

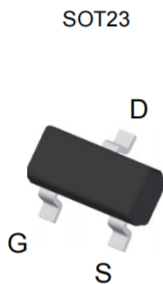
**General Features**

- $V_{DS} = 100V, I_D = 3.5A$
- $R_{DS(ON)} < 130m\Omega @ V_{GS}=10V$  (96m $\Omega$  Typ)
- $R_{DS(ON)} < 180m\Omega @ V_{GS}=4.5V$  (140m $\Omega$  Typ)

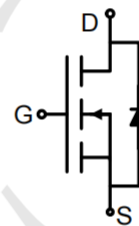
**Application**

- Load/Power Switching
- Interfacing Switching
- Battery Management for Ultra Small Portable
- Logic Level Shift

**Package and Pin Configuration**



**Circuit diagram**



**Marking:**



“P” is TECHPUBLIC LOGO  
“3NKT” is Part number, fixed

**Absolute Maximum Ratings ( $T_A=25^\circ C$  unless otherwise noted)**

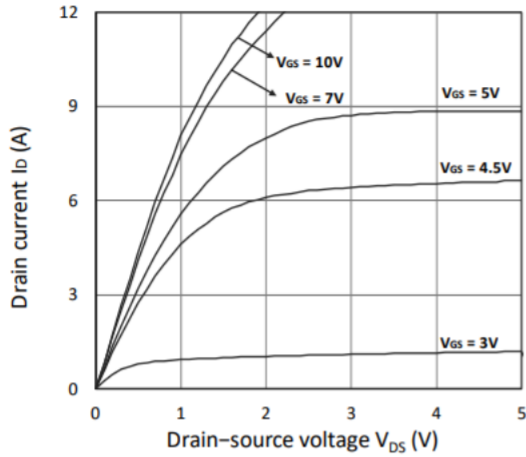
Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous	$I_D$	3.5	A
Drain Current-Pulsed <sup>(Note 1)</sup>	$I_{DM}$	20	A
Maximum Power Dissipation	$P_D$	1.5	W
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 To 175	$^\circ C$

**Thermal Characteristic**

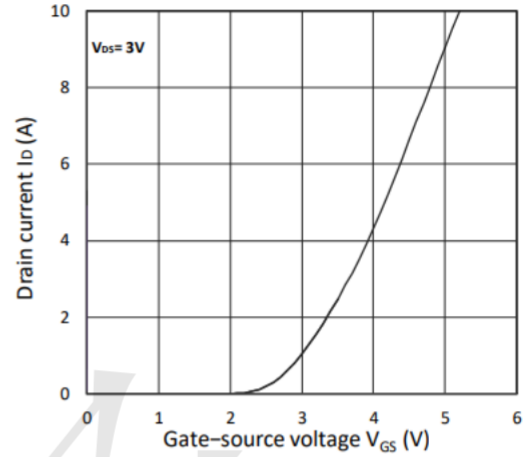
Thermal Resistance, Junction-to-Ambient <sup>(Note 2)</sup>	$R_{\theta JA}$	100	$^\circ C/W$
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**Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)**

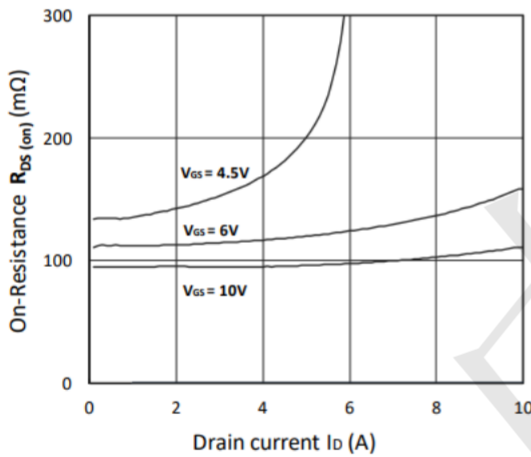
Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	100	-	-	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =100V, V <sub>GS</sub> =0V	-	-	1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±100	nA
<b>On Characteristics</b> (Note 3)						
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0	1.5	2.0	V
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =3A	-	96	130	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =1A	-	140	180	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =3A	-	5	-	S
<b>Dynamic Characteristics</b> (Note 4)						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =50V, V <sub>GS</sub> =0V, F=1.0MHz	-	650	-	PF
Output Capacitance	C <sub>oss</sub>		-	24	-	PF
Reverse Transfer Capacitance	C <sub>rss</sub>		-	20	-	PF
<b>Switching Characteristics</b> (Note 4)						
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =50V, R <sub>L</sub> =19Ω V <sub>GS</sub> =10V, R <sub>G</sub> =3Ω	-	6	-	nS
Turn-on Rise Time	t <sub>r</sub>		-	4	-	nS
Turn-Off Delay Time	t <sub>d(off)</sub>		-	20	-	nS
Turn-Off Fall Time	t <sub>f</sub>		-	4	-	nS
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =50V, I <sub>D</sub> =3A, V <sub>GS</sub> =10V	-	20	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	2.1	-	nC
Gate-Drain Charge	Q <sub>gd</sub>		-	3.3	-	nC
<b>Drain-Source Diode Characteristics</b>						
Diode Forward Voltage (Note 3)	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =3A	-	-	1.2	V
Diode Forward Current (Note 2)	I <sub>S</sub>			3.5		A



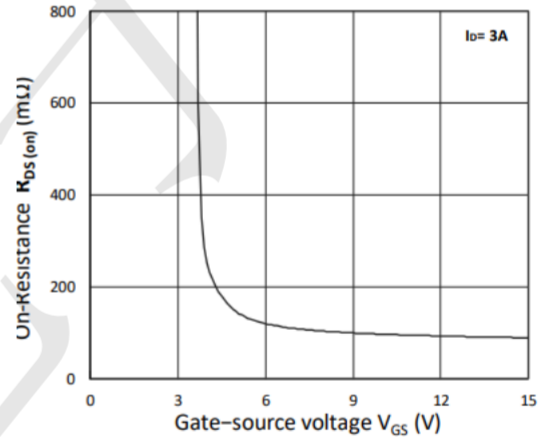
**Figure 1. Output Characteristics**



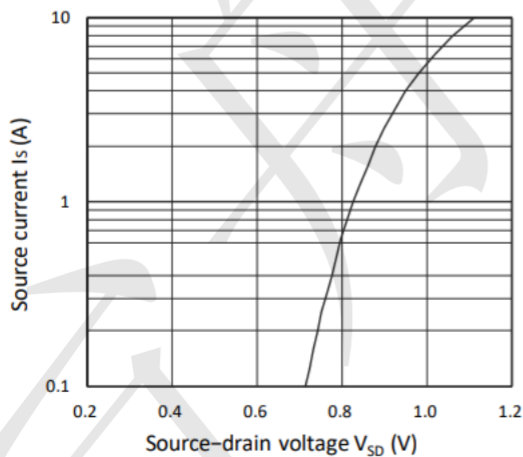
**Figure 2. Transfer Characteristics**



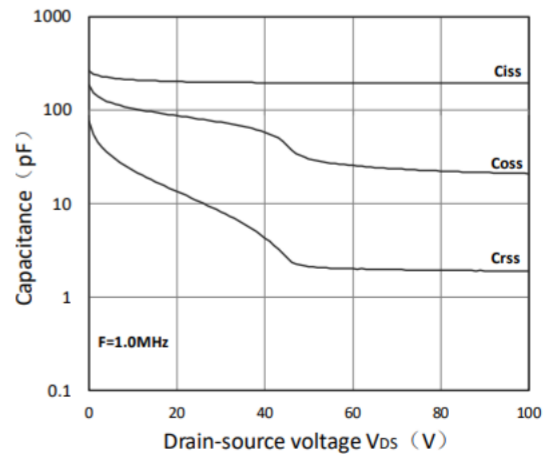
**Figure 3.  $R_{DS(ON)}$  VS.  $I_D$**



**Figure 4.  $R_{DS(ON)}$  VS.  $V_{GS}$**

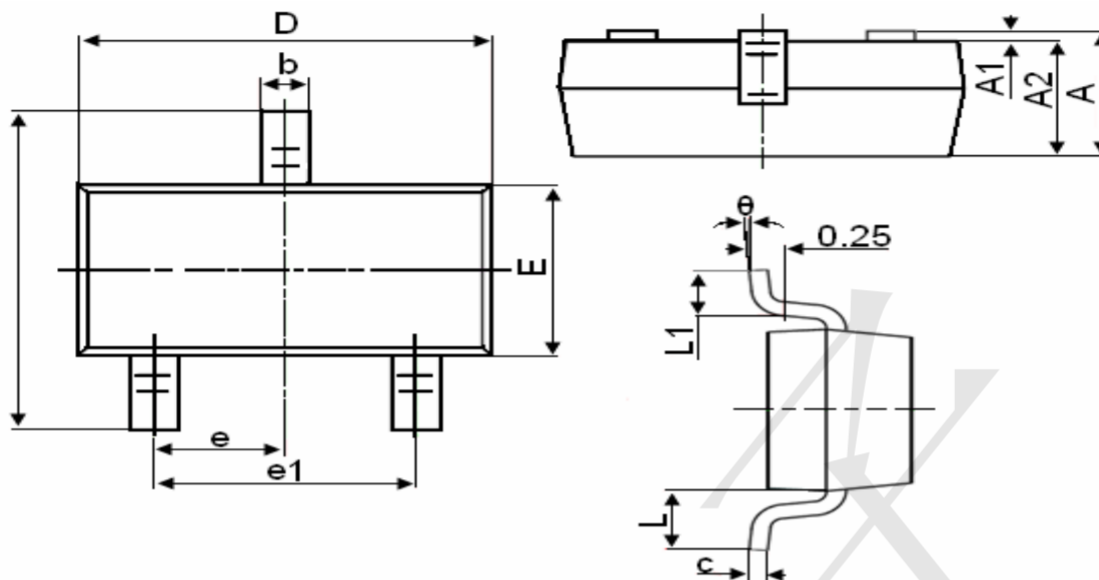


**Figure 5.  $I_S$  VS.  $V_{SD}$**



**Figure 6. Capacitance Characteristics**

**Package Outline Dimensions (SOT-23)**



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°