



## Description

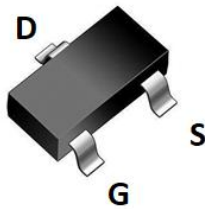
### JMT P-channel Enhancement Mode Power MOSFET

#### Features

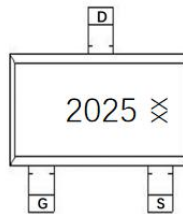
- -20V, -5A  
 $R_{DS(ON)} < 26m\Omega @ V_{GS} = -4.5V$   
 $R_{DS(ON)} < 37m\Omega @ V_{GS} = -2.5V$
- Advanced Trench Technology
- Provide Excellent  $R_{DS(ON)}$  and Low Gate Charge
- Lead free product is acquired

#### Application

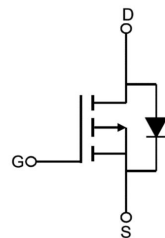
- Load Switch
- PWM Application
- Power management



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)
2025	JMTJ250P02A	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	-20	V
$V_{GSS}$	Gate-Source Voltage	$\pm 12$	V
$I_D$	Continuous Drain Current	$T_A = 25^\circ C$	-5
		$T_A = 100^\circ C$	-3.25
$I_{DM}$	Pulsed Drain Current <sup>note1</sup>	-20	A
$P_D$	Power Dissipation	1.1	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	114	$^\circ C/W$
$T_J, T_{STG}$	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	-20	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = -20V, 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	-0.4	-0.7	-1.0	V
R <sub>DS(on)</sub>	Static Drain-Source on-Resistance <small>note2</small>	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -5A	-	20	26	mΩ
		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -4A	-	27	37	
<b>Dynamic Characteristics</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> = -10V, V <sub>GS</sub> =0V, f=1.0MHz	-	1200	-	pF
C <sub>oss</sub>	Output Capacitance		-	191	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	168	-	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> = -10V, I <sub>D</sub> = -5A, V <sub>GS</sub> = -4.5V	-	33.7	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	3.5	-	nC
Q <sub>gd</sub>	Gate-Drain("Miller") Charge		-	10.5	-	nC
<b>Switching Characteristics</b>						
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> = -10V, I <sub>D</sub> = -5A, V <sub>GS</sub> = -4.5V, R <sub>GEN</sub> =10Ω	-	11	-	ns
t <sub>r</sub>	Turn-on Rise Time		-	35	-	ns
t <sub>d(off)</sub>	Turn-off Delay Time		-	30	-	ns
t <sub>f</sub>	Turn-off Fall Time		-	10	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
I <sub>S</sub>	Maximum Continuous Drain to Source Diode Forward Current		-	-	-5	A
I <sub>SM</sub>	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-20	A
V <sub>SD</sub>	Drain to Source Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> = -5A	-	-	-1.2	V

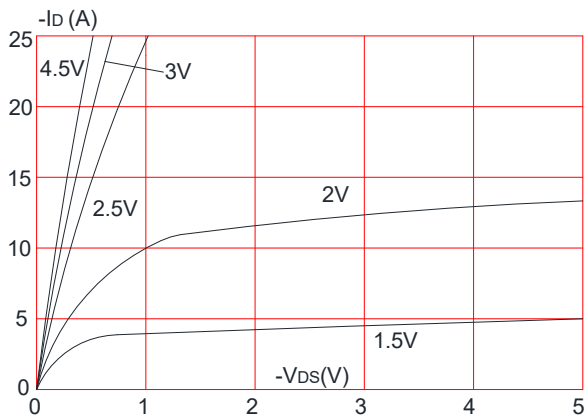
Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

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

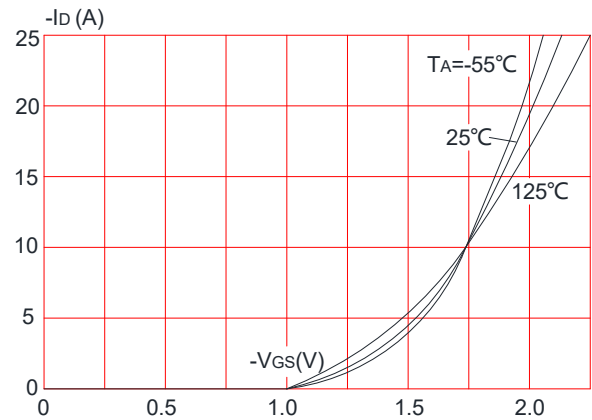


## Typical Performance Characteristics

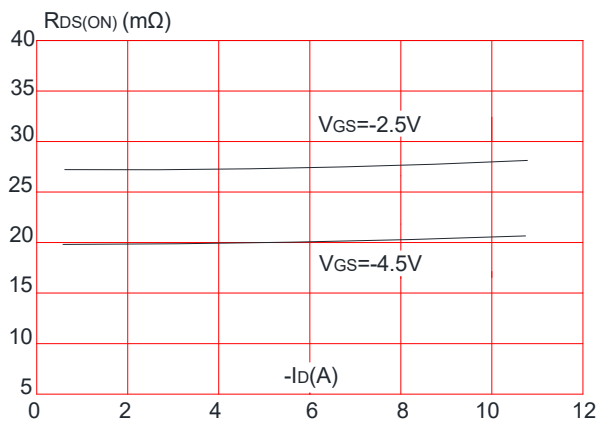
**Figure 1:** Output Characteristics



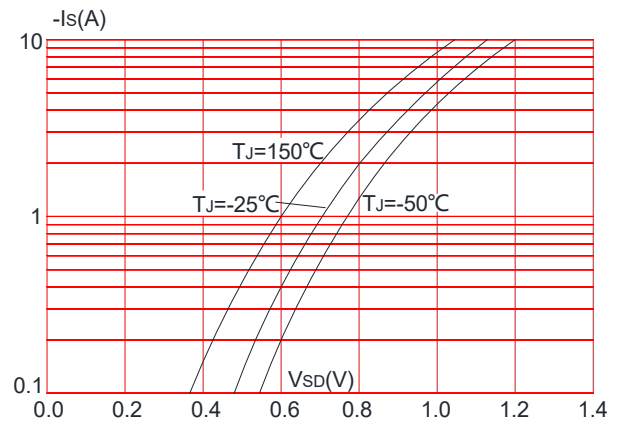
**Figure 2:** Typical Transfer Characteristics



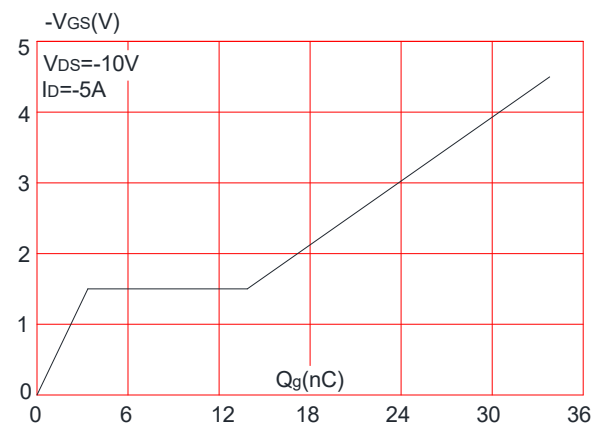
**Figure 3:** On-resistance vs. Drain Current



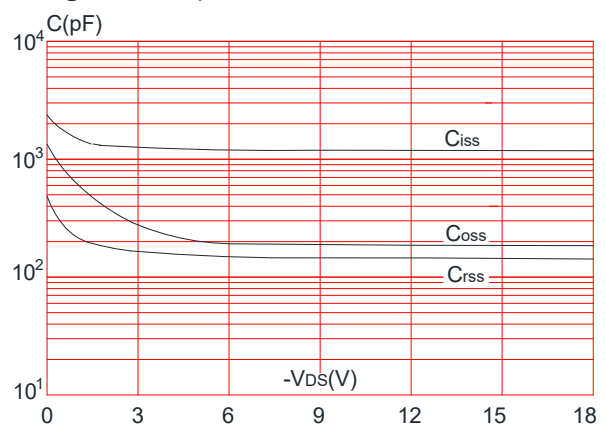
**Figure 4:** Body Diode Characteristics



**Figure 5:** Gate Charge Characteristics

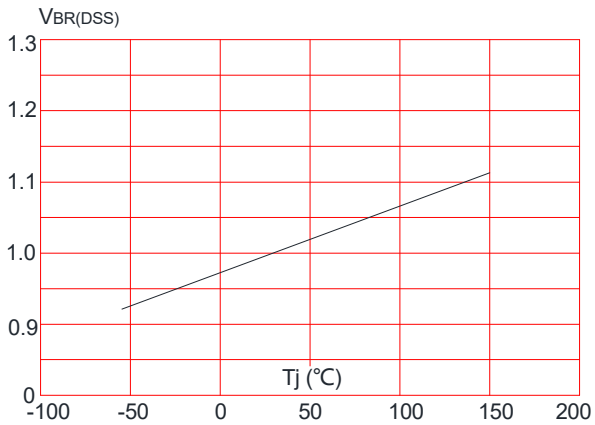


**Figure 6:** Capacitance Characteristics

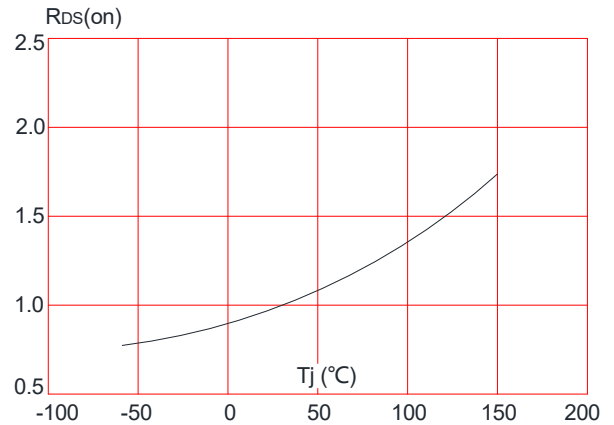




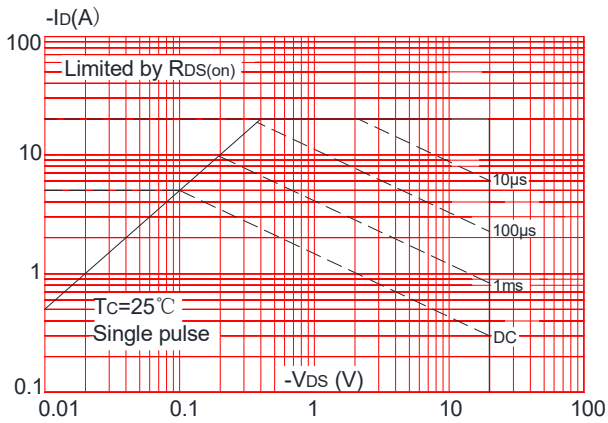
**Figure 7: Normalized Breakdown Voltage vs. Junction Temperature**



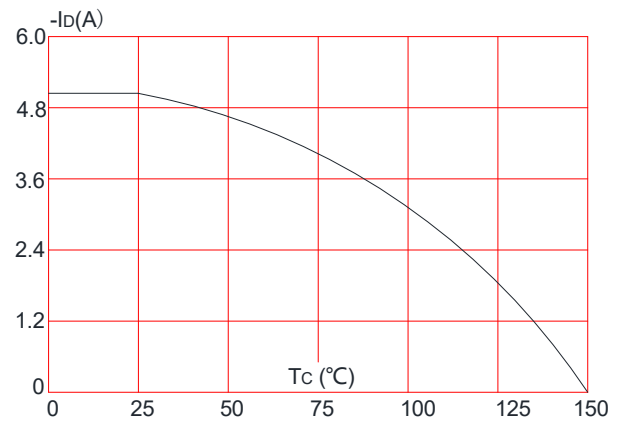
**Figure 8: Normalized on Resistance vs. Junction Temperature**



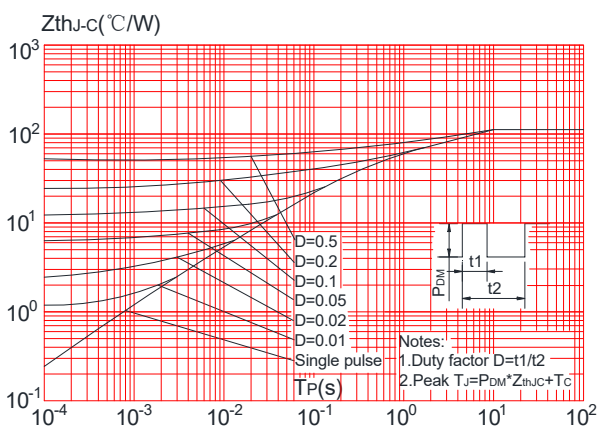
**Figure 9: Maximum Safe Operating Area**



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

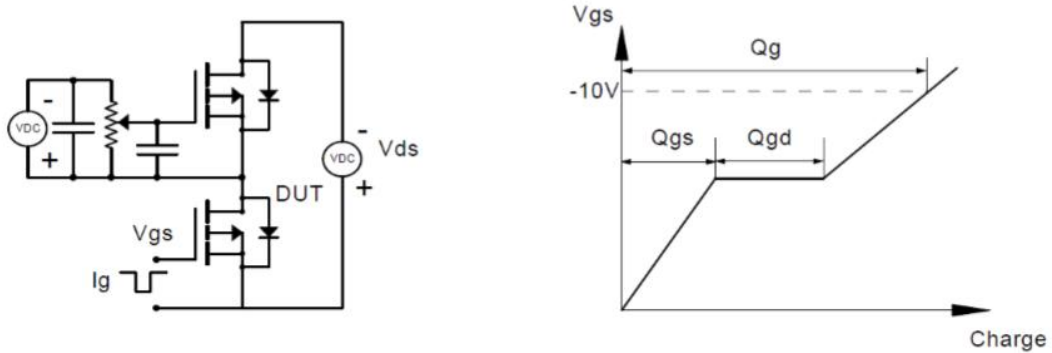


**Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case**

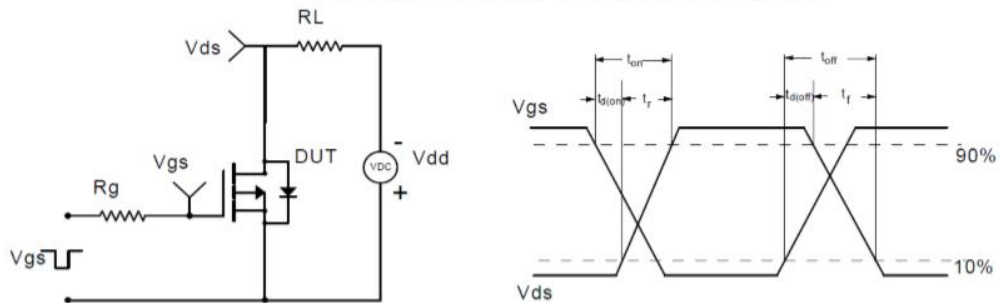


## Test Circuit

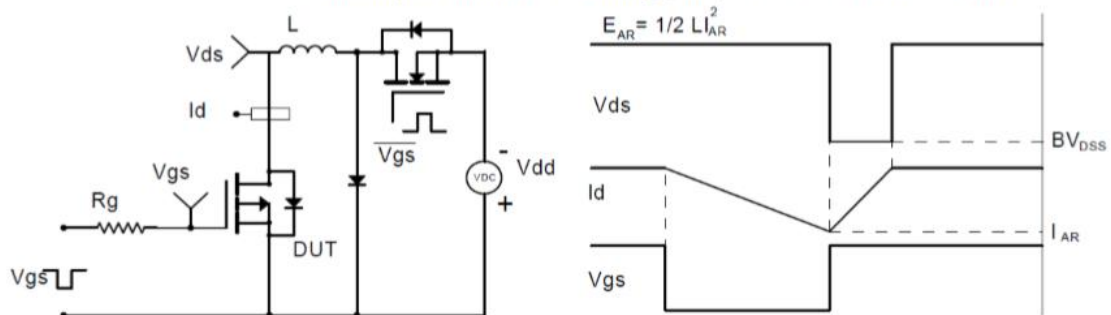
### Gate Charge Test Circuit & Waveform



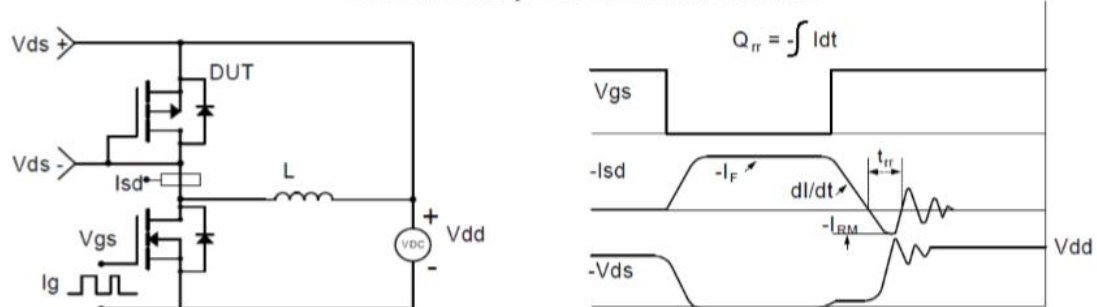
### Resistive Switching Test Circuit & Waveforms



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

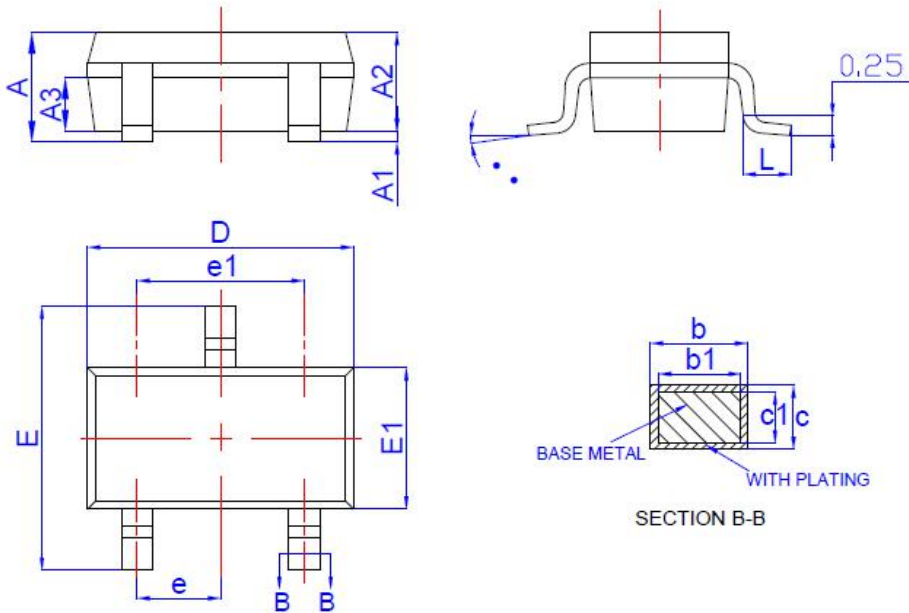


### Diode Recovery Test Circuit & Waveforms





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




SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	—	—	1.25
A1	0.04	—	0.10
A2	1.00	1.10	1.20
A3	0.55	0.65	0.75
b	0.38	—	0.48
b1	0.37	0.40	0.43
c	0.11	—	0.21
c1	0.10	0.13	0.16
D	2.72	2.92	3.12
E	2.60	2.80	3.00
E1	1.40	1.60	1.80
e	0.95BSC		
e1	1.90BSC		
L	0.30	—	0.60
••	0	—	•••

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