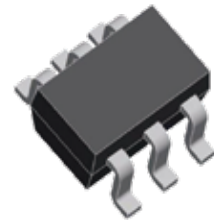


## FEATURES

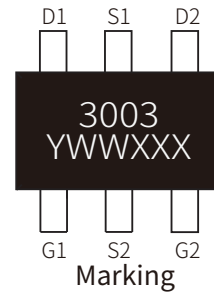
- | Surface-mounted package
- | Advanced trench cell design



SOT-23-6L

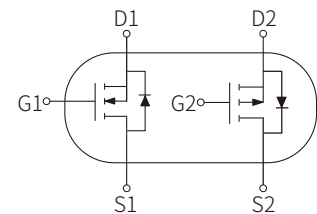
## APPLICATION

- | MB and NB
- | Motor drivers
- | Half – bridge Drivers



## APPROVALS

<b>RoHS</b>	Compliance with 2011/65/EU
<b>HF</b>	Compliance with IEC61249-2-21:2003



Schematic Symbol

## ABSOLUTE MAXIMUM RATINGS( $T_A=25^\circ\text{C}$ )

Parameter	Symbol	Value		Unit	
		N-channel	P-channel		
Drain-Source Voltage $T_A=25^\circ\text{C}$	$V_{DS}$	30	-30	V	
Drain Current	$I_D^*$	$T_A=25^\circ\text{C}$	4.2	-4.2	A
		$T_A=100^\circ\text{C}$	2.6	-1.8	A
Drain Current - Pulsed $T_A=25^\circ\text{C}$	$I_{DM}^{**}$	16.8	-12	A	
Gate-Source Voltage	$V_{GS}$	$\pm 20$	$\pm 20$	V	
Power Dissipation $T_A = 25^\circ\text{C}$	$P_{tot}$	0.83		W	
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150		$^\circ\text{C}$	
Thermal Resistance- Junction to Ambient	$R_{\theta JA}$	150		$^\circ\text{C}/\text{W}$	

Notes:

 \* Surface Mounted on 1 in<sup>2</sup> pad area,  $t \leq 10$  sec

 \*\* Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$

# ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

## N-Channel

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_{DS}=250\mu A$	30			V
Zero Gate Voltage Source Current	$I_{DSS}$	$V_{DS}=24V, V_{GS}=0V$			1	$\mu A$
Gate Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	1		2	V
Drain-Source On-State Resistance	$R_{DS(on)}^a$	$V_{GS}=10V, I_D=3A$		23.8	28	m $\Omega$
		$V_{GS}=4.5V, I_D=2A$		35.4	46	
<b>Diode Characteristics</b>						
Diode Forward Voltage	$V_{SD}^a$	$V_{GS}=0V, I_{SD}=3A$			1.3	V
Reverse Recovery Time	$t_{rr}$	$I_{SD}=3A, di_{SD}/dt=100 A/\mu s$		5.7		nS
Reverse Recovery Charge	$Q_{rr}$			2		nC
<b>Dynamic Characteristics<sup>b</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V$ Frequency = 1 MHz		396		pF
Output Capacitance	$C_{oss}$			49		
Reverse Transfer Capacitance	$C_{rss}$			36		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=15V, R_L=5\Omega$ $V_{GEN}=10V, R_G=3.9\Omega, I_D=3A$		4.2		nS
Turn-On Rise Time	$t_r$			9.2		
Turn-Off Delay Time	$t_{d(off)}$			12		
Turn-Off Fall Time	$t_f$			4.6		
<b>Gate Charge Characteristics<sup>b</sup></b>						
Total Gate Charge	$Q_g$	$V_{GS}=10V, V_{DS}=15V, I_{DS}=3A$		8.1		nC
Gate Source Charge	$Q_{gs}$			2		
Gate Drain Charge	$Q_{gd}$			1.1		

**P-Channel**

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_{DS}=-250\mu A$	-30			V
Zero Gate Voltage Source Current	$I_{DSS}$	$V_{DS}=-24V, V_{GS}=0V$			-1	$\mu A$
Gate Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	-1		-2	V
Drain-Source On-State Resistance	$R_{DS(on)}^a$	$V_{GS}=-10V, I_D=-3A$		53.8	60	m $\Omega$
		$V_{GS}=-4.5V, I_D=-2A$		88.7	98	
<b>Diode Characteristics</b>						
Diode Forward Voltage	$V_{SD}^a$	$V_{GS}=0V, I_{SD}=-3A$			-1.3	V
Reverse Recovery Time	$t_{rr}$	$I_{SD} = -3A, di_{SD}/dt = 100 A/\mu s$		8.4		nS
Reverse Recovery Charge	$Q_{rr}$			3.9		nC
<b>Dynamic Characteristics<sup>b</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V$ Frequency = 1 MHz		475		pF
Output Capacitance	$C_{oss}$			50		
Reverse Transfer Capacitance	$C_{rss}$			43		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=-15V, R_L=5\Omega$ $V_{GEN}=-10V, R_G=3.9\Omega, I_{DS}=-3A$		4.1		nS
Turn-On Rise Time	$t_r$			10		
Turn-Off Delay Time	$t_{d(off)}$			35		
Turn-Off Fall Time	$t_f$			18		
<b>Gate Charge Characteristics<sup>b</sup></b>						
Total Gate Charge	$Q_g$	$V_{GS}=-10V, V_{DS}=-15V, I_{DS}=-3A$		9.2		nC
Gate Source Charge	$Q_{gs}$			2.4		
Gate Drain Charge	$Q_{gd}$			1.1		

Notes: a : Pulse test ; pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$   
 b : Guaranteed by design, not subject to production testing

# PARAMETER CHARACTERISTIC CURVE

N-Channel

Figure1: Power Capability

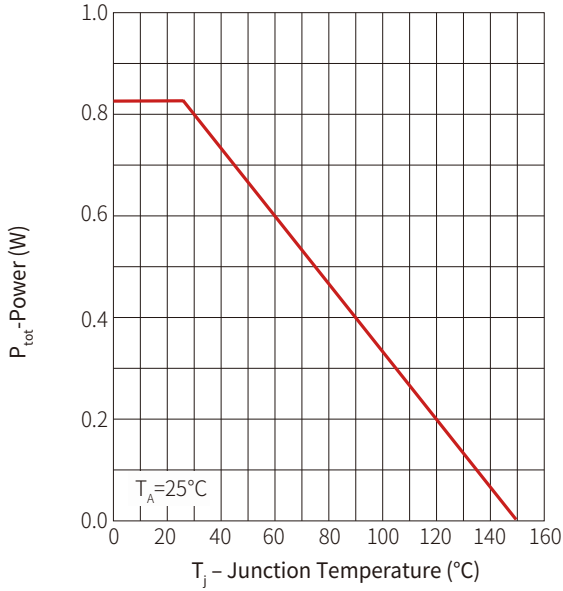


Figure2: Current Capability

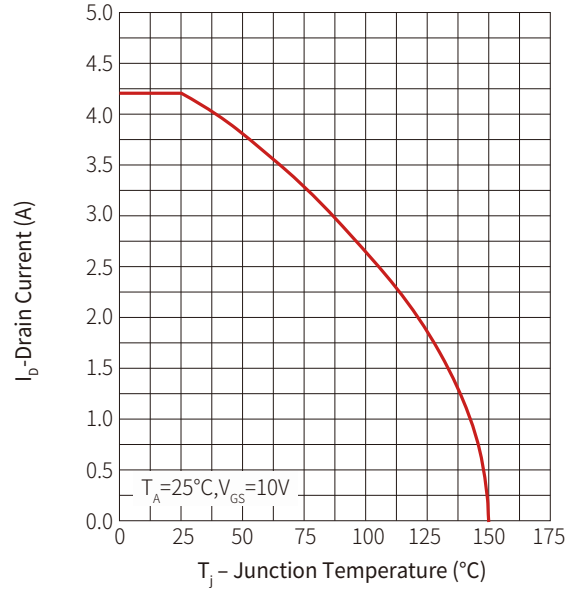


Figure3: Safe Operation Area

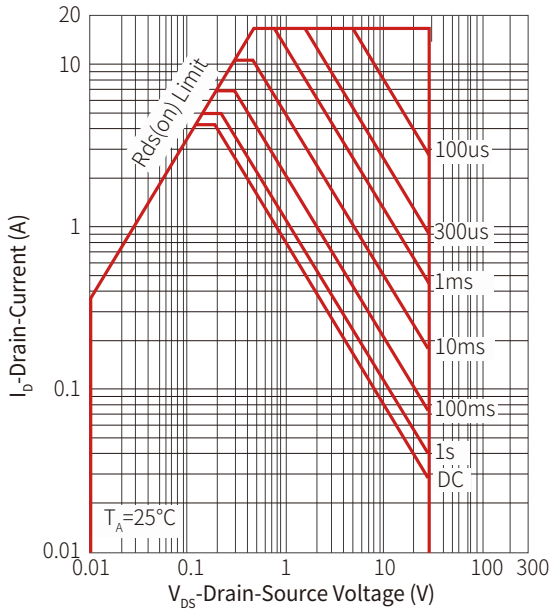


Figure 4: Transient Thermal Impedance

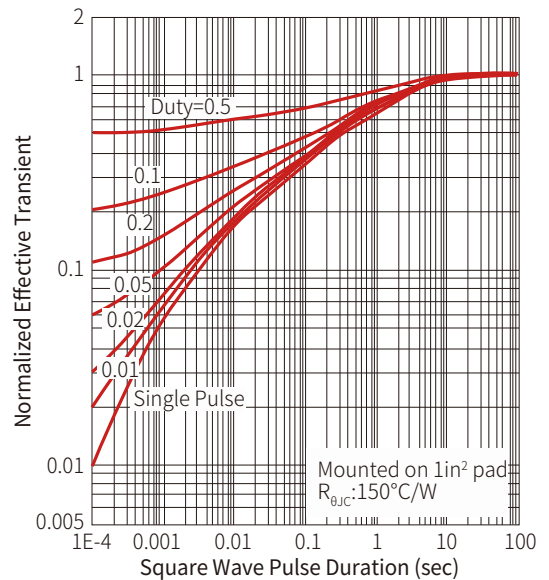


Figure 5: Output Characteristics

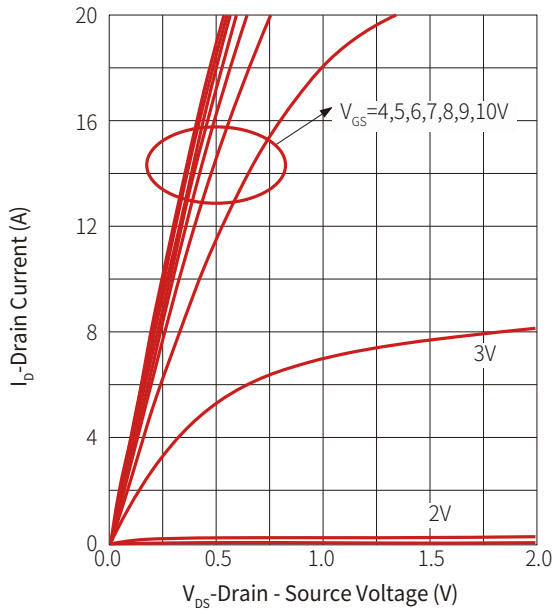


Figure 6: On Resistance

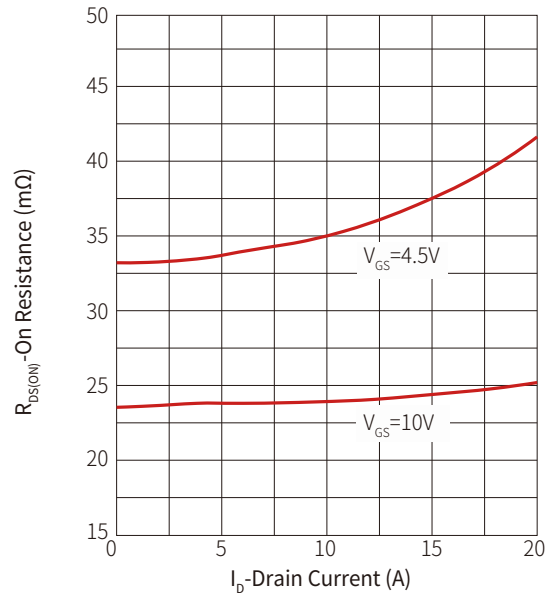


Figure 7: Transfer Characteristics

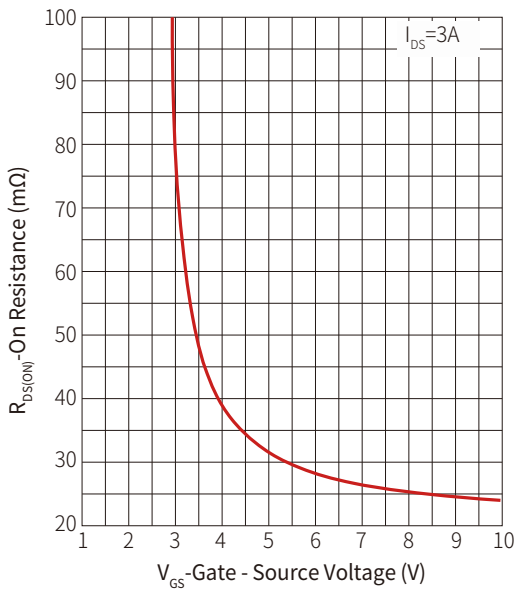


Figure 8: Normalized Threshold Voltage

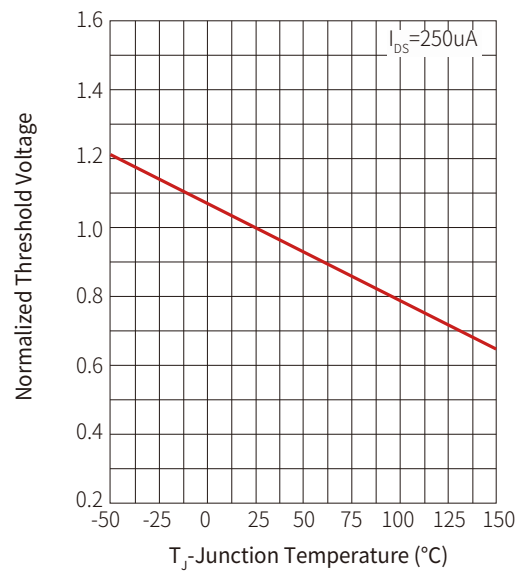


Figure 9: Normalized On Resistance

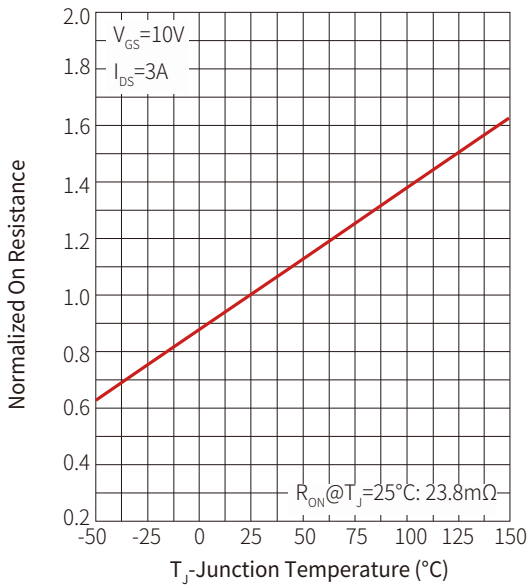


Figure 10: Diode Forward Current

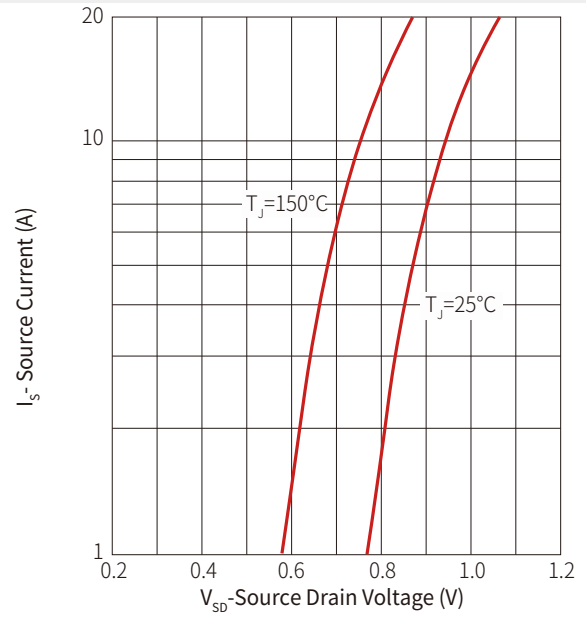


Figure 11: Capacitance

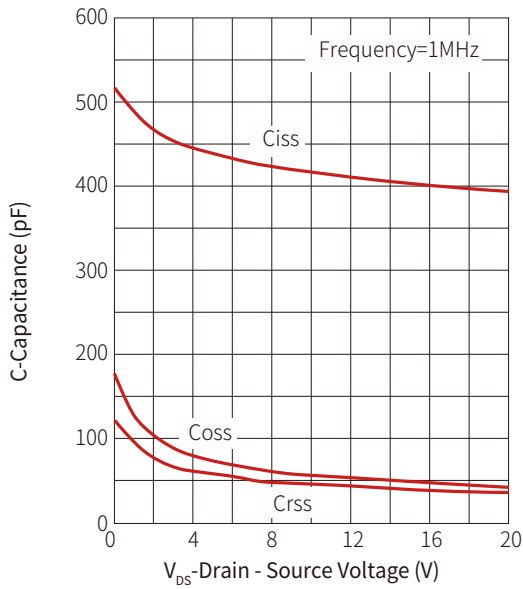
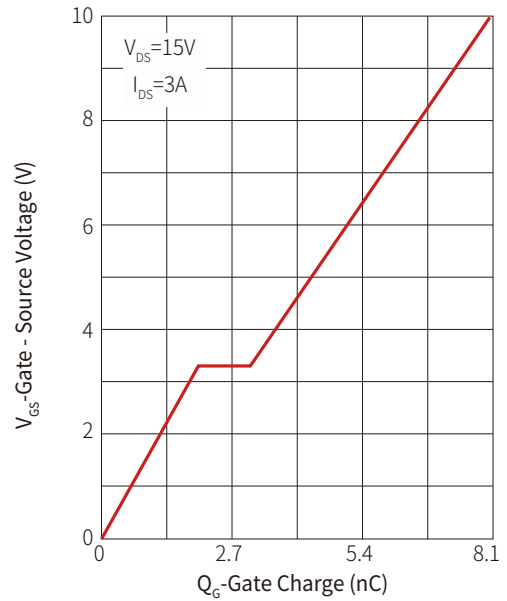


Figure 12: Gate Charge



P-Channel

Figure1: Power Capability

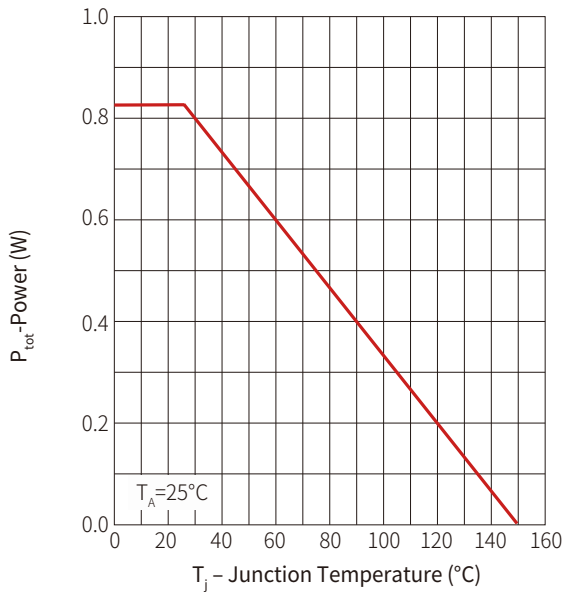


Figure2: Current Capability

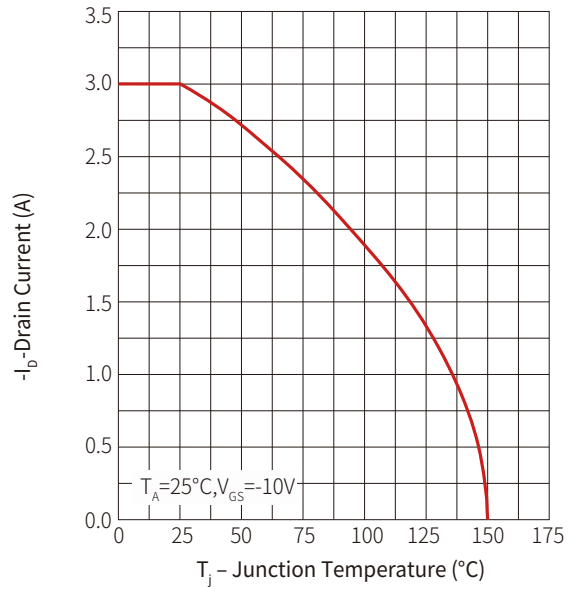


Figure3: Safe Operation Area

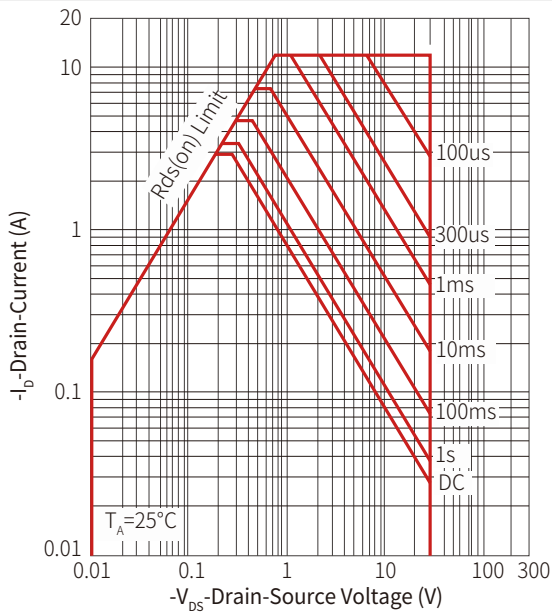
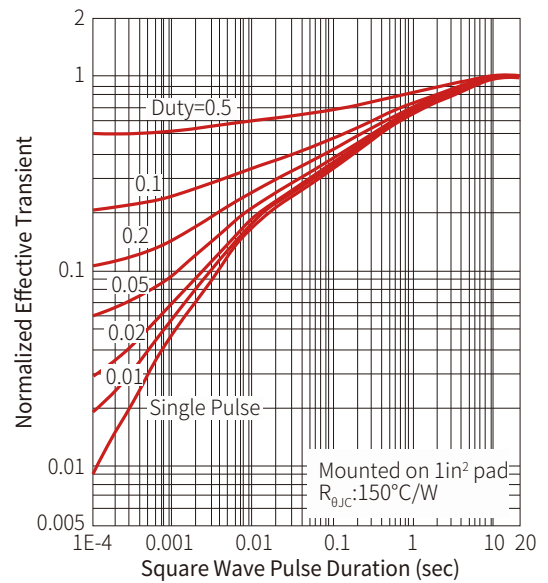
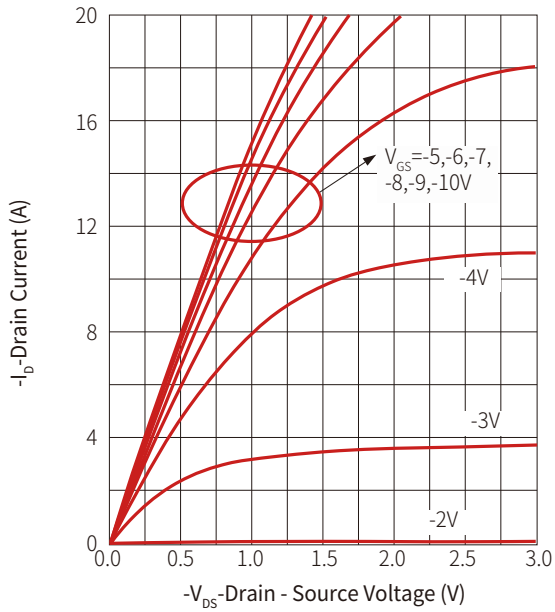


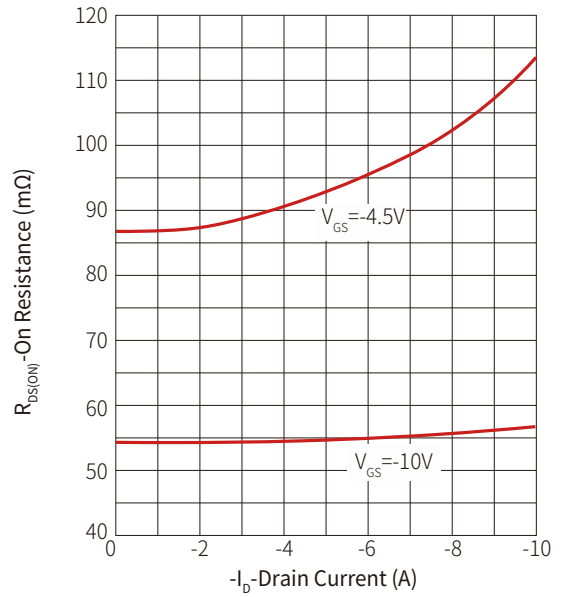
Figure 4: Transient Thermal Impedance



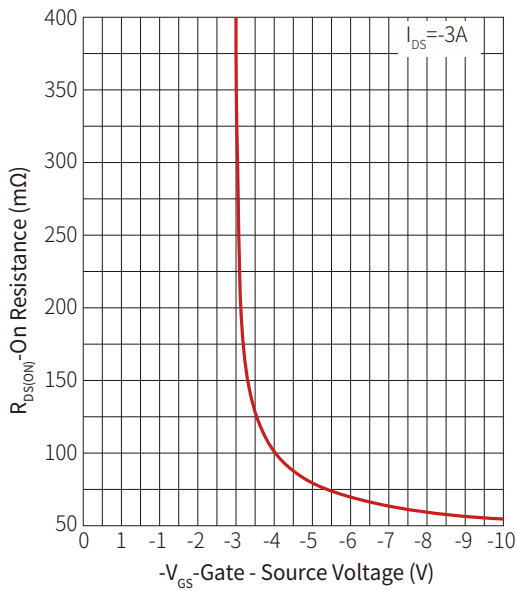
**Figure 5: Output Characteristics**



**Figure 6: On Resistance**



**Figure 7: Transfer Characteristics**



**Figure 8: Normalized Threshold Voltage**

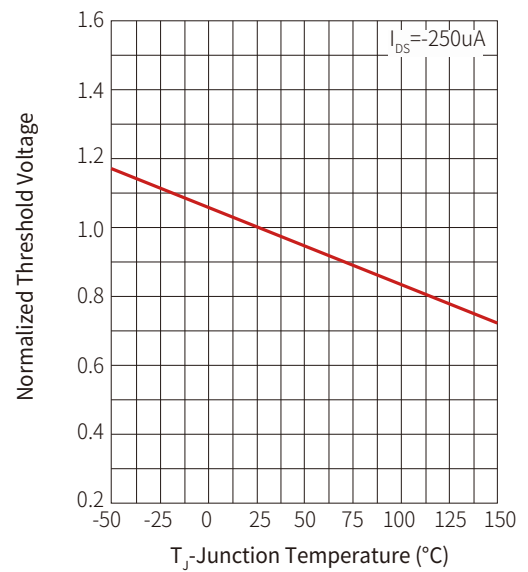


Figure 9: Normalized On Resistance

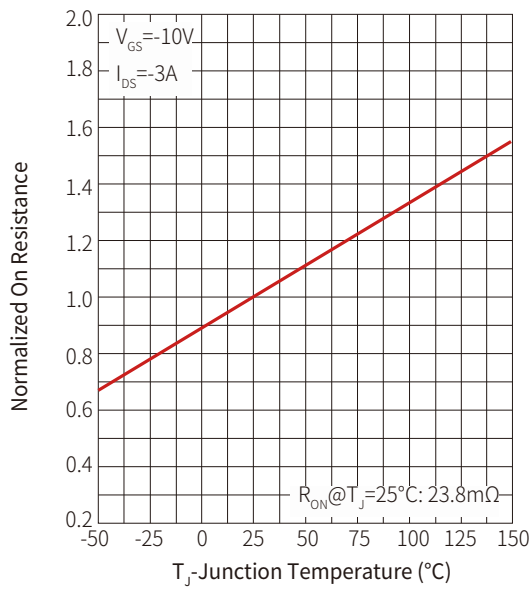


Figure 10: Diode Forward Current

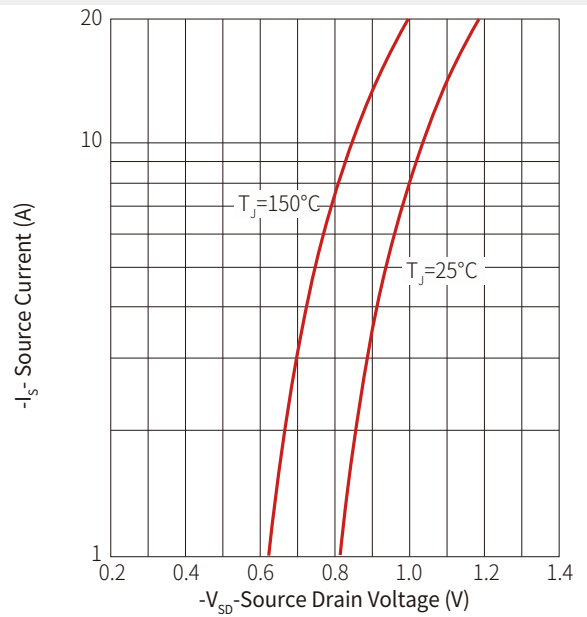


Figure 11: Capacitance

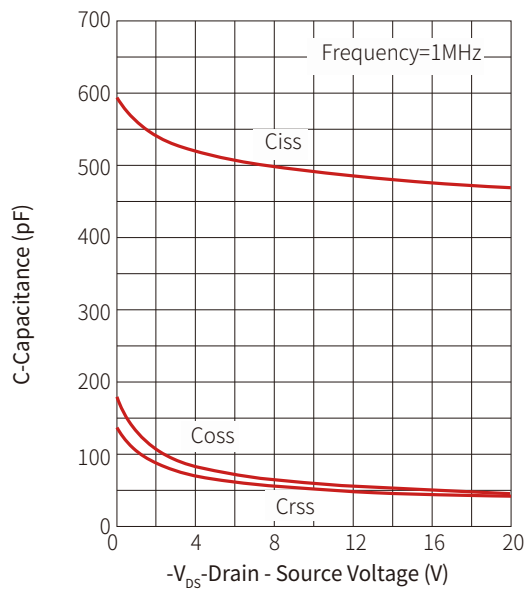
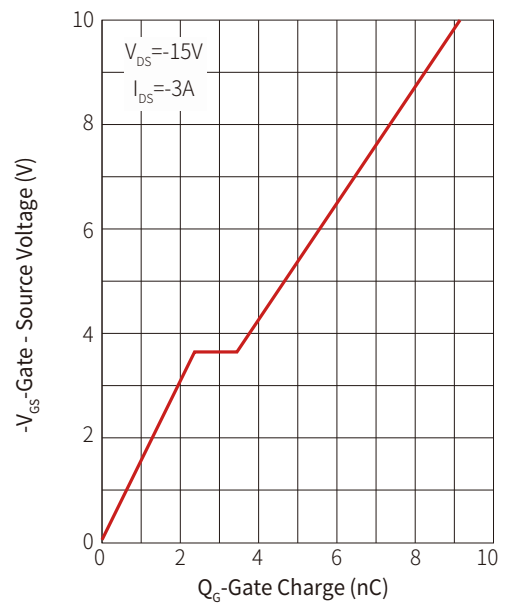
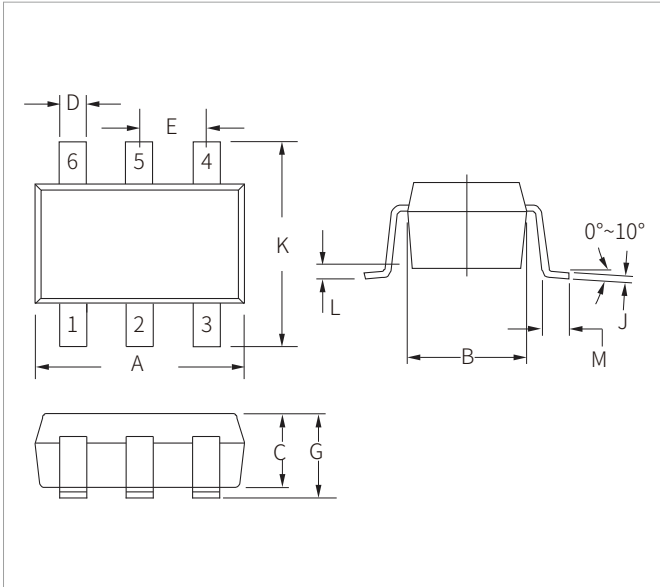


Figure 12: Gate Charge

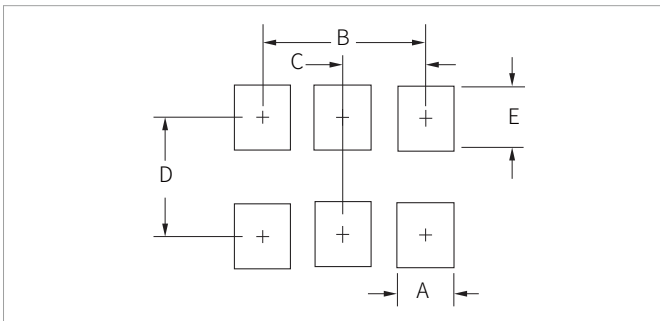


## SOT-23-6L PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.80	3.10	0.110	0.125
B	1.50	1.80	0.059	0.071
C	0.90	1.30	0.036	0.051
D	0.25	0.50	0.010	0.020
E	0.85	1.05	0.033	0.040
G	0.90	1.45	0.036	0.057
J	0.09	0.20	0.003	0.008
K	2.60	3.00	0.102	0.118
L	0.0	0.15	0.0	0.006
M	0.30	0.60	0.012	0.024

## RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters	Inches
	Nominal	Nominal
A	0.70	0.028
B	1.90	0.074
C	0.95	0.037
D	2.40	0.094
E	1.00	0.039

## ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SNPM3003CS	SOT-23-6L	3000PCS	7"

**Headquarters**

No.3387 Shendu Road  
Pujiang I&E Park  
Minhang Shanghai China  
201000

**Hotline**

400-021-5756

**Web**

<https://www.semiware.com>

**Sales Center**

Tel: 86-21-3463-7458  
Email: [sales18@semiware.com](mailto:sales18@semiware.com)

**Customer Service**

Tel: 86-21-5484-1001  
Email: [sales17@semiware.com](mailto:sales17@semiware.com)

**Technical Support**

Tel: 86-21-3463-7654  
Email: [fae01@semiware.com](mailto:fae01@semiware.com)

**Complaint & Suggestions**

Tel: 86-21-3463-7172  
Ext: 8868  
Email: [cs03@semiware.com](mailto:cs03@semiware.com)

**By QR Code**

Website



Wechat

To find your local partner within Semiware' s global website: [www.semiware.com](http://www.semiware.com)

© 2022 Semiware Semiconductor Inc.

The content of this document has been carefully checked and understood. However, neither Semiware nor its subsidiaries assume any liability whatsoever for any errors or inaccuracies of this document and the consequences thereof. Published specifications are subject to change without notice. Product suitability for any area of application must ultimately be determined by the customer. In all cases, products must never be operated outside their published specifications. Semiware does not guarantee the availability of all published products. This disclaimer shall be governed by substantive Chinese law and resulting disputes shall be settled by the courts at the place of business of Semiware. Latest publications and a complete disclaimer can be downloaded from the Semiware website. All trademarks recognized.