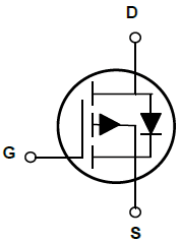
20V P-Channel MOSFET

Main Product Characteristics:

$V_{(BR)DSS}$	-20V
$R_{DS(ON)}$	42mΩ(max)
I_D	-4.2A

SOT-23



Schematic Diagram

Features and Benefits

- Standard Turbo MOSFET process technology.
- Optimized the cell structure.
- Low on-resistance and low gate charge.
- Featuring low switching and drive losses.
- Fast switching and reverse body recovery.
- High ruggedness and robustness.

Description

The ST series products utilizes Trust's outstanding standard turbo process and packaging techniques to achieve ultral low on-resistance and low gate charge and to provide the industry's best-in-class performance.

These features make this series products extremely efficient, temperature characteristics and reliable for use in power management, synchronous rectification, battery protection, load switch and a wide variety of other applications.

Absolute Maximum Ratings (T_C=25°C unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-to-Source Voltage	V_{GS}	±8	V
Continuous Drain Current, @ Steady-State	ID @ T_C = 25℃	-4.2	A
Continuous Drain Current, @ Steady-State	ID @ T_C = 100℃	-2.9	A
Power Dissipation	P_D @ T_C = 25℃	1.4	W
Power Dissipation	P_D @ T_C = 100℃	0.8	W
Junction-to-Ambient (PCB Mounted, Steady-State) [1]	$R_{\theta JA}$	90	°C/W
Operating Junction and Storage Temperature Range	T_J /T_{STG}	-55 to + 150	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, ID=-250μA	-20	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	V_{DS}=-20V, V_{GS}=0V	-	-	-1	μA
Gate-to-Source Forward Leakage	I_{GSS}	V_{GS}=8V	-	-	100	μA
		V_{GS}= -8V	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{DS\ (on)}$	V_{GS}=-4.5V,I_D=-4.2A	-	26	42	mΩ
		V_{GS}=-2.5V, I_D=-2A	-	34	56	
Gate Threshold Voltage	$V_{GS\ (th)}$	V_{DS}=V_{GS}, I_D=-250μA	-0.45	-0.6	-1.0	V
Input Capacitance	Ciss	V_{GS}=0V V_{DS}=-4V ƒ=1MHz	-	1240	-	pF
Output Capacitance	Coss		-	370	-	
Reverse transfer capacitance	Crss		-	210	-	
Total Gate Charge	Qg	I_D=-3.0A, V_{DS}=-4V, V_{GS}=-4.5V	-	10	16	nC
Gate-to-Source Charge	Qgs		-	2	-	
Gate-to-Drain("Miller") Charge	Qgd		-	3.5	-	
Turn-on Delay Time	td(on)	VGS=-4.5V, VDS=-4V, I_D=1A,R_G=6.6Ω	-	14	-	nS
Rise Time	tr		-	20	-	
Turn-Off Delay Time	td(off)		-	88	-	
Fall Time	tf		-	54	-	
Source-Drain Ratings and Characteristics						
Parameter	**Symbol**	**Conditions**	**Min.**	**Typ.**	**Max.**	**Unit**
Diode Forward Voltage	V_{SD}	I_S=-1A, V_{GS}=0V	-	-0.7	-1	V

Notes

1. Pulse test: Pulse Width≤ 300us, Duty cycle ≤ 2%.

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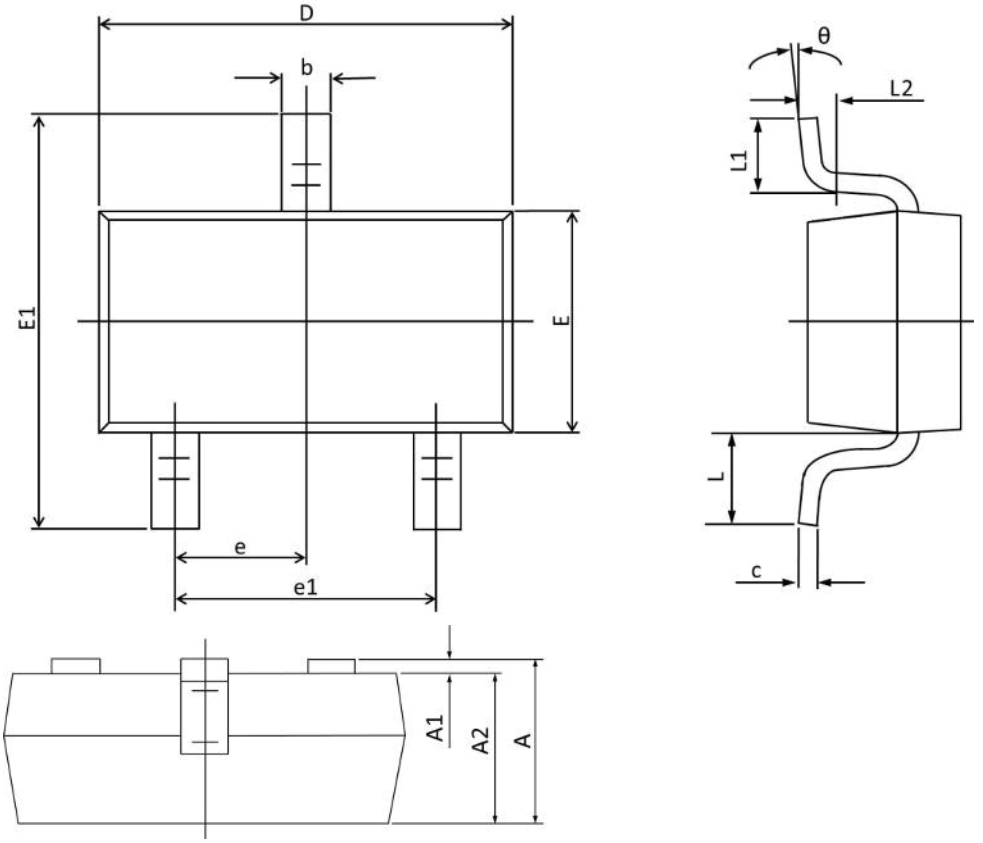
Package Outline Dimensions SOT-23



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.150	0.900	0.045	0.035
A1	0.100	0.000	0.004	0.000
A2	1.050	0.900	0.041	0.035
b	0.500	0.300	0.020	0.012
c	0.150	0.080	0.006	0.003
D	3.000	2.800	0.118	0.110
E	1.400	1.200	0.055	0.047
E1	2.550	2.250	0.100	0.089
e	0.95 TYP.		0.037 TYP.	
e1	2.000	1.800	0.079	0.071
L	0.55 REF.		0.022 REF.	
L1	0.500	0.300	0.020	0.012
L2	0.25 TYP.		0.01 TYP.	
θ	8°	0°	8°	0°