MY2307

-20V P-Channel Enhancement ModeMOSFET

MAOYUANWEI semiconductor

General Description

The MY2307 is the high cell density trenched P-CH MOSFET,which provide excellent $R_{DS(ON)}$ and efficiency for most of the small power switching and load s witch applications.

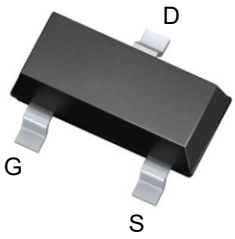
RoHS Compliant

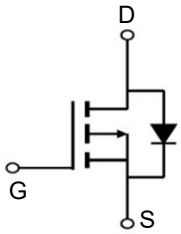
Features

V_{DSS}	-20	V
I_D	-2.5	A
$R_{DS(ON)}$(atV_{GS} =4.5V)	120	mΩ
$R_{DS(ON)}$(atV_{GS} =2.5V)	164	mΩ

Application

- Green Device Available
- Super Low Gate Charge
- Excellent CdV/dt effect decline





Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY2307	SOT-23-3L	2307	3000

Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	±12	V
I_D@T_A=25℃	Continuous Drain Current, V_{GS} @ -4.5V[1]	-2.5	A
I_D@T_A=70℃	Continuous Drain Current, V_{GS} @ -4.5V[1]	-1	A
I_{DM}	Pulsed Drain Current[2]	-6	A
P_D@T_A=25℃	Total Po wer Dissipation[3]	1	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient [1]	---	125	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	---	---	℃/W

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D= -250μA	-20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = -20V, V_{GS} = 0V,	-	-	-1	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS} =0V, V_{GS} = ±12V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D = -250μA	-0.45	-0.5	-0.55	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note2	V_{GS} =-4.5V, I_D =-2A	90	120	140	mΩ
		V_{GS} =-2.5V, I_D =-1A	-	164	200	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = -10V, V_{GS} = 0V, f = 1.0MHz	-	209	-	pF
C_{oss}	Output Capacitance		-	21	-	pF
C_{rss}	Reverse Transfer Capacitance		-	20	-	pF
Q_g	Total Gate Charge	V_{DS} = -10V, I_D = -2A, V_{GS} = -4.5V	-	3	-	nC
Q_{gs}	Gate-Source Charge		-	0.4	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	0.7	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD} = -10V, R_L=5Ω, R_{GEN}=3Ω,V_{GS}=-4.5V,	-	9	-	ns
t_r	Turn-on Rise Time		-	5	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	19	-	ns
t_f	Turn-off Fall Time		-	7.5	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-1.5	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forw ard Current		-	-	-6	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = -2A	-	-	-1.2	V

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Typical Electrical and Thermal Characteristics

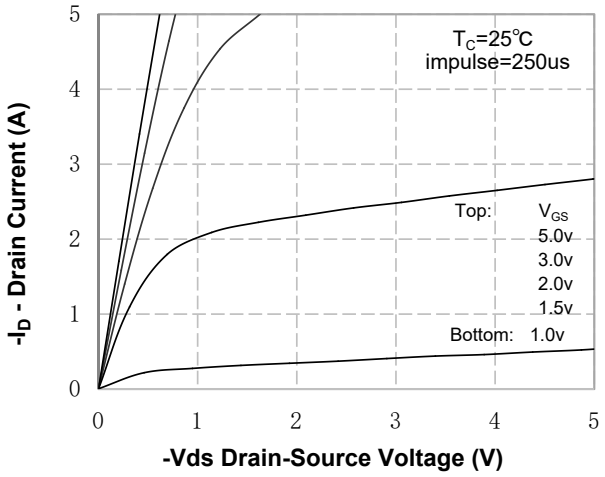


Figure 1. On-Region Characteristics

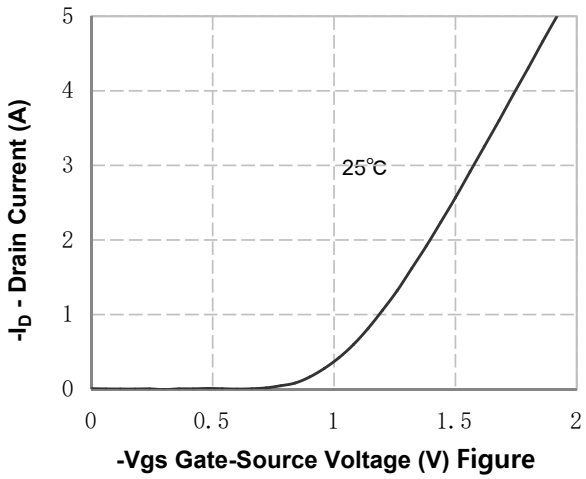


Figure 2. Transfer Characteristics

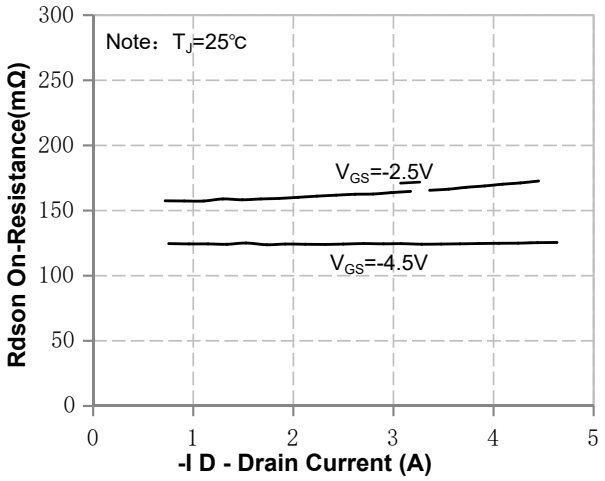


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

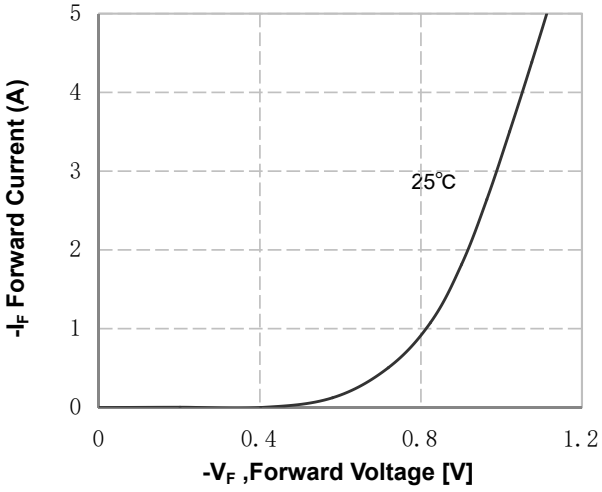


Figure 4. Body Diode Forward Voltage Variation with Source Current

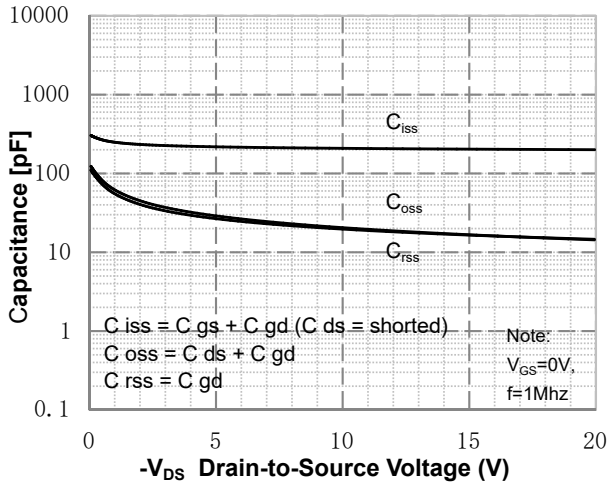


Figure 5. Capacitance Characteristics

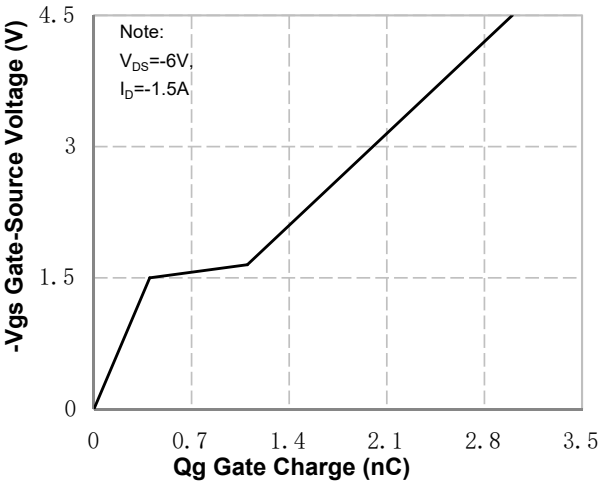


Figure 6. Gate Charge Characteristics

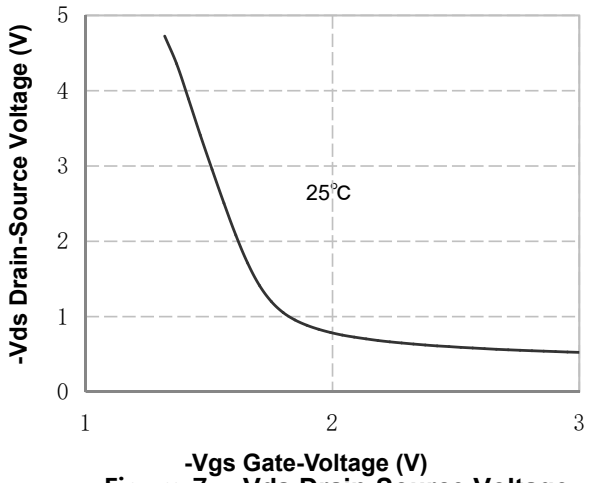


Figure 7. Vds Drain-Source Voltage vs Gate Voltage

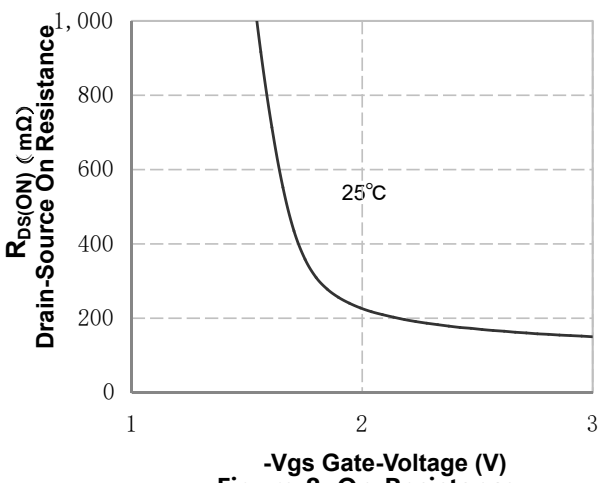


Figure 8. On-Resistance vs Gate Voltage

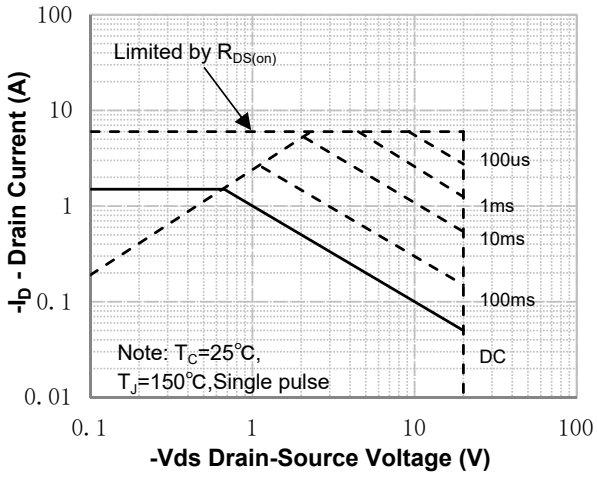


Figure 9. Maximum Safe Operating Area

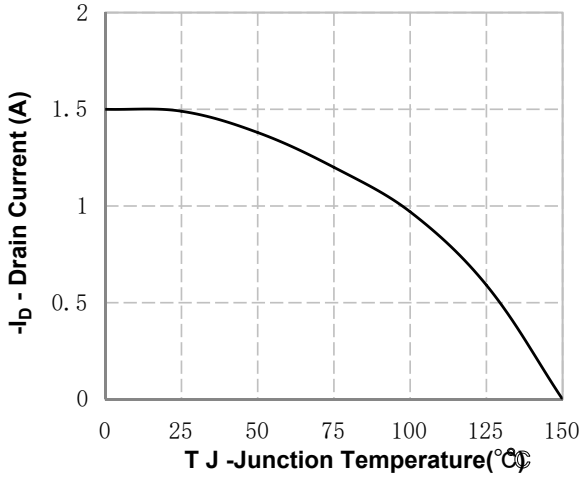


Figure 10. Maximum Continuous Drain Current vs Case Temperature

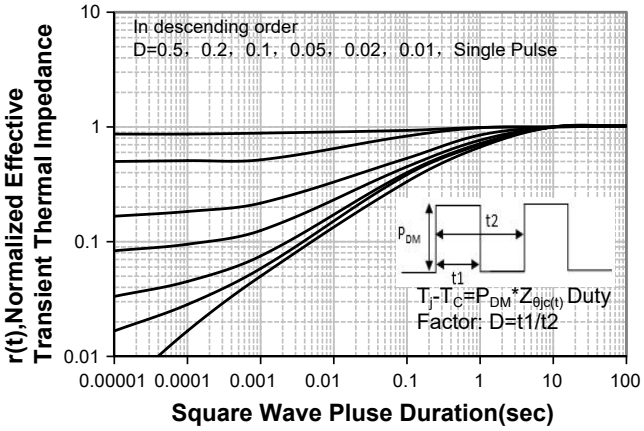
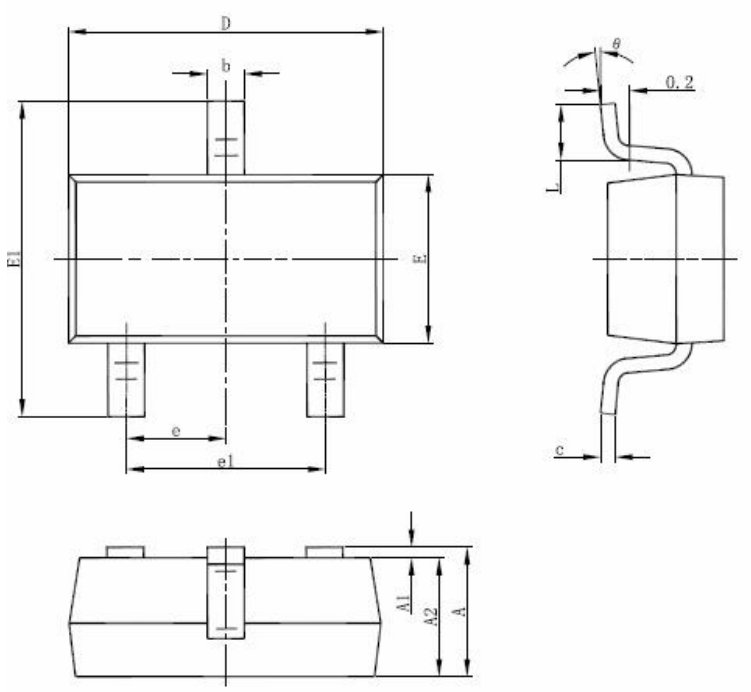


Figure 11. Transient Thermal Response Curve

Package Mechanical Data-SOT-23-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°