

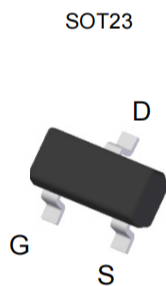
## Product Summary

$V_{DS}$	20V
$R_{DS(ON)}$	22m $\Omega$
$I_D$	6.5A

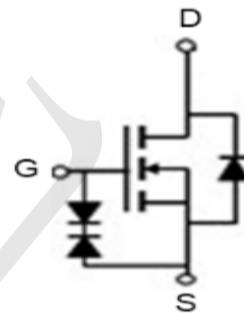
## Application

- Load Switch for Portable Devices
- DC/DC Converter

## Package and Pin Configuration



## Circuit diagram



**Marking: AF**

## Absolute Maximum Ratings ( $T_a=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	V
Drain Current-Continuous@ Current-Pulsed (Note 1)	$I_D$	6.5	A
	$I_{DM}$	30	A
Maximum Power Dissipation	$P_D$	1.4	W
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 To 150	$^\circ\text{C}$

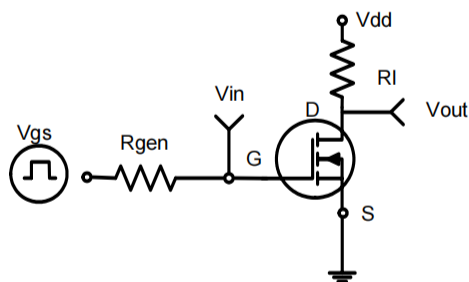
## THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	90	$^\circ\text{C/W}$
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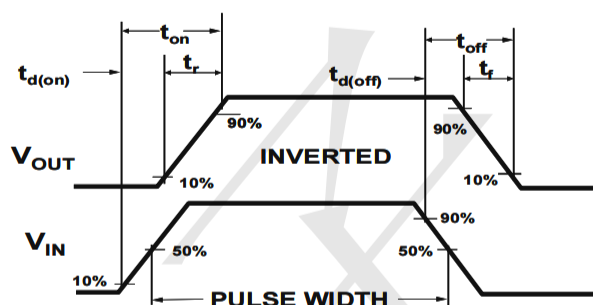
**ELECTRICAL CHARACTERISTICS** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	20			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=20V, V_{GS}=0V$			1	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 4.5V, V_{DS}=0V$			$\pm 1$	$\mu A$
		$V_{GS}=\pm 8V, V_{DS}=0V$			$\pm 10$	$\mu A$
<b>ON CHARACTERISTICS (Note 3)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.4	0.6	1	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=6.5A$		18	22	$m\Omega$
		$V_{GS}=2.5V, I_D=5.5A$		24	30	$m\Omega$
		$V_{GS}=1.8V, I_D=5A$		40	55	$m\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS}=5V, I_D=6.5A$		7		S
<b>DYNAMIC CHARACTERISTICS (Note 4)</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=10V, V_{GS}=0V,$ $F=1.0MHz$		1160		PF
Output Capacitance	$C_{oss}$			200		PF
Reverse Transfer Capacitance	$C_{rss}$			140		PF
<b>SWITCHING CHARACTERISTICS (Note 4)</b>						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=10V, I_D=1A$ $V_{GS}=5V, R_{GEN}=3\Omega$		6.5		nS
Turn-on Rise Time	$t_r$			13		nS
Turn-Off Delay Time	$t_{d(off)}$			50		nS
Turn-Off Fall Time	$t_f$			30		nS
Total Gate Charge	$Q_g$	$V_{DS}=10V, I_D=6.5A,$ $V_{GS}=4.5V$		10		nC
Gate-Source Charge	$Q_{gs}$			2.3		nC
Gate-Drain Charge	$Q_{gd}$			3		nC
<b>DRAIN-SOURCE DIODE CHARACTERISTICS</b>						
Diode Forward Voltage (Note 3)	$V_{SD}$	$V_{GS}=0V, I_S=1A$		0.76	1	V

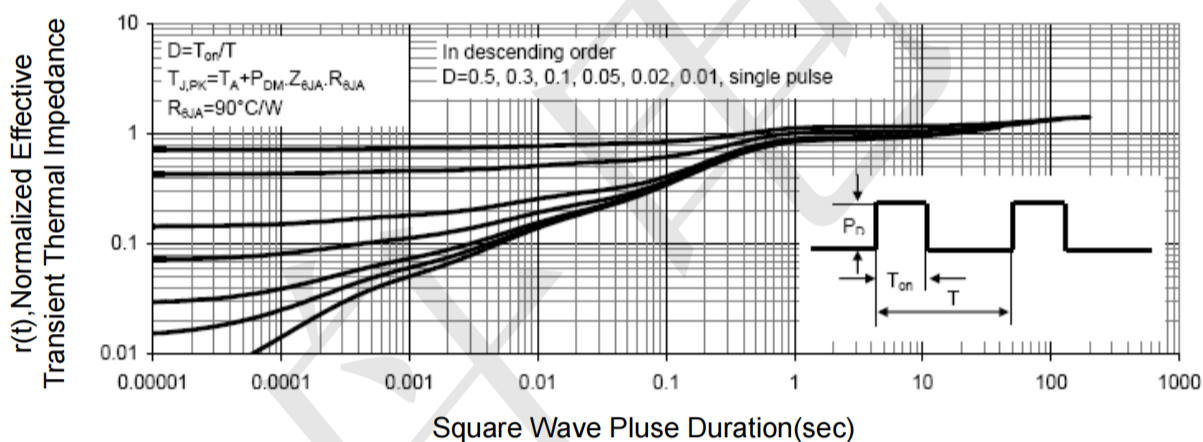
**TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS**



**Figure 1. Switching Test Circuit**

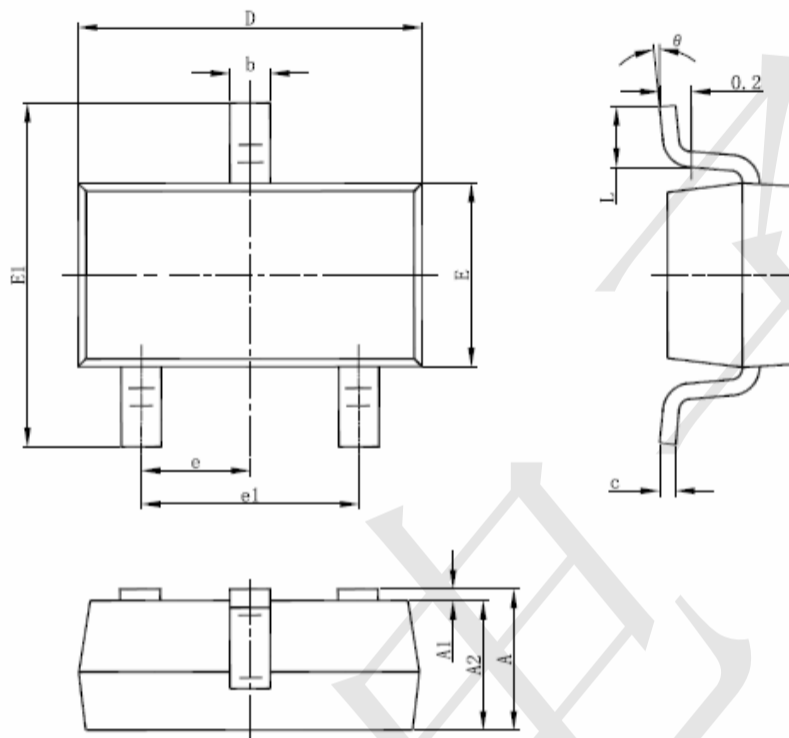


**Figure 2. Switching Waveforms**



**Figure 3. Normalized Maximum Transient Thermal Impedance**

SOT-23-3L Package Information



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°

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