

## 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 switch applications.

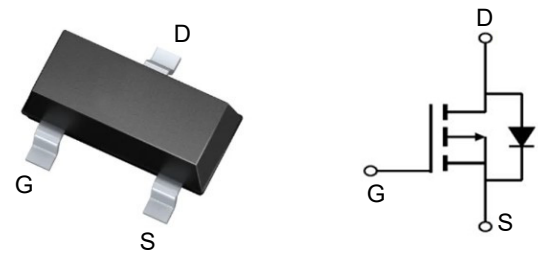


## Features

$V_{DSS}$	-20	V
$I_D$	-2.5	A
$R_{DS(ON)}$ (at $V_{GS} = 4.5V$ )	120	$m\Omega$
$R_{DS(ON)}$ (at $V_{GS} = 2.5V$ )	164	$m\Omega$

## 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 ( $T_A=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	-20	V
$V_{GS}$	Gate-Source Voltage	$\pm 12$	V
$I_D@T_A=25^\circ C$	Continuous Drain Current, $V_{GS} @ -4.5V^1$	-2.5	A
$I_D@T_A=70^\circ C$	Continuous Drain Current, $V_{GS} @ -4.5V^1$	-1	A
$I_{DM}$	Pulsed Drain Current <sup>2</sup>	-6	A
$P_D@T_A=25^\circ C$	Total Power Dissipation <sup>3</sup>	1	W
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ C$
$T_J$	Operating Junction Temperature Range	-55 to 150	$^\circ C$

## Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta A}$	Thermal Resistance Junction-ambient <sup>1</sup>	---	125	$^\circ C/W$
$R_{\theta C}$	Thermal Resistance Junction-Case <sup>1</sup>	---	---	$^\circ C/W$

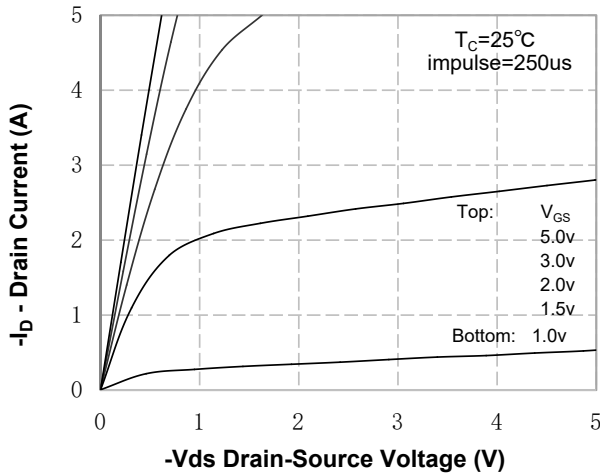
**Electrical Characteristics (T<sub>J</sub>=25 °C, unless otherwise noted)**

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristic</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> = -250μA	-20	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = -20V, V <sub>GS</sub> = 0V,	-	-	-1	μA
I <sub>GSS</sub>	Gate to Body Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> = ±12V	-	-	±100	nA
<b>On Characteristics</b>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	-0.45	-0.5	-0.55	V
R <sub>DS(on)</sub>	Static Drain-Source on-Resistance <small>note2</small>	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-2A	90	120	140	mΩ
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-1A	-	164	200	
<b>Dynamic Characteristics</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> = -10V, V <sub>GS</sub> = 0V, f = 1.0MHz	-	209	-	pF
C <sub>oss</sub>	Output Capacitance		-	21	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	20	-	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> = -10V, I <sub>D</sub> = -2A, V <sub>GS</sub> = -4.5V	-	3	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	0.4	-	nC
Q <sub>gd</sub>	Gate-Drain("Miller") Charge		-	0.7	-	nC
<b>Switching Characteristics</b>						
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> = -10V, R <sub>L</sub> =5Ω, R <sub>GEN</sub> =3Ω, V <sub>GS</sub> =- 4.5V,	-	9	-	ns
t <sub>r</sub>	Turn-on Rise Time		-	5	-	ns
t <sub>d(off)</sub>	Turn-off Delay Time		-	19	-	ns
t <sub>f</sub>	Turn-off Fall Time		-	7.5	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
I <sub>S</sub>	Maximum Continuous Drain to Source Diode Forward Current		-	-	-1.5	A
I <sub>SM</sub>	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-6	A
V <sub>SD</sub>	Drain to Source Diode Forward Voltage	V <sub>GS</sub> = 0V, I <sub>S</sub> = -2A	-	-	-1.2	V

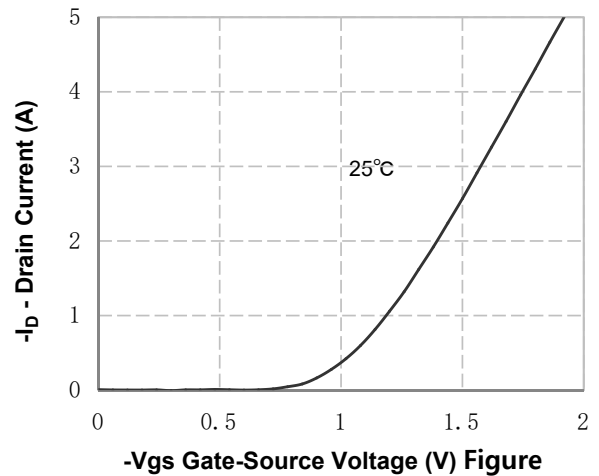
Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

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

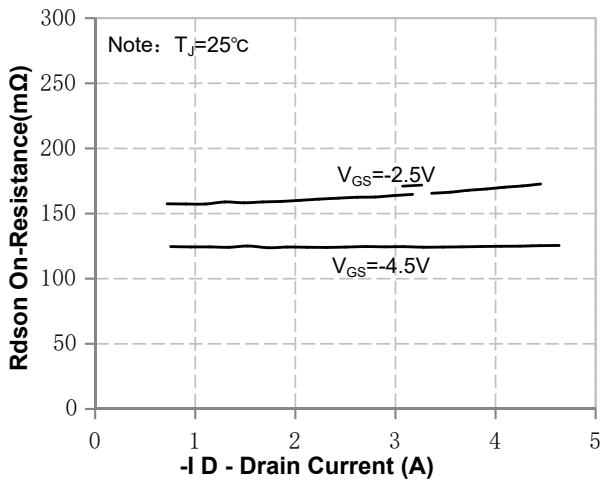
**Typical Electrical and Thermal Characteristics**



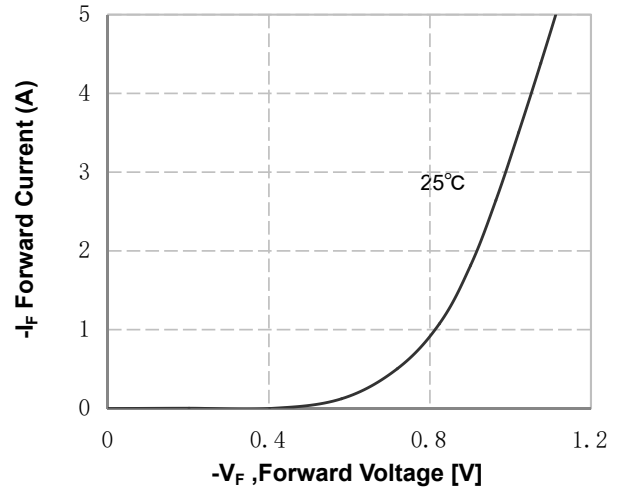
**Figure 1. On-Region Characteristics**



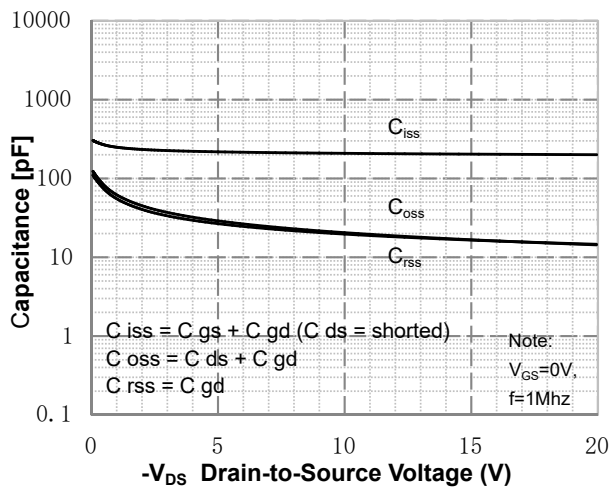
**Figure 2. Transfer Characteristics**



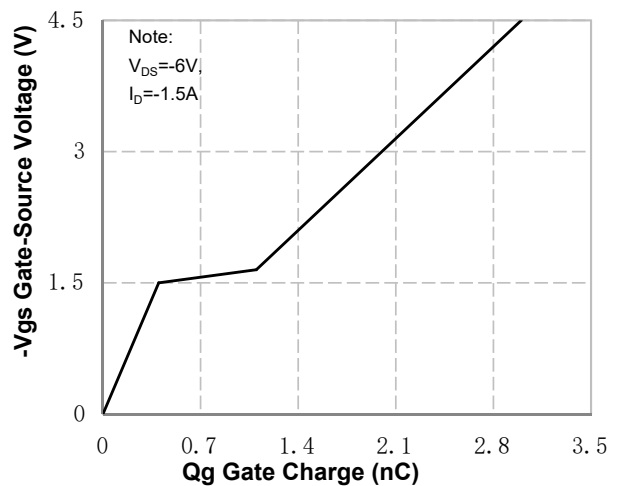
**Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage**



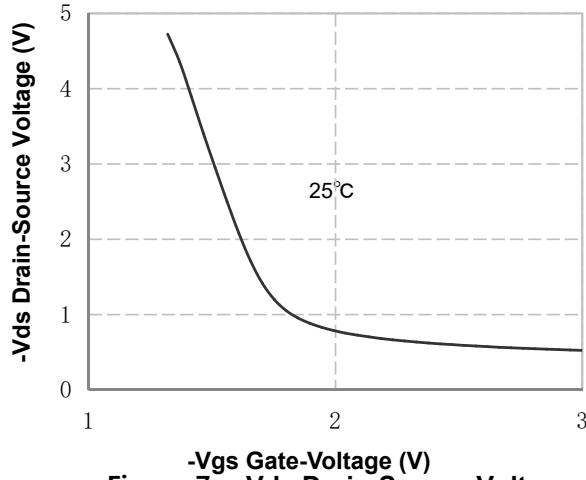
**Figure 4. Body Diode Forward Voltage Variation with Source Current**



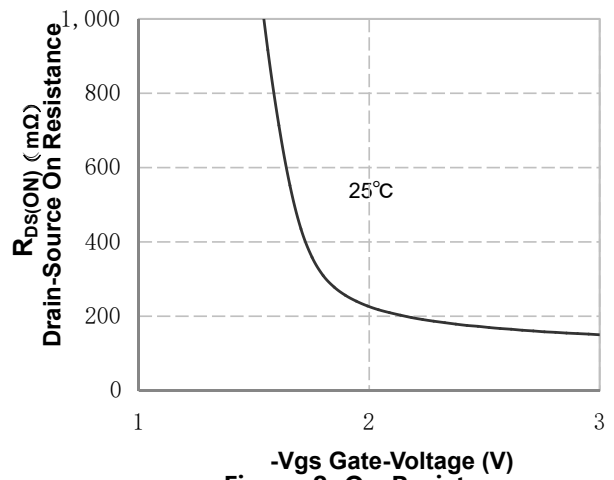
**Figure 5. Capacitance Characteristics**



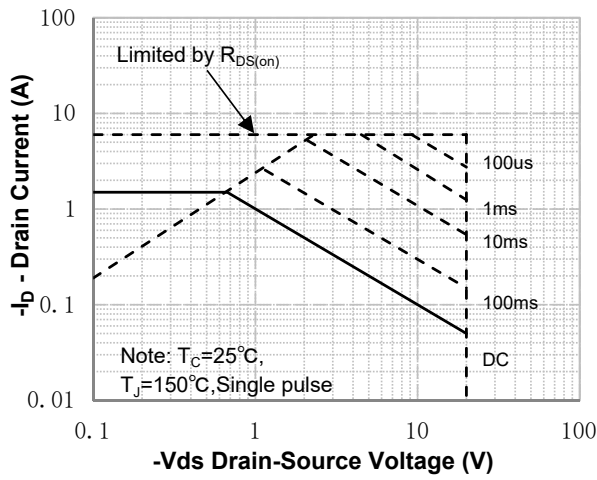
**Figure 6. Gate Charge Characteristics**



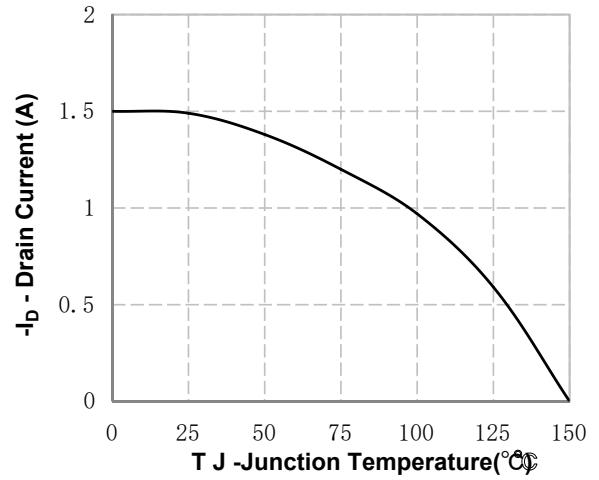
**Figure 7. Vds Drain-Source Voltage vs Gate Voltage**



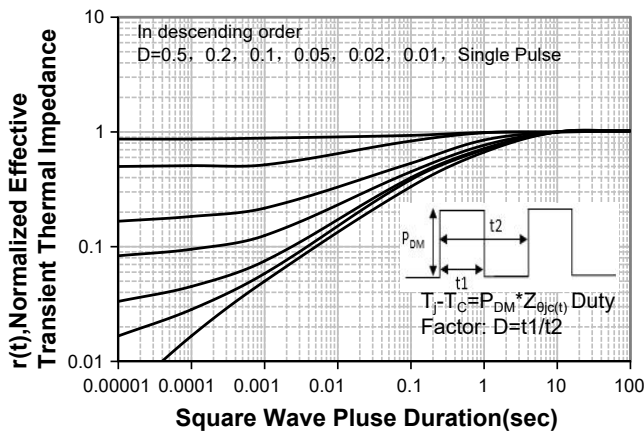
**Figure 8. On-Resistance vs Gate Voltage**



**Figure 9. Maximum Safe Operating Area**

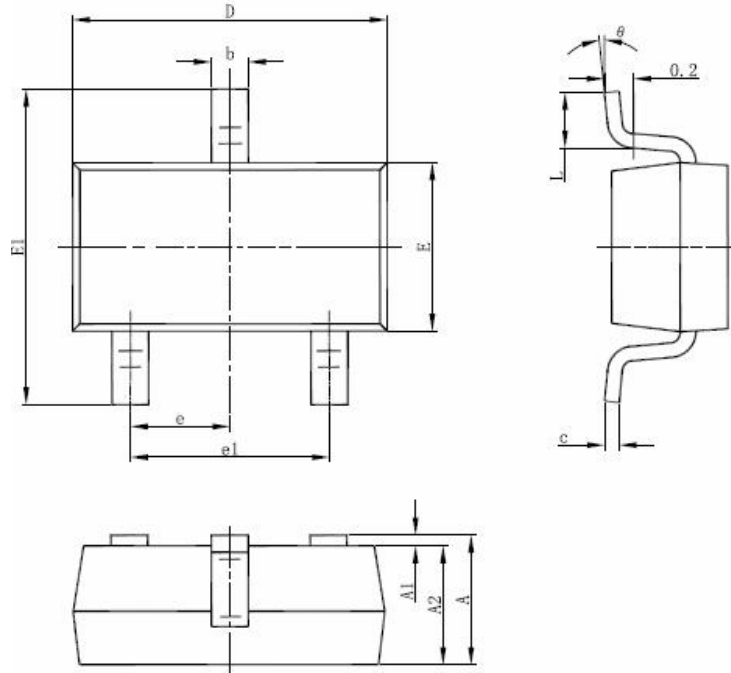


**Figure 10. Maximum Continuous Drain Current vs Case Temperature**



**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°