

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
30V	15mΩ@10V	13A
	25mΩ@4.5V	

Feature

- Advanced trench technology
- Excellent $R_{DS(on)}$
- Low gate charge

Application

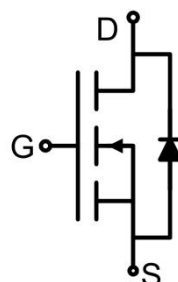
- Battery protection
- Load switch
- Uninterruptible power supply

Package

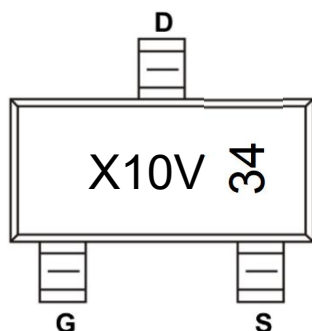


SOT-23-3L

Circuit diagram



Marking



Absolute maximum ratings (T_C=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	30	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current ¹⁾ (V _{GS} =10V)	I _D	13	A
Continuous Drain Current ¹⁾ (V _{GS} =10V, T _C =100°C)	I _D (100°C)	8.5	A
Pulsed Drain Current ²⁾	I _{DM}	39	A
Single Pulse Avalanche Energy	E _{AS}	11	mJ
Power Dissipation ³⁾	P _D	42	W
Thermal Resistance Junction to Case ¹⁾	R _{θJC}	3	°C/W
Operating Junction Temperature	T _J	-55 ~ +150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

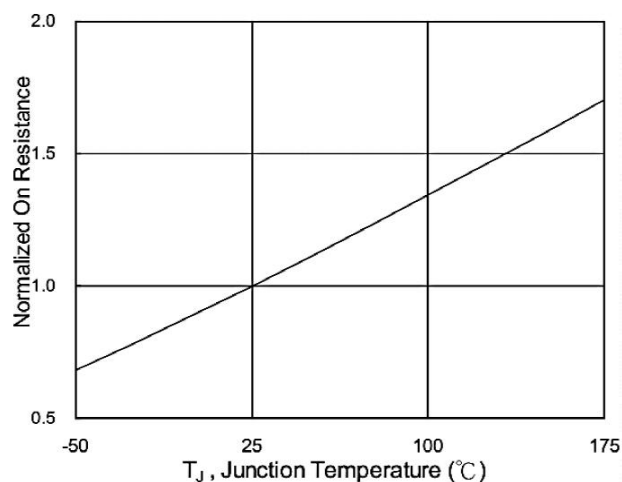
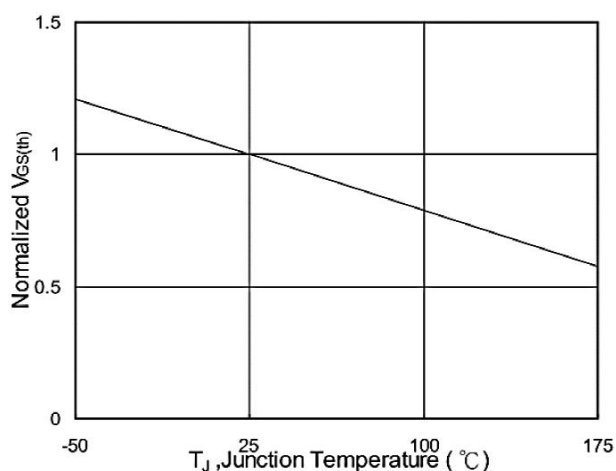
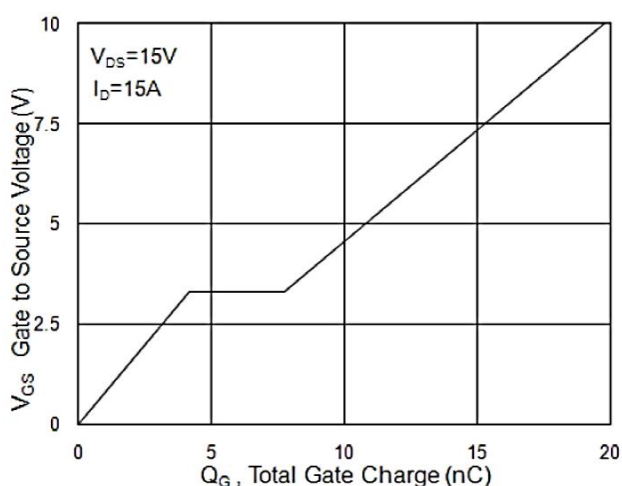
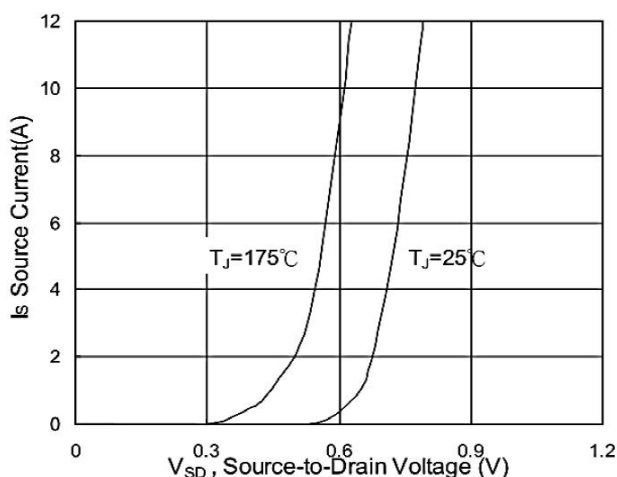
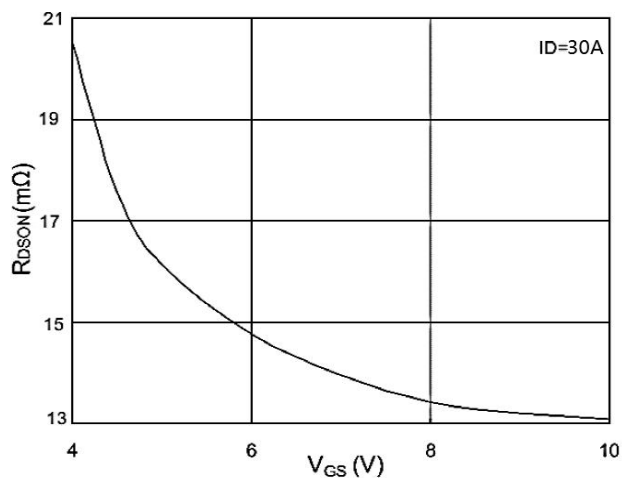
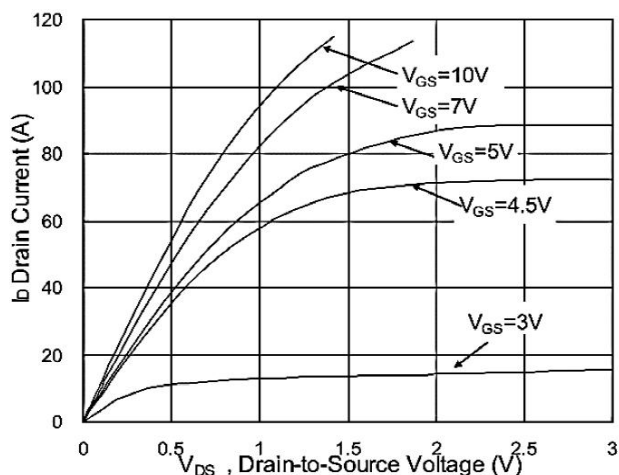
Electrical characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	30			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =24V, V _{GS} =0V, T _J =25°C			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.2	1.6	2.5	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} =10V, I _D =10A		11	15	mΩ
		V _{GS} =4.5V, I _D =10A		18	25	
Dynamic characteristics ⁴⁾						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f =1MHz		940		pF
Output Capacitance	C _{oss}			131		
Reverse Transfer Capacitance	C _{rss}			109		
Total Gate Charge	Q _g	V _{DS} =15V, V _{GS} =4.5V, I _D =10A		9.8		nC
Gate-Source Charge	Q _{gs}			4.2		
Gate-Drain Charge	Q _{gd}			3.6		
Turn-on delay time	t _{d(on)}	V _{DS} =15V, V _{GS} =10V I _D =10A , R _G =3.3Ω		4		nS
Turn-on rise time	t _r			8		
Turn-off delay time	t _{d(off)}			31		
Turn-off fall time	t _f			4		
Source-Drain Diode characteristics						
Diode Forward Current	I _S	V _G =V _D =0V , Force Current			13	A
Diode Forward voltage ²⁾	V _{SD}	V _{GS} =0V, I _S =1A, T _J =25°C			1	V
Reverse recover time	T _{rr}	I _S =13A, di/dt =100A/us		8.5		nS
Reverse recovery charge	Q _{rr}	T _J =25°C		2.2		nC

Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2) The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
- 3) The power dissipation is limited by 150°C junction temperature.
- 4) Guaranteed by design, not subject to production.

Typical Characteristics



Typical Characteristics

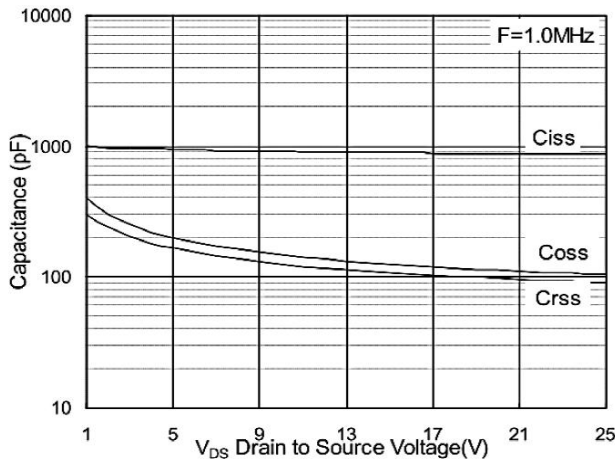


Fig.7 Capacitance

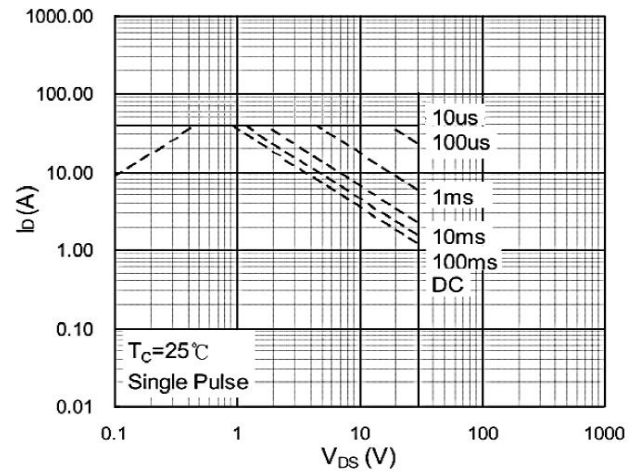


Fig.8 Safe Operating Area

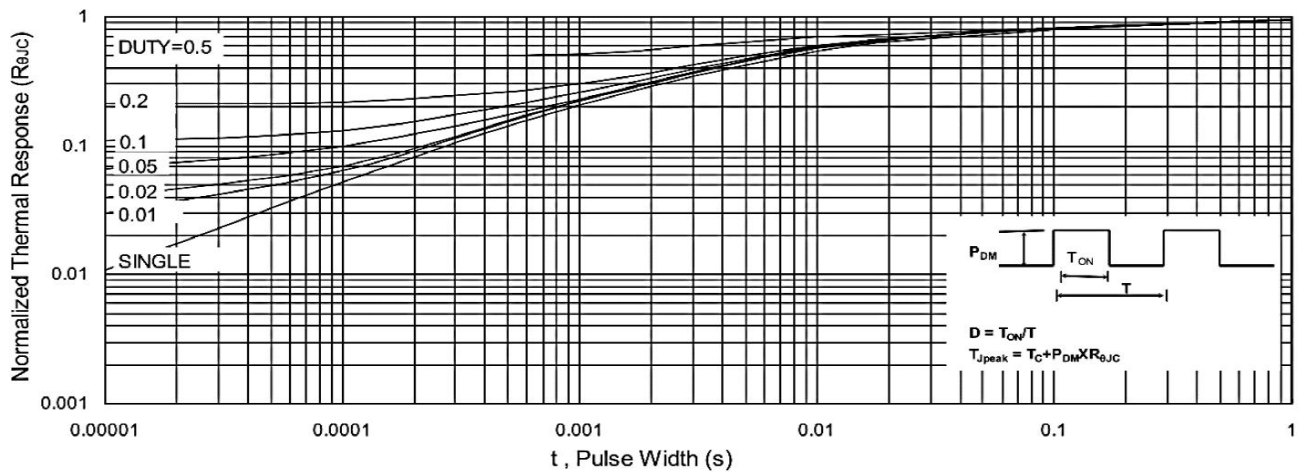


Fig.9 Normalized Maximum Transient Thermal Impedance

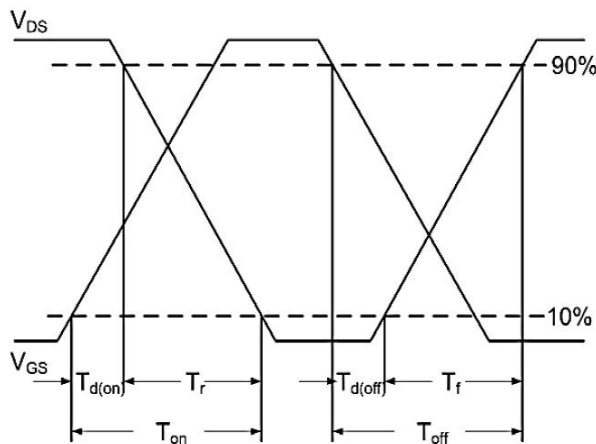


Fig.10 Switching Time Waveform

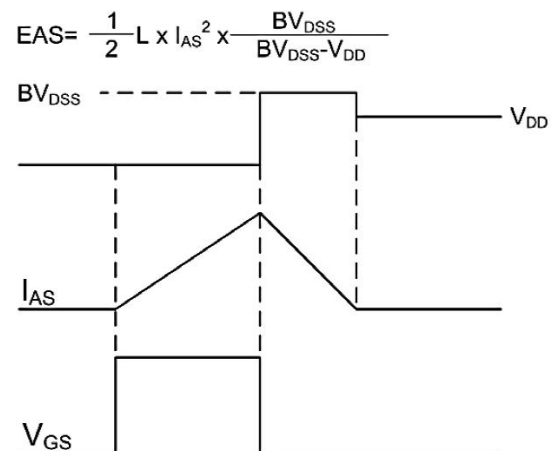
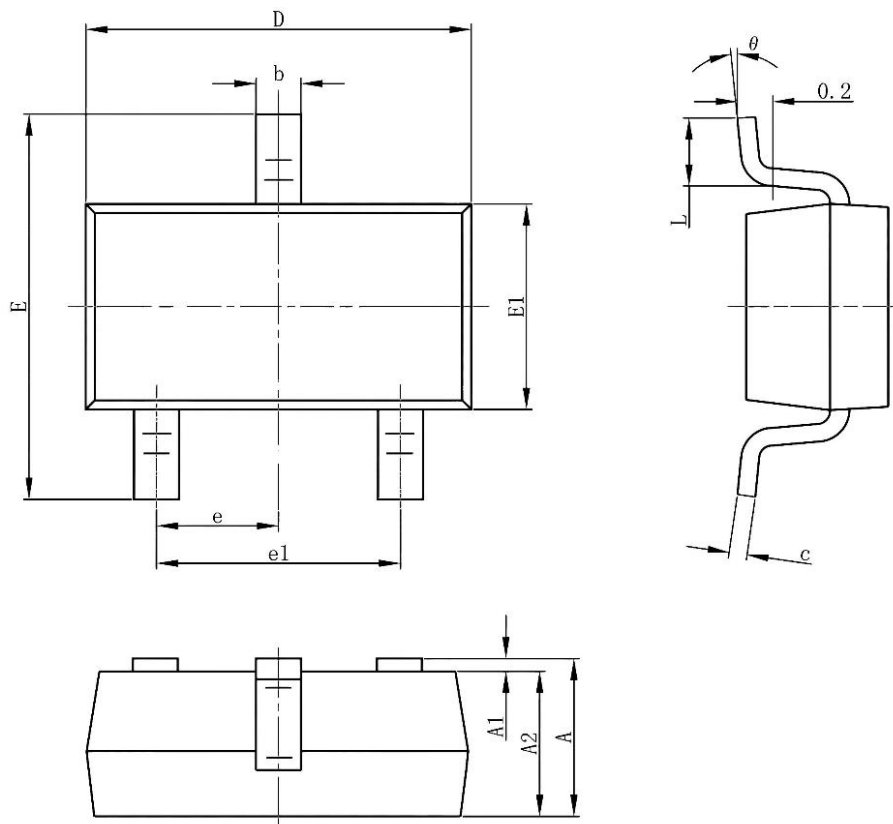


Fig.11 Unclamped Inductive Switching Waveform

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	0.250	0.450	0.010	0.018
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	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	0.500	0.012	0.020
θ	0°	8°	0°	8°