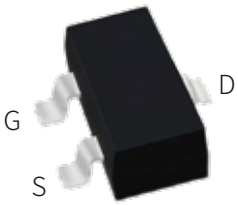
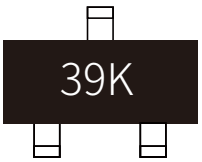
FEATURES

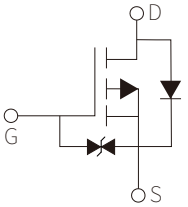
- P-Channel Switch with Low $R_{DS(on)}$
- Operated at Low Logic Level Gate Drive
- Load/Power Switching
- Interfacing, Logic Switching
- Battery Management for Ultra Small Portable Electronics



SOT-23



Marking



Schematic Symbol

MECHANICAL DATA

- SOT-23 Small Outline Plastic Package
- Epoxy UL: 94V-0
- Mounting Position: Any

APPROVALS

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

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Typical Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current(note 1)	I_D	-0.66	A
Pulsed Drain Current (tp=10μs)	I_{DM}	-1.2	A
Power Dissipation(note 1)	P_D	350	mW
Thermal Resistance from Junction to Ambient (note 1)	$R_{\theta JA}$	357	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 to 150	°C

ELECTRICAL CHARACTERISTICS (Ta=25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=-250μA	-20			V
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±10V,V_{DS}=0V			±20	μA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-20V,V_{GS}=0V			-1	μA
Gate Threshold Voltage(note 2)	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	-0.35		-1.2	V
Drain-Source On-Resistance(note 2)	$R_{DS(on)}$	V_{GS}=-4.5V,I_D=-1A		450	520	mΩ
		V_{GS}=-2.5V,I_D=-0.8A		570	700	mΩ
		V_{GS}=-1.8V,I_D=-0.5A		950		mΩ
Forward Transconductance	g_{FS}	V_{DS}=-10V,I_D=-540mA		1.2		S
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=-0.5A			-1.2	V
Dynamic Characteristics(note 4)						
Input Capacitance	C_{iss}	V_{DS}=-16V,V_{GS}=0V,f=1MHz		113	170	pF
Output Capacitance	C_{oss}			15	25	pF
Reverse Transfer Capacitance	C_{rss}			9	15	pF
Switching Characteristics(note 4)						
Turn–on Delay Time(note 3)	$t_{d(on)}$	V_{DS}=-10V,I_D=-200mA V_{GS}=-4.5V,R_{GEN}=10Ω		9		ns
Turn–on Rise Time(note 3)	t_r			5.8		ns
Turn–Off Delay Time(note 3)	$t_{d(off)}$			32.7		ns
Turn–off Fall Time (note 3)	t_f			20.3		ns

Notes :
1. Surface mounted on FR4 board using the minimum recommended pad size.
2. Pulse Test : Pulse Width=300μs, Duty Cycle=2%.
3. Switching characteristics are independent of operating junction temperatures.
4. Guaranteed by design, not subject to producting.

PARAMETER CHARACTERISTIC CURVE

Figure1: Output Characteristics

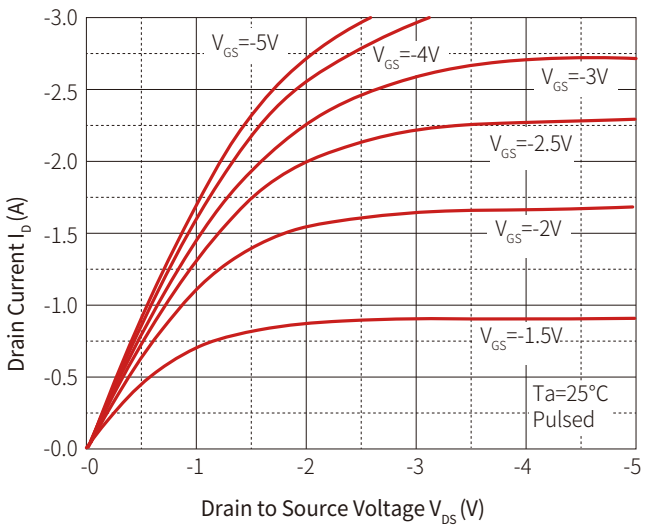


Figure2: Transfer Characteristics

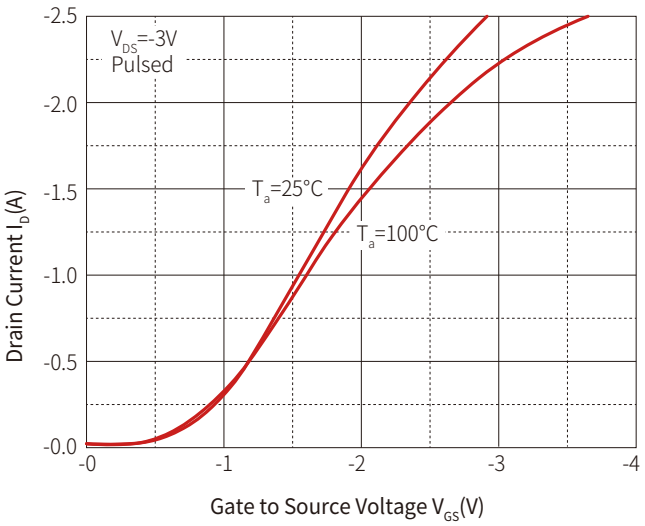


Figure3: $R_{DS(ON)}$——I_D

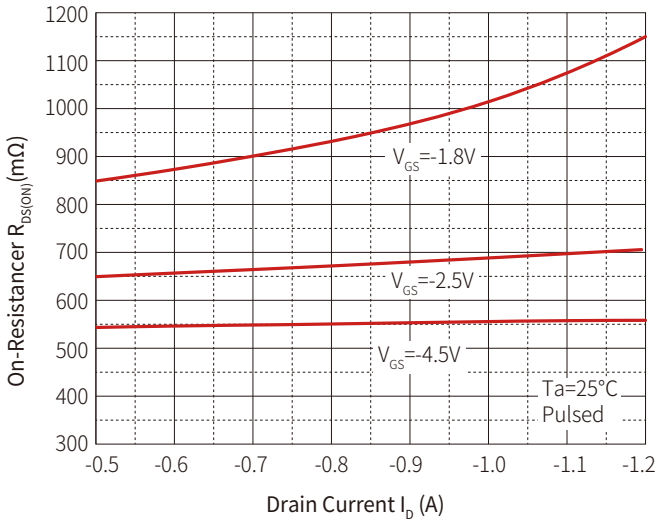


Figure 4: $R_{DS(ON)}$——V_{GS}

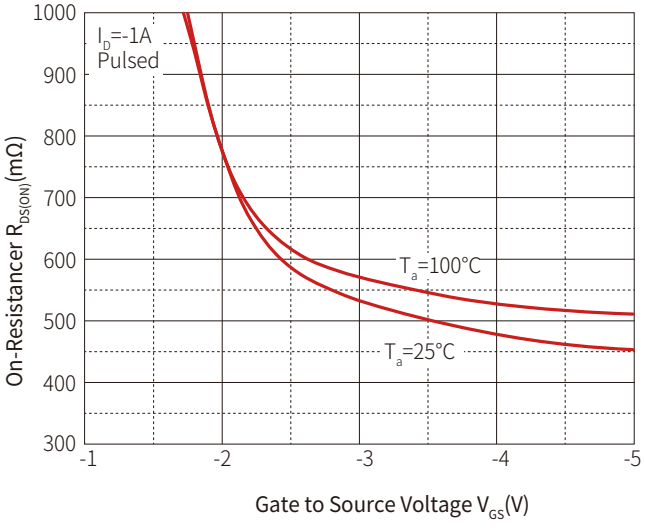


Figure 5: I_S——V_{SD}

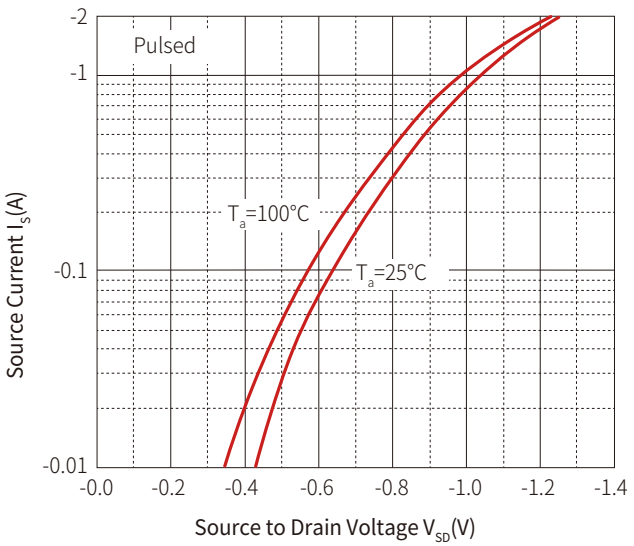
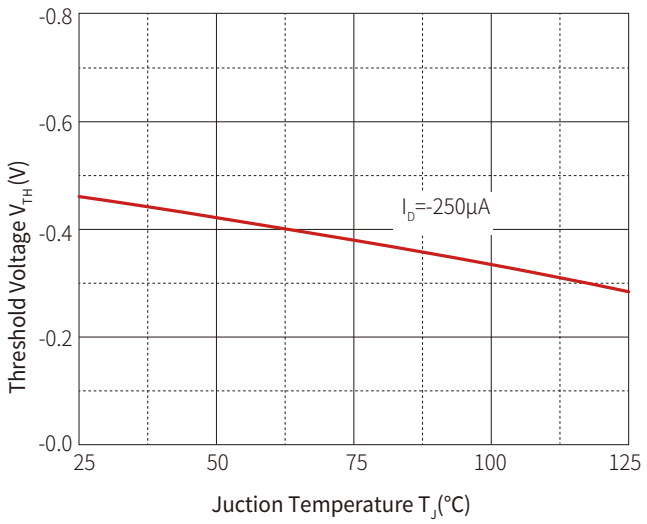
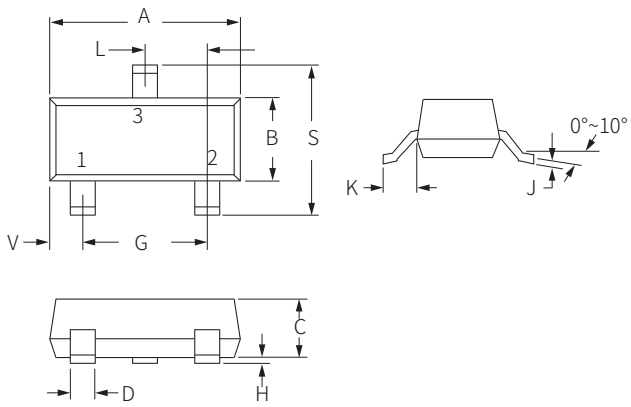


Figure 6: Threshold Voltage

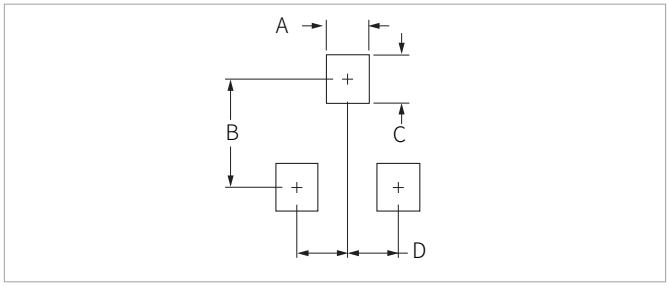


SOT-23 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.80	3.05	0.110	0.120
B	1.20	1.40	0.047	0.055
C	0.90	1.15	0.035	0.045
D	0.37	0.50	0.015	0.020
G	1.75	2.05	0.069	0.081
H	0.01	0.100	0.001	0.004
J	0.085	0.180	0.003	0.007
K	0.35	0.69	0.014	0.029
L	0.89	1.02	0.035	0.040
S	2.10	2.65	0.083	0.104
V	0.45	0.60	0.018	0.024

RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters		Inches	
	Min	Max	Min	Max
A	0.71	0.97	0.028	0.038
B	1.88	2.13	0.074	0.084
C	0.71	0.97	0.028	0.038
D	0.81	1.07	0.032	0.042

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SPM3139KS	SOT-23	3000PCS	7”

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