



## Description

The SI2343DS-T1-BE3 uses advanced trench technology to provide excellent  $R_{DS(ON)}$ . This device is suitable for use as a load switch or in PWM applications.

## General Features

$V_{DS} = -30V, I_D = -4.2A$

$R_{DS(ON)} < 55m\Omega @ V_{GS} = -10V$

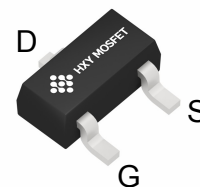
$R_{DS(ON)} < 75m\Omega @ V_{GS} = -4.5V$

## Application

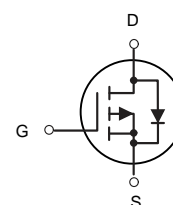
Battery protection

Load switch

Uninterruptible power supply



SOT-23



P-Channel MOSFET

## Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
SI2343DS-T1-BE3	SOT-23	A19T	3000

## Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Symbol	Parameter	Limit	Unit
$V_{DS}$	Drain-Source Voltage	-30	V
$V_{GS}$	Gate-Source Voltage	$\pm 12$	V
$I_D$	Drain Current-Continuous	-4.2	A
$I_{DM}$	Drain Current-Pulsed (Note 1)	-30	A
$P_D$	Maximum Power Dissipation	1.2	W
$T_J, T_{STG}$	Operating Junction and Storage Temperature Range	-55 To 150	°C
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 2)	104	°C/W



**Electrical Characteristics (TA=25°C unless otherwise noted)**

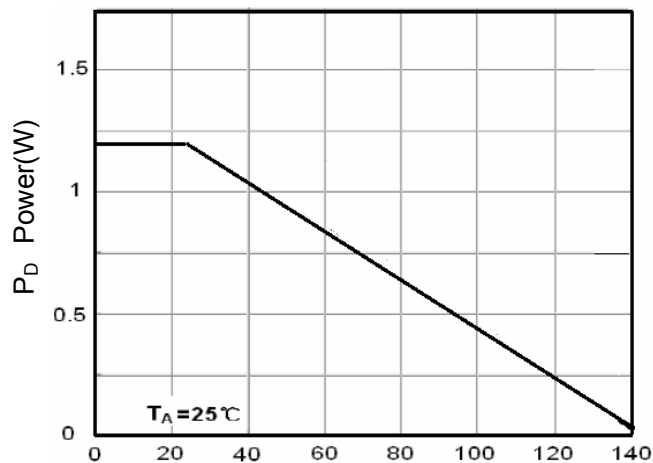
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V I <sub>D</sub> =-250μA	-30		-	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-24V,V <sub>GS</sub> =0V	-	-	-1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±10V,V <sub>DS</sub> =0V	-	-	±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> ,I <sub>D</sub> =-250μA	-0.7	-1	-1.3	V
Drain-Source On-State Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-4.2A	-	45	55	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-4A	-	56	75	mΩ
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-1A		72	90	mΩ
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =-5V,I <sub>D</sub> =-4.2A	-	10	-	S
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-15V,V <sub>GS</sub> =0V, F=1.0MHz	-	880	-	PF
Output Capacitance	C <sub>oss</sub>		-	105	-	PF
Reverse Transfer Capacitance	C <sub>rss</sub>		-	65	-	PF
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =-15V,I <sub>D</sub> =-4.2A V <sub>GS</sub> =-10V,R <sub>GEN</sub> =6Ω	-	7	-	nS
Turn-on Rise Time	t <sub>r</sub>		-	3	-	nS
Turn-Off Delay Time	t <sub>d(off)</sub>		-	30	-	nS
Turn-Off Fall Time	t <sub>f</sub>		-	12	-	nS
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-15V,I <sub>D</sub> =-4.2A, V <sub>GS</sub> =-4.5V	-	8.5	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	1.8	-	nC
Gate-Drain Charge	Q <sub>gd</sub>		-	2.7	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage <sup>(Note 3)</sup>	V <sub>SD</sub>	V <sub>GS</sub> =0V,I <sub>S</sub> =-4.2A	-	-	-1.2	V

**Notes:**

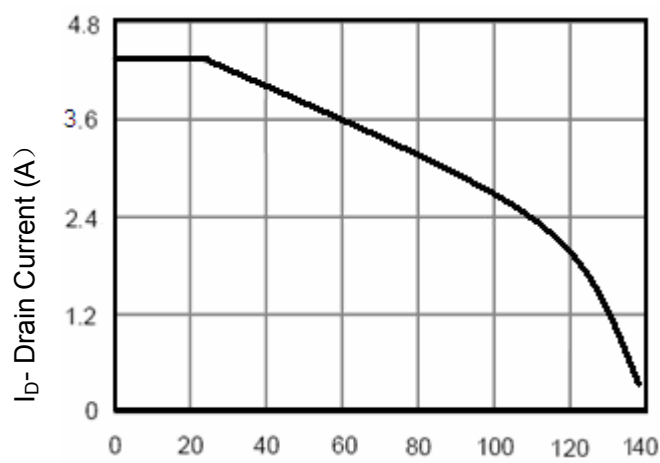
- 1、Repetitive Rating: Pulse width limited by maximum junction temperature.
- 2、Surface Mounted on FR4 Board,  $t \leq 10$  sec.
- 3、Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
- 4、Guaranteed by design, not subject to production



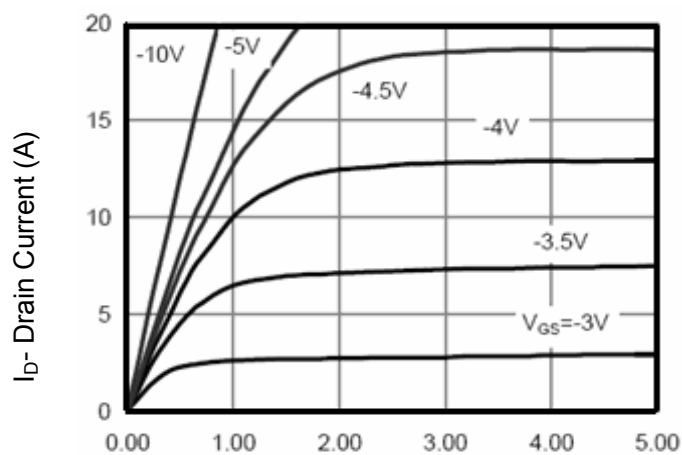
## Typical Electrical and Thermal Characteristics



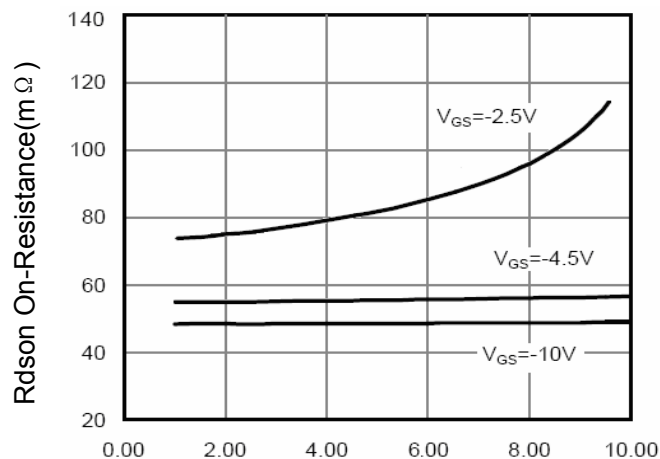
$T_J$ -Junction Temperature ( $^{\circ}\text{C}$ )  
Figure 1 Power Dissipation



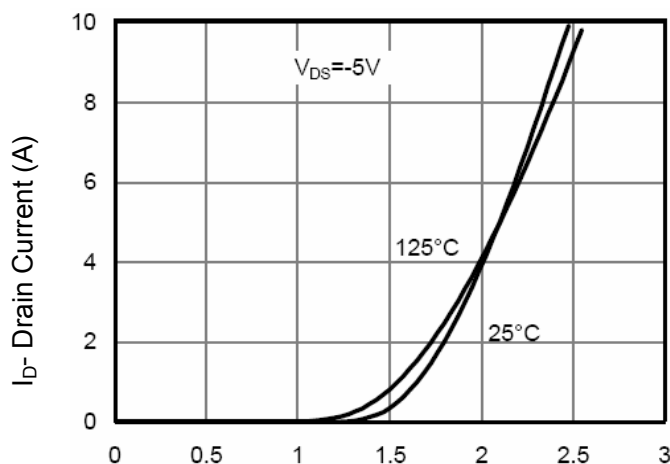
$T_J$ -Junction Temperature ( $^{\circ}\text{C}$ )  
Figure 2 Drain Current



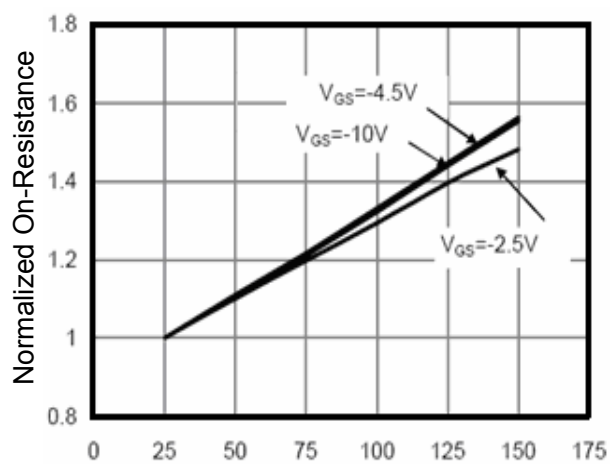
$V_{DS}$  Drain-Source Voltage (V)  
Figure 3 Output Characteristics



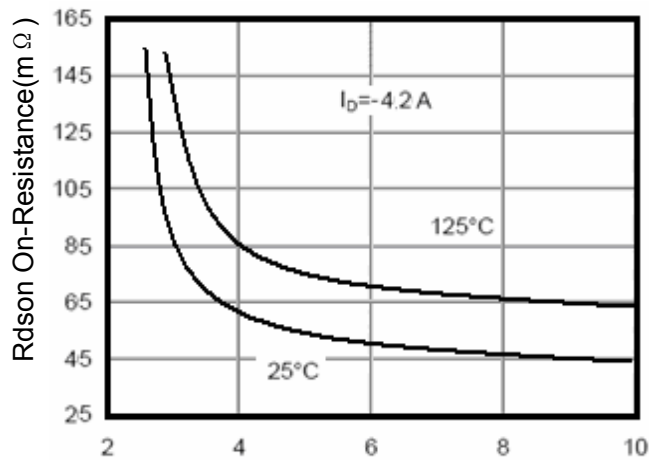
$I_D$ - Drain Current (A)  
Figure 4 Drain-Source On-Resistance



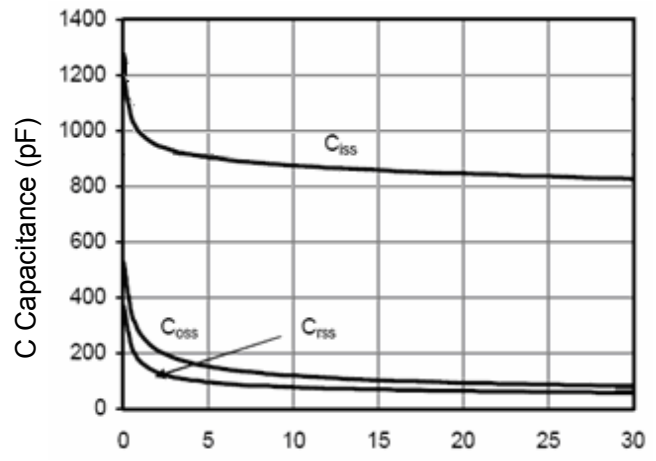
$V_{GS}$  Gate-Source Voltage (V)  
Figure 5 Transfer Characteristics



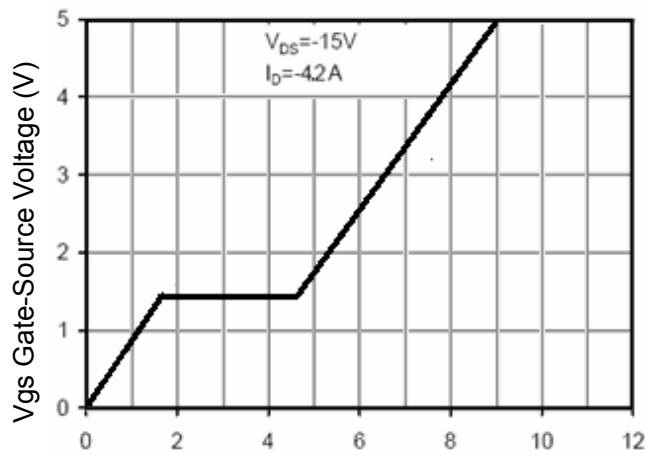
$T_J$ -Junction Temperature ( $^{\circ}\text{C}$ )  
Figure 6 Drain-Source On-Resistance



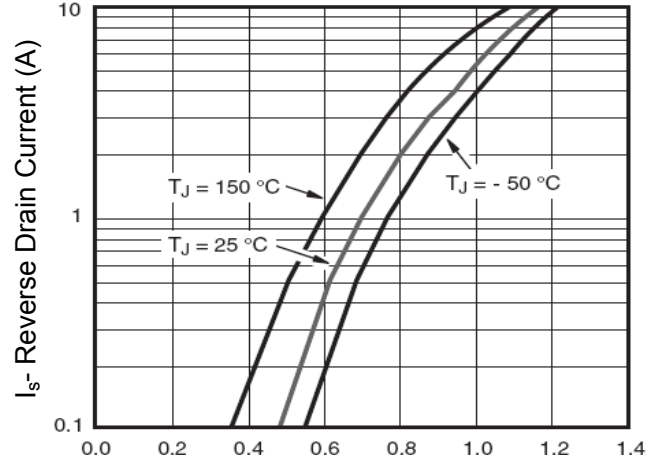
Vgs Gate-Source Voltage (V)  
Figure 7 Rdson vs Vgs



Vds Drain-Source Voltage (V)  
Figure 8 Capacitance vs Vds



Qg Gate Charge (nC)  
Figure 9 Gate Charge



Vsd Source-Drain Voltage (V)  
Figure 10 Source- Drain Diode Forward

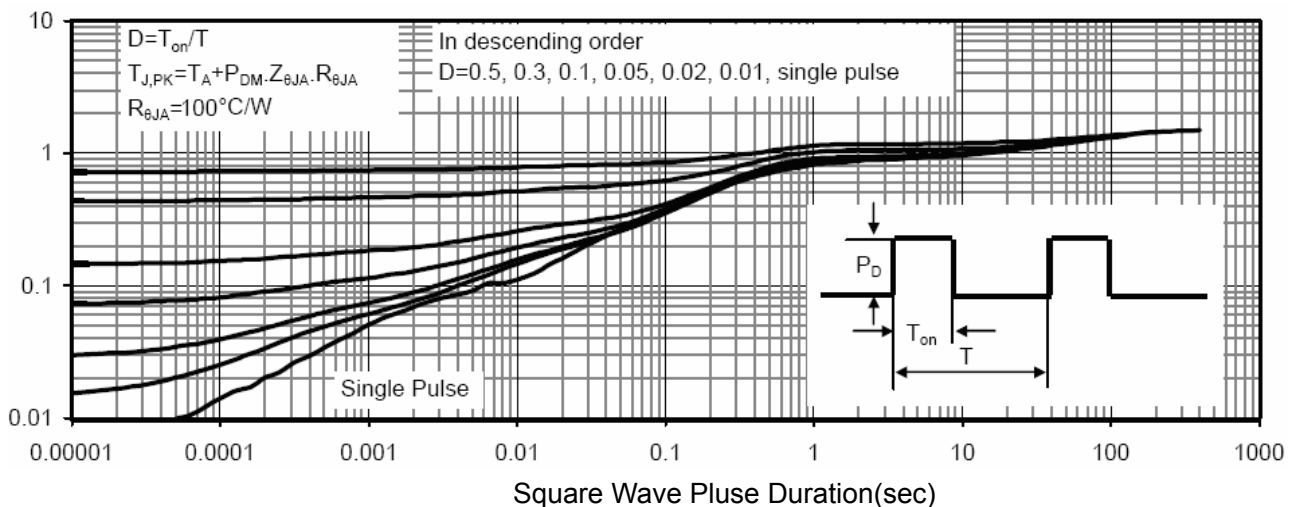
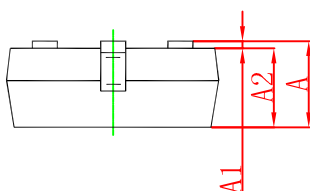
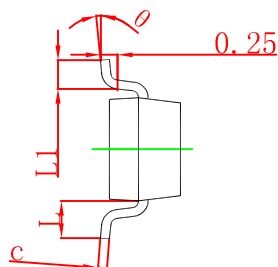
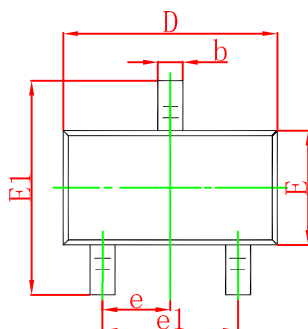


Figure 14 Normalized Maximum Transient Thermal Impedance

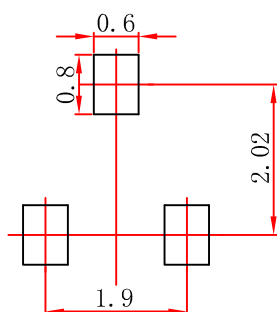


## SOT-23 Package Outline Dimensions



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
θ	0°	8°	0°	8°

## SOT-23 Suggested Pad Layout



Note:  
1. Controlling dimension: in millimeters.  
2. General tolerance:  $\pm 0.05\text{mm}$ .  
3. The pad layout is for reference purposes only.



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