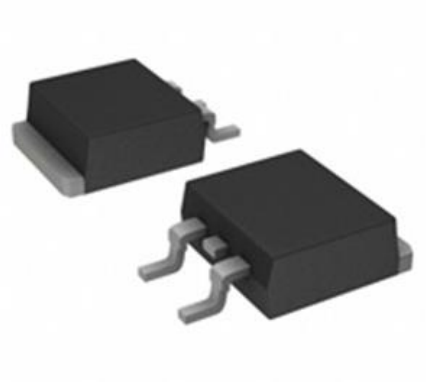
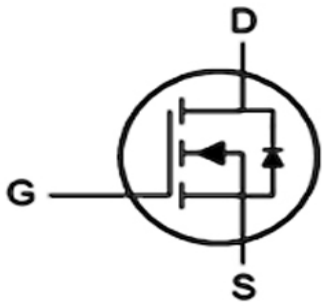
Description

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}=200V,I_D=20A,$R_{DS(ON)}$ =180MΩ (Max)@V_{GS}=10V
2) Low gate charge.
3) Green device available.
4) Advanced high cell denity trench technology for ultra $R_{DS(ON)}$.
5) Excellent package for good heat dissipation.





Absolute Maximum Ratings T_C=25℃,unless otherwise noted

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	200	V
V_{GS}	Gate-Source Voltage	±30	V
I_D	Continuous Drain Current-	20	A
	Continuous Drain Current-T_C=100℃	12	
E_{AS}	Single Pulse Avalanche Energy[2]	250	mJ
P_D	Power Dissipation	80	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55~+150	℃

Thermal Characteristics

Symbol	Parameter	Ratings	Units
$R_{\Theta JC}$	Thermal Resistance,Junction to Case	1.01	℃/W
$R_{\Theta JA}$	Thermal Resistance,Junction to Ambient[4]	62.5	

Package Marking and Ordering Information

Part NO.	Marking	Package
RYN200B8	RYN200B8	TO-252

Electrical Characteristics T_C=25℃ unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	200	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=200V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±30V, V_{DS}=0V	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	2	---	4	V
$R_{DS(ON)}$	Drain-Source On Resistance[3]	V_{GS}=10V,I_D=10A	---	---	.180	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1MHz	---	830	1080	pF
C_{oss}	Output Capacitance		---	200	260	
C_{rss}	Reverse Transfer Capacitance		---	25	33	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time[3]	V_{DD}=250V, I_D=9A R_G=25Ω	---	16	40	ns
t_r	Rise Time[2,3]		---	133	275	ns
$t_{d(off)}$	Turn-Off Delay Time		---	38	85	ns
t_f	Fall Time[2,3]		---	62	135	ns
Q_g	Total Gate Charge[3]	V_{GS}=10V, V_{DS}=400 I_D=9A	---	20	26	nc
Q_{gs}	Gate-Source Charge		---	5.6	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	10	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage[3]	V_{GS}=0V,I_S=20A	---	---	1.5	V
t_{rr}	Reverse Recovery Time[3]	I_S=20A, diF/dt=100A/μ	---	158	---	ns
Q_{rr}	Reverse Recovery Charge		---	1.0	---	nC

*Notes
1, L=1.2 mH, IAS=200A, VDD=50V, RG=25 Ω, Starting TJ =25°C
2, Repetitive Rating : Pulse width limited by maximum junction temperature
3, Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%
4, Essentially Independent of Operating Temperature

Typical Characteristics T_J=25℃ unless otherwise noted

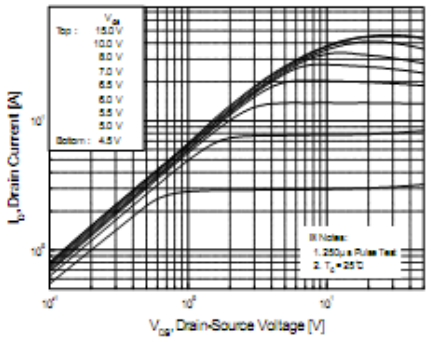


Figure 1. On-Region Characteristics

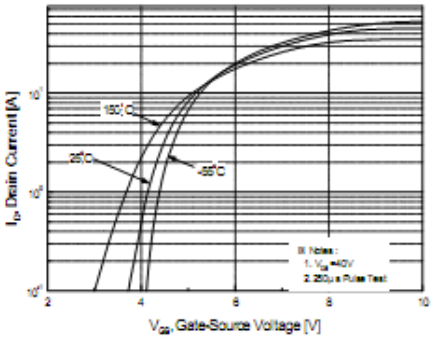


Figure 2. Transfer Characteristics

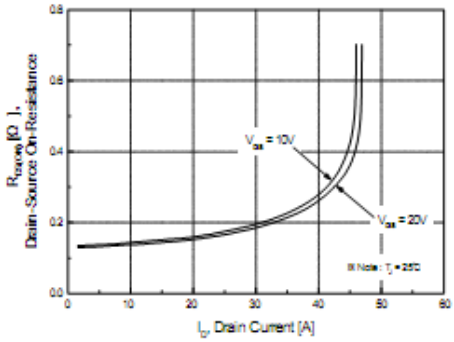


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

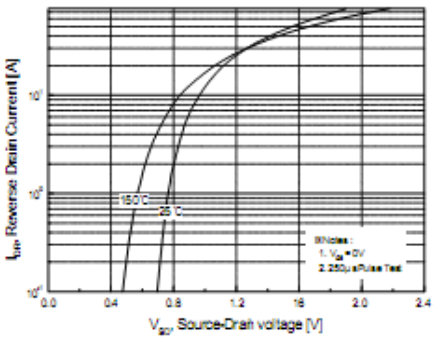


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

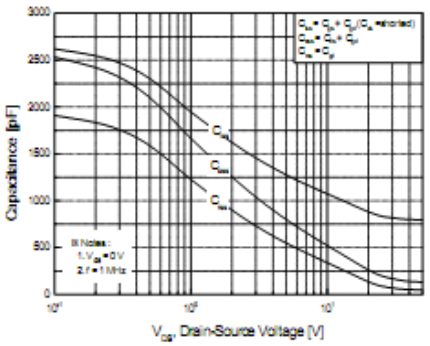


Figure 5. Capacitance Characteristics

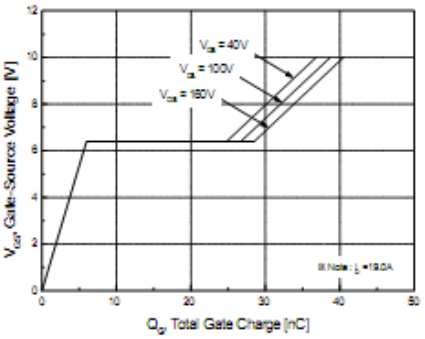


Figure 6. Gate Charge Characteristics

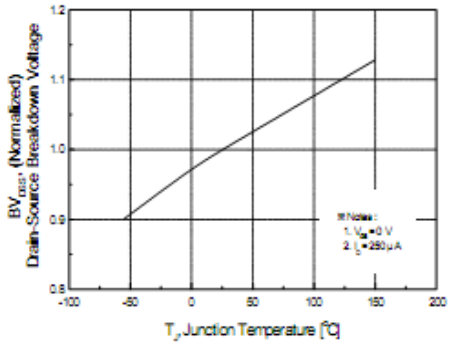


Figure 7. Breakdown Voltage Variation vs Temperature

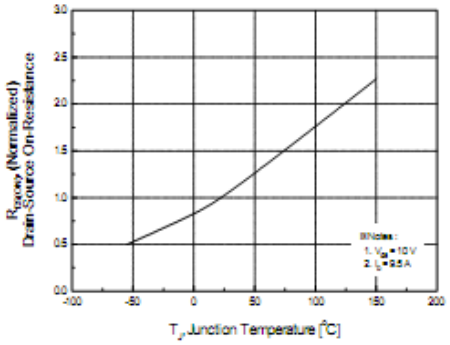


Figure 8. On-Resistance Variation vs Temperature

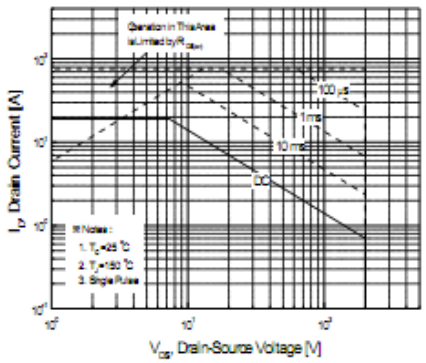


Figure 9-1. Maximum Safe Operating Area

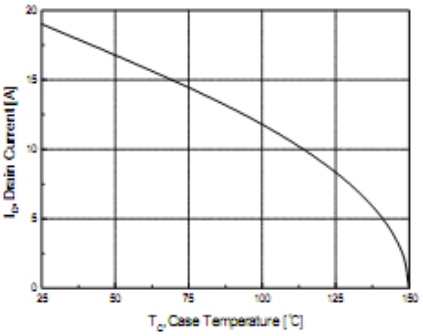


Figure 10. Maximum Drain Current vs Case Temperature

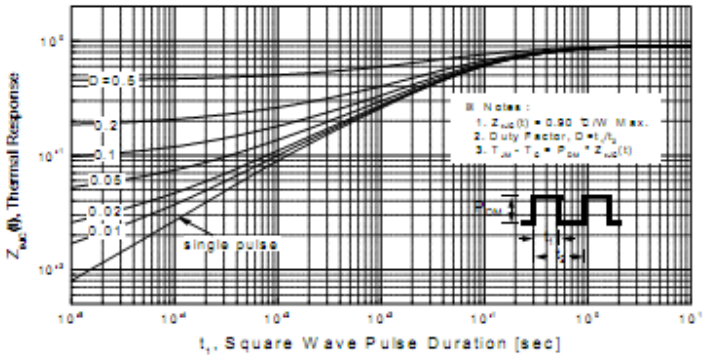


Figure 11-1. Transient Thermal Response Curve