晧科
SHIKUES

SK301N

N-Channel Enhancement Mode MOSFET

$R_{DS(ON)} \leqq 0.6\ \Omega$ @ $V_{GS} = 4.5$ V
$R_{DS(ON)} \leqq 0.7\ \Omega$ @ $V_{GS} = 2.5$ V
BV ≧ 25 V $P_{tot} \leqq 0.83$ W $I_D \leqq 0.95$ A

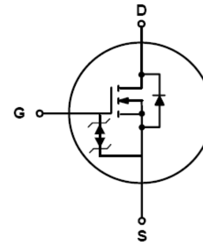
Features

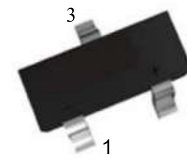
·Surface-mounted package
·Extremely low threshold voltage
·Advanced trench cell design
·ESD protected

Applications

·Portable appliances

SOT-23





1：Gate 2：Source 3：Drain

Limiting Values

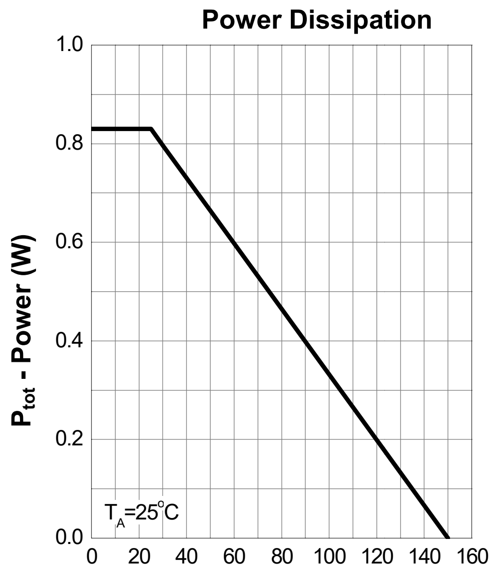
Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	T_A = 25 ℃	-	25	V
V_{GS}	Gate-Source Voltage	T_A = 25 ℃	-	±10	V
I_D*	Drain Current	T_A = 25 ℃, V_{GS} = 4.5 V	-	0.95	A
I_{DM}*,**	Pulsed Drain Current	T_A = 25 ℃, V_{GS} = 4.5 V	-	3.8	A
P_{tot}*	Total Power Dissipation	T_A = 25 ℃	-	0.83	W
		T_A = 100 ℃	-	0.33	
T_{stg}	Storage Temperature		- 55	150	℃
T_J	Junction Temperature		-	150	℃
I_S*	Diode Forward Current	T_A = 25 ℃	-	3.8	A
$R_{\theta JA}$*	Thermal Resistance- Junction to Ambient		-	150	℃ / W

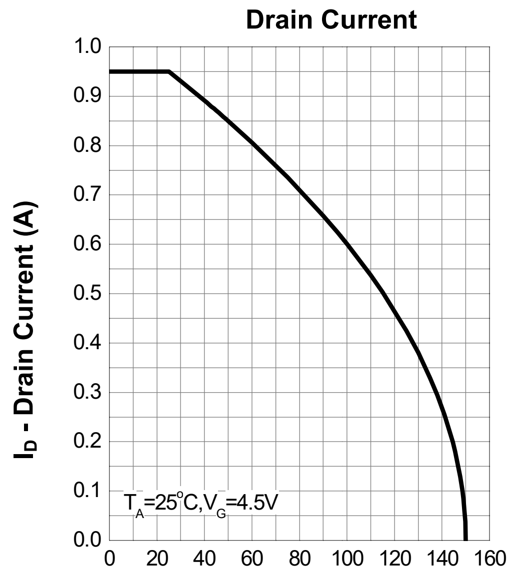
Notes：* Surface Mounted on 1 in^2 pad area, t ≤ 10 sec   ** Pulse width ≤ 300 μs, duty cycle ≤ 2 %

Electrical Characteristics (Ta = 25 °C Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_{DS} = 250 μA	25	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_{DS} = 250 μA	0.4	0.7	1.1	V
I_{DSS}	Drain Leakage Current	V_{DS} = 25 V, V_{GS} = 0 V	-	-	1	μA
		T_J = 85 ℃	-	-	30	μA
I_{GSS}	Gate Leakage Current	V_{GS} = ± 10 V, V_{DS} = 0 V	-	-	± 10	μA
$R_{DS(ON)}$[a]	On-State Resistance	V_{GS} = 4.5 V, I_{DS} = 0.5 A	-	0.5	0.6	Ω
		V_{GS} = 2.5 V, I_{DS} = 0.2 A	-	0.55	0.7	
Diode Characteristics						
V_{SD}[a]	Diode Forward Voltage	I_{SD} = 0.5 A, V_{GS} = 0 V	-	-	1.3	V
t_{rr}	Reverse Recovery Time	I_{SD} = 0.5 A, dI_{SD} / dt = 100 A / μs	-	40	-	ns
Q_{rr}	Reverse Recovery Charge		-	39	-	nC
Dynamic Characteristics[b]						
C_{iss}	Input Capacitance	V_{GS} = 0 V, V_{DS} = 10 V Frequency = 1 MHz	-	30	-	pF
C_{oss}	Output Capacitance		-	3	-	
C_{rss}	Reverse Transfer Capacitance		-	1	-	
t_d(on)	Turn-on Delay Time	V_{DS} = 30 V, V_{GEN} = 10 V, R_G = 25 Ω, R_L = 60 Ω, I_{DS} = 0.95 A	-	3.6	-	ns
t_r	Turn-on Rise Time		-	3.3	-	
t_d(off)	Turn-off Delay Time		-	20	-	
t_f	Turn-off Fall Time		-	11	-	
Q_g	Total Gate Charge	V_{GS} = 4.5 V, V_{DS} = 10 V, I_{DS} = 0.95 A	-	0.6	-	pC
Q_{gs}	Gate-Source Charge		-	0.26	-	
Q_{gd}	Gate-Drain Charge		-	0.17	-	

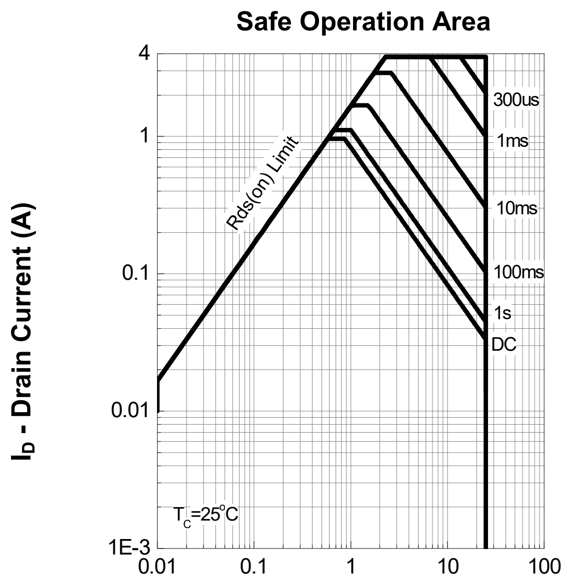
Notes：a : Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2 %   b : Guaranteed by design, not subject to production testing

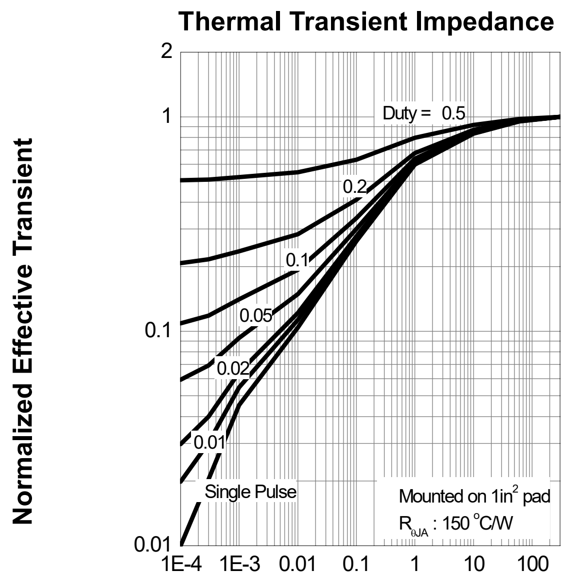




T_j - Junction Temperature (° C)

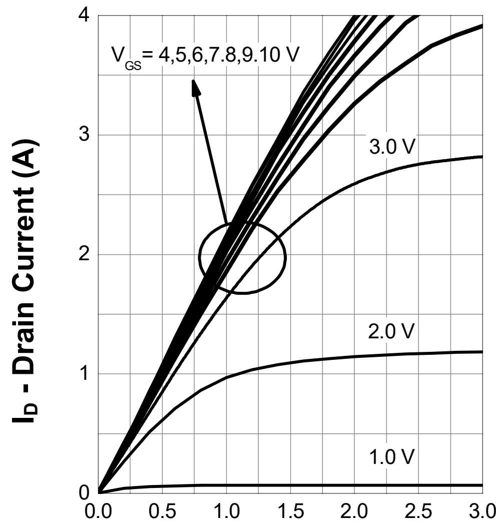
T_j - Junction Temperature (° C)

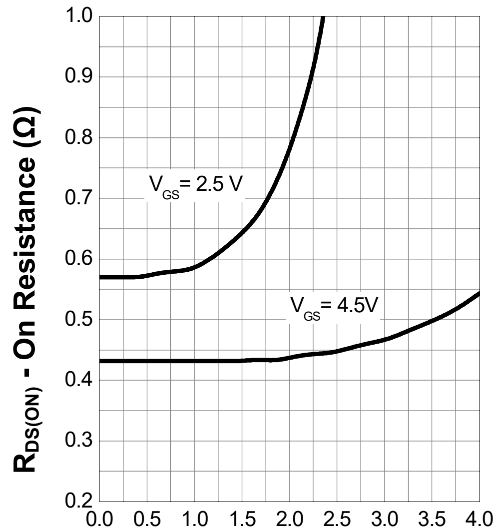


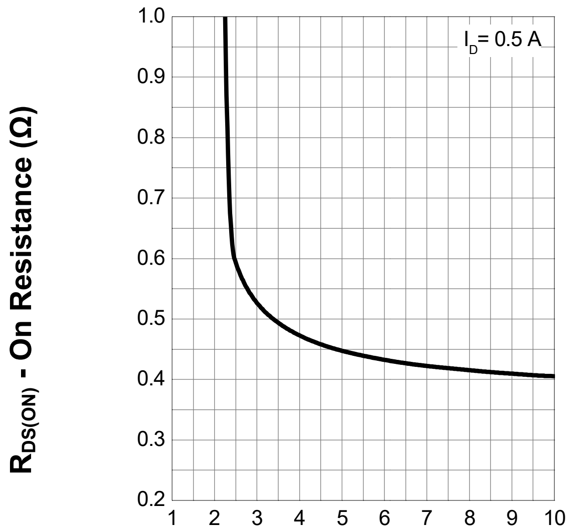


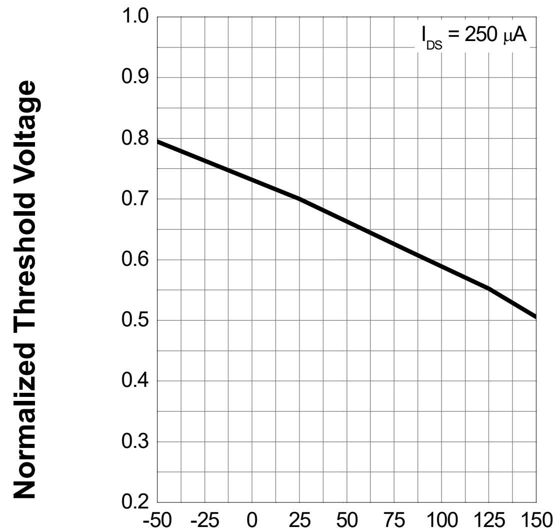
V_{DS} - Drain-Source Voltage (V)

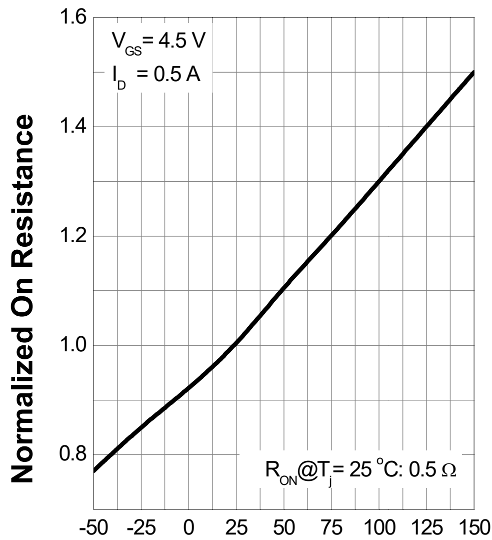
Square Wave Pulse Duration (sec)


Output Characteristics
I_D - Drain Current (A)
V_{GS}= 4,5,6,7.8,9.10 V
3.0 V
2.0 V
1.0 V
0
1
2
3
4
0.0
0.5
1.0
1.5
2.0
2.5
3.0
V_{DS} - Drain-Source Voltage (V)

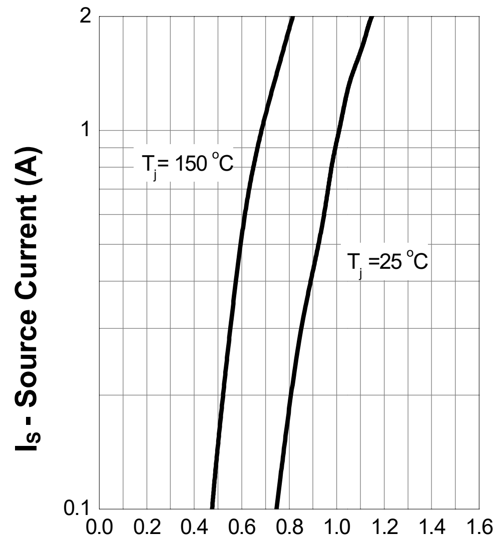

Drain-Source On Resistance
$R_{DS(ON)}$ - On Resistance (Ω)
V_{GS}= 2.5 V
V_{GS}= 4.5V
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
I_D - Drain Current (A)


Transfer Characteristics
$R_{DS(ON)}$ - On Resistance (Ω)
I_D= 0.5 A
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1
2
3
4
5
6
7
8
9
10
V_{GS} - Gate-Source Voltage (V)

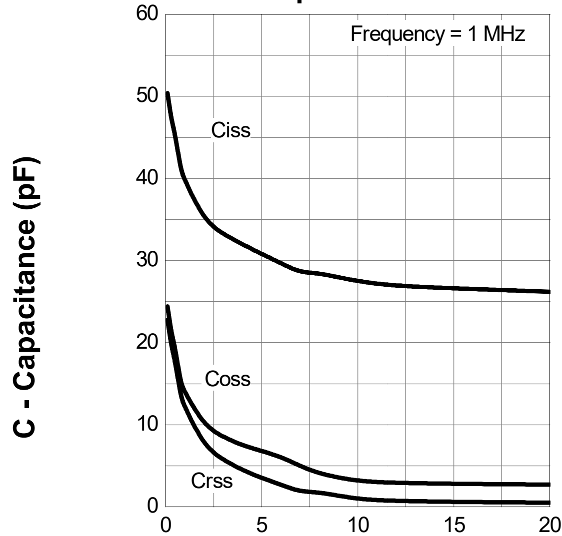

Gate Threshold Voltage
Normalized Threshold Voltage
I_{DS} = 250 μA
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
-50
-25
0
25
50
75
100
125
150
T_j - Junction Temperature (°C)



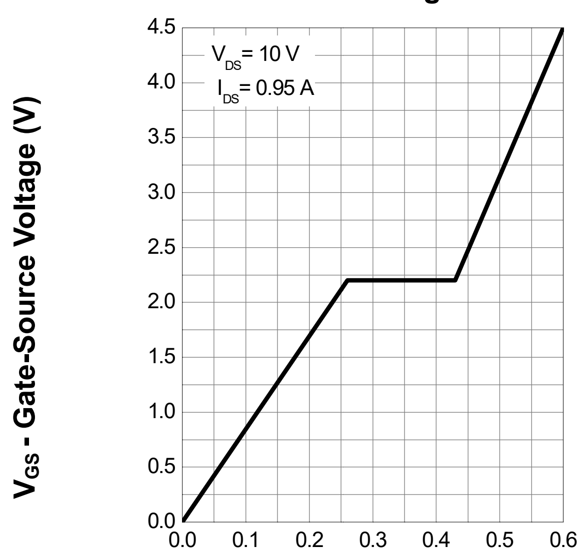
T_j - Junction Temperature (°C)



V_{SD} - Source-Drain Voltage (V)



V_{DS} - Drain-Source Voltage (V)



Q_G - Gate Charge (pC)