



Description

JMT N-channel Enhancement Mode Power MOSFET

Features

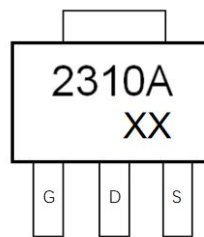
- 60V, 3A
- $R_{DS(ON)} < 92m\Omega @ V_{GS} = 10V$
- $R_{DS(ON)} < 119m\Omega @ V_{GS} = 4.5V$
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

Application

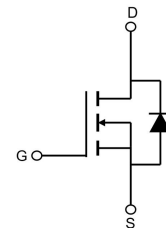
- Load Switch
- PWM Application
- Power management



SOT-89-3L top view



Marking and pin Assignment



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	OUTLINE	Device Package	Reel Size	Reel (PCS)	Per Carton (PCS)
2310A	JMTN2310A	TAPING	SOT-89-3L	7inch	1000	40000

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

Symbol	Parameter	Max.	Units
V_{DSS}	Drain-Source Voltage	60	V
V_{GSS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current	$T_A = 25^\circ\text{C}$	3
		$T_A = 100^\circ\text{C}$	2
I_{DM}	Pulsed Drain Current ^{note1}	12	A
P_D	Power Dissipation	$T_A = 25^\circ\text{C}$	1.4
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	89	$^\circ\text{C}/\text{W}$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ\text{C}$



Electrical Characteristics (T_J=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	60	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =60V, V _{GS} =0V,	-	-	1.0	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0	1.5	2.2	V
R _{DS(on)}	Static Drain-Source on-Resistance <small>note2</small>	V _{GS} =10V, I _D =3A	-	71	92	mΩ
		V _{GS} =4.5V, I _D =2A	-	85	119	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	350	-	pF
C _{oss}	Output Capacitance		-	29	-	pF
C _{riss}	Reverse Transfer Capacitance		-	23	-	pF
Q _g	Total Gate Charge	V _{DS} =30V, I _D =3A, V _{GS} =4.5V	-	6	-	nC
Q _{gs}	Gate-Source Charge		-	1	-	nC
Q _{gd}	Gate-Drain("Miller") Charge		-	1.3	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} =30V, I _D =1.5A, R _{GEN} =1Ω, V _{GS} =10V	-	6	-	ns
t _r	Turn-on Rise Time		-	15	-	ns
t _{d(off)}	Turn-off Delay Time		-	15	-	ns
t _f	Turn-off Fall Time		-	10	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	3	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	12	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S =3A	-	-	1.2	V

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%



Typical Performance Characteristics

Figure 1: Output Characteristics

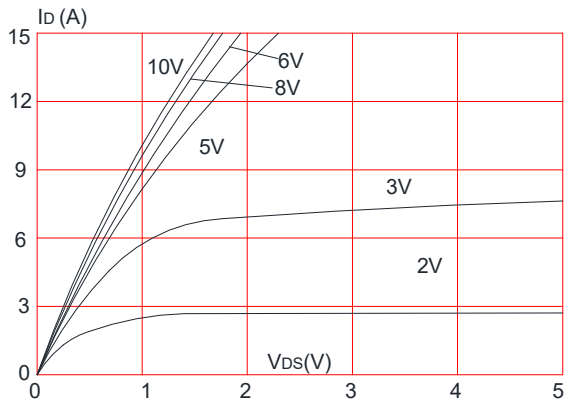


Figure 2: Typical Transfer Characteristics

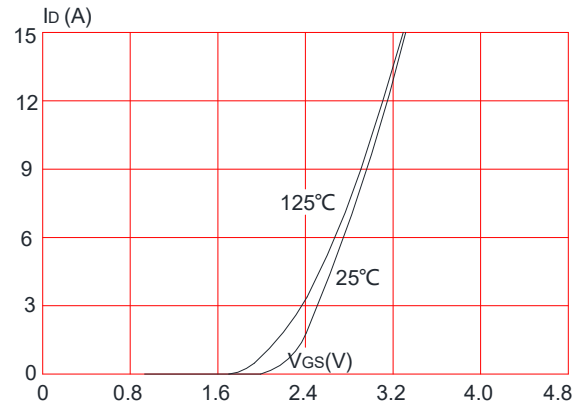


Figure 3: On-resistance vs. Drain Current

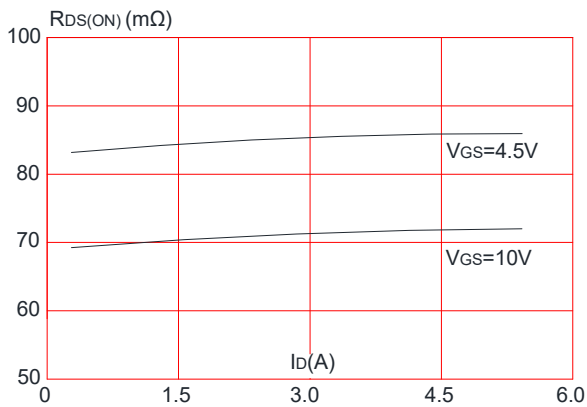


Figure 4: Body Diode Characteristics

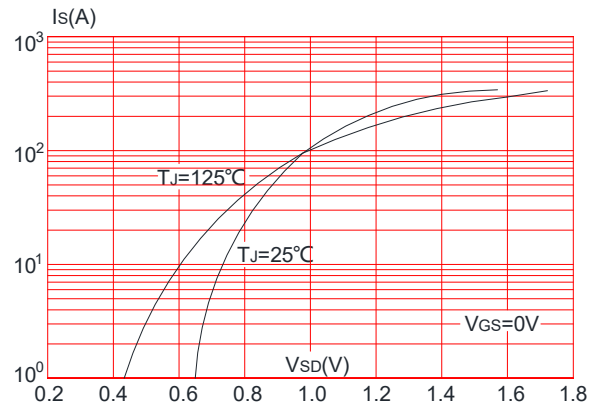


Figure 5: Gate Charge Characteristics

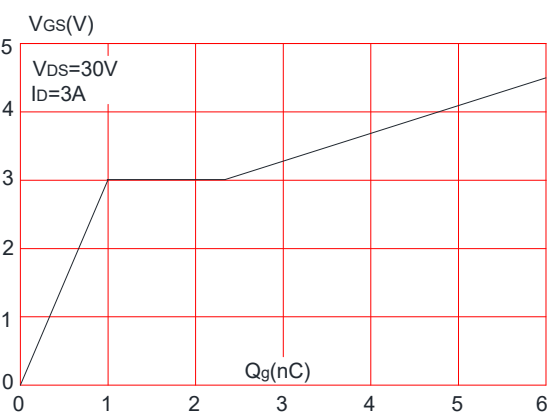


Figure 6: Capacitance Characteristics

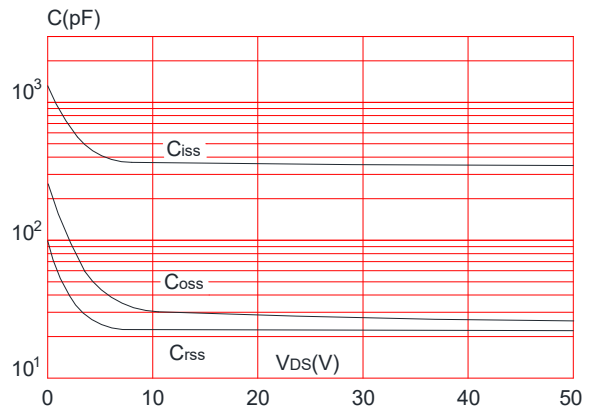




Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

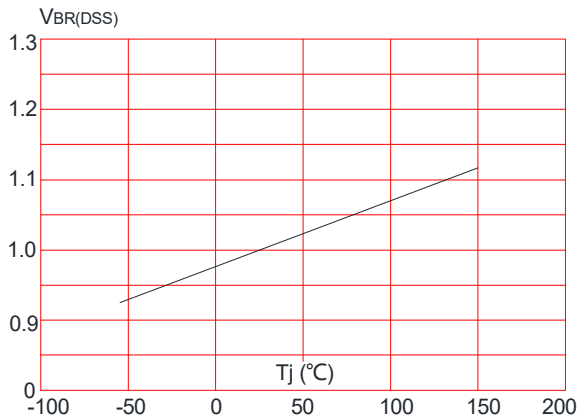


Figure 8: Normalized on Resistance vs. Junction Temperature

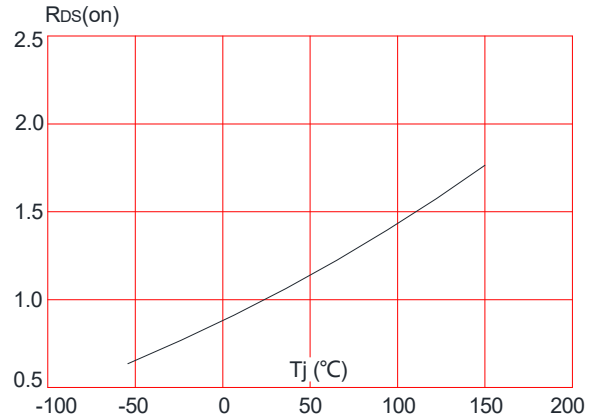


Figure 9: Maximum Safe Operating Area

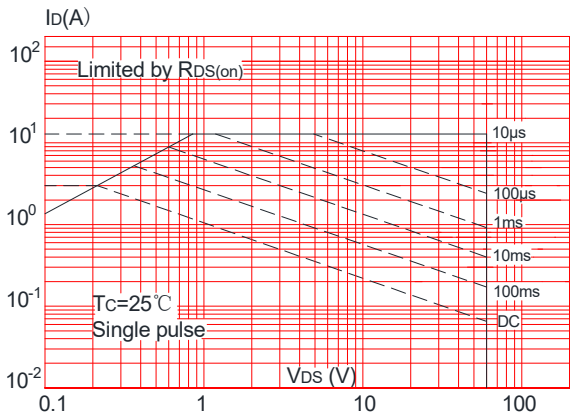


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

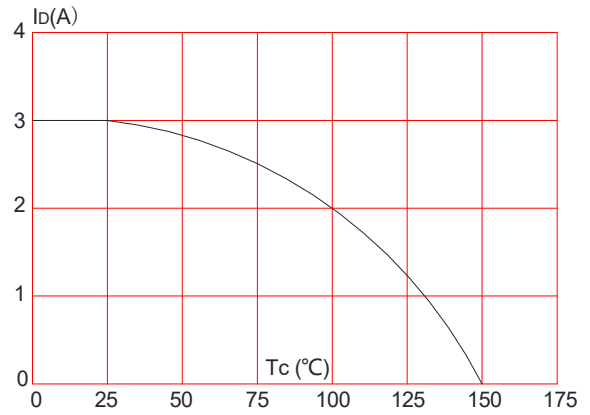
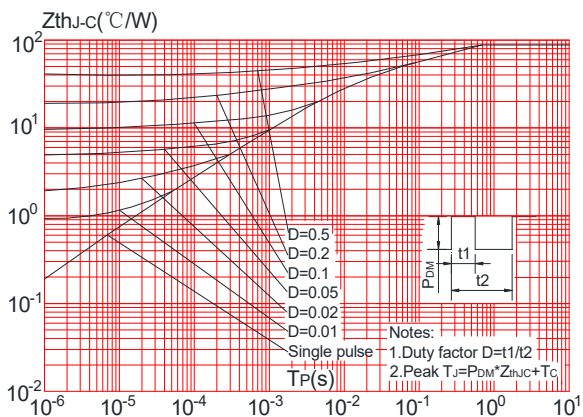


Figure 11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Test Circuit



Figure1:Gate Charge Test Circuit & Waveform



Figure 2: Resistive Switching Test Circuit & Waveforms

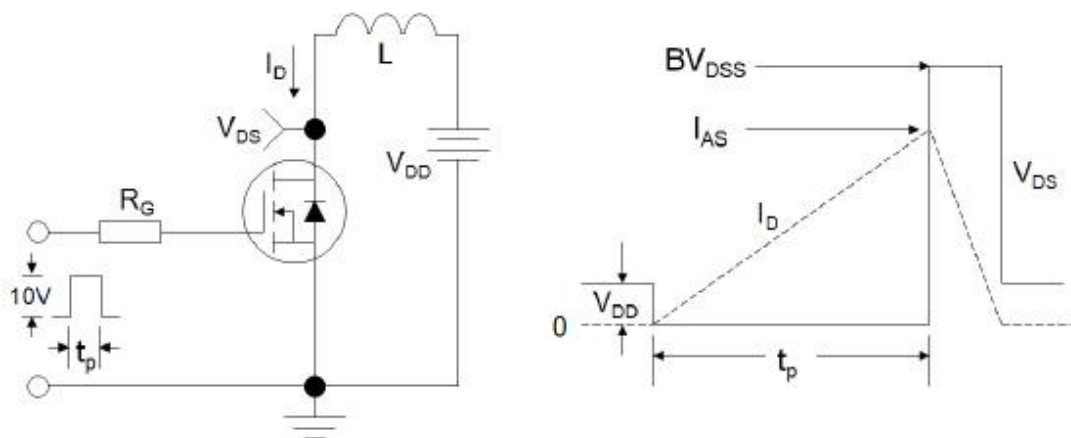
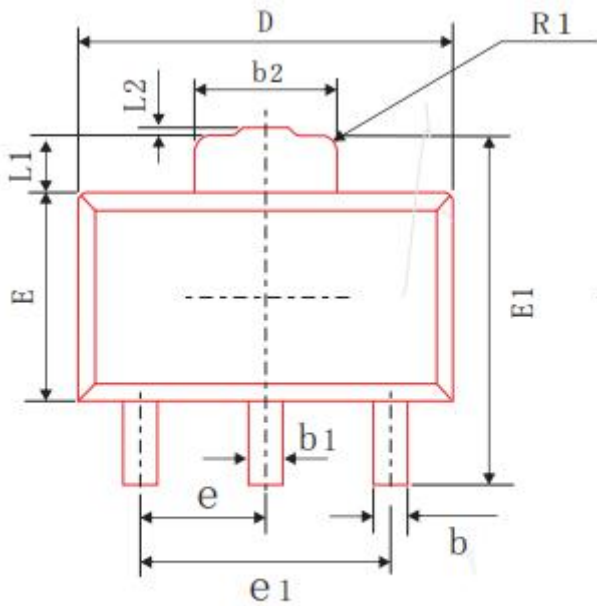


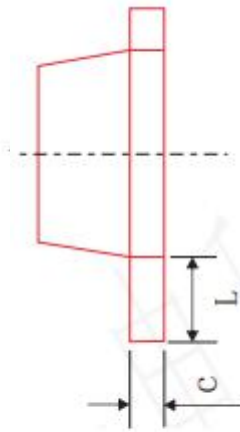
Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms



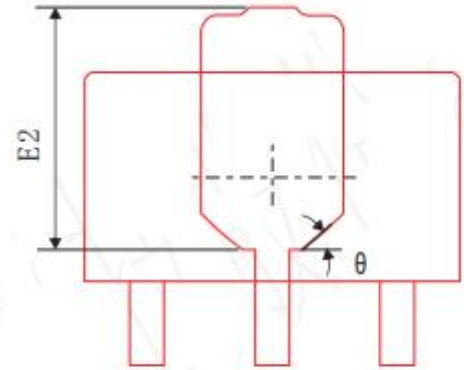
Package Mechanical Data-SOT-89-3L



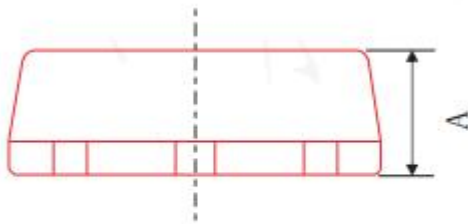
TOP VIEW



SIDE VIEW



BOTTOM VIEW



SIDE VIEW


SYMBOL	MIN	NOM	MAX
A	1.40	1.50	1.60
b	0.36	0.40	0.50
b1	0.44	0.48	0.58
b2	1.60	1.70	1.80
c	0.35	0.40	0.45
D	4.40	4.50	4.60
E	2.40	2.50	2.60
E1	4.00	4.20	4.40
E2	2.65	2.85	3.05
e1	2.80	3.00	3.20
L	0.90	1.00	1.10
L1	0.60	0.70	0.80
L2	0.075 REF		
R1	0.2 BSC		
θ	45° TYP		
e	1.5 BSC		



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