Features

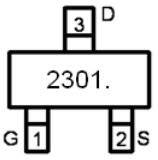
- VDS = -20V,ID =-2.6A
- RDS(ON) < 59mΩ
- Advanced MOSFET process technology
- Special designed for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- 150℃ operating temperature

Pb
RoHS
COMPLIANT

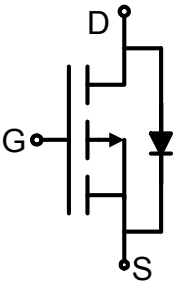
Marking: 2301

SOT-23

Assignments



Schematic Diagram



Description

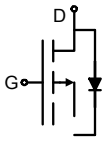
It utilizes the latest processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in powerswitchingapplicationanda widevarietyof otherapplications.

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)			
Parameter	**Symbols**	**V alue**	**Unit**
Drain-Source Voltage	V_{DS}	-20	V
Gate -Source Voltage	V_{GS}	±12	
Drain Current-Continuous@ Current-Pulsed (Note 1)	I_D (25℃)	-2.6	A
Pulsed Drain Current	I_{DM}	-10	
Maximum Power Dissipation	P_D	1.25	W
Operating Junction and Storage Temperature Range	T_J T_{STG}	-50 to +150	°C
Junction-to-case	$R_{\theta JC}$	Max 100	℃/W

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

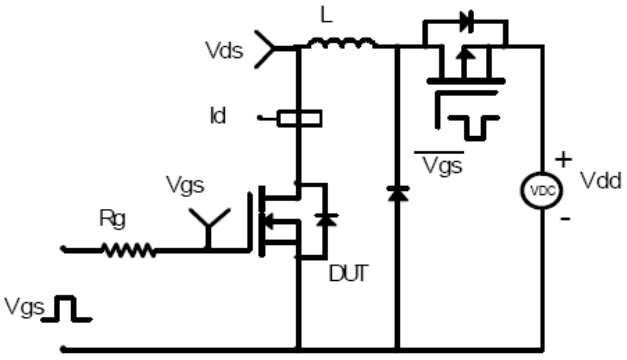
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-20			V
Gate threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D =-250μA	-0.4		-1	V
Drain-to-Source leakage current	I_{DSS}	V_{DS} =-20V,V_{GS} = 0V			-1	uA
Static Drain-to-Source on-resistance	$R_{DS(on)}$	V_{GS} = -4.5 I_D = -2A		59	67	mΩ
		V_{GS} = -2.5 I_D = -1.8A		76	83	mΩ
Gate-to-Source forward leakage	I_{GSS}	V_{GS} =12V			100	nA
		V_{GS} = -12V			-100	nA
Votal gate charge	Q_g	I_D = -2.3A V_{DS}=-6V, V_{GS} = -4.5V		5.8		nC
Gate-to-Source charge	Q_{gs}			0.84		
Gate-to-Drain("Miller") charge	Q_{gd}			1.6		
Turn-on delay time	$t_{d(on)}$	V_{GS}=-4.5V, V_{DD}=-20V R_{GEN}=3Ω R_L=10Ω		7		ns
Rise time	t_r			14		
Turn-Off delay time	$t_{d(off)}$			20		
Fall time	t_f			7		
Input Capacitance	C_{lss}	V_{GS} = 0V V_{DS} = -20V F=1MHz		394		PF
Output Capacitance	C_{oss}			48		
Reverse Transfer Capacitance	C_{rss}			41		

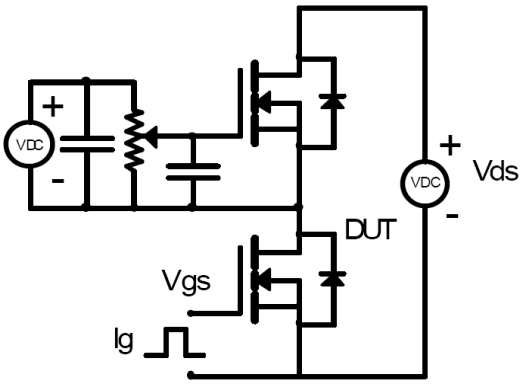
Source-Drain Ratings and Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode 			-2.6	A
Pulsed Source Current (Body Diode)	I_{SM}				-10	
Diode Forward Voltage	V_{sd}	I_S=-1A, V_{GS}=0V		-0.8	-1.2	V

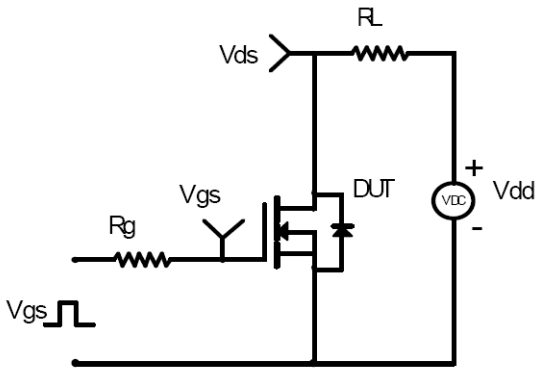
Ratings and Characteristics Curves

(T_A = 25℃ unless otherwise noted)

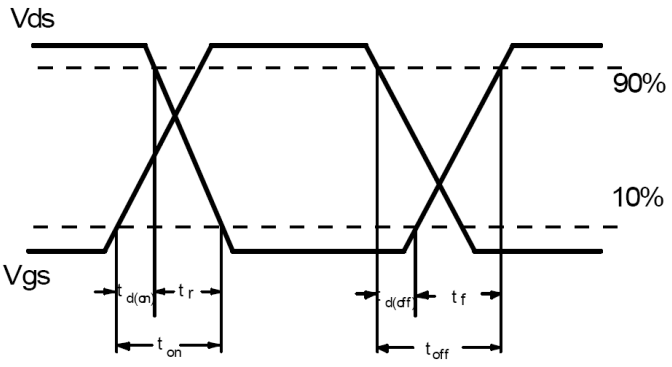




Switching Time Test Circuit:



Switching Waveforms:



Notes:

1. Calculated continuous current based on maximum allowable junction temperature.
2. Repetitive rating; pulse width limited by max.junction temperature.
3. The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.

Ratings and Characteristics Curves

(T_A = 25℃ unless otherwise noted)

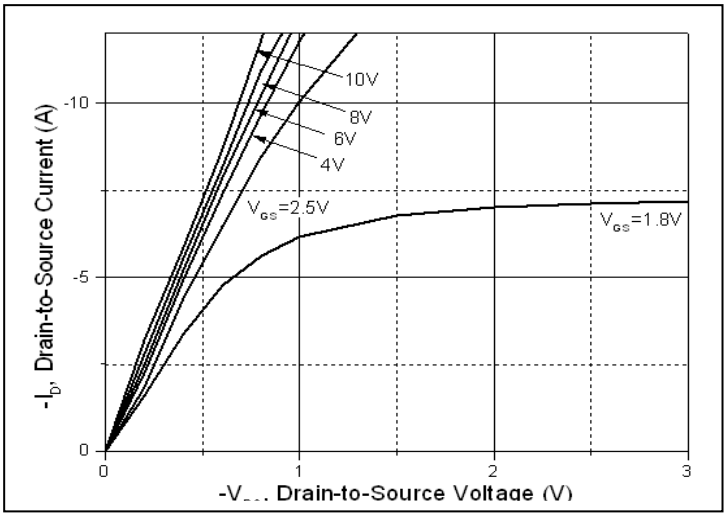


Figure1.Typical Output Characteristics

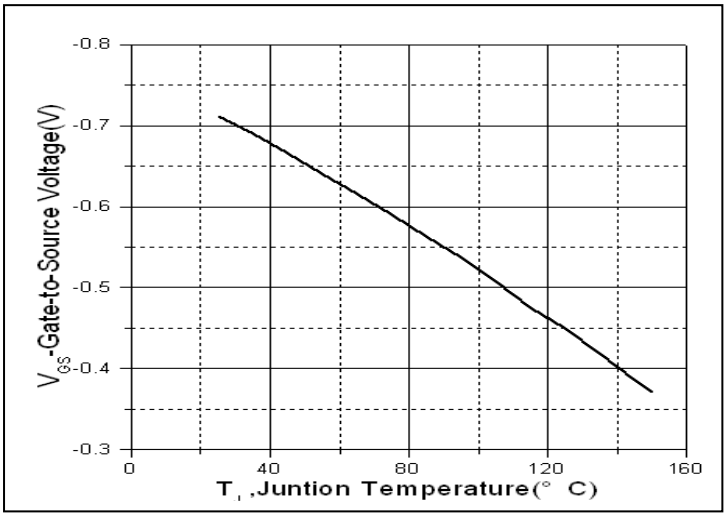


Figure2. Gate to Source Cut-off

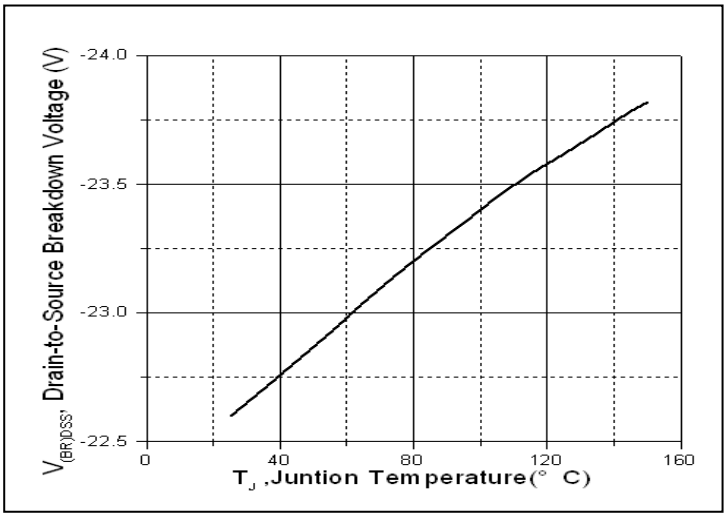


Figure3. Drain-to-Source Breakdown Voltage vs. Junction Temperature

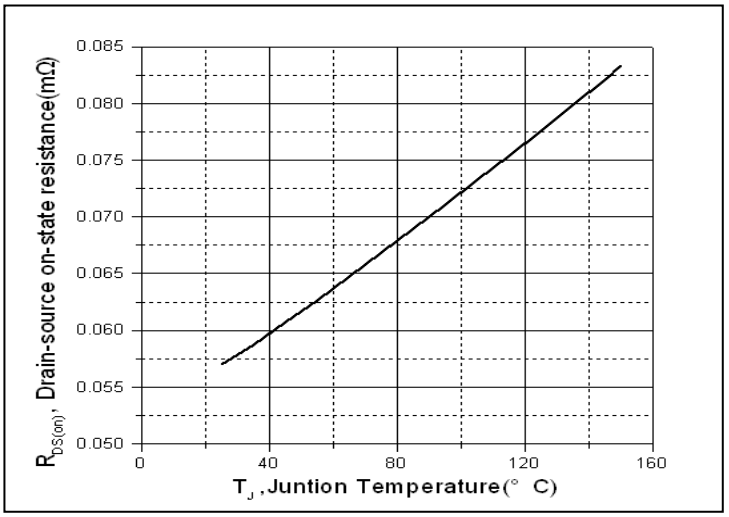


Figure4.$R_{DS(on)}$ VS. Drain Current

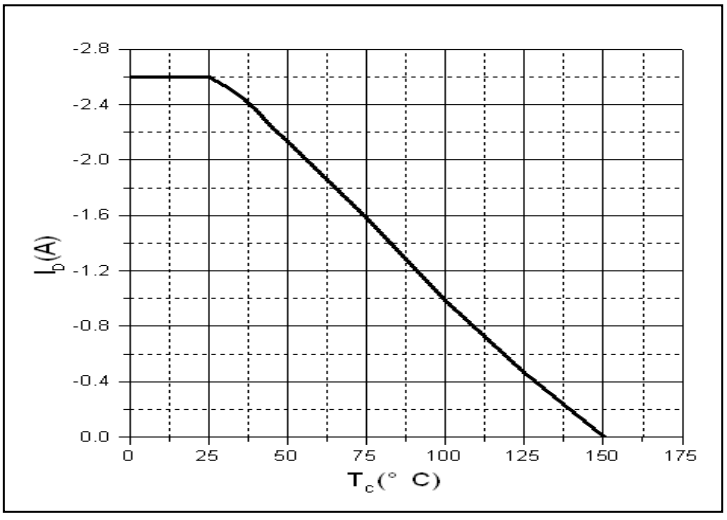


Figure5. Drain Current vs. Case Temperature

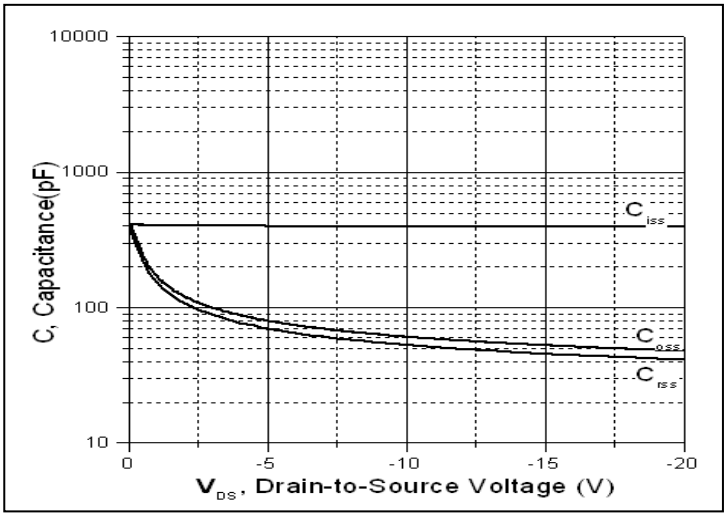
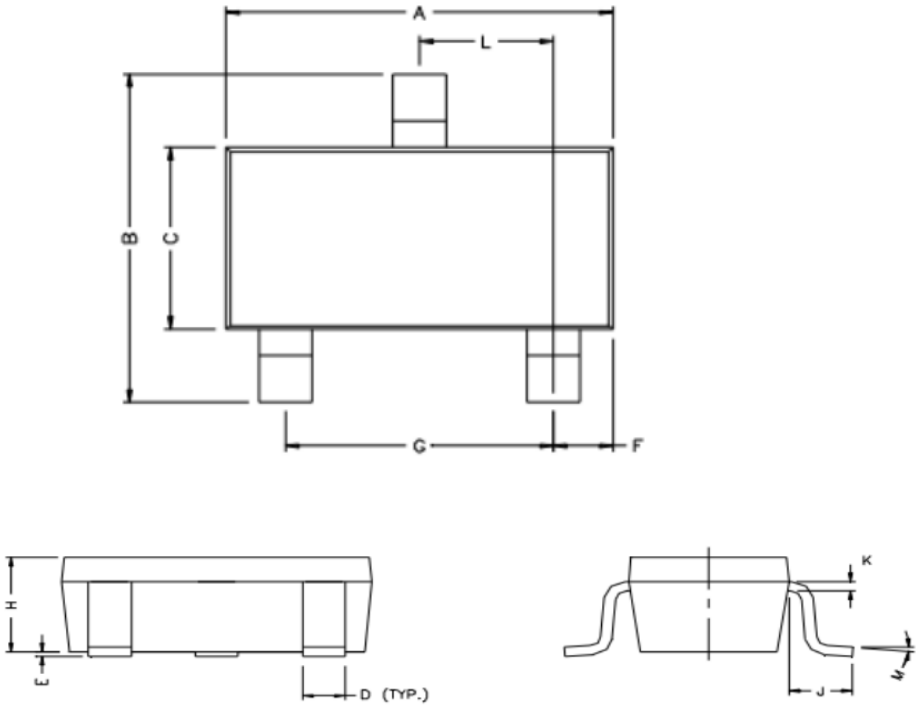


Figure6. Capacitance

Package Outline Dimensions

in inches (millimeters)



REF.	Millimeter		REF.	Millimete	
	Min.	Max.		Min.	Max.
A	2.80	3.00	G	1.80	2.00
B	2.30	2.50	H	0.90	1.1
C	1.20	1.40	K	0.10	0.20
D	0.30	0.50	J	0.35	0.70
E	0	0.10	L	0.92	0.98
F	0.45	0.55	M	0°	10°

Revision History

Document Version	Date of release	Description of changes
Rev.A	2020.06.15	First issue

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