

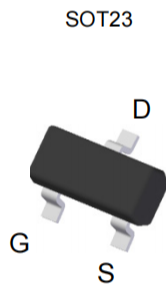
Product Summary

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

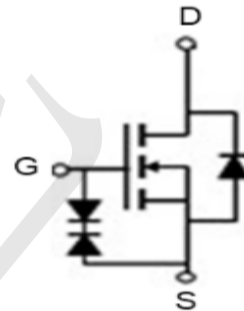
Application

- Load Switch for Portable Devices
- DC/DC Converter

Package and Pin Configuration



Circuit diagram



Marking: AF

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 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	$^{\circ}C$

THERMAL CHARACTERISTICS

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
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	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 4.5V, V_{DS}=0V$			± 1	μA
		$V_{GS}=\pm 8V, V_{DS}=0V$			± 10	μA
ON CHARACTERISTICS (Note 3)						
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
DYNAMIC CHARACTERISTICS (Note 4)						
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
SWITCHING CHARACTERISTICS (Note 4)						
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
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage (Note 3)	V_{SD}	$V_{GS}=0V, I_S=1A$		0.76	1	V

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

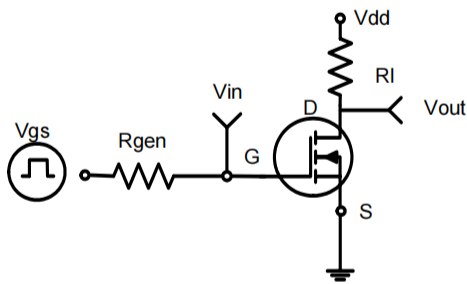


Figure 1. Switching Test Circuit

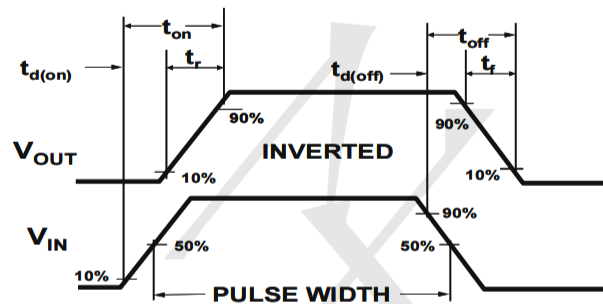


Figure 2. Switching Waveforms

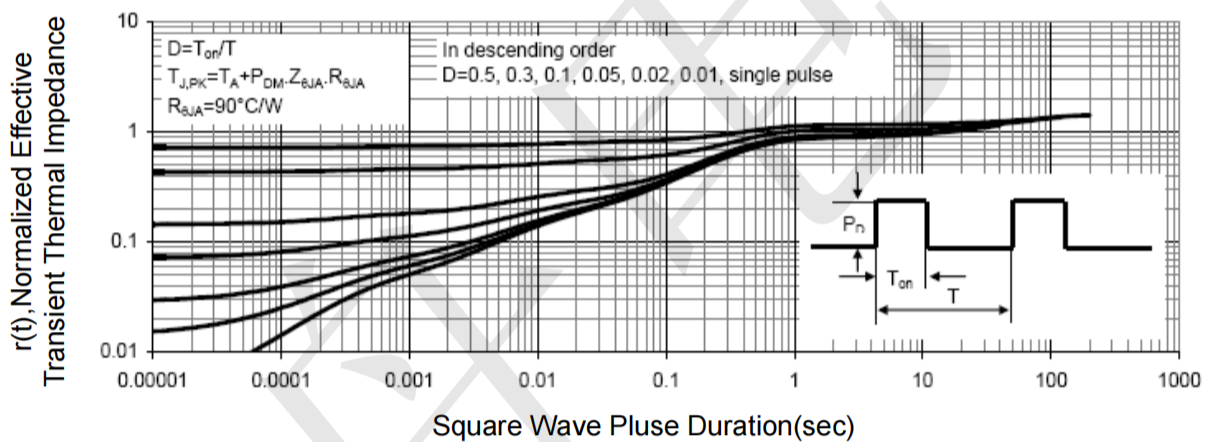
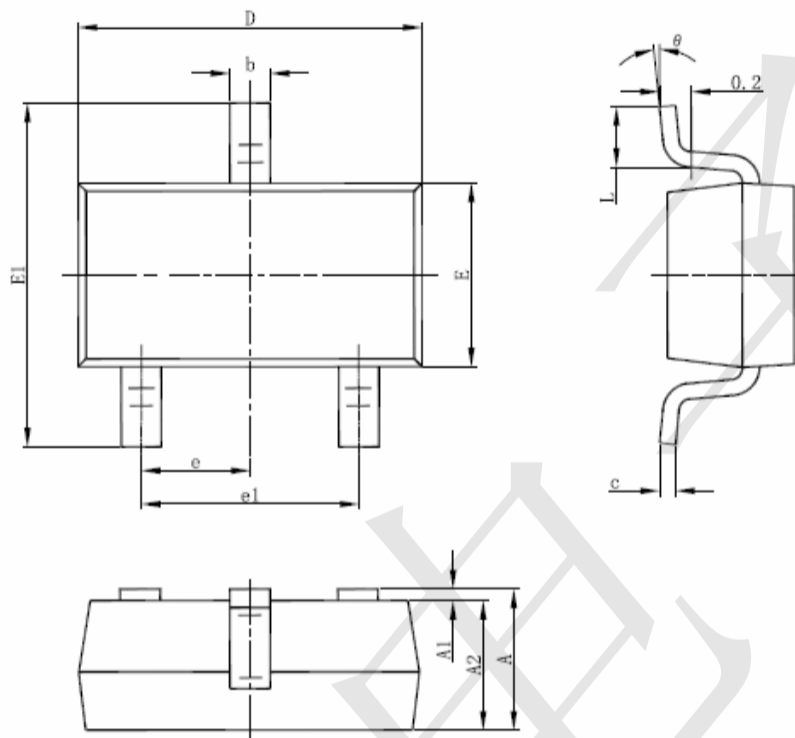


Figure 3. Normalized Maximum Transient Thermal Impedance

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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