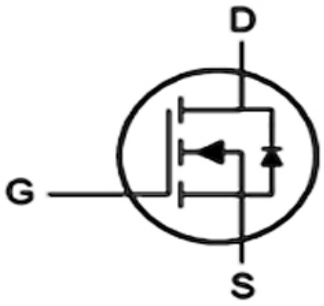
Description

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}=71V,I_D=90A,$R_{DS(ON)}$<6.8mΩ @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	71	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current-	90	A
	Continuous Drain Current-T_C=100℃	63	
P_D	Power Dissipation	170	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +175	℃

Thermal Characteristics

Symbol	Parameter	Ratings	Units
$R_{\Theta JC}$	Thermal Resistance,Junction to Case	0.88	℃/W

Package Marking and Ordering Information

Part NO.	Marking	Package
RYN71A90TA	RYN71A90TA	TO-220

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	71	74	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=500V	---	---	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	3	4	V
$R_{DS(ON)}$	Drain-Source On Resistance	V_{GS}=10V,I_D=40A	---	5.9	6.8	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz	---	4871	---	pF
C_{oss}	Output Capacitance		---	630.6	---	
C_{rss}	Reverse Transfer Capacitance		---	410.3	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=30V, I_D=42A, R_{GEN}=10Ω, V_{GS}=10v	---	36.1	---	ns
t_r	Rise Time		---	54.3	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	85.2	---	ns
t_f	Fall Time		---	37.3	---	ns
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=48V, I_D=84A	---	85.7	---	nC
Q_{gs}	Gate-Source Charge		---	23.2	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	31.2	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage	V_{GS}=0V,I_S=20A	---	---	1.2	V
t_{rr}	Reverse Recovery Time	I_F=84A diF/dt=100A/μs (Note3)	---	88.3	---	ns
Q_{rr}	Reverse Recovery Charge		---	65.9	---	nC

Typical Characteristics T_J=25℃ unless otherwise noted

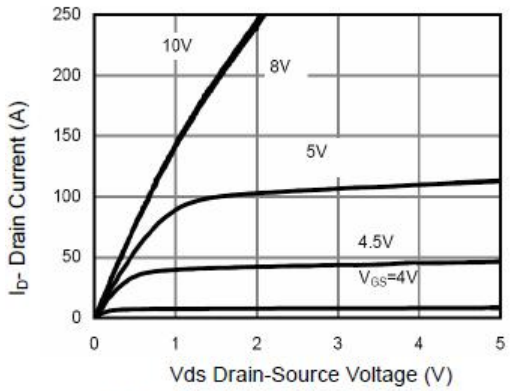


Figure 1 Output Characteristics

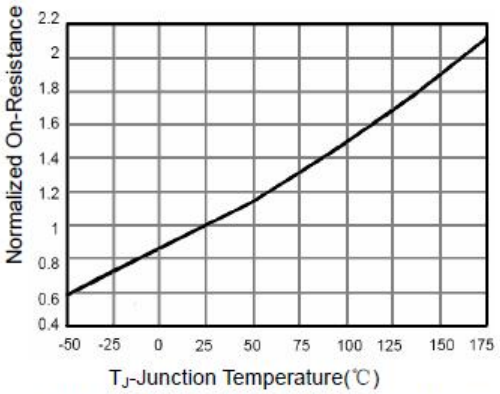


Figure 4 Rdson-JunctionTemperature

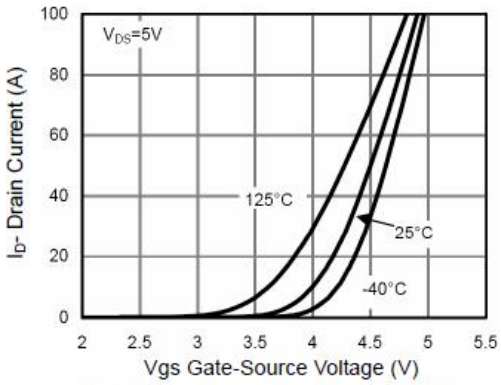


Figure 2 Transfer Characteristics

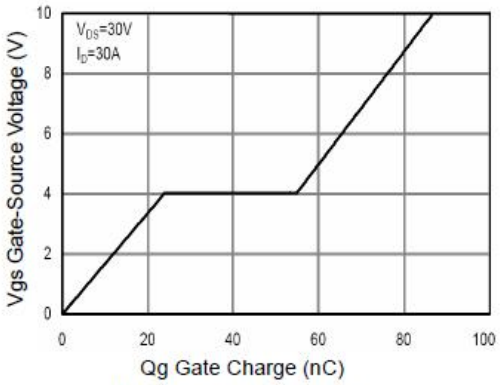


Figure 5 Gate Charge

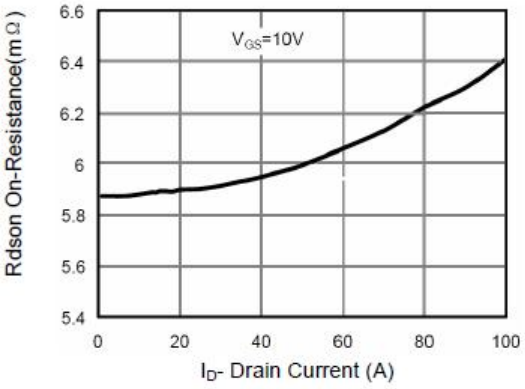


Figure 3 Rdson- Drain Current

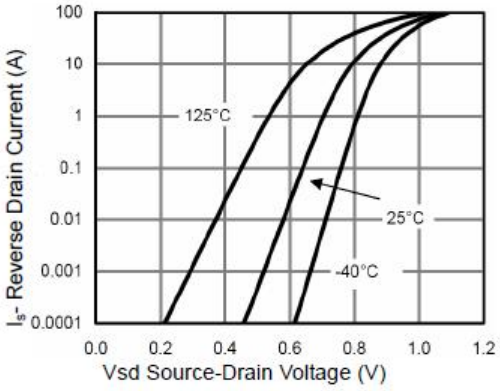


Figure 6 Source- Drain Diode Forward

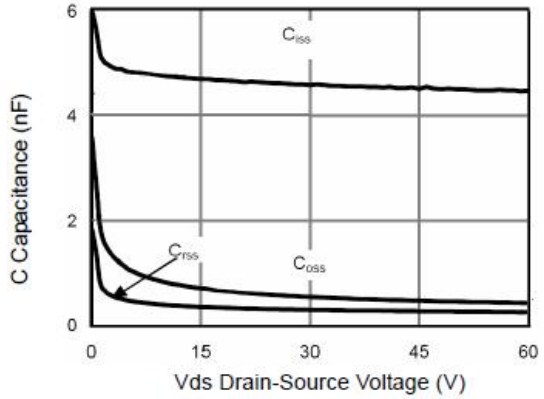


Figure 7 Capacitance vs Vds

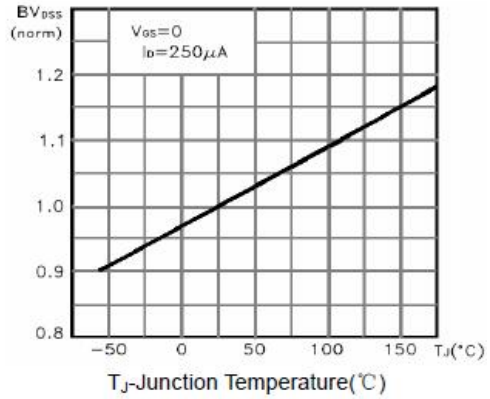


Figure 9 BV_{DSS} vs Junction Temperature

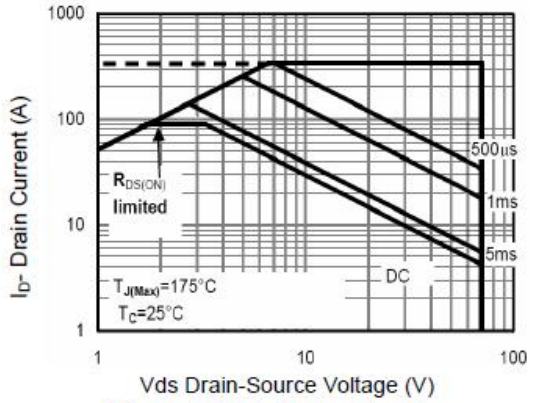


Figure 8 Safe Operation Area

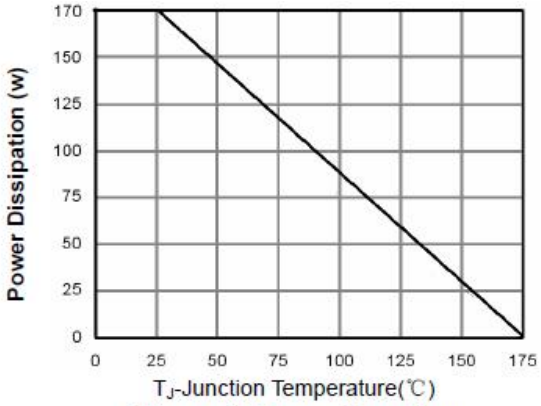


Figure 10 Power De-rating

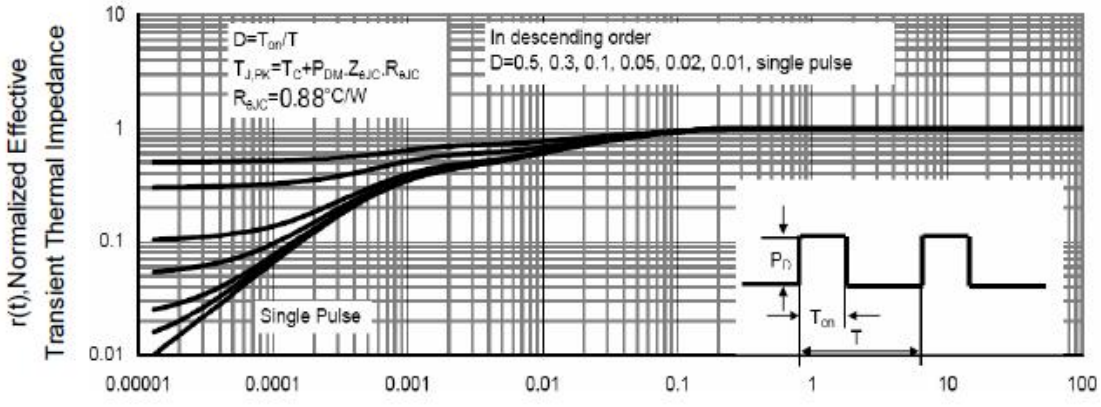


Figure 11 Normalized Maximum Transient Thermal Impedance