

## Description

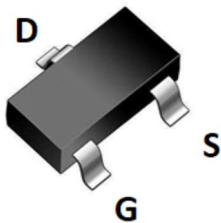
### JMT P-channel Enhancement Mode Power MOSFET

#### Features

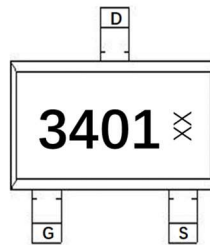
- $V_{DS} = -30V$ ,  $I_D = -4.2A$   
 $R_{DS(ON)} < 60m\Omega @ V_{GS} = -10V$   
 $R_{DS(ON)} < 78m\Omega @ V_{GS} = -4.5V$   
 $R_{DS(ON)} < 112m\Omega @ V_{GS} = -2.5V$
- Advanced Trench Technology
- Excellent  $R_{DS(ON)}$  and Low Gate Charge
- Lead free product is acquired

#### Application

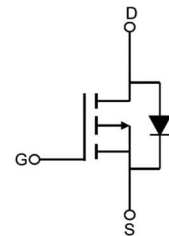
- PWM Applications
- Load Switch
- Power Management



SOT-23-3L 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)
3401	JMTJ3401A	TAPING	SOT-23-3L	7inch	3000	180000

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

Symbol	Parameter	Max.	Units
$V_{DSS}$	Drain-Source Voltage	-30	V
$V_{GSS}$	Gate-Source Voltage	$\pm 12$	V
$I_D$	Continuous Drain Current	$T_A = 25^\circ C$	-4.2
		$T_A = 100^\circ C$	-2.7
$I_{DM}$	Pulsed Drain Current <sup>note1</sup>	-30	A
$P_D$	Power Dissipation	$T_A = 25^\circ C$	1.7
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	76.2	$^\circ C/W$
$T_J, T_{STG}$	Operating and Storage Temperature Range	-55 to +150	$^\circ C$



## Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristic</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> = -250μA	-30	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = -30V, V <sub>GS</sub> =0V,	-	-	-1	μA
I <sub>GSS</sub>	Gate to Body Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> = ±12V	-	-	±100	nA
<b>On Characteristics</b>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> = -250μA	-0.6	-0.9	-1.3	V
R <sub>DS(on)</sub>	Static Drain-Source on-Resistance <small>note2</small>	V <sub>GS</sub> = -10V, I <sub>D</sub> = -4A	-	48	60	mΩ
		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -3A	-	57	78	
		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -1A	-	77	112	
<b>Dynamic Characteristics</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> = -15V, V <sub>GS</sub> =0V, f=1.0MHz	-	880	-	pF
C <sub>oss</sub>	Output Capacitance		-	105	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	65	-	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> = -15V, I <sub>D</sub> = -4.2A, V <sub>GS</sub> = -10V	-	8.5	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	1.8	-	nC
Q <sub>gd</sub>	Gate-Drain("Miller") Charge		-	2.7	-	nC
<b>Switching Characteristics</b>						
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> = -15V, I <sub>D</sub> = -1A, V <sub>GS</sub> = -10V, R <sub>GEN</sub> =2.5Ω	-	7	-	ns
t <sub>r</sub>	Turn-on Rise Time		-	3	-	ns
t <sub>d(off)</sub>	Turn-off Delay Time		-	20	-	ns
t <sub>f</sub>	Turn-off Fall Time		-	12	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
I <sub>S</sub>	Maximum Continuous Drain to Source Diode Forward Current		-	-	-4.2	A
I <sub>SM</sub>	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-30	A
V <sub>SD</sub>	Drain to Source Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> = -4.2A	-	-0.8	-1.2	V

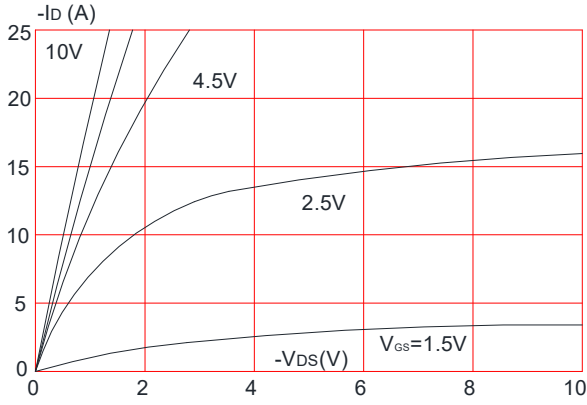
Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

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

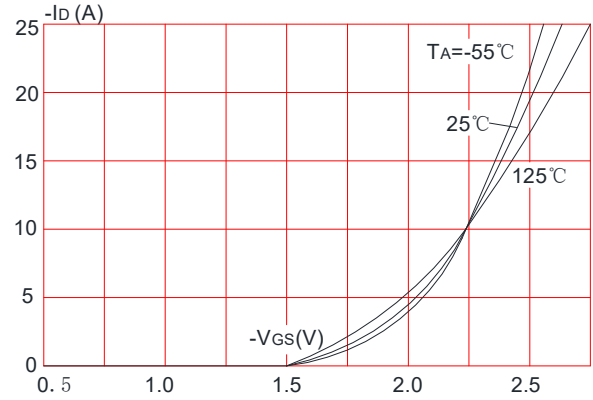


## Typical Performance Characteristics

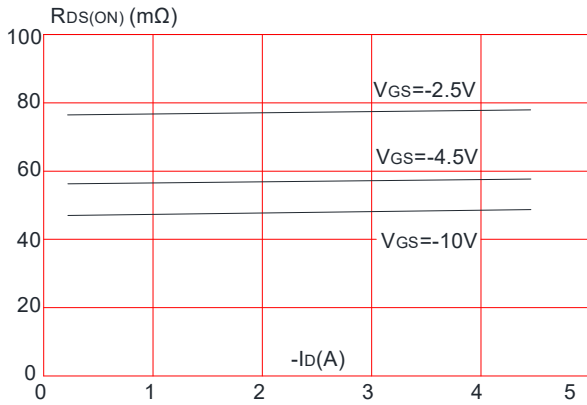
**Figure 1:** Output Characteristics



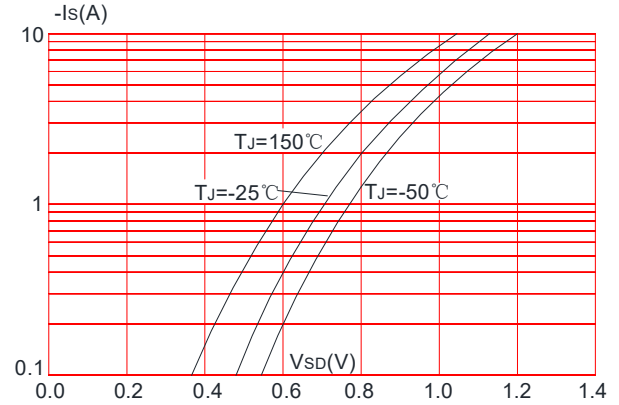
**Figure 2:** Typical Transfer Characteristics



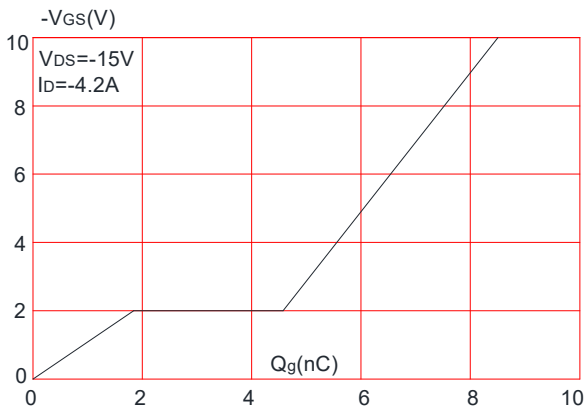
**Figure 3:** On-resistance vs. Drain Current



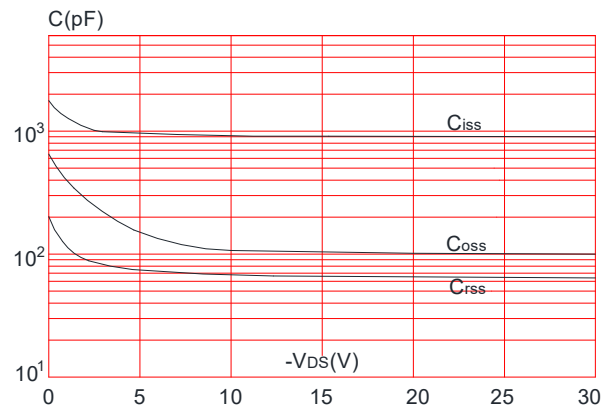
**Figure 4:** Body Diode Characteristics



**Figure 5:** Gate Charge Characteristics

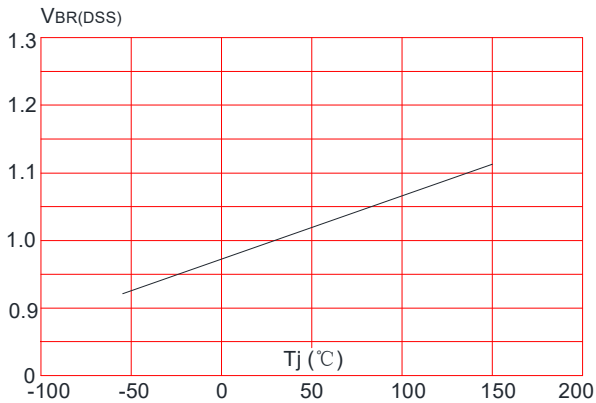


**Figure 6:** Capacitance Characteristics

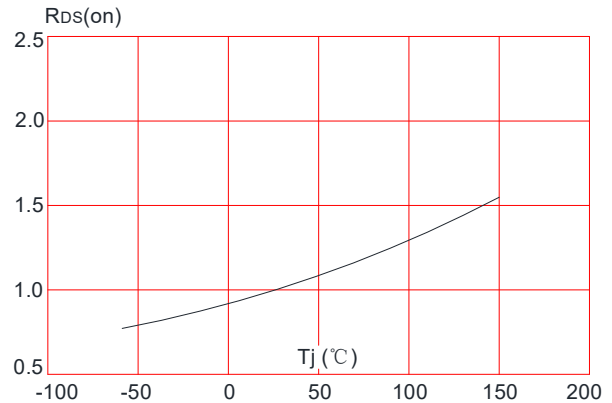




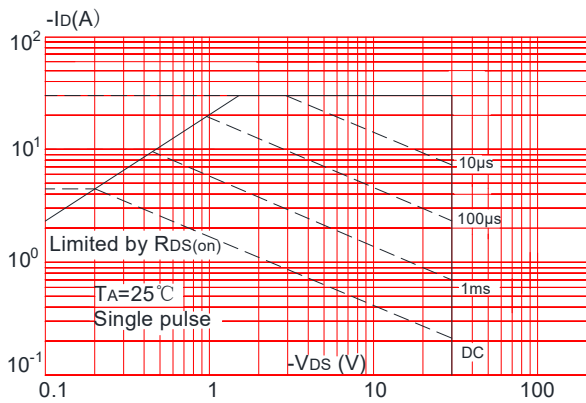
**Figure 7: Normalized Breakdown Voltage vs. Junction Temperature**



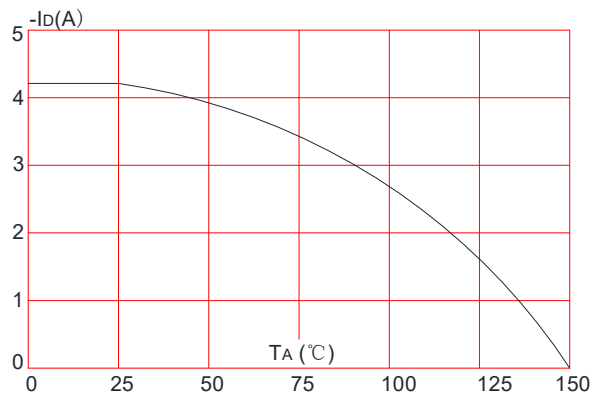
**Figure 8: Normalized on Resistance vs. Junction Temperature**



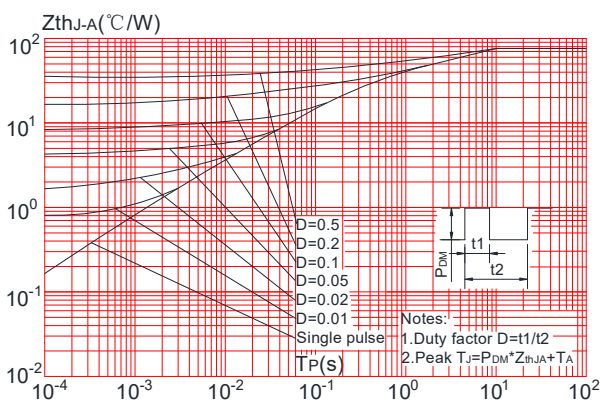
**Figure 9: Maximum Safe Operating Area**



**Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature**

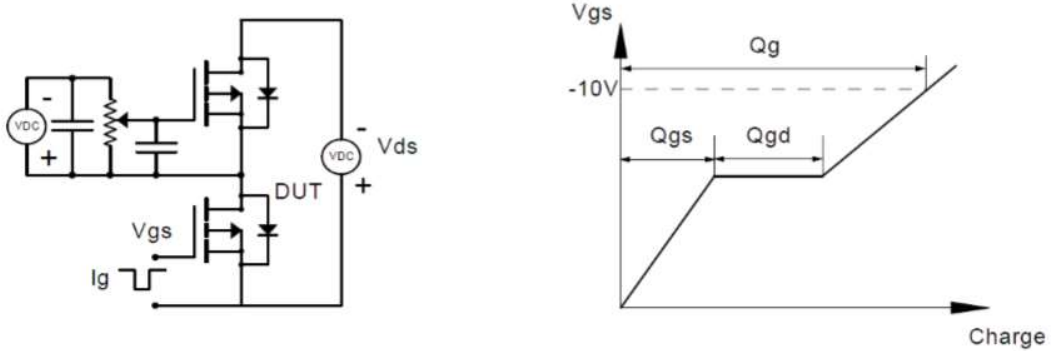


**Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient**

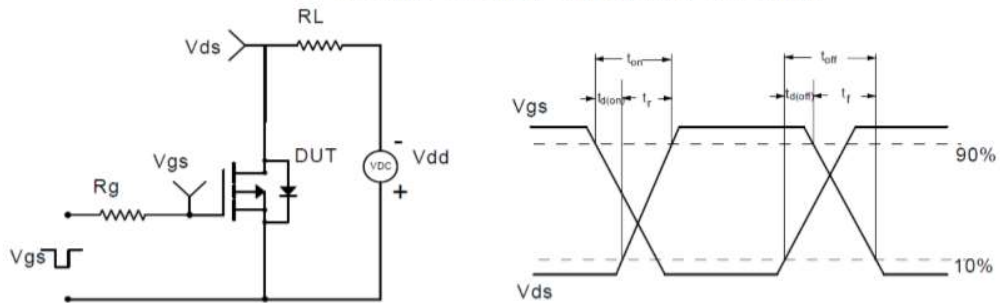


## Test Circuit

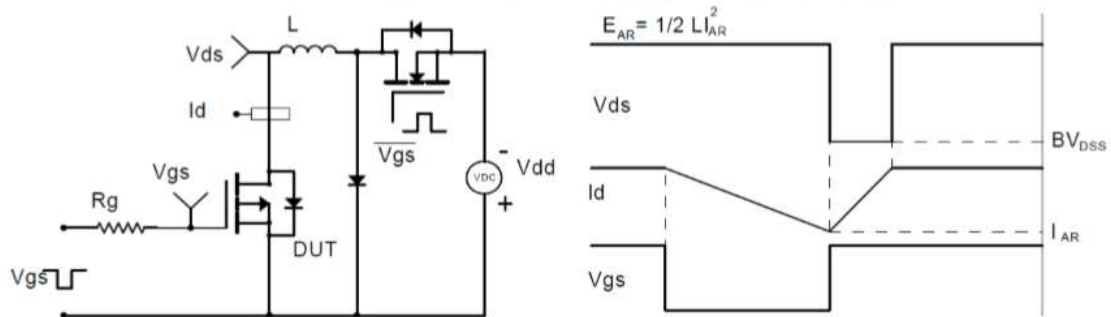
### Gate Charge Test Circuit & Waveform



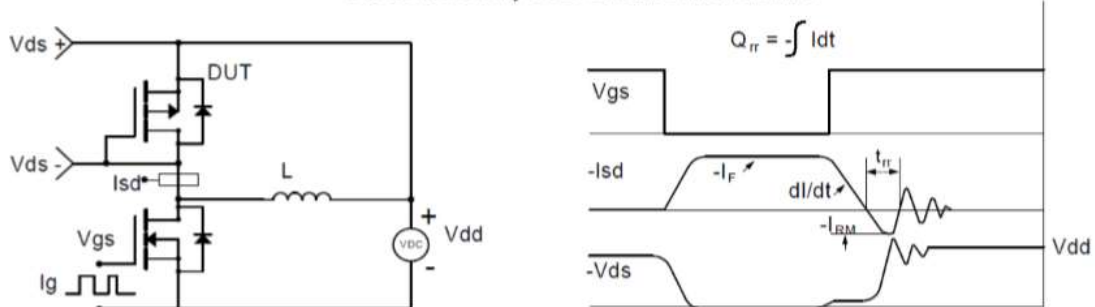
### Resistive Switching Test Circuit & Waveforms



### Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

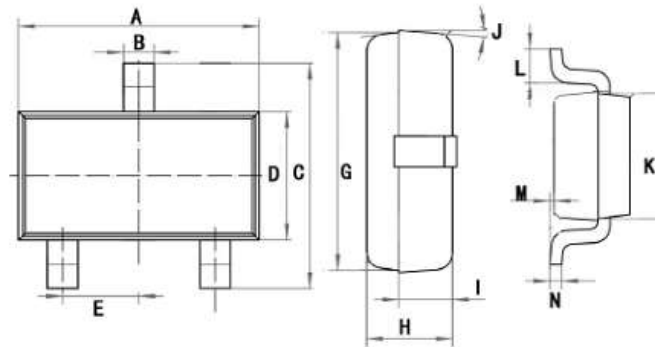


### Diode Recovery Test Circuit & Waveforms





## Package Mechanical Data-SOT-23-3L



A	2.90±0.1	E	0.950	J	7°	N	0.15 <sup>+0.03</sup>
B	0.4±0.01	G	2.85±0.1	K	1.550±0.1		
C	2.80±0.20	H	1.10±0.1	L	0.40		
D	1.60±0.1	I	0.70±0.1	M	0.05±0.03		

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