

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	1.5Ω@10V	0.22A
	1.8Ω@4.5V	

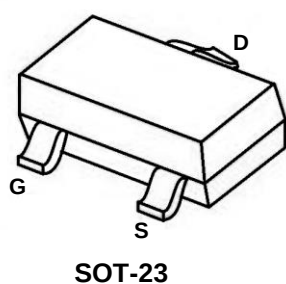
Feature

- High density cell design for extremely low $R_{DS(on)}$
- Rugged and Reliable

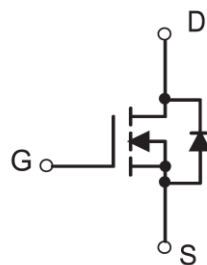
Application

- Direct Logic-Level Interface: TTL/CMOS
- Drivers: Relays, Solenoids, Lamps, Hammers, Display, Memories, Transistors, etc.
- Battery Operated Systems
- Solid-State Relays

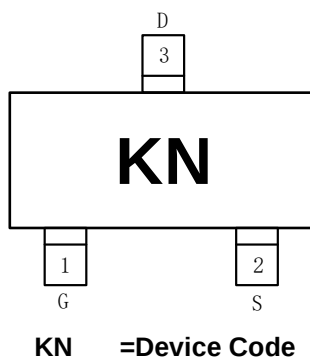
Package



Circuit diagram



Marking



**Absolute maximum ratings (Ta=25°C unless otherwise noted)**

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	0.22	A
Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	$^{\circ}\text{C}/\text{W}$
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}\text{C}$

Electrical characteristics (T_A=25 °C, unless otherwise noted)

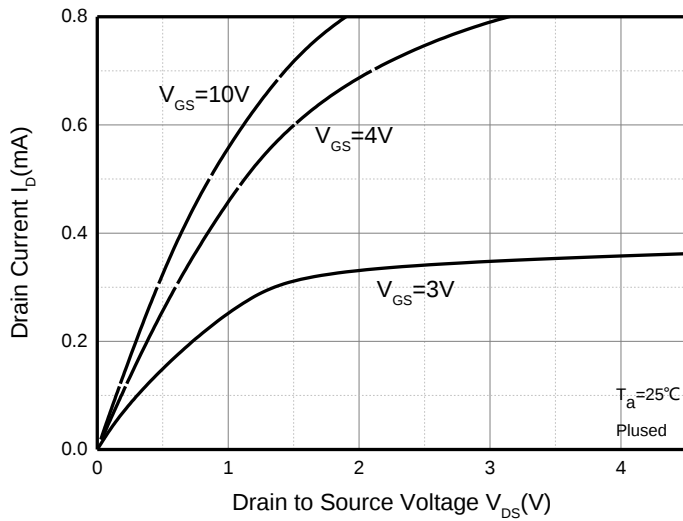
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	60			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =48V, V _{GS} = 0V			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} = 0V			±5	μA
Gate threshold voltage ¹⁾	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	0.8	1	1.45	V
Drain-source on-resistance ¹⁾	R _{DS(on)}	V _{GS} =10V, I _D =500mA		1.5	3	Ω
		V _{GS} =4.5V, I _D =200mA		1.8	4	
Dynamic characteristics ²⁾						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz		27		pF
Output Capacitance	C _{oss}			13		
Reverse Transfer Capacitance	C _{rss}			6		
Switching Characteristics ¹⁾²⁾						
Turn-on delay time	t _{d(on)}	V _{DD} =30V, I _D =0.29A, V _{GS} =10V, R _G =6Ω			5	nS
Rise time	tr				18	
Turn-off delay time	t _{d(off)}				36	
Fall tim	tf				14	
Total Gate Charge	Q _g	VGS=10V, VDS=15V, ID=1A	-	1.34	-	nC
Gate-Source Charge	Q _{gs}		-	0.29	-	
Gate-Drain Charge	Q _{gd}		-	0.2	-	
Source-Drain Diode characteristics						
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =500mA	0.5		1.4	V

Notes:

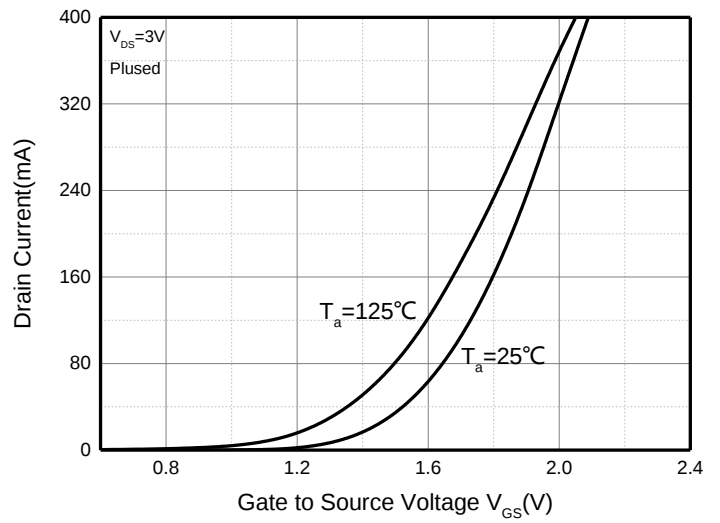
- 1) Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
- 2) These parameters have no way to verify.



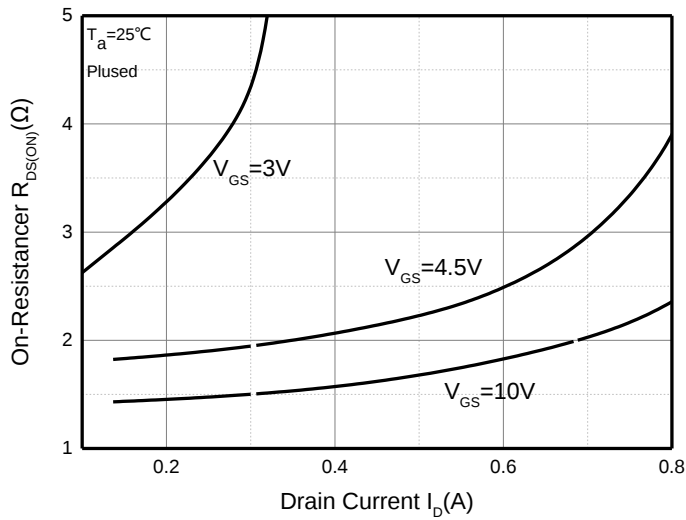
Typical Characteristics



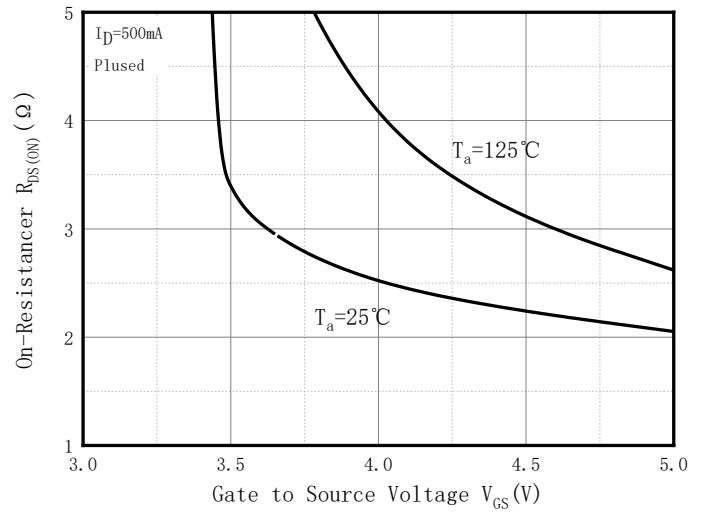
Output Characteristics



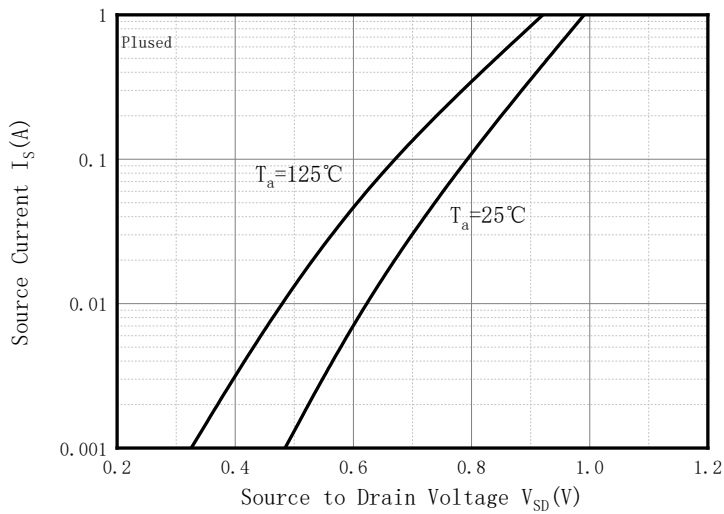
Transfer Characteristics



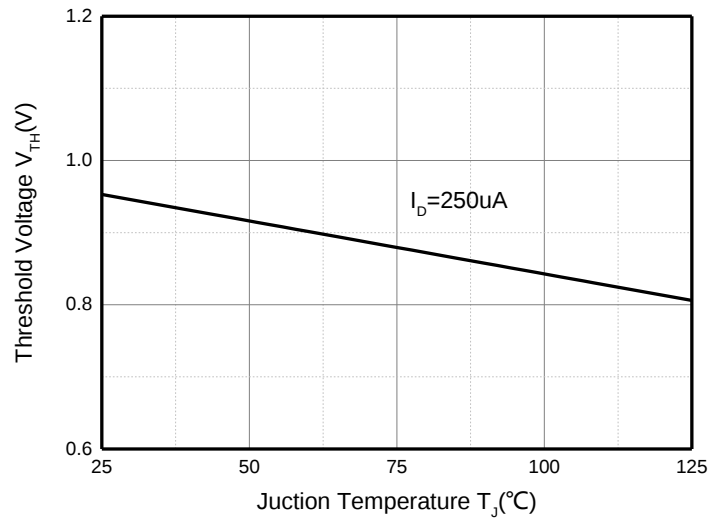
RDS(ON)— I_D



RDS(ON)— V_{GS}



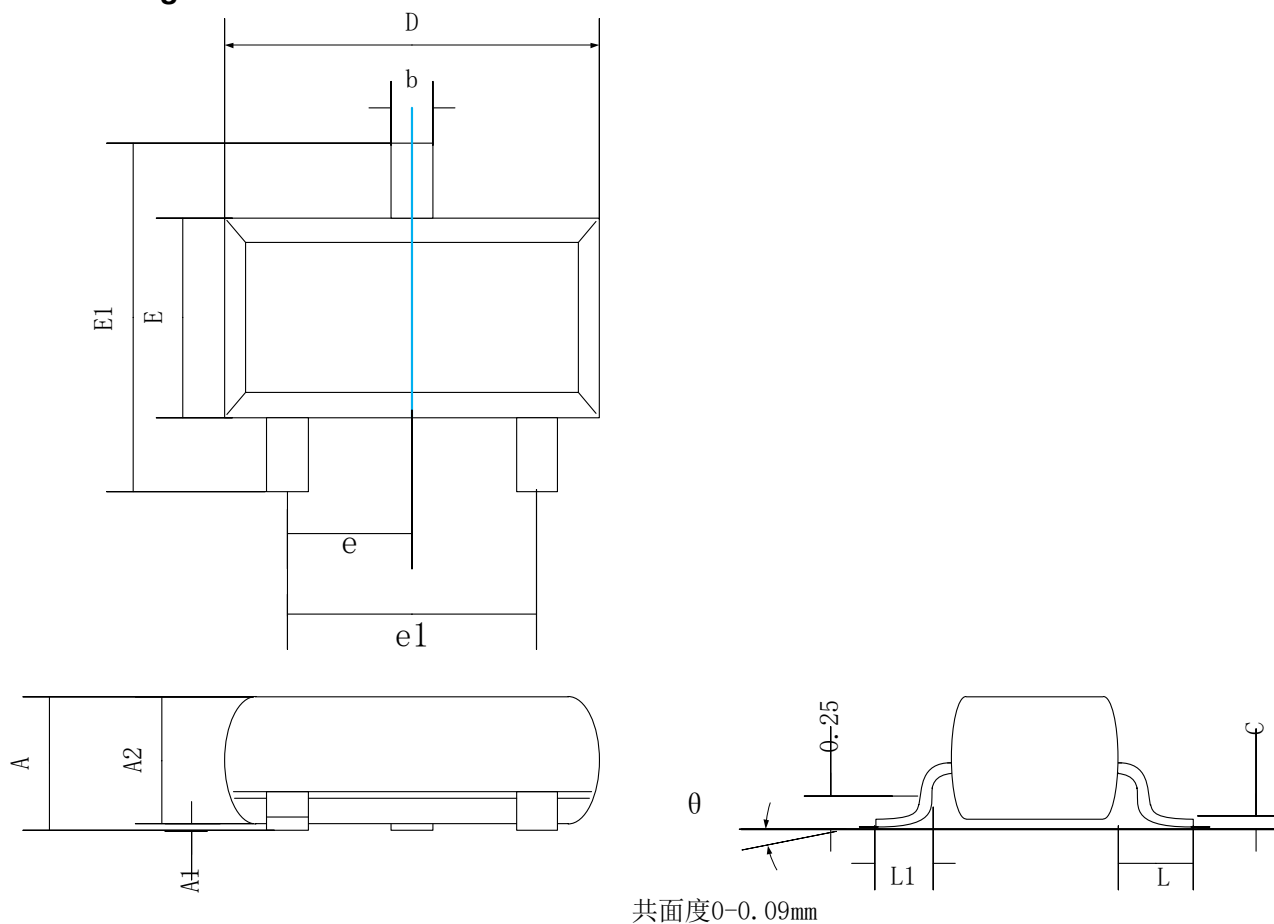
IS—VSD



Threshold Voltage



SOT-23 Package Information



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	0.90	1.15
A1	0.00	0.10
A2	0.90	1.05
b	0.30	0.50
c	0.08	0.15
D	2.80	3.00
E	1.20	1.40
E1	2.25	2.55
e	0.95 REF.	
e1	1.80	2.00
L	0.55 REF.	
L1	0.30	0.50
θ	0°	8°