

### Product Summary

BVDSS	RDSON	ID
20V	65 mΩ	2 A

### Application

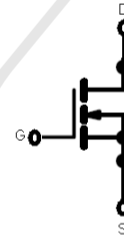
- Load/Power Switching
- Interfacing Switching
- Logic Level Shift

### Package and Pin Configuration

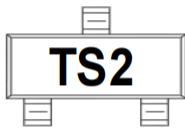
SOT-323



### Circuit diagram



### Marking:



### Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

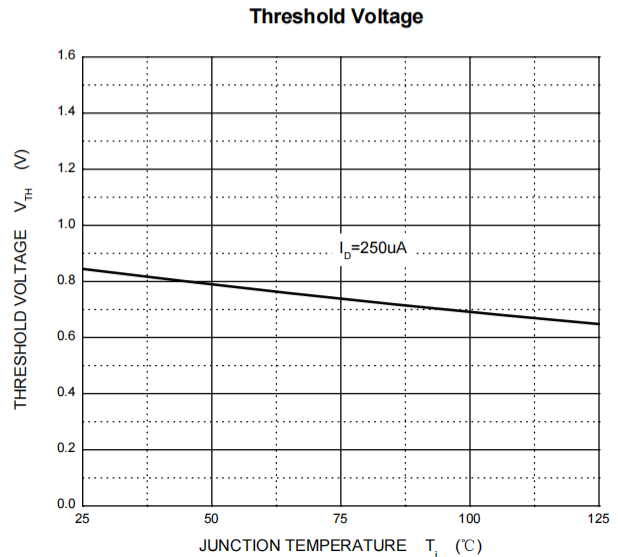
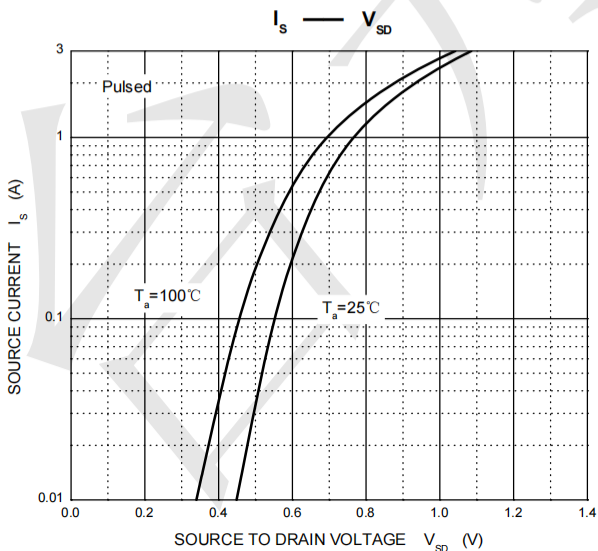
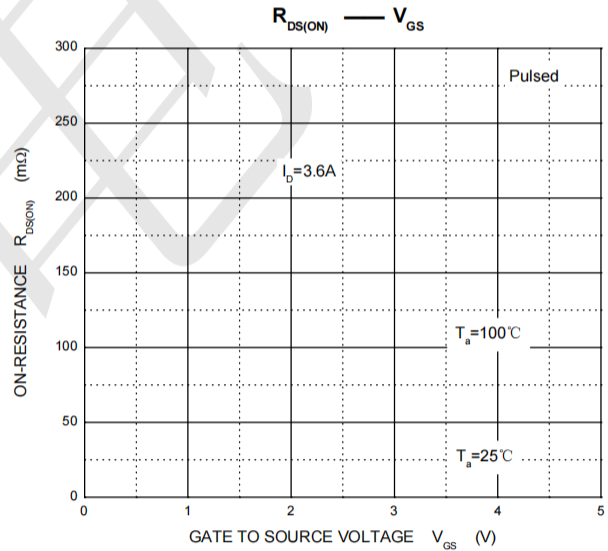
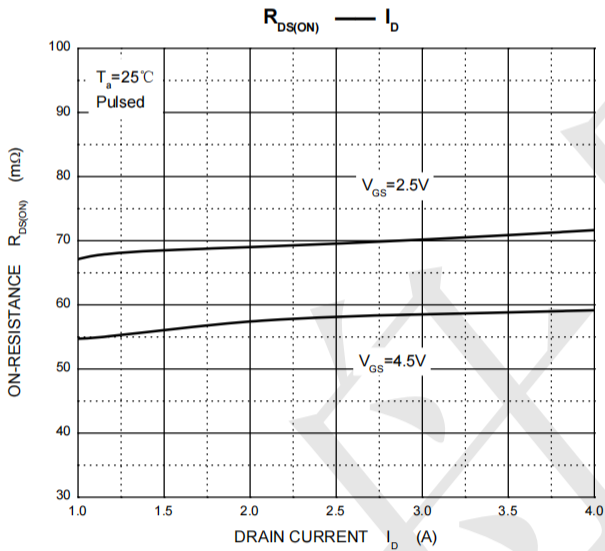
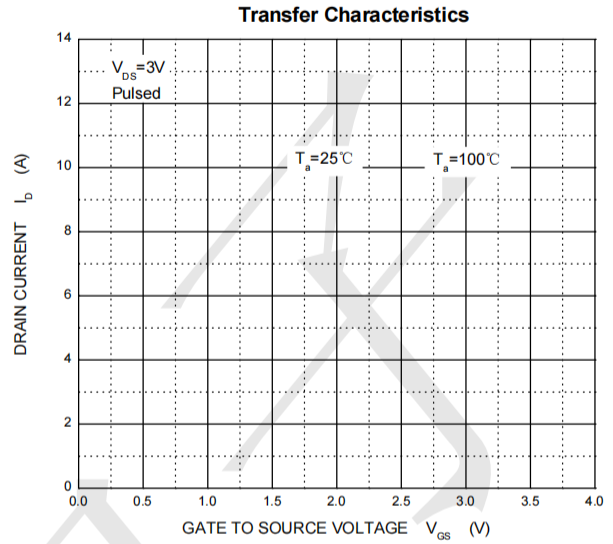
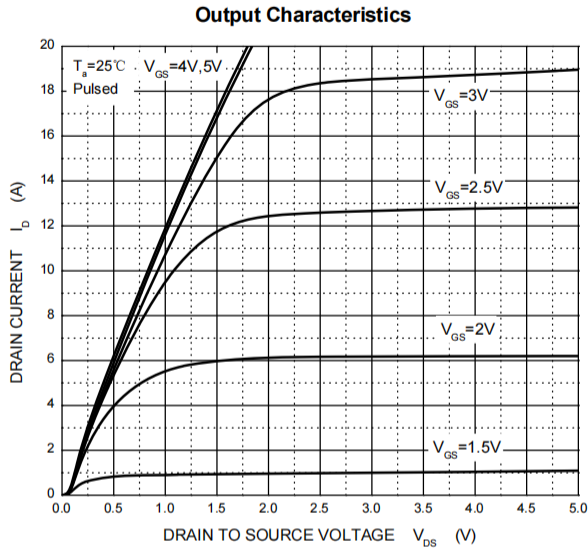
Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	
Continuous Drain Current	$I_D$	2.1	A
Continuous Source-Drain Current(Diode Conduction)	$I_S$	0.6	
Power Dissipation	$P_D$	0.2	W
Thermal Resistance from Junction to Ambient ( $t \leq 5s$ )	$R_{\theta JA}$	625	$^{\circ}\text{C}/\text{W}$
Operating Junction	$T_J$	150	$^{\circ}\text{C}$
Storage Temperature	$T_{STG}$	-55 ~ +150	

Electrical Characteristics ( $T_J=25\text{ }^\circ\text{C}$ , unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 10\mu A$	20			V
Gate-threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 50\mu A$	0.65	0.95	1.2	V
Gate-body leakage	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 8V$			$\pm 100$	nA
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 20V, V_{GS} = 0V$			1	$\mu A$
Drain-source on-resistance <sup>1</sup>	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 3.6A$		0.065	0.075	$\Omega$
		$V_{GS} = 2.5V, I_D = 3.1A$		0.070	0.120	
Forward transconductance <sup>1</sup>	$g_{fs}$	$V_{DS} = 5V, I_D = 3.6A$		8		S
Diode forward voltage	$V_{SD}$	$I_S = 0.94A, V_{GS} = 0V$		0.76	1.2	V
<b>Dynamic Characteristics</b>						
Total gate charge	$Q_g$	$V_{DS} = 10V, V_{GS} = 4.5V, I_D = 3.6A$		4.0	10	nC
Gate-source charge	$Q_{gs}$			0.65		
Gate-drain charge	$Q_{gd}$			1.5		
Input capacitance <sup>2</sup>	$C_{iss}$	$V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$		300		pF
Output capacitance <sup>2</sup>	$C_{oss}$			120		
Reverse transfer capacitance <sup>2</sup>	$C_{rss}$			80		
<b>Switching Characteristics<sup>2</sup></b>						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 10V,$ $R_L = 5.5\Omega, I_D \approx 3.6A,$ $V_{GEN} = 4.5V, R_g = 6\Omega$		7	15	ns
Rise time	$t_r$			55	80	
Turn-off delay time	$t_{d(off)}$			16	60	
Fall time	$t_f$			10	25	

0.120

**Typical Electrical and Thermal Characteristics**





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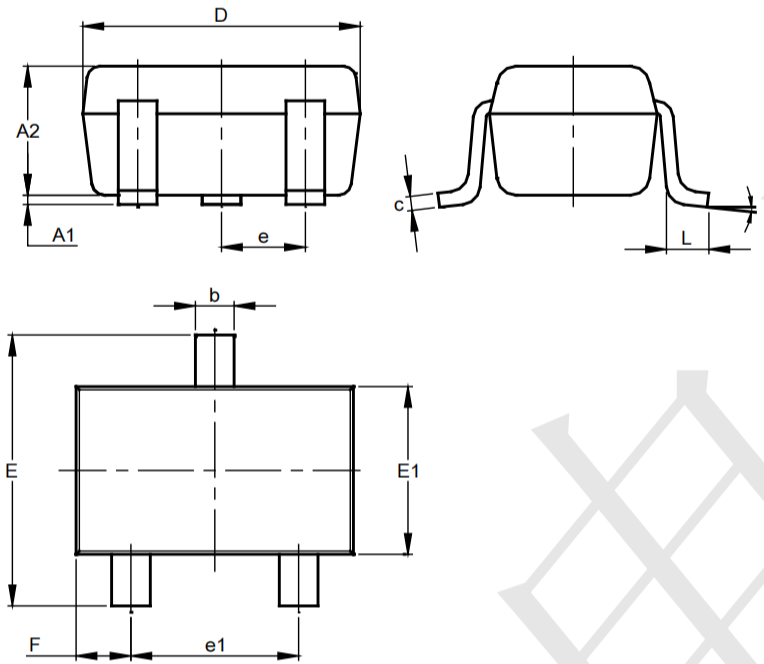
—台丹电子—

**TPM2102NLC3**

**N-Channel Enhancement Mode MOSFET**

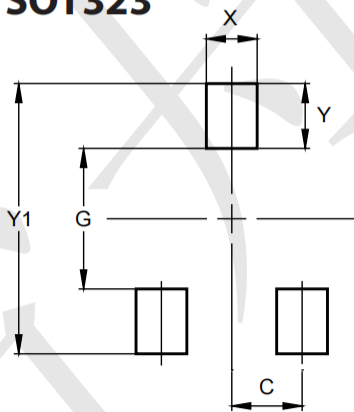
[www.sot23.com.tw](http://www.sot23.com.tw)

### Outline Drawing - SOT323(SC70-3)



SOT323			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.25	0.40	0.30
c	0.10	0.18	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
e1	1.20	1.40	1.30
F	0.375	0.475	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

### Land Pattern - SOT323



Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.470
Y	0.600
Y1	2.500