

N Channel Advanced Power MOSFET

MOSFET Product Summary

V_{DS}	I_D	$R_{DS(on)}$ (TYP)
20V	4.2A	24mΩ@4.5V
		32mΩ@2.5V

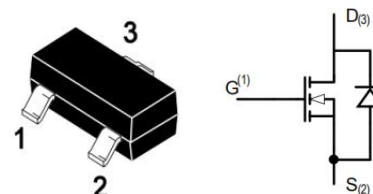
Features and benefits

- Exceptional on-resistance and maximum DC current capability
- High dense cell design for extremely low RDS(ON)
- Pb-Free, RoHS Compliant

Applications

- Load/Power Switching
- Interfacing Switching

Schematic & Pin configuration



Maximum Ratings ($T_A = 25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 10	V
Continuous Drain Current ^A	I_D	4.2	A
Power Dissipation ^A	P_D	0.5	W
Thermal Resistance from Junction to Ambient ^A	$R_{\theta JA}$	312	$^\circ\text{C/W}$
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-50 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
STATIC CHARACTERISTICE						
Drain-source breakdown voltage ^B	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20	--	30	V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 18V, V_{GS} = 0V$	--	--	100	nA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 10V, V_{DS} = 0V$	--	--	± 100	nA
Gate threshold voltage ^B	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.5	0.65	1.0	V
Drain-source on-resistance ^B	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 2.5A$	--	24	28	m Ω
		$V_{GS} = 2.5V, I_D = 1.0A$	--	32	36	m Ω
Diode forward voltage ^B	V_{SD}	$I_S = 3.0A, V_{GS} = 0V$	--	--	0.9	V
Forward tranconductance ^B	g_{fs}	$V_{DS} = 5.0V, I_D = 2.0A$	--	8.0	--	S
DYNAMIC CHARACTERISTICS						
Input capacitance	C_{iss}	$V_{DS} = 10V, V_{GS} = 0V,$ $f = 1MHz$	--	322	--	pF
Output capacitance	C_{oss}		--	60	--	pF
Reverse transfer capacitance	C_{rss}		--	55	--	pF
Gate resistance	R_g	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$	--	4.0	--	Ω
SWITCHING CHARACTERISTICS						
Turn-on delay time	$t_{d(on)}$	$V_{GS} = 4.5V, V_{DS} = 10V, R_L = 3.0\Omega$	--	4.20	--	nS
Turn-on rise time	t_r		--	44.8	--	nS
Turn-off delay time	$t_{d(off)}$		--	22.2	--	nS
Turn-off fall time	t_f		--	20.4	--	nS

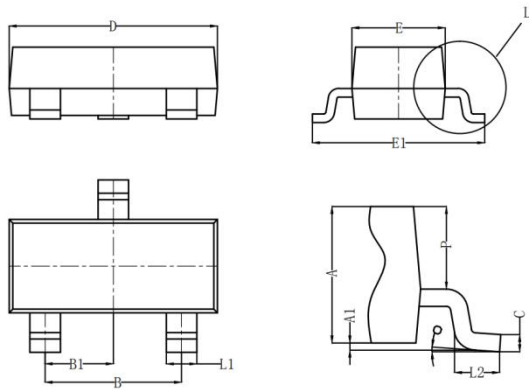
Notes:

A. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. copper, in a still air environment with $T_A = 25^\circ\text{C}$. The value in any given application depends on the user's specific board design. The current rating is based on the $t \leq 10s$ thermal resistance rating.

B. Pulse Test : Pulse Width=300 μs , Duty Cycle=2%.

Package Outline Dimensions

SOT23



Symbol	Dimensions (mm)		
	Min	Typ	Max
A	0.900	1.000	1.1100
A1	0.000	0.050	0.100
L1	0.350	0.400	0.500
C	0.100	0.110	0.120
D	2.800	2.900	3.000
E	1.250	1.300	1.350
E1	2.250	2.400	2.550
B	1.800	1.900	2.000
B1	0.950 Typ		
L2	0.200	0.350	0.450
P	0.550	0.575	0.600

SOT-23 Suggested Pad Layout

