

60V N-Channel Enhancement Mode MOSFET

General Description

- Trench Power MV MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

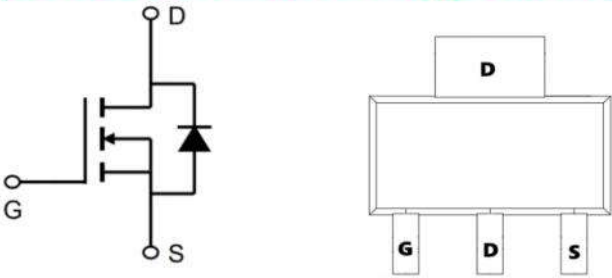
Applications

- DC-DC Converters
- Power management functions

Product Summary

- V_{DS} 60V
- I_D 3.0A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) < 80 mohm
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) < 100 mohm

SOT223-3L Pin Configuration



■ Absolute Maximum Ratings ($T_A=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-source Voltage	V_{DS}	60	V
Gate-source Voltage	V_{GS}	± 20	V
Drain Current	I_D	3.0	A
Pulsed Drain Current ^A	I_{DM}	12	A
Total Power Dissipation @ $T_C=25^{\circ}C$	P_D	1.2	W
Thermal Resistance Junction-to-Ambient ^B	$R_{\theta JA}$	105	$^{\circ}C/W$
Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^{\circ}C$

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Electrical Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

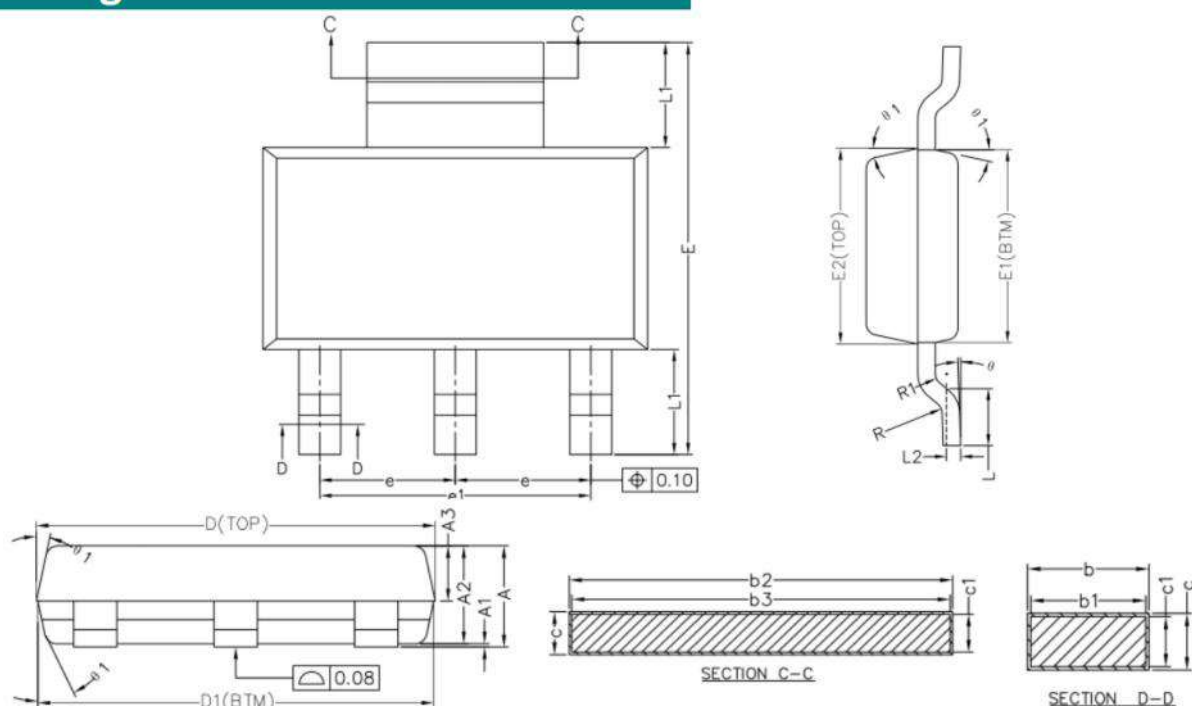
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V,V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS1}	V _{GS} = ± 20V, V _{DS} =0V			±100	nA
	I _{GSS2}	V _{GS} = ± 12V, V _{DS} =0V			± 50	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	1.1	1.7	2.3	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D =2A			80	mΩ
		V _{GS} = 4.5V, I _D =1.5A			100	
Diode Forward Voltage	V _{SD}	I _S =2.0A,V _{GS} =0V		0.8	1.2	V
Maximum Body-Diode Continuous Current	I _S				2.0	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =30V,V _{GS} =0V,f=1MHZ		330		pF
Output Capacitance	C _{oss}			90		
Reverse Transfer Capacitance	C _{rss}			17		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V,V _{DS} =30V,I _D =2.0A		5.1		nC
Gate-Source Charge	Q _{gs}			1.3		
Gate-Drain Charge	Q _{gd}			1.7		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V,V _{DD} =30V, I _D =1.5A,R _L =1Ω R _{GEN} =3Ω		13		ns
Turn-on Rise Time	t _r			51		
Turn-off Delay Time	t _{D(off)}			19		
Turn-off fall Time	t _f			12		

 A. Pulse Test: Pulse Width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

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Package Mechanical Data-SOT-223



Symbol	Min	Nom	Max
A	--	--	1.80
A1	0.02	--	0.10
A2	1.50	1.60	1.70
A3	0.80	0.90	1.00
b	0.67	--	0.80
b1	0.66	0.71	0.76
b2	2.96	--	3.09
b3	2.95	3.00	3.05
C	0.30	--	0.35
C1	0.29	0.30	0.31
D	6.48	6.53	6.58
D1	6.55	6.60	6.65
E	6.80	--	7.20
E1	3.40	3.50	3.60
E2	3.33	3.43	3.53
e	2.30BSC		
e1	4.60BSC		
L	0.80	1.00	1.20
L1	1.75REF		
L2	0.25BSC		
R	0.10	--	--
R1	0.10	--	--
θ	0°	--	8°
θ1	10°	12°	14°