Description

JMT P-channel Enhancement Mode Power MosFET

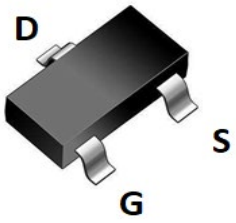
Features

- -30V, -4A
  $R_{DS(ON)}$ < 64mΩ @ V_{GS} = -10V
  $R_{DS(ON)}$ < 74mΩ @ V_{GS} = -4.5V
  $R_{DS(ON)}$ < 96mΩ @ V_{GS} = -2.5V
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free

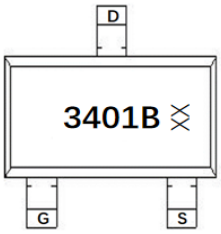
Applications

- Load Switch
- PWM Application
- Power Management

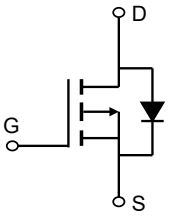
RoHS



SOT-23-3L Top View



Marking and Pin Assignment



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	Outline	Package	Reel Size	Reel(pcs)	Per Carton (pcs)
3401B	JMTJ3401B	TAPING	SOT-23-3L	7"	3000	120000

Absolute Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Symbol	Parameter		Value	Units
V_{DS}	Drain-to-Source Voltage		-30	V
V_{GS}	Gate-to-Source Voltage		±12	V
I_D	Continuous Drain Current	T_A = 25°C	-4	A
		T_A = 100°C	-3	
I_{DM}	Pulsed Drain Current (1)		-16	A
P_D	Power Dissipation	T_A = 25°C	1.1	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient(2)		110	°C/W
T_J, T_{STG}	Junction & Storage Temperature Range		-55 to 150	°C

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	I_D = -250μA, V_{GS} = 0V	-30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = -30V, V_{GS} = 0V	-	-	1.0	μA
I_{GSS}	Gate-Body Leakage Current	V_{DS} = 0V, V_{GS} = ±12V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = -250μA	-0.6	-0.95	-1.3	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(3)	V_{GS} = -10V, I_D = -4A	-	49	64	mΩ
		V_{GS} = -4.5V, I_D = -3A	-	57	74	mΩ
		V_{GS} = -2.5V, I_D = -3A	-	74	96	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = -15V, f = 1MHz	-	553	-	pF
C_{oss}	Output Capacitance		-	57	-	pF
C_{rss}	Reverse Transfer Capacitance		-	35	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to -4.5V V_{DS} = -15V, I_D = -3A	-	6.5	-	nC
Q_{gs}	Gate Source Charge		-	1.4	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	1.7	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = -4.5V, V_{DD} = -15V I_D= -3A, R_{GEN} = 3Ω	-	10	-	ns
t_r	Turn-On Rise Time		-	86	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	150	-	ns
t_f	Turn-Off Fall Time		-	357	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-4	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-16	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = -4A	-	-	-1.2	V
trr	Body Diode Reverse Recovery Time	I_F = -3A, di/dt = 80A/us	-	36	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	5	-	nC

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

2. $R_{\theta JA}$ is measured with the device mounted on a 1inch^2 pad of 2oz copper FR4 PCB

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

Typical Performance Characteristics

Figure 1: Output Characteristics

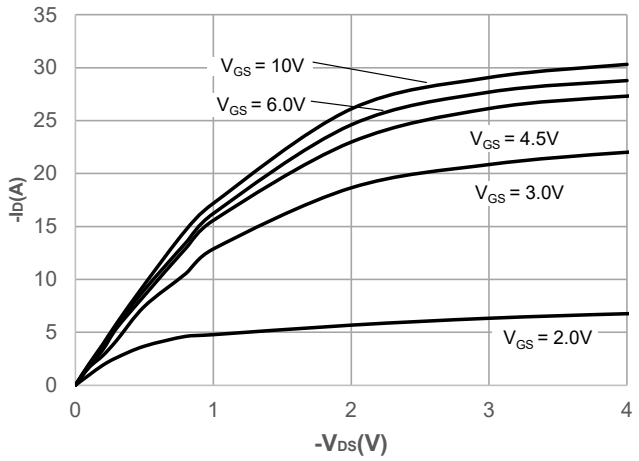


Figure 2: Typical Transfer Characteristics

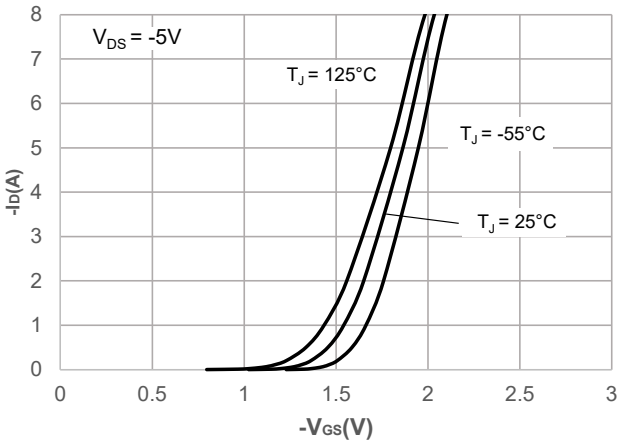


Figure 3: On-resistance vs. Drain Current

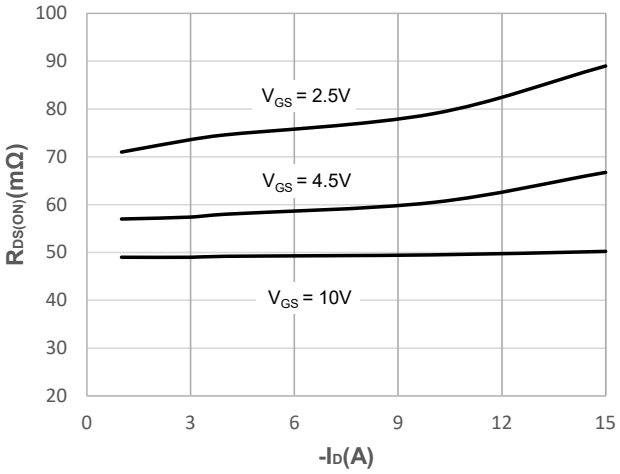


Figure 4: Body Diode Characteristics

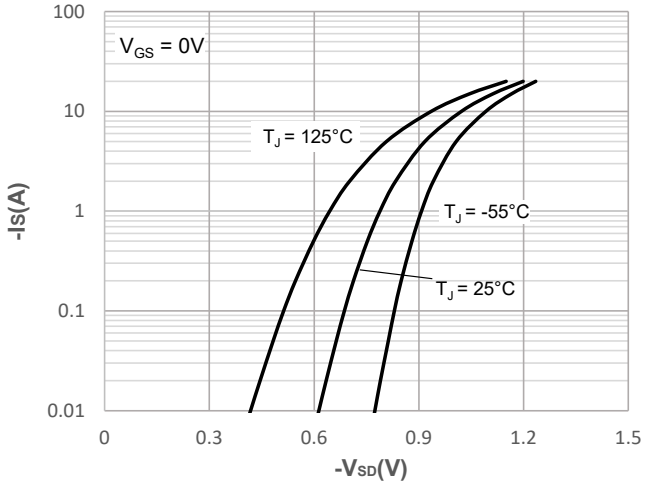


Figure 5: Gate Charge Characteristics

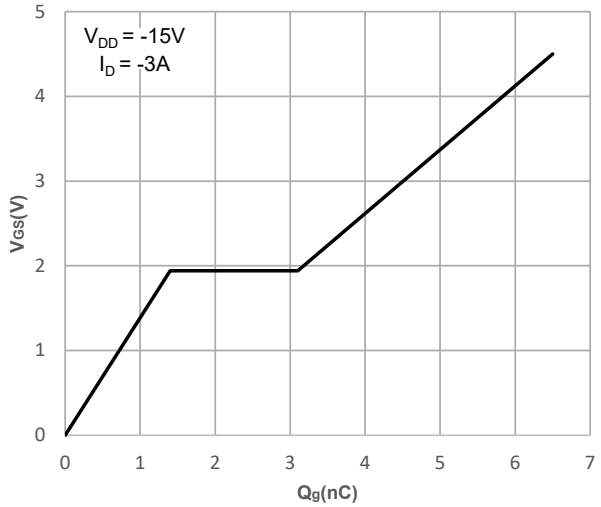
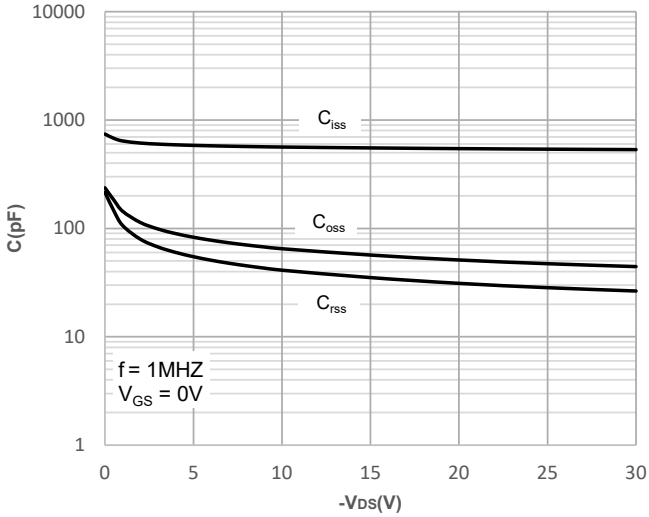


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

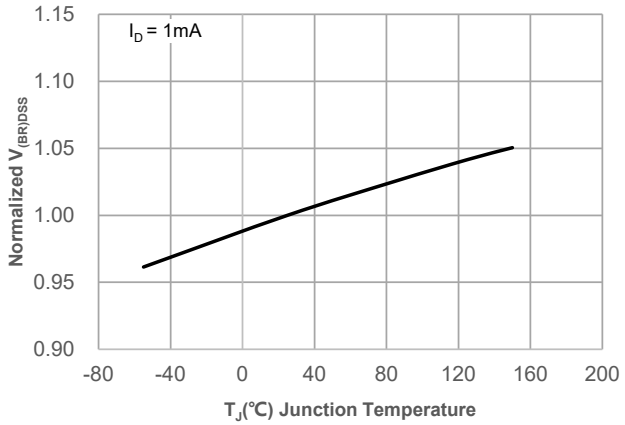


Figure 8: Normalized on Resistance vs. Junction Temperature

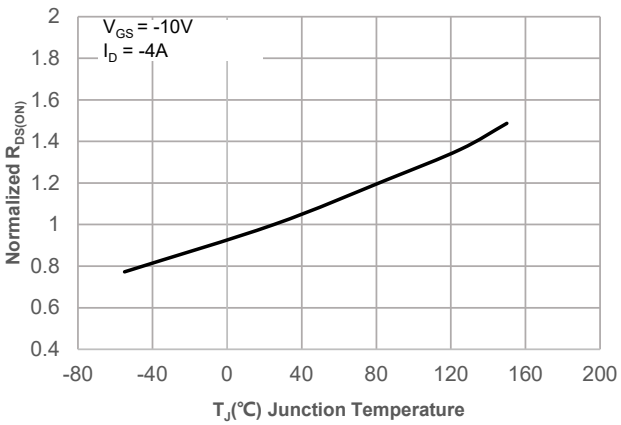


Figure 9: Maximum Safe Operating Area

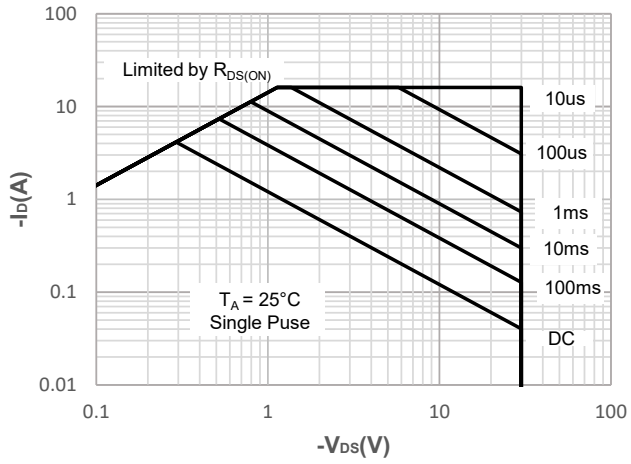


Figure 10: Maximum Continuous Drian Current vs. Ambient Temperature

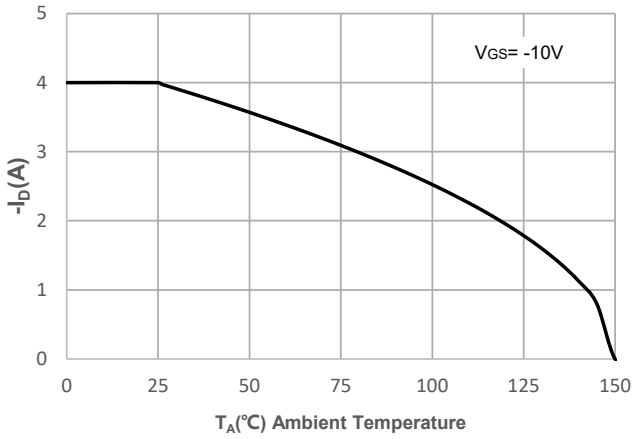


Figure 11: Normalized Maximum Transient Thermal Impedance

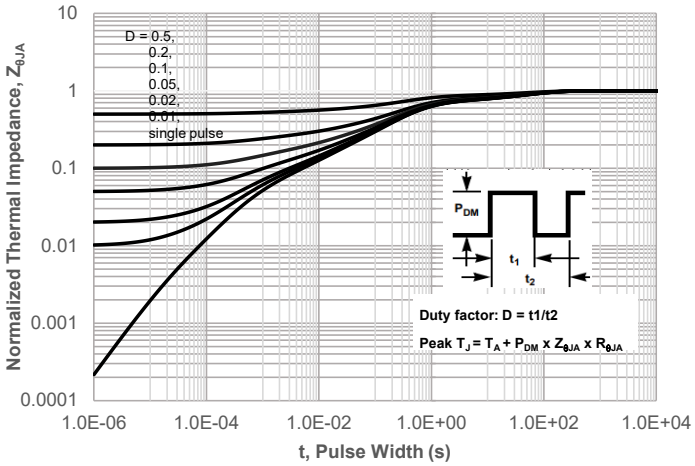
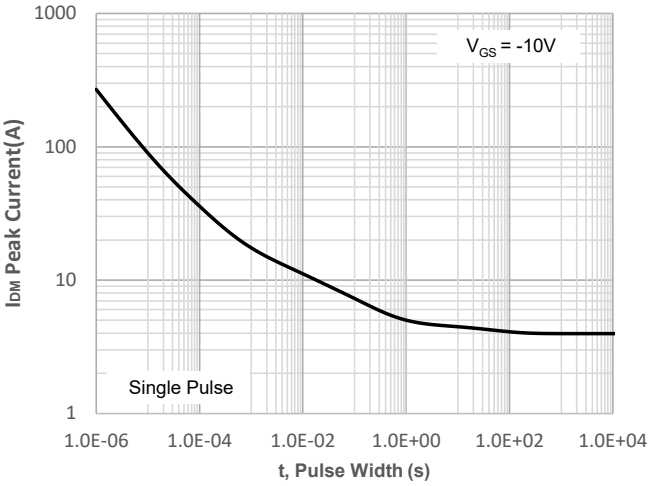


Figure 12: Peak Current Capacity



Test Circuit

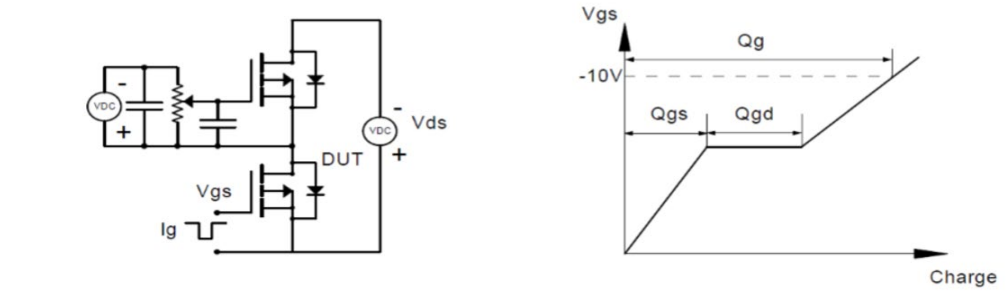


Figure 1: Gate Charge Test Circuit & Waveform

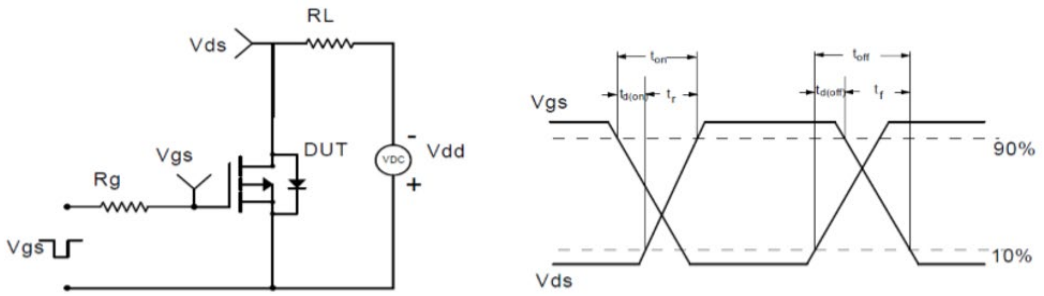


Figure 2: Resistive Switching Test Circuit & Waveform

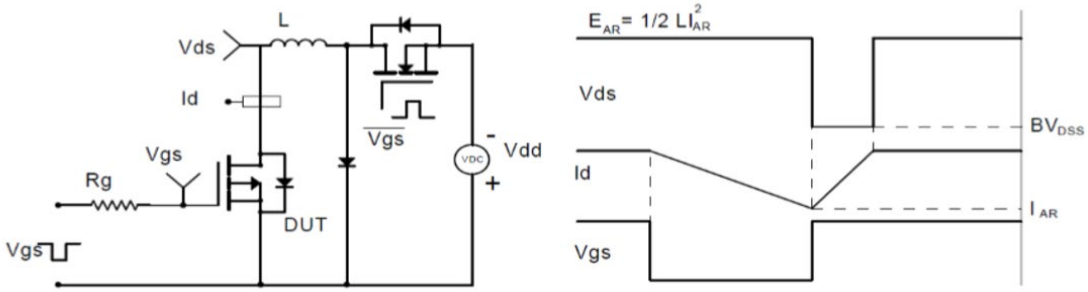


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

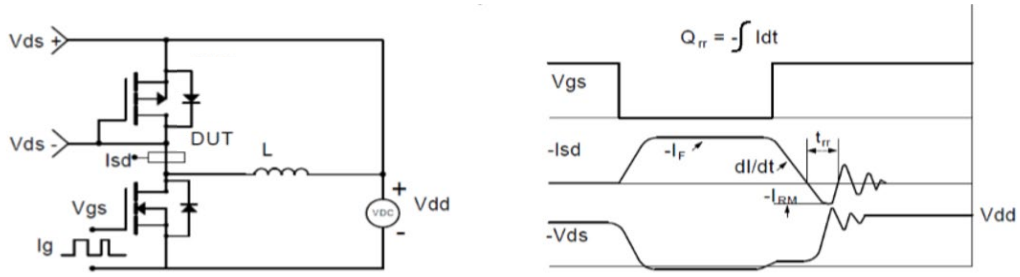
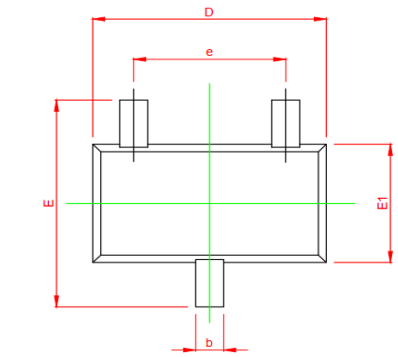
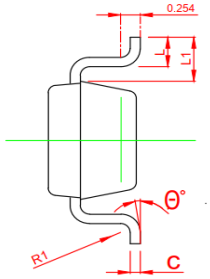


Figure 4: Diode Recovery Test Circuit & Waveform

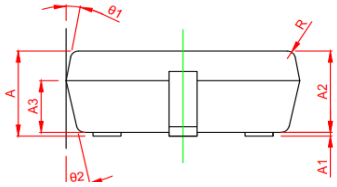
Package Mechanical Data(SOT-23-3L)



TOP VIEW



SIDE VIEW



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	-	-	1.25
* A1	0.02	-	0.10
* A2	1.05	1.10	1.15
A3	0.65	0.70	0.75
* b	0.30	0.35	0.45
* c	0.127 BSC		
* D	2.87	2.92	2.97
* E	2.72	2.80	2.88
* E1	1.55	1.60	1.65
* e	1.85	1.90	1.95
* L	0.32	0.40	0.48
* L1	0.55	0.60	0.65
R	0.10 REF		
R1	0.12 REF		
* θ	0	--	8°
θ1	8°	10°	12°
θ2	10°	12°	14°