

Product Summary

$V_{(BR)DSS}$	$R_{DS(on) MAX}$	I_D
-100V	650mΩ@-10V	-1.0A

Feature

- The SI01P10 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

Application

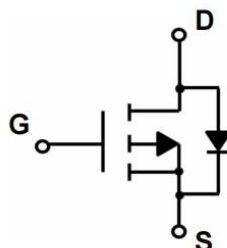
- Battery protection
- Load switch
- Uninterruptible power supply

Package



SOT-23

Circuit diagram



Marking: 0101

Absolute maximum ratings ($T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$-V_{DS}$	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	$-I_D$	1	A
Drain Current-Pulsed ^{Note1}	$-I_{DM}$	1.5	A
Maximum Power Dissipation	P_D	0.5	W
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^\circ\text{C}$

Thermal Characteristics

Thermal Resistance, Junction-to-Ambient ^{Note2}	$R_{\theta JA}$	250	$^\circ\text{C/W}$
--	-----------------	-----	--------------------

Electrical Characteristics (Ta=25°C unless otherwise specified)

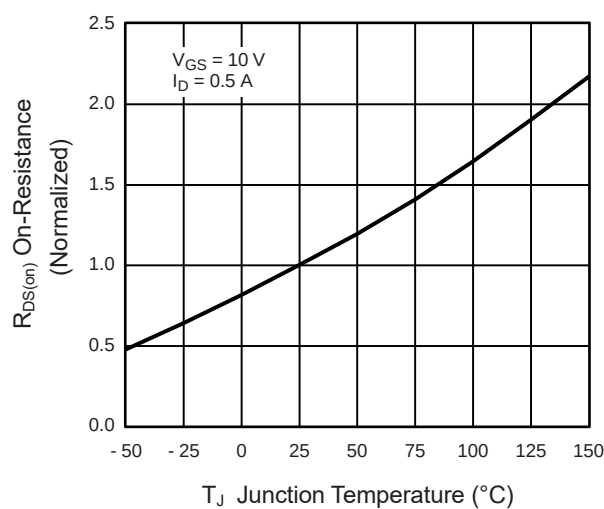
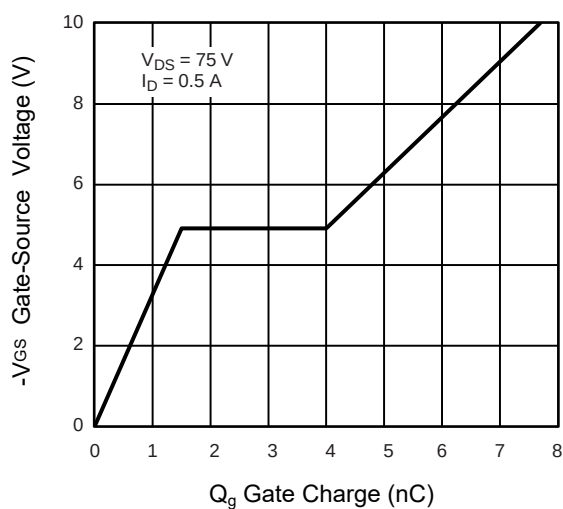
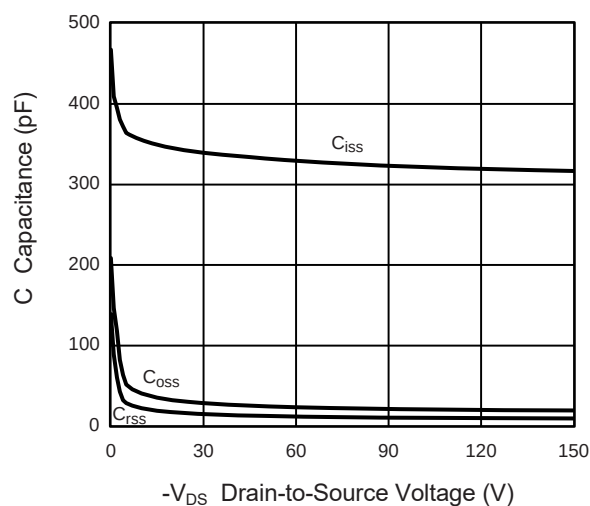
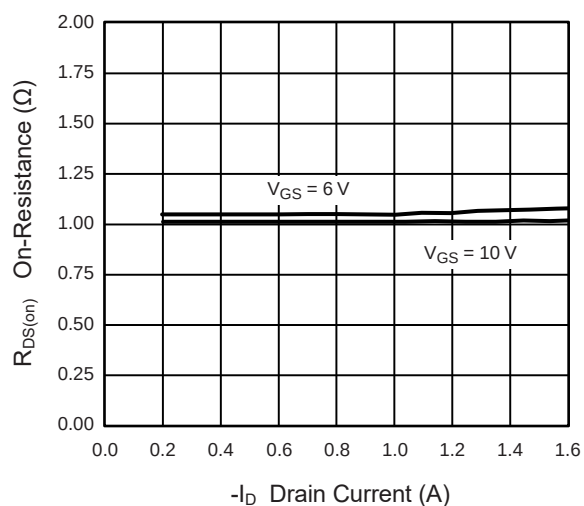
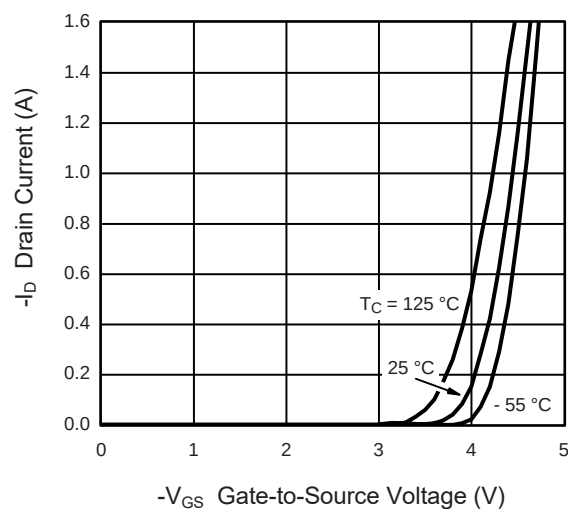
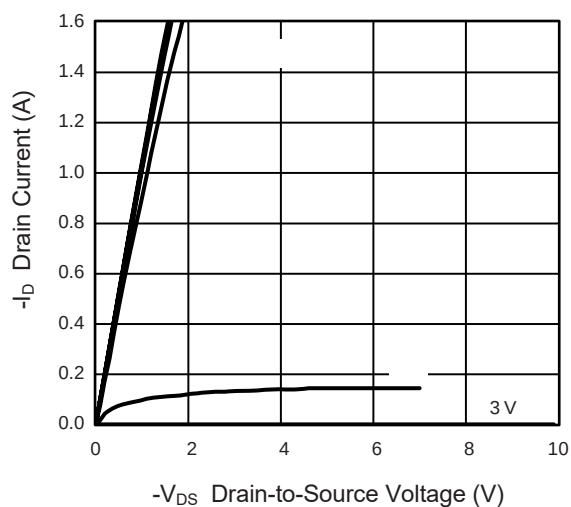
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$-V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	100	--	--	V
Zero Gate Voltage Drain Current	$-I_{DSS}$	$V_{DS}=-80V, V_{GS}=0V$	--	--	100	nA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	--	--	± 100	nA
Gate Threshold Voltage ^{Note3}	$-V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	1	--	2.5	V
Drain-Source On-Resistance ^{Note3}	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-1A$	--	--	650	mΩ
		$V_{GS}=-6V, I_D=-0.5A$	--	--	700	mΩ
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-50V, I_D=-1A$ $V_{GEN}=-10V, R_L=33\Omega, R_G=6\Omega$	--	7	11	nS
Turn-on Rise Time	t_r		--	11	17	nS
Turn-off Delay Time	$t_{d(off)}$		--	9	15	nS
Turn-off Fall Time	t_f		--	10	15	nS
Total Gate Charge	Q_g	$V_{DD}=-50V, I_D=-1A, V_{GS}=-10V$	--	3.3	4	nC
Gate-Source Charge	Q_{gs}		--	0.47	--	nC
Gate-Drain Charge	Q_{gd}		--	1.45	--	nC
Source-Drain Diode Characteristics						
Diode Forward Voltage ^{Note3}	$-V_{SD}$	$V_{GS}=0V, I_S=-0.5A$	--	--	1.3	V
Diode Forward Current ^{Note2}	$-I_S$		--	--	1	A

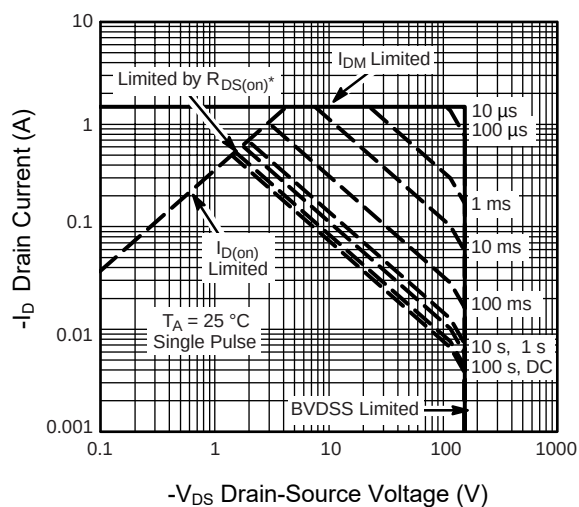
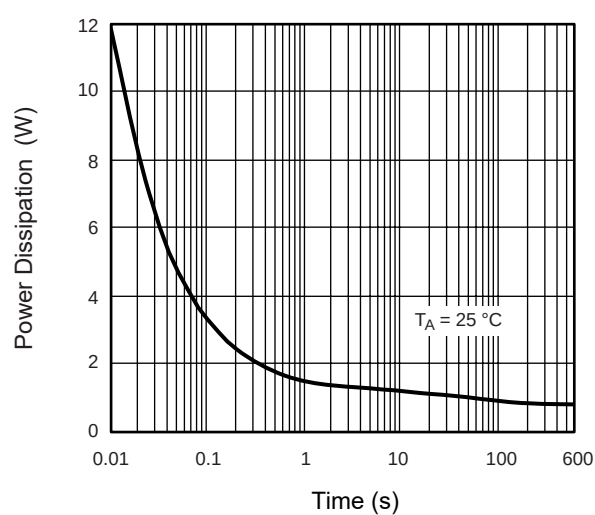
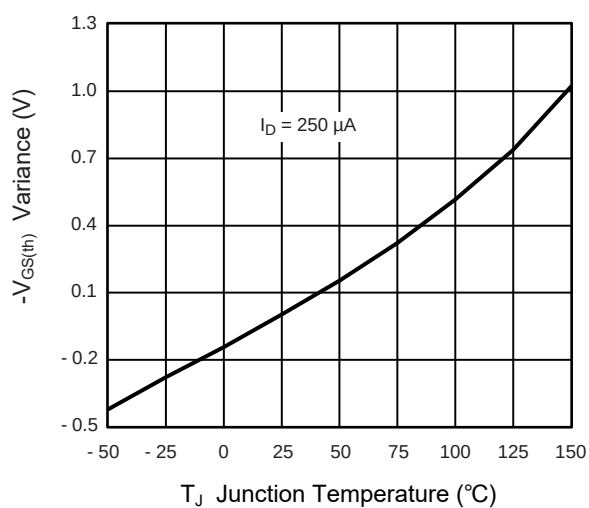
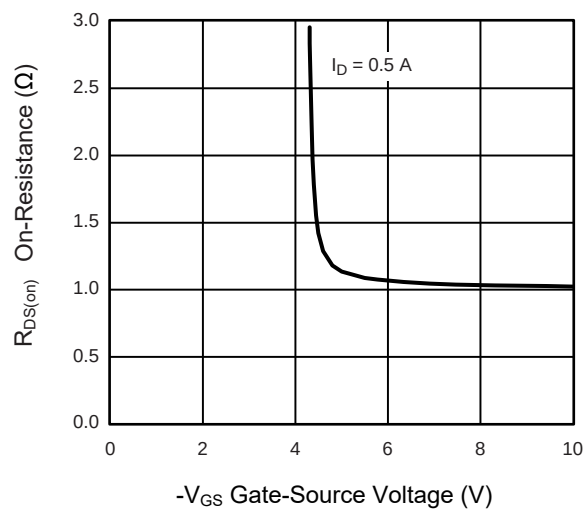
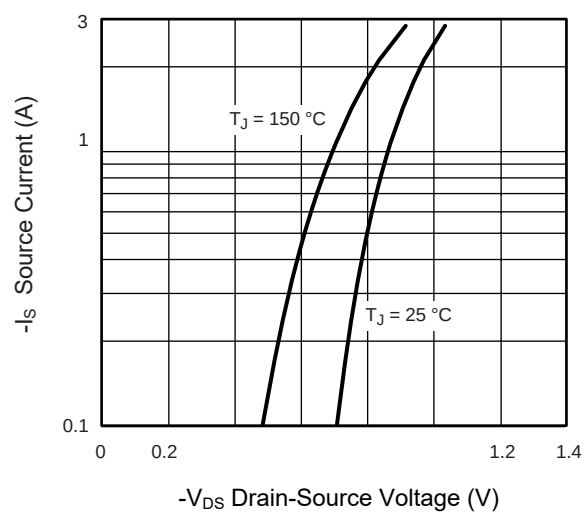
Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

 2. Surface Mounted on FR4 Board, $t \leq 10$ sec.

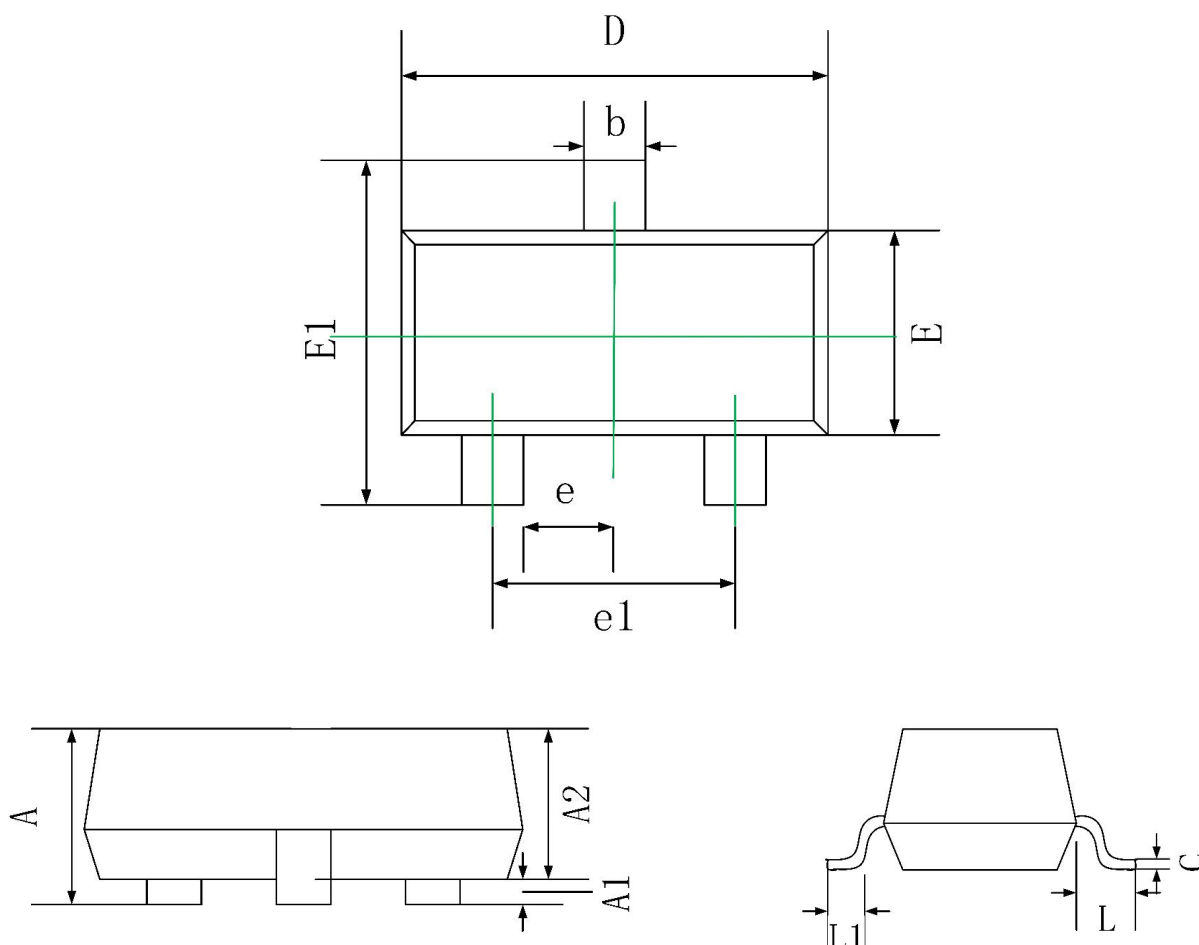
 3. Pulse Test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Typical Characteristics





SOT-23 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020