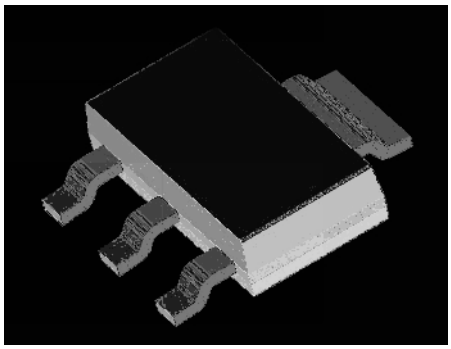
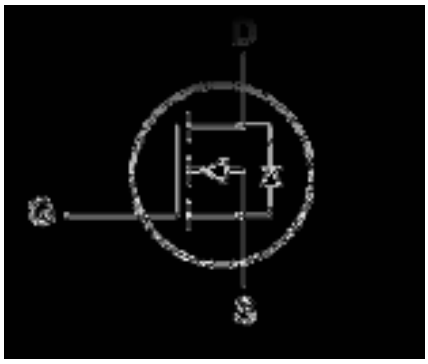
Description

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}=30V,I_D=5.8A,$R_{DS(ON)}$<28mΩ @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	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	~~Continuous Drain Current-[1]~~	5.8	A
	Continuous Drain Current-T_C=70℃[1]	4.7	
P_D	Power Dissipation[3]	1.5	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	℃

Thermal Characteristics

Symbol	Parameter	Ratings	Units
$R_{\Theta JC}$	Thermal Resistance,Junction to Case[1]	48	℃/W
$R_{\Theta JA}$	Thermal Resistance,Junction to Ambient[1]	85	

Package Marking and Ordering Information

Part NO.	Marking	Package
RYN30A6S	30A6S	SOT-223

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	30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=80V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0V	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	1.0	1.4	3	V
$R_{DS(ON)}$	Drain-Source On Resistance	V_{GS}=10V,I_D=5A	---	31.5	37	mΩ
		V_{GS}=4.5V,I_D=4	---	36	43	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=30V, V_{GS}=0V, f=1MHz	---	1062.8	---	pF
C_{oss}	Output Capacitance		---	157.26	---	
C_{rss}	Reverse Transfer Capacitance		---	56.56	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=30V,R_L=6.8Ω, V_{GS}=4.5V,R_{GEN}=1Ω	---	18.12	36.24	ns
t_r	Rise Time		---	17.68	35.36	ns
$t_{d(off)}$	Turn-Off Delay Time		---	25	50	ns
t_f	Fall Time		---	8.92	17.84	ns
Q_g	Total Gate Charge	V_{GS}=5V, V_{DS}=30V, I_D=5.3A	---	11.26	14.64	nC
Q_{gs}	Gate-Source Charge		---	3.77	4.9	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	4.08	5.3	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage	V_{GS}=0V,I_S=1A	---	0.75	1.0	V

Typical Characteristics T_J=25℃ unless otherwise noted

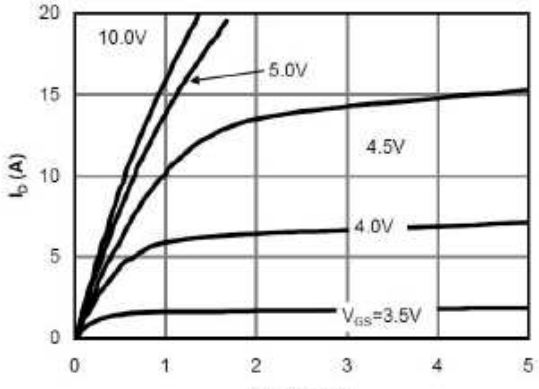


Fig 1: On-Region Characteristics

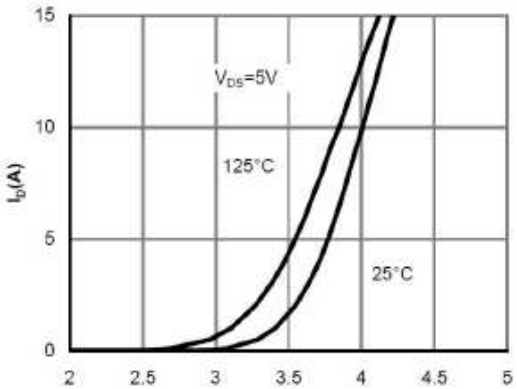


Figure 2: Transfer Characteristics

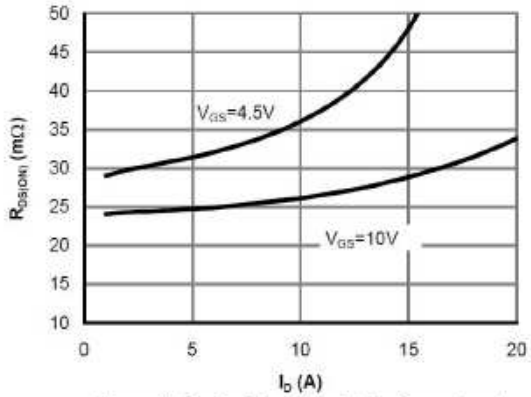


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

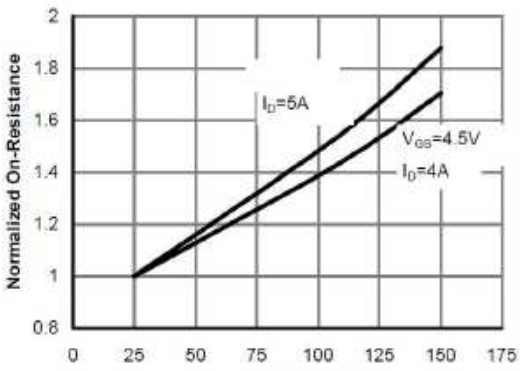


Figure 4: On-Resistance vs. Junction Temperature

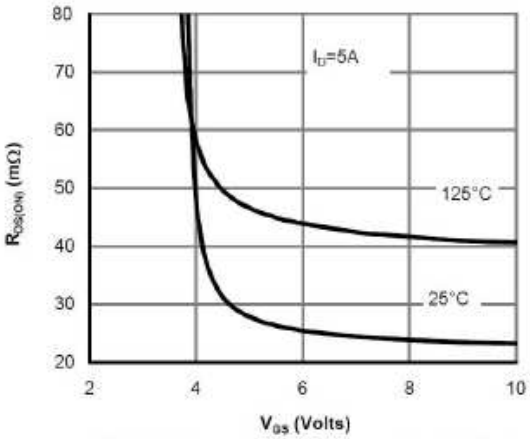


Figure 5: On-Resistance vs. Gate-Source Voltage

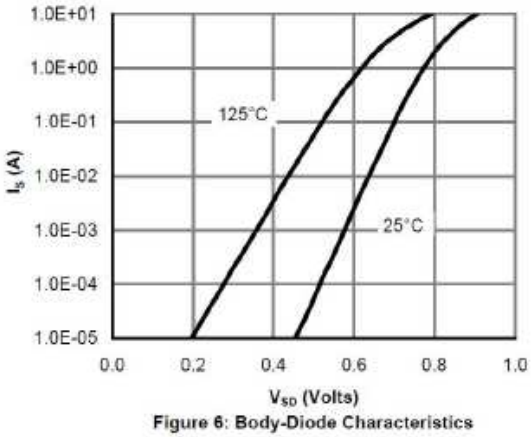


Figure 6: Body-Diode Characteristics