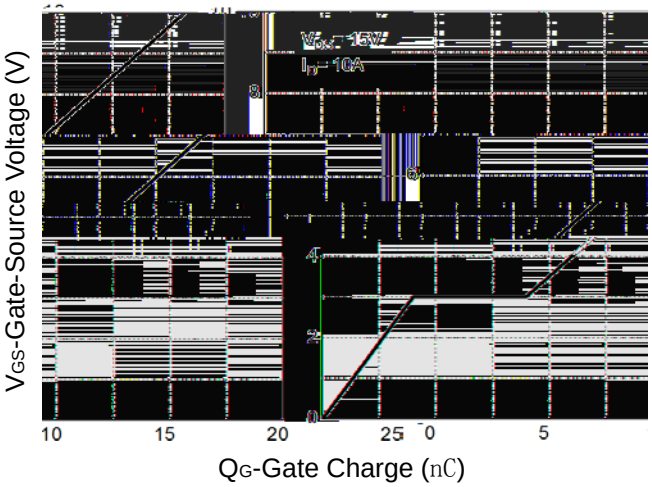


Table 1.SnPb Eutectic Process – Classification Temperatures (Tc)

Package Thickness	Volume mm³ <350	Volume mm³ ≥ 350
2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 2.Pb-free Process – Classification Temperatures (Tc)

Package Thickness	Volume mm³ <350	Volume mm³ 350-2000	Volume mm³ ≥ 2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 mm – 2.5 mm	260 °C	250 °C	245 °C
≥ 2.5 mm	250 °C	245 °C	245 °C

Reliability Test Program

Test item	Method	Description
SOLDERABILITY	JESD-22, B102	5 Sec, 245°C
HTRB	JESD-22, A108	168Hrs/500Hrs/1000Hrs, Bias @ 150°C
PCT	JESD-22, A102	96 Hrs, 100%RH, 2atm, 121°C
TCT	JESD-22, A104	500 Cycles, -55°C~150°C

Customer Service