

Description

The SX3H03LI uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

$V_{DS} = 30V$ $I_D = 3.8A$

$R_{DS(ON)} < 45m\Omega$ @ $V_{GS}=10V$

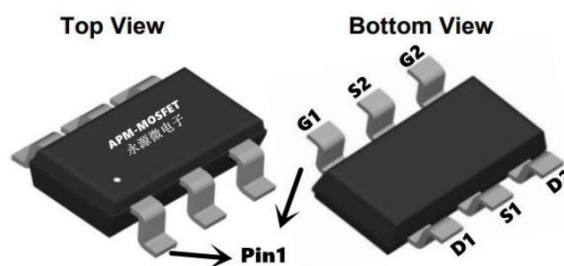
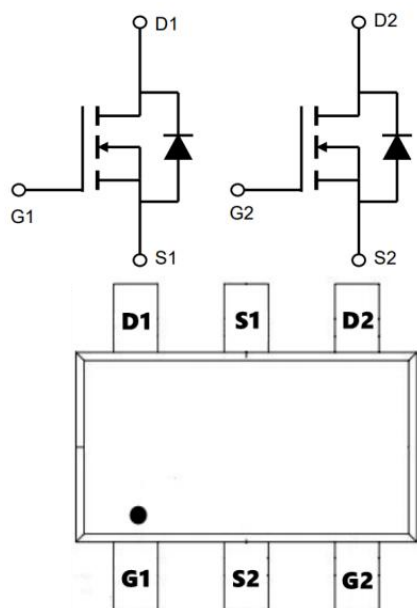
$R_{DS(ON)} < 48m\Omega$ @ $V_{GS}=4.5V$

Application

Battery protection

Load switch

Uninterruptible power supply



Absolute Maximum Ratings ($T_C=25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 12	V
$I_D @ T_A=25^{\circ}C$	Continuous Drain Current, V_{GS} @ 4.5V ¹	3.8	A
$I_D @ T_A=70^{\circ}C$	Continuous Drain Current, V_{GS} @ 4.5V ¹	2.8	A
I_{DM}	Pulsed Drain Current ²	13	A
$P_D @ T_A=25^{\circ}C$	Total Power Dissipation ³	0.7	W
T_{STG}	Storage Temperature Range	-55 to 150	$^{\circ}C$
T_J	Operating Junction Temperature Range	-55 to 150	$^{\circ}C$
$R_{\theta JA}$	Thermal Resistance Junction-ambient ¹	125	$^{\circ}C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	90	$^{\circ}C/W$

Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30	32	-	V
IDSS	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V,$	-	-	1.0	μA
IGSS	Gate to Body Leakage Current	$V_{DS}=0V, V_{GS}= \pm 12V$	-	-	± 100	nA
VGS(th)	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.9	1.4	V
RDS(on)	Static Drain-Source on-Resistance note2	$V_{GS}=10V, I_D=4A$	-	32	42	m Ω
RDS(on)	Static Drain-Source on-Resistancenote2	$V_{GS}=4.5V, I_D=3A$	-	36	48	
RDS(on)	Static Drain-Source on-Resistancenote2	$V_{GS}=2.5V, I_D=2A$	-	50	70	
Ciss	Input Capacitance	$V_{DS}=15V, V_{GS}=0V,$ $f=1.0\text{MHz}$	-	285	-	pF
Coss	Output Capacitance		-	33	-	pF
Crss	Reverse Transfer Capacitance		-	27	-	pF
Qg	Total Gate Charge	$V_{DS}=15V, I_D=4A,$ $V_{GS}=4.5V$	-	2.6	-	nC
Qgs	Gate-Source Charge		-	0.6	-	nC
Qgd	Gate-Drain("Miller") Charge		-	0.9	-	nC
td(on)	Turn-on Delay Time	$V_{DS}=15V,$ $I_D=2A, R_{GEN}=3\Omega,$ $V_{GS}=4.5V$	-	15	-	ns
tr	Turn-on Rise Time		-	42	-	ns
td(off)	Turn-off Delay Time		-	16	-	ns
tr	Turn-off Fall Time		-	10	-	ns
IS	Maximum Continuous Drain to Source Diode Forward Current		-	-	4	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	16	A
VSD	Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=4A$	-	-	1.2	V

Note :

- 1、The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2、The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3、The power dissipation is limited by 150°C junction temperature
- 4、The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

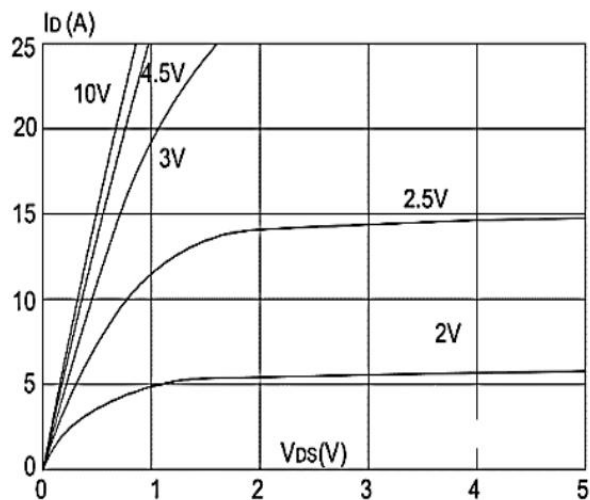


Figure1: Output Characteristics

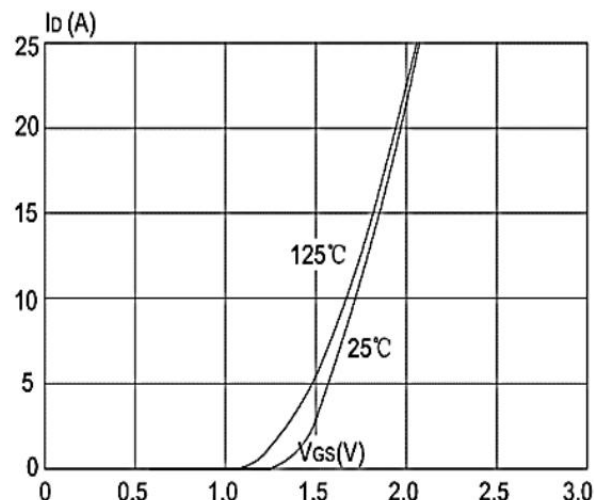


Figure 2: Typical Transfer Characteristics

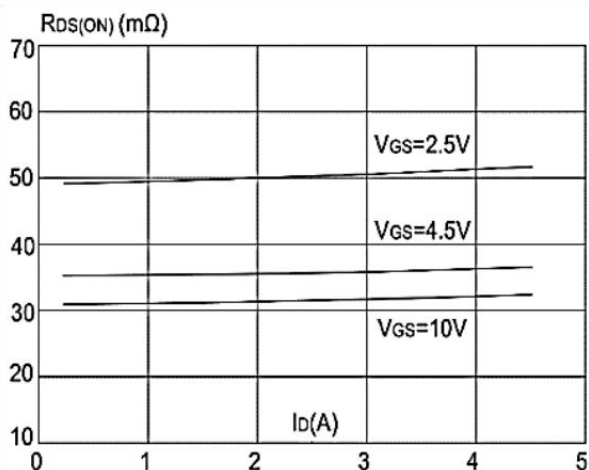


Figure 3: On-resistance vs. Drain Current

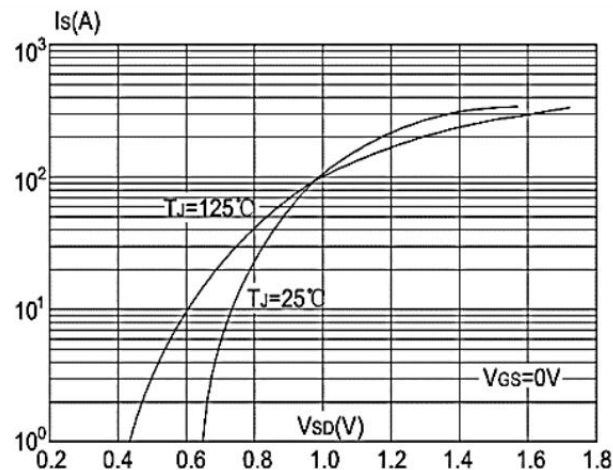


Figure 4: Body Diode Characteristics

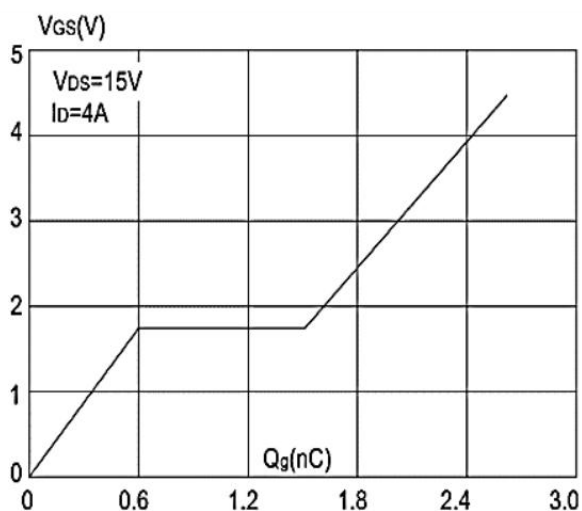


Figure 5: Gate Charge Characteristics

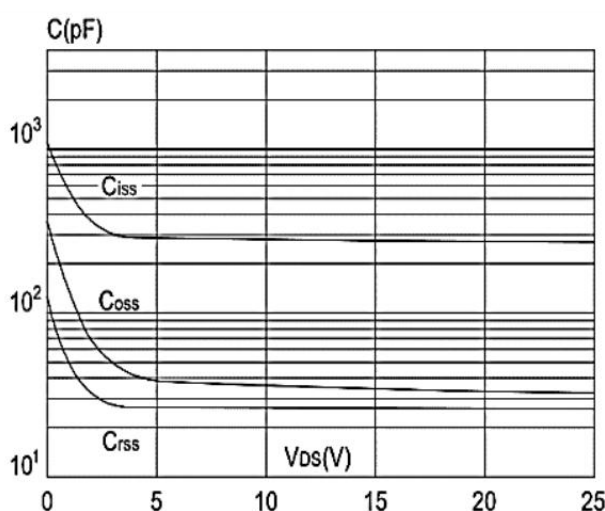


Figure 6: Capacitance Characteristics

Typical Characteristics

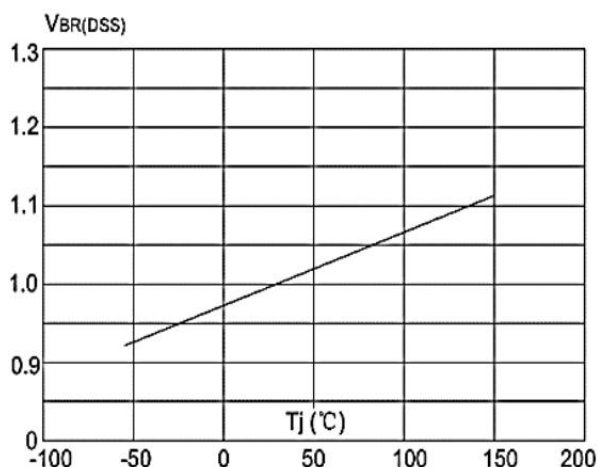


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

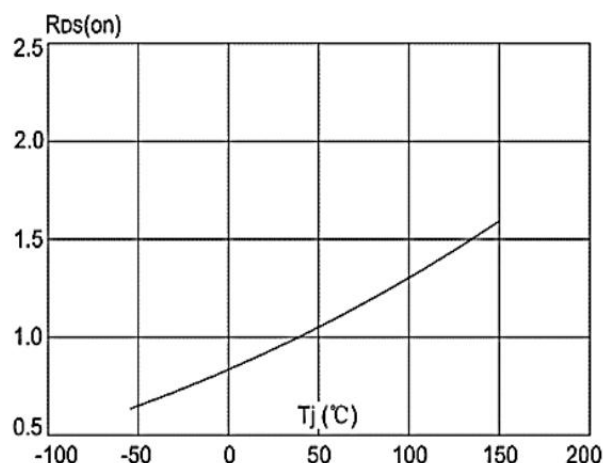


Figure 8: Normalized on Resistance vs. Junction Temperature

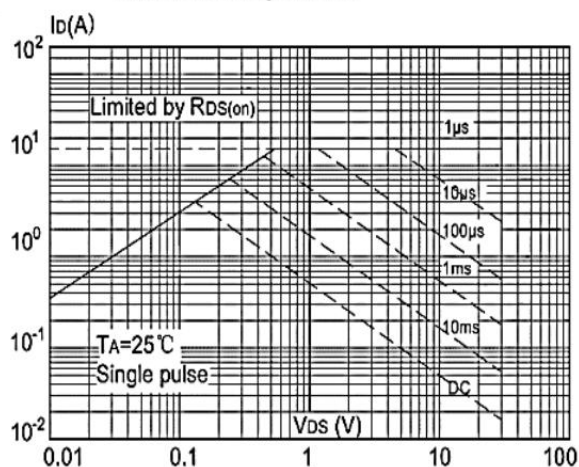


Figure 9: Maximum Safe Operating Area

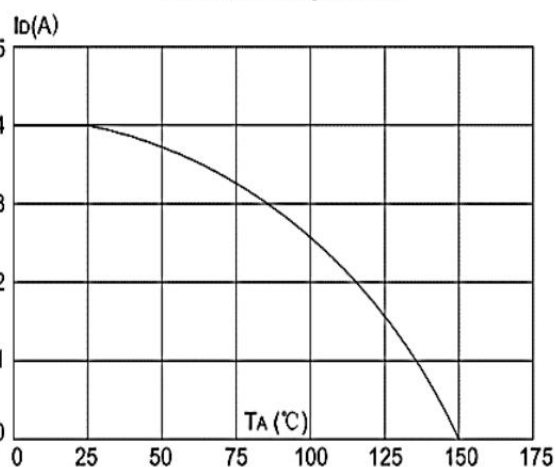


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

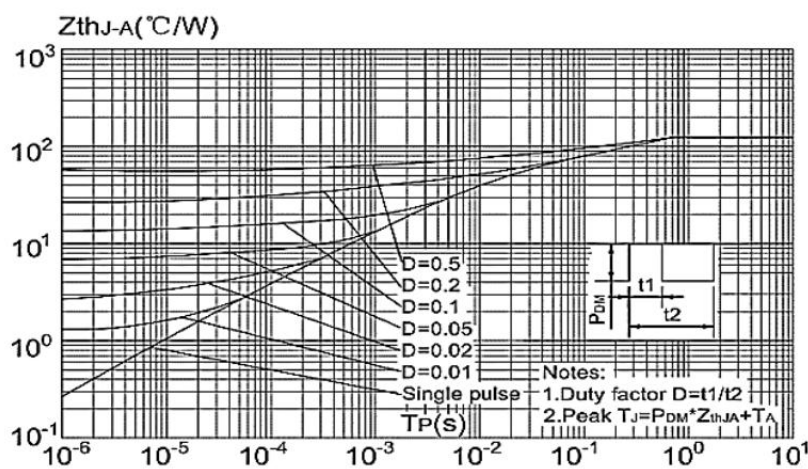
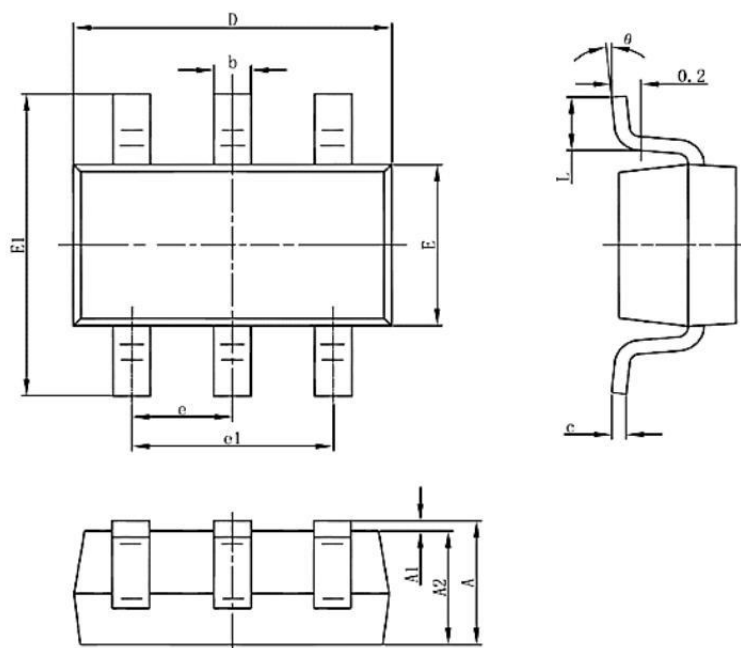


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambien

Package Mechanical Data-SOT23-6-Single



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
C	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950 (BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0	8	0	8

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	SOT23-6L		3000